भारत हेवी इलेक्ट्रिकल्स लिमिटेड
(भारत सरकार का उपक्रम)

Bharat Heavy Electricals Limited
Industry Sector, Transmission Business Group
Integrated Office Complex
Lodhi Road, New Delhi-110 003
Phones: 011-41793117,Fax: 011-24369016

AMENDEMENT NO-2 TO NIT **DATE: 16.08.2012**

TENDER SPEC. No. – TBSM/AGRA-HVDC/PEB/PKG-III/TENDER, DTD: 19.07.2012

NIT NO. – 12318

SUB : AMENDMENT TO NIT FOR "DESIGN, ENGINEERING, SUPPLY, FABRICATION, SHIPMENT TO JOB SITE, ERECTION & COMMISSIONING OF DC HALL PRE- ENGINEERED BUILDING INCLUDING ASSOCIATED WORK REQUIRED FOR +/- 800KV NE-AGRA HVDC PROJECT AT AGRA IN UTTAR PRADESH".

With reference to above tender following addendums/ amendments may please be noted.

A. Following tender documents have been modified and attached with this amendment.

1. Special terms & conditions for supply part (for supply items-BOQ Part-I) (Rev.01).
2. Special terms & conditions for services part (for Services-BOQ Part-II) (Rev. 01).
3. Pre-Qualification Criteria (Rev.01).
4. Scope, Specific Tech. Requirements, Tech. Specification, drawings & Bill of Quantities (Rev.-02)

B. BHEL clarifications on queries asked by bidders during Pre-Bid meeting are attached.

C. The due date & time for tender submission and technical bid opening are extended as below

Tender submission date & time: 24.08.2012, 15:00 hrs.
Technical bid opening date & time: 24.08.2012, 15:30 hrs.

Notes:

- Revised tender documents as mentioned at serial no. A above and pre-bid clarifications are attached with this amendment no.2. Bidders are requested to quote considering attached clarifications and revisions of tender documents & BOQ.
- All other terms & conditions of the tender shall remain unchanged.
- Please enclose with your Technical Bid a copy of this amendment-02 along with all enclosures duly signed by your authorized signatory and stamped.
- Kindly ensure submission of your offer by above due date & time.

16.08.12

(Anand Tripathi)
DGM/TBSM

TRANSMISSION BUSINESS GROUP
SUB CONTRACTS MANAGEMENT
LODHI ROAD, NEW DELHI

SPECIAL TERMS & CONDITIONS FOR SUPPLY PART (for Supply items - BOQ Part I)
(Revision-01)

1.0 INTEREST BEARING RECOVERABLE ADVANCES

1.1 Normally no advance is payable to the contractor. However, advance payment in exceptional circumstances shall be interest bearing and secured through an equivalent Bank Guarantee and shall be limited to a maximum of 5% of contract value.

1.2 In exceptional circumstances, with due justification, Competent Authority of BHEL is empowered to approve proposals for payment of additional interim interest bearing advance against matching Bank Guarantee, for resource augmentation towards expediting work for project implementation.

1.3 Payment and recovery of Interest Bearing Recoverable advance shall be at the sole discretion of BHEL and shall not be a subject matter of arbitration.

1.4 The rate of interest applicable for the above advances shall be the prime lending rate of State Bank of India prevailing at the time of disbursement of the advance + 2%, and such rate will remain fixed till the total advance amount is recovered.

1.5 Unadjusted amount of advances paid shall not exceed 5% of the total contract value at any point of time. Recovery of advances shall be made progressively from each Running Bill such that the advance amounts paid along with the interest is fully recovered by the time the contractor's billing reaches 80% of contract value.

1.6 Recovery rate per month shall not be less than sum of following (except for last adjustment where total amount to be adjusted may be less than the sum of following):

a. 10% of Gross Value of Running Bill amount

b. Simple interest up to the date of RA Bill on the outstanding Principle amount/amounts.

1.7 Contractor to submit Bank Guarantee as per prescribed formats for each of the advance and shall be valid for at least one year or the recovery duration or the balance contract period whichever is later. In case the recovery of dues does not get completed within the aforesaid BG period, the contractor shall renew the BG or submit fresh BG for the outstanding amount and the remaining recovery period.

1.8 BHEL is entitled to make recovery of the entire outstanding amount in case the contractor fails to comply with the BG requirement.

2.0 TERMS OF PAYMENT

A. Payment Terms: For Supply (BOQ for supply items – Part I)

a. 80% of payment on sequential supply as certified by BHEL site Incharge on prorate basis after receipt of the material at site, proper storage and certification from site in charge. The invoice must contain following documents in 3 sets (Original+2 copies)

- Proof of receipt at site/ Receipted LR.
- Transit insurance certificate from under writers or copy of intimation of transit insurance duly endorsed by under writers.
- Excise invoice
- Delivery challan/ Packing list (Casewise)
- Dispatch clearance given by BHEL.
- Guarantee certificate.
- Inspection clearance reports

b. 10% on progress of erection works on the basis of per metric ton erected.

c. 5% on completion of all erection work.

d. 5% payment shall be paid after commissioning of the work and issuance of Operational Acceptance Certificate by the authorized Project Manager of the Principal Employer and after complete handing over to the principal employer/customer.

OR

Last 5% payment can also be released against submission of additional bank guarantee of equivalent amount valid for 24 months after completion of etection.

3.0 Interest Liability- In case of any delay in payment due to any reason, BHEL shall not pay any interest on delayed payment.

4.0 Final Engineering Documentation: Final documentation as called in the specification is to be submitted within 3 months from the dated of dispatch of material.

5.0 Inspection: As per quality assurance plan and procedures finalized between vendor and BHEL.

6.0 Dispatch Documents:

Following Dispatch documents are to be immediately send to purchaser on dispatch

- Copy of LR/ proof of receipt at site
- Copy of Delivery challan/ Packing list
- Insurance certificate
- Guarantee certificate

7.0 Consignee:

All the equipments/ materials after port clearance in case of imported items and material dispatch clearance in case of indigenous items shall be dispatched to HVDC Agra site and name of consignee will be notified later.

8.0 TAXES AND DUTIES:

8.1 Prices to be quoted by bidder should be are inclusive of all taxes, duties and levies etc. Any increase by Government at any stage during execution of contract shall be borne by bidder. All charges on account of Octroi, Terminal Tax, Entry Tax and/or other taxes and duties, what so ever on materials obtained for the work shall be borne by the supplier. The bidder shall pay all taxes, fees, license charges, deposits, duties, tolls, royalty, commissions or other charges which may be Leviable on account of any of his operations connected with this contract.

8.2 Though the Prices to be quoted are inclusive of all taxes & duties on FOR Destination Basis. Bidders are required to give break up in the following manner

(a) Ex Works Price –EX Works Price including packing and forwarding.

(b) Sales Tax : ST/VAT/CST (Against C Form) : bidders should also mention applicable CST/VAT in unprice bid and price bid. In case of sale in transit, supplier will have to provide E1/E2 form.

(c) Freight & Insurance: Freight & insurance for Door delivery upto destination is to be quoted

8.3 Tender rates are inclusive of all taxes, duties and levies. Any increase by Government at any stage during execution of contract shall be borne by bidder. However, regarding newly introduced taxes (i.e. taxes introduced by Govt. after technical bid opening date), reimbursement will be made by BHEL subject to following:

(i) Reimbursement will be made only if tax becomes directly applicable on rates specified. No reimbursement will be made for taxes / duties not directly levied on items specified in Bill of Quantities.

(ii) Further, if the new tax introduced by Central/State Govt. becomes directly applicable on items specified in Bill of Quantities but is in substitution / abolition / reduction of any of present taxes, BHEL will reimburse to the extent it has additional burden on contractor. For verification of working of additional burden, which will be calculated with reference to tax rate structure prevailing as on date of tender opening, contractor will have to provide such documents, details, information as considered fit by BHEL.

9.0 GUARANTEE:

The material shall be guaranteed for 18 months from date delivery or 12 months from the date of commissioning/ issuance of operational acceptance certificate, whichever is later. The defective material /component shall be replaced free of cost at site.

10.0 PERFORMANCE BANK GUARANTEE:

The contractor shall submit Bank Guarantee of an approved Nationalized Bank / Scheduled Bank as per BHEL proforma for an amount equal to 10 % of the total value of purchase order within a period of 30 days from the date of issue of LOI / PO. Bank guarantee should be initially valid for a period of 21 months and shall be kept valid till expiry of guarantee period.

11.0 OVER ALL CONTRACT PRICE VARIATION

The individual quantity can vary to any extent or may be deleted for which no compensation will be payable to the contractor and the rates will remain firm. Also the rate of each item remains firm as long as the variation in the total value of work executed under the contract including extra items if any remains within plus/minus 30 percent of the contract value. In case the actual value of executed work including extra work on completion of work becomes less than 70% of the basic/original contract value than the following method shall be adopted.

The actual executed value shall be raised by 7% (For arriving at the final payment against work executed) subject to the condition that total value of work executed plus increase by 7% as above shall be limited to 70% of the basic/original contract value. The rate quoted shall be firm irrespective of any upward variation in the contract price. It is further clarified that the enhancement/rate revision on the basic rate as per PVC clause (if any) shall not be accounted for the purpose of operating this clause.

12.0 DELIVERY PERIOD:

Deliver schedule of the material shall be as given below:

(i) DC Hall -1- 20 Feb'13.
(ii) DC Hall -2- 20 June'13
(iii) DC Hall-3 –20 Nov'13
(iv) DC Hall -4- 20 Feb'14

13.0 DELAYED DELIVERY:

In case of delay in execution of order beyond then lot wise contractual delivery, an amount of ½ % of total Ex-Works Value per week or part there-of subject to maximum of 5% of total Ex-Works value of P.O. will be withheld.

14.0 LEGAL SETTLEMENT:

All suits / claims in respect of this contract shall be in the courts having jurisdiction at New Delhi.

15.0 SUBCONTRACTING:

Further subcontracting of BHEL order or part thereof is not allowed in this contract.

16.0 SAFETY MEASURES:

Safety plan of customer is given in the tender. All safety rules and codes as applicable / may become applicable to work shall be followed without exception.

17.0 PRICE VARIATION:

Prices will be firm for total contract period and extended period , if any , and no price escalation / price variation will be applicable.

18.0 EVALUATION:

Evaluation shall be on the basis of total cost to BHEL. Total input credit in respect of VAT (available to BHEL as per law), as indicated by the bidders in their price bid, shall be deducted from the cost for purpose of ascertaining total cost to BHEL for purpose of evaluation.

19.0 RISK & COST:

In case successful bidder fail to supply the material or fails to comply with terms & conditions of the tender / Purchase Order / LOI, BHEL reserves the right to procure such material / component / equipment / system whether by itself or from any other agency, at risk and cost of the successful bidder. Rights of BHEL shall be as per B.7 of 'Conditions of Contract'

20.0 ADJUSTMENT OF RECOVERY:

Any amount payable by the supplier under any condition of this contract, shall be liable to be adjusted against any amount payable to the supplier under any other works/contract/purchase order awarded to him by any BHEL unit or from security deposit of any other work / contract / purchase order with any unit of BHEL or by encashment of bank guarantee furnished by supplier with any unit of BHEL pertaining to any works / contract / purchase order. This is without prejudice to any other action as may be deemed fit by BHEL or any other right of BHEL mentioned elsewhere in this tender.

21.0 FORCE MAJEURE:

The following shall amount to force majeure conditions:

throughout the acts of God, Act of any Government, war, sabotage, riots, civil commotion, Police action, revolution, flood, fire cyclone, earthquake, epidemic and other similar causes over which the contractor has no control.

If the contractor suffers delay in the due execution of the contract, due to delays caused by force majeure conditions, as defined above, the agreed time of completion of the work covered by this contract may be extended by a reasonable period of time in consultation and after agreement of BHEL's clients/owner, provided that on the occurrence of any such contingency, the Contractor immediately reports to BHEL in writing the causes of delay. The Contractor shall not be eligible for any compensation on this account.

22.0 ARBITRATION :

Except where otherwise provided for in the contract all questions and disputes relating to the meaning of the specification designs, drawings and instruction herein before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings specifications, estimates, instructions, orders of these conditions or otherwise concerning the works, of the execution or failure to execute the same whether arising during the progress of the work or after the completion or abandonment thereof shall be referred to the sole arbitration of the Head, TBG, BHEL, New Delhi and if the Head, TBG is unable or unwilling to act, to the sole arbitration of some other person appointed by the Head, TBG willing to act as such arbitrator. There will be no objection if the arbitrator so appointed is an employee of BHEL, New Delhi and that he had to deal with the matters to which the contract relates and that in the course of his duties as such he had expressed views on all or any of the matters in dispute of difference. The arbitrator to whom the matter is originally referred being transferred or vacating his office or being unable to act for any reason such Head, TBG as aforesaid at inability to act shall appoint (see note) another person to act as arbitrator in accordance with the terms of the contract such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor. It is also a term of this contract that no person other than a person appointed by such Head, TBG as aforesaid should act as arbitrator and if for any reason that is not possible the matter is not to be referred to arbitration at all, in all cases where the amount of the claim dispute is Rs. 50,000/- (Rupees fifty thousand) and above the arbitrator shall give reasons for the award.

Subject as aforesaid the provisions of the arbitration Act, 1940 or any statutory modification or re-enactment thereof and the rules made there under and the time being in force shall apply to the arbitration proceeding under this clause.

It is a term of the contract that the party involving arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amounts claimed in respect of each dispute.

The arbitrator (s) may from time to time with consent of the parties enlarge the time for making and publishing the award.

The work under the contract shall, if reasonably possible, continue during the arbitration proceedings and no payment due or payable to the contractor shall be withheld on account of such proceedings.

The Arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the parties fixing the date of the first hearing.

The Arbitrator shall give a separate award in respect of each dispute or difference referred to him.

The Venue of arbitration shall be such place as may be fixed by the Arbitrator in his sole discretion.

The award of the arbitrator shall be final, conclusive and binding all parties to this contract.

Laws governing the Contract:

The contract shall be governed by the Indians Laws for the time being in force.

NOTE: - The Authority appointing the arbitrator should not be lower in rank than the Authority accepting the Agreement.

TRANSMISSION BUSINESS GROUP
SUB CONTRACTS MANAGEMENT
LODHI ROAD, NEW DELHI

SPECIAL TERMS & CONDITIONS FOR SERVICES (for Services - BOQ Part II)
(Revision-01)

1.0 INTEREST BEARING RECOVERABLE ADVANCES

1.1 Normally no advance is payable to the contractor. However, advance payment in exceptional circumstances shall be interest bearing and secured through an equivalent Bank Guarantee and shall be limited to a maximum of 5% of contract value.

1.2 In exceptional circumstances, with due justification, Competent Authority of BHEL is empowered to approve proposals for payment of additional interim interest bearing advance against matching Bank Guarantee, for resource augmentation towards expediting work for project implementation.

1.3 Payment and recovery of Interest Bearing Recoverable advance shall be at the sole discretion of BHEL and shall not be a subject matter of arbitration.

1.4 The rate of interest applicable for the above advances shall be the prime lending rate of State Bank of India prevailing at the time of disbursement of the advance + 2%, and such rate will remain fixed till the total advance amount is recovered.

1.5 Unadjusted amount of advances paid shall not exceed 5% of the total contract value at any point of time. Recovery of advances shall be made progressively from each Running Bill such that the advance amounts paid along with the interest is fully recovered by the time the contractor's billing reaches 80% of contract value.

1.6 Recovery rate per month shall not be less than sum of following (except for last adjustment where total amount to be adjusted may be less than the sum of following):

a. 10% of Gross Value of Running Bill amount

b. Simple interest up to the date of RA Bill on the outstanding Principle amount/amounts.

1.7 Contractor to submit Bank Guarantee as per prescribed formats for each of the advance and shall be valid for at least one year or the recovery duration or the balance contract period whichever is later. In case the recovery of dues does not get completed within the aforesaid BG period, the contractor shall renew the BG or submit fresh BG for the outstanding amount and the remaining recovery period.

1.8 BHEL is entitled to make recovery of the entire outstanding amount in case the contractor fails to comply with the BG requirement.

2.0 SECURITY DEPOSIT:

2.1 Upon acceptance of tender, the successful tenderer must deposit the security Deposit before commencement of work. The rate of Security Deposit will be as below:

Work upto Rs. 10 Lakhs	:10%
Above Rs. 10 Lakhs upto Rs. 50 Lakhs	:1Lakh+7.5%of the amount exceeding 10 Lakhs.
Above Rs. 50 Lakhs	:Rs. 4 Lakhs + 5 % of the amount exceeding Rs. 50 Lakhs.

The SD must be deposited within 15 days from date of issue of LOI in anyone of the following forms given in (i) to (v) below:

i) Cash (as permissible under the Income Tax Act).

ii) Pay Order, Demand Draft in favour of BHEL.

iii) Local cheques of scheduled banks / Nationalized banks, subject to realization.

iv) Bank Guarantee from Nationalized banks / scheduled Banks/ Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should be as per Annexure H " Proforma for BG for Security deposit. Bank Guarantee from Co-operative bank will not be accepted. Also, the Bank Guarantees should be enforceable in the town/city in which the sector/project is located.

v) Fixed Deposit receipt issued by Scheduled Bank / Public Financial Institutions as defined in the Companies Act. The FDR should be in the name of the contractor, A/C BHEL, duly discharged on the back.

vi) Security deposit can also be recovered at the rate of 10% from the running bills. However in such cases at least 50% of the Security Deposit should be collected before start of the work and the balance 50% may be recovered from the running bills.

vii) EMD of the successful tenderer can be converted and adjusted against the security deposit.

viii) The security deposit shall not carry any interest.

ix) Security deposit shall not be refunded to the contractor except in accordance with the terms of the contract.

x) The Head of Unit may waive the Security Deposit in respect of Public Sector Undertaking particularly on a reciprocal basis.

Note : 1) Acceptance of Security Deposit against Sl. No. (v) above will be subject to hypothecation or endorsement on the documents in favour of BHEL. However, BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith.

2) The BG shall be submitted only through the Banker and direct submission by the party will not be accepted. Along with the BG, the Bank shall also furnish a letter of confirmation (as per prescribed format).

3) The validity of the Bank Guarantee furnished towards Security Deposit under (iv) above shall be up to three months more than the period of completion of work as stipulated in the LOI and the same will be kept valid by proper renewal till the completion of the work.

2.2 If the value of the work done at any time exceeds the accepted agreement value, Security Deposit shall be correspondingly enhanced and the extra Security Deposit shall be immediately deposited by the contractor or recovered from the payments due to him.

2.3 Failure to deposit the Security Deposit within the stipulated time, may lead to forfeiture of EMD and cancellation of the award of work.

2.4 BHEL reserves the right of forfeiture of Security Deposit in addition to other claims and penalties in the event of the contractor's failure to fulfill any of the contractual obligations or in the event of termination of contract as per terms and conditions of the contract. BHEL reserves the right to set off the Security Deposit, against any claims of any other contracts with BHEL.

2.5 RETURN OF SECURITY DEPOSIT: If the contractor duly performs and completes the work in all respects to the entire satisfaction of BHEL and presents an absolute "No demand certificate" in the prescribed form and returns properties belonging to BHEL, taken, borrowed or hired by him for carrying out the said works, Security Deposit will be released to the contractor after deducting all costs, expenses and other amounts that are to be paid to BHEL under this contract or other contracts entered into with the contractor. It may be noted that in no case the Security Deposit shall be refunded/released prior to passing of final bill.

2.6 No interest shall be payable by BHEL on Security Deposit or on any money due to the contractor.

3.0 TERMS OF PAYMENT

A. For item No. 1 of BOQ Part-II

1. 95% payment on submission of documents as per technical specification and after final approval of design by BHEL/Customer..

2. Last 5% of payment (retention money) shall be released on completion of guarantee period. However, this retention money can be released on submission of B.G. (as per clause no. 10.0) of equivalent amount valid till guarantee period.

B. For other items of BOQ Part-II:

1. The contractor shall be paid monthly running bill to a maximum of 90% as progressive payment of the works actually executed at site. Next 5 % of payment shall be released after completion of all activities covered under the scope of this contract. Last 5% of payment (retention money) shall be released on completion of guarantee period. However, this retention money can be released on submission of B.G. (as per clause no. 10.0) of equivalent amount valid till guarantee period.

2. The Engineer shall after a measured bill allow and certify payment to the contractor on the basis of abstract measurement bill submitted by contractor. However, the usual recoveries would be affected from bill.

3. All intermediate payments shall be regarded as advance against the final payment only and shall not be considered as an admission of the due performance of the contract or any part thereof in any respect of the occurring of any claim whatsoever. Such intermediate payments shall not conclude, determine or affect in any way the powers of the Engineer as to the final settlement and adjustment of the account of otherwise, or in any way vary of affect the contract. To this affect the contractor shall submit the final bill, which shall contain the complete up-to-date measurements for the total work done.

4. Any certificate relating to the work done may be modified by any subsequent interim certificates or by the final certificate and no certificate of the Engineer supporting an advance payment shall of itself be conclusive evidence that any work or materials to which it relates are in accordance with the contract.

4.0 **Interest Liability-** In case of any delay in payment due to any reason, BHEL shall not pay any interest on delayed payment.

5.0 **Taxes and Duties:**

5.1 BHEL shall be releasing payments against this work order after deduction of applicable taxes at source as per requirements of tax rules and BHEL will issue appropriate certificates in this regard.

5.2 Prices are inclusive of all taxes, duties and levies etc. including sales tax / works tax /all other taxes Except service tax. etc. Vendor are required to indicate applicable % in Price Bid /Un Price Bid . Any increase by Government at any stage during execution of contract shall be borne by contractor. All charges on account of Octroi, Terminal Tax, Entry Tax and/or other taxes and duties on materials obtained for the work shall be borne by the contractor. The Contractor shall pay all taxes, fees, license charges, deposits, duties, tolls, royalty, commissions or other charges which may be Leviable on account of any of his operations connected with this contract.

5.3 Service Tax (including Educational Cess) wherever applicable as legally leviable & payable by the contractor under the provisions of applicable law/ act shall be paid by BHEL as per contractor's bill. However, contractor shall have to submit proof of Service Tax deposited by them immediately after the deposit but not later than the next bill submitted after the due date of deposit. The contractor shall furnish proof of Service Tax registration with Central Excise Division covering the services covered under this contract. Registration should also bear endorsement for the premises from where the billing shall be done by contractor on BHEL for this project. The contractor shall obtain prior approval of BHEL before billing the Service Tax amount.

5.4 With introduction of CENVAT credit rules 2004 which came into force wef 10-09-04, Excise Duty paid on input goods including capital goods used for providing the output service & service tax paid on input service can be taken credit of against the Service Tax payable on output service. As such, it is suggestive that while offering the rates, contractors may take into account benefit of above provisions to be more competitive.

5.5 Service tax rules, and any changes made therein by Government shall be complied with.Vendor shall obtain prior approval before opting for applicable scheme for execution of contract.

5.6 Notwithstanding anything contained herein above the tender rates are inclusive of all taxes, duties and levies except service tax Any increase by Government at any stage during execution of contract in any of taxes except service tax shall be borne by contractor. However, regarding newly introduced taxes (i.e. taxes introduced by Govt. after tender opening date), reimbursement will be made by BHEL subject to following:

(i) Reimbursement will be made only if tax becomes directly applicable on rates specified. No reimbursement will be made for taxes / duties not directly levied on items specified in Bill of Quantities.

(ii) Further, if the new tax introduced by Central/State Govt. becomes directly applicable on items specified in Bill of Quantities but is in substitution / abolition / reduction of any of present taxes, BHEL will reimburse to the extent it has additional burden on contractor. For verification of working of additional burden, which will be calculated with reference to tax rate structure prevailing as on date of tender opening, contractor will have to provide such documents, details, information as considered fit by BHEL.

6.0 INSPECTION:

As per quality assurance plan and procedures finalized between vendor and BHEL.

7.0 COMPLETION TIME:

All the activities associated with the above package are to be completed as per project milestone schedule given below:

(i) DC Hall -1- 20 March'13.
(ii) DC Hall -2- 20 July'13
(iii) DC Hall-3 –20 Dec'13
(iv) DC Hall -4- 20 March'14

8.0 LIQUIDATED DAMAGE :

If the contractor fails to complete the work within the time specified contractual period or extension thereof granted by the engineer, liquidated damage will be imposed on the contractor for delay in completion of the work @ 0.5% (half percent) of the contract value, per calendar week, subject to ceiling of 5% of the contract value.

9.0 GUARANTEE: (For Services, BOQ Part-II)

Even though the work will be carried under the supervision of BHEL Engineers, the contractor will be responsible for the quality of the workmanship and shall guarantee the work done for a period of 12 months from the date of putting the complete system into commercial operation/ issuance of operation acceptance certificate or 18 months from the date of system is declared completely erected duly tested and accepted by customer whichever is later and shall rectify free of cost all defects due to faulty erection detected during the guarantee period starting from the date of the completion of rectification. In the event of the contractor failing to repair the defective works within the time specified by the Engineer, BHEL may proceed to undertake the repairs of such defective works at the contractor's risk and expense without prejudice to any other rights and recover the same from Security Deposit/other dues.

10.0 PERFORMANCE BANK GUARANTEE (For Services, BOQ Part-II)

The contractor shall submit Bank Guarantee of an approved Nationalized Bank / Scheduled Bank as per BHEL proforma for an amount equal to 5 % of the total contract value as performance bond to get 5% retention money released at the discretion of the engineer before release of Security Deposit as per the special terms & conditions of NIT. The performance Bank Guarantee shall remain valid up to successful completion of performance and guarantee tests of the station and taking over of the plant by BHEL/client of BHEL. Notwithstanding the provisions of any other clause(s) of General Conditions of Contract, the contractor shall continue to be responsible to execute all such works of repair, rectification and making good of defects, imperfections of other faults as may be required of the contractor in writing by the Engineer for the period as stated above.

11.0 ADDITIONAL EXPENDITURE DUE TO FAULTY EXECUTION:

In case any additional expenditure is incurred in the works arising out of the faulty execution of the works by the contractor , such additional expenditure shall be borne by the contractor.

12.0 SUBCONTRACTING:

Further subcontracting of BHEL order or part thereof is not allowed in this contract.

13.0 SAFETY MEASURES:

Safety plan of customer is given in the tender. All safety rules and codes as applicable / may become applicable to work shall be followed without exception.

14.0 PRICE VARIATION: (Only for BOQ Part-II)

14.1 In order to take care of variation in cost of execution of work on either side, due to variation in the index of LABOUR and HIGH SPEED DIESEL OIL, Price Variation Formula as described herein shall be applicable.

14.2 85% component of Contract Value shall be permitted to be adjusted for variation in various relevant indices during execution of work. The remaining 15% shall be

treated as fixed component.

14.3 The basis for calculation of price variation in each category, their component, Base Index, shall be as under:

Sl. No.	Category	Base Index	Component (K)
1	Labour	'MONTHLY ALL-INDIA AVERAGE CONSUMER PRICE INDEX NUMBERS FOR INDUSTRIAL WORKERS' published by Labour Bureau, Ministry of Labour and Employment, Government of India. (Website: labourbureau.nic.in)	80
2	High Speed Diesel Oil	Name of Commodity : HSD OIL. Type : INDIVIDUAL COMMODITY (See Note A)	5

Note:

A) As per the 'MONTHLY WHOLE SALE PRICE INDEX' for the respective Commodity and Type, published by Office of Economic Adviser, Ministry of Commerce and Industry, Government of India. (Website : www.eaindustry.nic.in)

14.4 Payment/recovery due to variation in index shall be determined on the basis of the following notional formula without any initial absorption, in respect of the identified components viz LABOUR and HIGH SPEED DIESEL

$$P = K \times R \times \frac{(X_N - Xo)}{Xo}$$

Where

P = Amount to be paid/recovered due to variation in the Index for Labour & High Speed Diesel Oil

K = Percentage component applicable for Labour & High Speed Diesel Oil

R = Value of work done for the billing month (Excluding Taxes and Duties if payable extra)

X_N = Revised Index No for Labour & High Speed Diesel Oil for the billing month under consideration

Xo = Index no for Labour & High Speed Diesel Oil as on the Base date.

14.5 Base date shall be calendar month of the latest date of submission of Tender.

14.6 PVC shall not be payable for the ORC amount, Supplementary/Additional Items, Extra works executed on manday rates basis.

14.7 The contractor shall furnish necessary monthly bulletins for the necessary indices from the relevant websites along with his Bills.

14.8 The contractor will be required to raise the bills for price variation payments on a monthly basis along with the running bills irrespective of the fact whether any increase/decrease in the index for relevant categories has taken place or not. In case there is delay in publication of bulletins (final figure), the provisional values as published can be considered for payments and arrears shall be paid/recovered on getting the final values.

14.9 PVC shall be applicable for the entire original contract period plus the extended period. However the Total Quantum of Price Variation amount payable/recoverable shall be regulated as follows:

i) For the portion of backlog attributable to the contractor, the PVC will be based on the average of the indices for the period of the original contract period.

ii) For the period of Force Majeure, the PVC will be limited to the indices applicable at the beginning of the force majeure period.

iii) For the portion of backlog attributable to BHEL, the PVC will be as per the indices applicable for the respective months.

iv) The total amount of PVC shall be limited to 20% of executed contract value. Executed contract value for this purpose is exclusive of PVC, ORC, Supplementary/Additional Items, Extra works executed on manday rates basis.

15.0 OVER ALL CONTRACT PRICE VARIATION

The individual quantity can vary to any extent or may be deleted for which no compensation will be payable to the contractor and the rates will remain firm. Also the rate of each item remains firm as long as the variation in the total value of work executed under the contract including extra items if any remains within plus/minus 30 percent of the contract value. In case the actual value of executed work including extra work on completion of work becomes less than 70% of the basic/original contract value than the following method shall be adopted.

The actual executed value shall be raised by 7% (For arriving at the final payment against work executed) subject to the condition that total value of work executed plus increase by 7% as above shall be limited to 70% of the basic/original contract value. The rate quoted shall be firm irrespective of any upward variation in the contract price. It is further clarified that the enhancement/rate revision on the basic rate as per PVC clause (if any) shall not be accounted for the purpose of operating this clause.

16.0 RISK & COST:

In case successful bidder fail to start the work or fails to comply with terms & conditions of the Work Order / LOI, BHEL reserves the right to the work done, whether by itself or from any other agency, at risk and cost of the successful bidder. Rights of BHEL shall be as per B.7 of ' Conditions of Contract'

17.0 ADJUSTMENT OF RECOVERY:

Any amount payable by the contractor under any condition of this contract, shall be liable to be adjusted against any amount payable to this contractor under any other works/contract/purchase order awarded to him by any BHEL unit or from security deposit of any other work / contract / purchase order with any unit of BHEL or by encashment of bank guarantee furnished by contractor with any unit of BHEL pertaining to any works / contract / purchase order. This is without prejudice to any other action as may be deemed fit by BHEL or any other right of BHEL mentioned elsewhere in this tender.

18.0 FORCE MAJEURE:

The following shall amount to force majeure conditions:

throughout the acts of God, Act of any Government, war, sabotage, riots, civil commotion, Police action, revolution, flood, fire cyclone, earthquake, epidemic and other similar causes over which the contractor has no control.

If the contractor suffers delay in the due execution of the contract, due to delays caused by force majeure conditions, as defined above, the agreed time of completion of the work covered by this contract may be extended by a reasonable period of time in consultation and after agreement of BHEL's clients/owner, provided that on the occurrence of any such contingency, the Contractor immediately reports to BHEL in writing the causes of delay. The Contractor shall not be eligible for any compensation on this account.

19.0 ARBITRATION :

Except where otherwise provided for in the contract all questions and disputes relating to the meaning of the specification designs, drawings and instruction herein before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings specifications, estimates, instructions, orders of these conditions or otherwise concerning the works, of the execution or failure to execute the same whether arising during the progress of the work or after the completion or abandonment thereof shall be referred to the sole arbitration of the Head, TBG, BHEL, New Delhi and if the Head, TBG is unable or unwilling to act, to the sole arbitration of some other person appointed by the Head, TBG willing to act as such arbitrator. There will be no objection if the arbitrator so appointed is an employee of BHEL, New Delhi and that he had to deal with the matters to which the contract relates and that in the course of his duties as such he had expressed views on all or any of the matters in dispute of difference. The arbitrator to whom the matter is originally referred being transferred or vacating his office or being unable to act for any reason such Head, TBG as aforesaid at inability to act shall appoint (see note) another person to act as arbitrator in accordance with the terms of the contract such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor. It is also a term of this contract that no person other than a person appointed by such Head, TBG as aforesaid should act as arbitrator and if for any reason that is not possible the matter is not to be referred to arbitration at all, in all cases where the amount of the claim dispute is Rs. 50,000/- (Rupees fifty thousand) and above the arbitrator shall give reasons for the award.

Subject as aforesaid the provisions of the arbitration Act, 1940 or any statutory modification or re-enactment thereof and the rules made there under and the time being in force shall apply to the arbitration proceeding under this clause.

It is a term of the contract that the party involving arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amounts claimed in respect of each dispute.

The arbitrator (s) may from time to time with consent of the parties enlarge the time for making and publishing the award.

The work under the contract shall, if reasonably possible, continue during the arbitration proceedings and no payment due or payable to the contractor shall be withheld on account of such proceedings.

The Arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the parties fixing the date of the first hearing.

The Arbitrator shall give a separate award in respect of each dispute or difference referred to him.

The Venue of arbitration shall be such place as may be fixed by the Arbitrator in his sole discretion.

The award of the arbitrator shall be final, conclusive and binding all parties to this contract.

Laws governing the Contract:

The contract shall be governed by the Indians Laws for the time being in force.

NOTE: - The Authority appointing the arbitrator should not be lower in rank than the Authority accepting the Agreement.

+/-800kV NE AGRA HVDC PROJECT – AGRA

Name of Work: **Design, Supply & Erection of DC Hall Pre-Engineered Buildings including Associated Works**

CRITERIA FOR PRE-QUALIFICATION OF BIDDERS FOR ABOVE WORK (REV. 01)

1. FINANCIAL

A. Bidder should have a minimum average annual turnover of. **Rs.15 Crores** and should submit audited balance sheet and Profit & Loss Account for last three years (2008-09, 2009-10 & 2010-11).

B. Bidder should have successfully executed similar (refer note a & b below) job during last seven years ending 30.06.12. Bidder should produce certification/proof in support of execution of similar package from user/end user and should be either of the following:

(i) **Three similar jobs executed costing not less than Rs. 20 Crores each**

OR

(ii) **Two similar jobs executed costing not less than Rs. 25 Crores each.**

OR

(iii) **One similar job executed costing not less than Rs. 40 Crores**

C. Bidder should have earned profit in at least one year during last three financial years (2008-09, 2009-10 & 2010-11)

Notes:

(a) Definition of similar job shall be as indicated in technical criteria.

(b) The word 'executed' means the bidder should have achieved the criteria specified above even if the total contract has not been completed or closed.

2. TECHNICAL

A. Bidder should be a Pre-Engineered Building (PEB) manufacturer with minimum experience of 5 years of in-house design, engineering, manufacturing and execution of Pre-Engineered Building (relevant documents like order copies /completion certificates for projects should be submitted)

B. Bidder should have manufactured & erected average 6000 MT of structures per annum for the last 3 years. (2009-10, 2010-11 & 2011-12) (Details to be provided)

C. Bidder should have self-owned manufacturing plant with complete facilities to fabricate major components like steel structures, roofing & cladding sheets, etc. (Details to be provided)

D. Bidder should be ISO certified and should be following documented Quality Assurance Plan. (Details to be provided).

E. Bidder should have successfully executed a PEB project with a building having either a clear span (without any in between supports) of 45m or more or a clear height of 20m or more.

(Relevant documents like order copy & drawings along with Client details like site address & contact numbers should be provided).

F. Bidder should submit preliminary analysis (in STAAD) and design of main and secondary members, details of roof, gutters, wall, etc. along with tender. based on IS Codes specified. In case of any ambiguity in the provisions of IS Codes, bidder should highlight in his bid about the source of alternative provisions /basis for his design.

Important Notes

1) BHEL reserves the right to:
   (a) Accept or reject any bid received at its discretion without assigning any reasons whatsoever.

   (b) Postpone the above mentioned date, split and distribute the work among more than one bidder without assigning any reason whatsoever.

   (c) May ask for further qualification during techno commercial scrutiny of bids received.
2) BHEL shall not be responsible for any delay, loss, damage for bids sent by post.

3) BHEL shall not be liable for any expenses incurred by bidder in preparation of bid irrespective of whether it is accepted or not.

4) Quotations received from bidders who do not fulfil the PQR shall be summarily rejected without any further evaluation and information to bidders.

5) Canvassing i.e. soliciting favour, seeking advantage etc. in any form is strictly prohibited and any bidder found to have engaged in canvassing shall be liable to have his bid rejected summarily.

6) If the bidder deliberately gives any wrong information in his tender to create in circumstances for the acceptance to his bid, BHEL reserves the right to reject such application.

7) Bidder's selection is subject to approval of BHEL's customer/ customer's consultants for this work.

8) All corrigenda, addenda, amendments and clarifications to this Tender will be hosted in web page, www.bhel.com and not in the newspaper. Bidders shall keep themselves updated with all such amendments.

SECTION - 1

SCOPE, SPECIFIC TECHNICAL REQUIREMENTS
& QUANTITIES

SECTION - 1

SCOPE, SPECIFIC TECHNICAL REQUIREMENTS & QUANTITIES

1.1.0 SCOPE

1.1.1 The scope of work under this specification is engineering design, material supply, fabrication, shipment to job site, erection & commissioning of DC Hall Pre-engineered Buildings including associated works, required for +/-800kV NE-Agra HVDC Project at Agra in Uttar Pradesh, being executed by BHEL on turnkey basis. The Customer/Employer is Power Grid Corporation of India Ltd.

1.1.2 The works shall include, but not limited to, following:

1.1.2.1 Structural analysis and design of the main structure and auxiliary structural elements, submission of design reports and design drawings for approval to BHEL/Customer including as-built drawings.

1.1.2.2 Providing of loads on foundations at the base plate level.

1.1.2.3 Submission of detailed fabrication drawings.

1.1.2.4 Supply of fabricated structural steel main building frames and secondary framing including purlins and girts, cladding & roofing materials including insulation materials, gutters, downspouts, doors, windows, rolling shutters, louvers, anchor bolts, fasteners, sealants and any other accessories/materials required for the satisfactory performance of the buildings.

1.1.2.5 Erection & finishing of the entire structure, cladding and auxiliaries including providing of warranty certificate for above described system.

1.1.2.6 Providing structural stability certificate for at least 40 years.

1.1.2.7 Providing maintenance manuals for the various structural, cladding & roofing components.

1.1.2.8 Any other work required for the project.

1.1.3 The exclusions are as follows:

1.1.3.1 RCC grade floors and grade beams and inserts/equipment foundations coming thereon.

1.1.3.2 RCC foundations, pedestals, floor and roof slabs for ventilation rooms.

1.1.3.3 Masonry materials, plumbing, HVAC, electrical equipment and wiring.

1.1.3.4 Interior finishing to masonry or concrete elements.

1.2.0 SPECIFIC TECHNICAL REQUIREMENT

1.2.1 The specific technical requirements for the execution of this work shall be as per attached Technical Specification (Refer SECTION 3).

1.3.0 BILL OF QUANTITIES

1.3.1 The Bill of Quantity cum Price Schedule shall be as per page 1.2 & 1.3.

1.3.2 The quantities indicated in the 'Bill of Quantity cum Price Schedule' are indicative and can vary to any extent. Contractor shall not be entitled for any claim for any such variation in the quantities.

1.3.3 The provision of Bill of Quantity cum Price Schedule, specification and drawings shall be read in conjunction with each other and in case of conflict amongst them, the clarification shall be obtained from the Engineer-in-charge whose decision shall be final and binding.

Bill of Quantity-cum-Price Schedule

Part 1

Name of Project	: +/- 800kV NE AGRA HVDC PROJECT
Name of Work	: Design, supply & erection of DC Hall Pre-engineered buildings including associated works.

S.No.	Description of Item	Quantity	Unit	Unit Rate Ex Works (Rs)	Total Ex Works (Rs)	Unit Freight & Insurance (Rs)	Total F & I (Rs)	CST/VAT %		Amount of CST/VAT (Rs)	Total FOR Destination Price (Rs)
								CST/VAT*	CST/VAT%		
1	2	3	4	5	6	7	8	9	10	11	12
1	**Supply of fabricated structural steelwork** including foundation bolts all complete as per technical specification & drawings. (Steel to be procured from SAIL, RINL, TISCO or authorised parties approved by POWERGRID. List available in POWERGRID Compendium of Venders at http://www.powergridindia.com)	**3500000**	kg								
2	**Supply of standing seam outer sheet** for roofing including flashing, etc., as necessary for air/moisture proofing, all complete as per technical specification & drawings.	**25000**	sqm								
3	**Supply of inner sheet** for roofing/cladding including flashing, etc., as necessary for air/moisture proofing, all complete as per technical specification & drawings.	**80000**	sqm								
4	**Supply of mineral wool insulation - 25mm thk** between double sheet wall cladding all complete as per technical specification & drawings.	**42000**	sqm								
5	**Supply of mineral wool insulation - 200mm thk** between double sheet roofing all complete as per technical specification & drawings.	**25000**	sqm								
6	**Supply of rolling shutters** all complete as per technical specification & drawings.	**400**	sqm								
7	**Supply of doors** all complete as per technical specification & drawings.	**40**	sqm								
	TOTAL AMOUNT (T1)										
	NOTE:										
(i)	The supply cost of gutters, downspouts, flashings, all accessories, etc., should be built in the total cost.										
(ii)	PLEASE NOTE THAT UNPRICED COPY OF PRICE BID (i.e. ONLY % OF CST/VAT IS TO BE MENTIONED IN COLUMN NO. 10 AND CST/VAT* AS APPLICABLE IS TO BE INDICATED IN COLUMN NO. 9.) SHALL BE FURNISHED ALONG WITH TECHNO-COMMERCIAL BID.										
(iii)	THE PRICES MUST BE QUOTED IN THE PRESCRIBED UNIT ONLY.										

Bill of Quantity-cum-Price Schedule

Part 2

Name of Project	**: +/- 800kV NE AGRA HVDC PROJECT**
Name of Work	**: Design, supply & erection of DC Hall Pre-engineered buildings including associated works.**

S.No.	Description of Item	Quantity	Unit	Unit Rate (Rs)	Amount (Rs)
1	**Design** of DC Hall Pre-engineered buildings including all documentation & drawing works all complete as per technical specification and including approval from Customer.	**1**	Lump Sum		
2	**Erection of structural steelwork** including painting all complete as per technical specification & drawings.	**3500000**	kg		
3	**Erection of standing seam outer sheet** for roofing including flashing, etc., as necessary for air/moisture proofing, all complete as per technical specification & drawings.	**25000**	sqm		
4	**Erection of inner sheet** for roofing/cladding including flashing, etc., as necessary for air/moisture proofing, all complete as per technical specification & drawings.	**80000**	sqm		
5	**Erection of mineral wool insulation - 25mm thk** between double sheet wall cladding all complete as per technical specification & drawings.	**42000**	sqm		
6	**Erection of mineral wool insulation - 200mm thk** between double sheet roofing all complete as per technical specification & drawings.	**25000**	sqm		
7	**Erection of rolling shutters** all complete as per technical specification & drawings.	**400**	sqm		
8	**Erection of doors** all complete as per technical specification & drawings.	**40**	sqm		
	TOTAL AMOUNT (T2)				
	NOTE:				
(i)	The erection cost of gutters, downspouts, flashings, all accessories, etc., should be built in the total cost.				
(ii)	The unit rate for S.No.1 shall not be more than 1% of the total amount (T1 of Part 1 & T2 of Part 2).				

SECTION - 2

STANDARD TECHNICAL SPECIFICATION
(N.A.)

SECTION - 3

ENCLOSURES TO THE SPECIFICATION
(i) Technical Specification

Technical Specification

Contents

1.0 General

1.1 Introduction

The works to be performed under this specification is design, supply and erection of the Pre-Engineered Steel Structure with roofing & wall cladding and other accessories as described elsewhere in this document for DC halls that will house the DC filter equipments at Agra Converter Station. Two numbers of structures of identical size and shape are envisaged for housing the Pole 1&3 and Pole 2&4 DC equipments.

2.0 References

2.1 Tender Drawings

1. DC building Pole 4&2 - Main dimensions and layout – Drg.No. 5517-3-73-001
2. Over all GA layout Agra - Drg No. 1JNL100409-604-R2

2.2 Codes and Standards

Referenced codes and standards shall be the latest edition or revision, including amendments and supplements, in effect on the date of the purchase order, except as otherwise specified.

1)	IS:277	Galvanised steel sheet specification
2)	IS:513	Cold rolled low carbon steel sheets and strips
3)	IS:800 (2007)	Code of Practice for general construction in steel
4)	IS:801	Code of Practice for use of Cold Formed Light Gauge Steel Structural Members in General Building Construction.
5)	IS: 802	Code of Practice for use of structural steel in overhead transmission line towers (All parts)
6)	IS: 806	Code of Practice for use of steel tubes in general building construction
7)	IS: 808	Dimensions for hot rolled steel beam, column channel and angle section
8)	IS: 813	Scheme of symbols for welding
9)	IS:816	Code of Practice for use of metal arc welding for general construction in mild steel
10)	IS: 919	Recommendations for limits and fits for engineering
11)	IS: 1024	Code of Practice for use of welding in bridges and structures subjected to Dynamic loading
12)	IS: 1038	Specification For Steel Doors, Windows And Ventilators.
13)	IS: 1079	Hot rolled carbon steel sheets and strips.
14)	IS: 1161	Specification for Steel tubes for structural purposes

15)	IS: 1239	Specification for Mild steel tubes, tubular and other wrought steel fittings (all parts)
16)	IS: 1361	Steel windows for industrial buildings.
17)	IS: 1363	Black hexagonal bolts, nuts and locknuts (dia 6 to 39 mm) and black hexagon screws (dia 6 to 24 mm) [All parts]
18)	IS: 1364	Precision and semi-precision hexagon bolts, screws, nuts and locknuts (dia. range 6 to 39 mm). [all parts]
19)	IS: 1365	Slotted counter sunk head screws (dia range 1.6 to 20 mm)
20)	IS: 1730	Dimensions for steel plate, sheet and strip for structural and general engineering purpose
21)	IS: 2016	Plain Washers
22)	IS: 2062	Steel for General structural purposes (fusion welding quality)
23)	IS: 3502	Specification for steel chequered plates
24)	IS: 3589	Steel Pipes for Water and Sewage (168.3 to 2 540 mm Outside Diameter) - Specification
25)	IS: 3613	Acceptance tests for wire-flux combinations for submerged-arc welding of structural steels
26)	IS: 3757	High Strength Structural Bolts.
27)	IS: 4000	High strength bolts in steel structures – Code of Practice
28)	IS: 4351	Steel Door Frames
29)	IS: 4759	Hot dip zinc coatings on structural steel and other allied products
30)	IS: 4923	Hollow Steel sections for structural use
31)	IS: 6248	Metal Rolling Shutters and Rolling Grills
32)	IS: 6623	High Strength Structural Nuts.
33)	IS: 7215	Tolerances for fabrication of steel structures
34)	IS: 7280	Bare wire electrodes for submerged arc welding of structural steels
35)	IS: 8183	Bonded mineral wool.
36)	IS: 8500	Structural steel - micro alloyed (medium and high strength qualities)
37)	IS: 8640	Recommendations for dimensional parameters for industrial building
38)	IS:9595	Recommendation for Metal arc welding of carbon and carbon manganese steel
39)	IS: 12843	Tolerances for erection of steel structures
40)	ASTM A653	Standard Specification for Steel Sheet, Zinc Coated

		(Galvanized) or Zinc Iron Alloy Coated (Galvannealed) by the Hot Dip Process
41)	ASTM A792	Standard Specification for Steel Sheet, 55 % Aluminum Zinc Alloy Coated by the Hot Dip Process.

3.0 Site Conditions

3.1 Environmental Conditions

Site Altitude above MSL	100.5 m
Site Distance from Sea Port	1065 km from Agra (Kandla in Gujarat)
Road access	National Highway NH-2 connecting New Delhi and Kolkata runs through Agra. NH-3 & NH-11 also connects Agra to Mumbai & Jaipur respectively.
Nearest Railway Station	Agra Station which comes under Western Railways.
Terrain category	Flat
Rainfall	
1) Daily Max.	200 mm
2) Maximum hourly rainfall	30 mm / hour
Operating Atmosphere (Caustic, Chloride, etc.)	Later
DC equipment rated temperature	$50^{O}C$

3.2 Site Environmental Data

Design Code	**Wind Loading**		**Earthquake Loading**	
IS: 800-2007	Maximum wind velocity	44 m/s	Seismic zone	III

The Sub-contractor shall take special precautions in the selection and protection of materials and equipment against deterioration due to the effects of humidity, temperature, dust, pollutants and atmosphere.

4.0 System Description and Performance Requirements

4.1 General

While certain proposals for the installation are made herein, this in no way relieves the contractor of the DC hall Steel Structure from complete responsibility for the design and construction.

The basic dimensions for the building, viz lengths, widths, heights and roof pitches are as indicated in the drawing 5517-3-73-001. Contractor's standard products may be used if structure, components and accessories conform to design indicated and specified requirements.

4.2 System Description

Pre-Engineered Steel Structure of DC hall will also house the ventilation room and cooling room as shown in the drawing 5517-3-73-001. The main DC hall will contain DC yard equipments connected to 800 kV HV pole bus such as smoothing reactors, high speed parallel/ de-parallel switch, line isolator, DCCT, voltage divider, DC filters and HV capacitors etc. The area between the DC yard for two adjacent pole halls house the ventilation room at EL(+) 6.00m. This room shall accommodate the ventilation equipment and the electrical equipment. Roof for the ventilation room shall be at EL (+) 12.00m and will be supporting the coolers.

The following input shall be provided by BHEL during contract stage.

1. Building plans and/or description.
2. Location of building.
3. Hoist (if required) capacities and service classifications.
4. Collateral Loads - The weight of additional permanent materials supported from the building frame such as mechanical systems, electrical systems, sprinklers, bushings, conductors, etc.
5. Painting colors for wall and roof panels and structural members in consultation with Customer.

4.3 Performance Requirements

4.3.1 Wall Panels

Field-assembled inner and outer sheeting with insulation of 25mm thickness and all fixing accessories as per specification.

4.3.2 Roof Panels

Roof panels with inner sheeting, insulation of 200mm thickness, outer sheeting and fixing accessories as per specification.

5.0 Design

The Pre-Engineered Steel Structure of DC hall shall be designed by the contractor as a complete system. Members and connections not indicated on the drawings shall be the responsibility of the contractor. All components of the system shall be supplied or specified by the same contractor.

5.1 Design Criteria

5.1.1 Applicable codes and standards

The proposed building shall conform to the referenced codes and standards as stated in Clause 2.2.

5.2 Loads

5.2.1 Dead Loads

The roof dead load is generally assumed to be distributed uniformly over the entire roof area and to act vertically upon the horizontal projection of the roof. However, the local effects of any large concentrated dead loads shall also be considered.

5.2.2 Live Loads

Sloped Roof for DC hall	:	0.75 kN/m²
Flat Accessible Roof	:	1.5 kN/m²
Ventilation Room at EL (+) 6.00m	:	10 kN/m²
Electrical Room at EL (+) 6.00m	:	10 kN/m²
Roof bays housing coolers	:	10 kN/m²
Staircases	:	5 kN/m²

Other area live loads and its design application shall be in accordance with the requirements of IS 875 (part2).

5.2.3 Snow Loads

Snow loads need not be considered.

5.2.4 Wind Loads

Wind loads shall be in accordance with IS: 875-Part 3.

1.	Basic wind speed	V	=	44 m/s
2.	Category of Terrain		=	Category 2
3.	K_2 varies with height		=	As per IS: 875-1987 (Part 3)
4.	Risk Co-efficient K_1		=	1.07
5.	Topography factor		=	As per IS: 875-1987 (Part 3)

5.2.5 Seismic Loads

Earthquake loads shall be in accordance with IS: 1893 (Part 1 & 4).

1.	Seismic Zone	=	III
2.	Soil Condition	=	Medium
3.	Importance Factor	=	1.5
4.	Response Reduction Factor	=	As per Table 3 of IS: 1893 (Part 4)

5.2.6 Hoist Loads

Building shall be designed for forces induced by the operation or movement of the hoist as given hoist vendor drawings. All elements affected by hoist loads shall be designed to resist the loads specified. The vertical impact, lateral and longitudinal forces for hoists are to be calculated as per IS: 875. The hoist loads and locations, if required, shall be provided during detailed engineering.

5.2.7 Temperature Loads

The temperature variation shall be considered as 2/3 of the average maximum annual variation in temperature. The average maximum annual variation in temperature for this purpose shall be taken as the difference between the mean of the daily minimum temperature during the coldest month of the year and mean of daily maximum temperature during the hottest month of the year. The structure shall be designed to withstand thermal stresses due to 50% of the temperature variation.

The building shall be designed for thermal loads based on the variation in temperature as given below.

Highest monthly mean temperature	-	40^0 C
Lowest monthly mean temperature	-	0^0 C
Temperature Variation	-	26.66^0 C

Hence structure shall be designed to with stand temperature variation of 13.33^0 C.

5.2.8 Conductor loads

Loads from the conductors supported on the DC hall. The final loads with locations shall be furnished during contract stage.

5.2.9 Rainfall Intensity

All exterior gutters and downspouts shall be designed for a maximum rainfall intensity of 30mm per hour.

5.3 Load combinations

Load combinations shall be in accordance with IS: 875 – Part 5.

5.4 Structural Framing Arrangement

Structural framing arrangement shall follow the system proposed in the tender drawings which takes care of opening requirements, preferred location and arrangement of bracings.

5.5 Structural Performance Requirements

1. The metal building system shall be designed and fabricated to withstand loads from winds, gravity, equipment, structural movement including movement thermally induced and to resist in-service use conditions that the building will experience, including exposure to the weather, without failure, or excessive deformation. The contractor shall provide a structural stability certificate for **40** years for the whole structure.
2. Each member shall be designed to withstand stresses resulting from combination of loads that produce the maximum allowable stresses in that member.
3. All loads shall be proportioned and applied in accordance with relevant IS codes.
4. Assembly shall permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to temperature ranges as specified in this specification.
5. Roof drainage system shall withstand the maximum rainfall intensity of rainfall.
6. Roof sheeting panels shall be free to move in response to the expansion and contraction forces resulting from a temperature variation.
7. Ends of the sheets shall be protected to prevent corrosion.
8. Anchor bolts shall be adequate to sustain all vertical tensile forces, anchor bolts shall not be assumed to take horizontal shear forces and shear key shall be provided to take the horizontal shear forces on one or two axes
9. The worst combination of loads shall apply.

6.0 Documents / Drawings & other Submissions

Design documents and drawings including shop drawings for metal building structural framing system, roof and wall panels and other metal building system components and accessories and as-built drawings shall be submitted for approval by BHEL/Customer

Drawings shall be clearly identified and coordinated with the schedule giving title and reference numbers. The title block and reference numbers shall be provided by BHEL as to achieve uniformity.

6.1 Structural Framing

1. Complete erection drawings with assembly dimensions shall be furnished.
2. Details showing fabrication and assembly of the metal building system shall be included..
3. Locations of structural members, connections, attachments, openings, cambers, etc shall be shown.
4. Wall and roof system dimensions, panel layout, general construction details, anchorages and method of anchorage, installation shall be indicated.
5. Anchor bolt settings, sizes, and locations from datum, etc shall be shown.
6. Field welded connections with AWS shall be indicated.
7. Transverse cross-sections shall be shown.
8. Structural calculations that have been initiated, checked and stamped by a professional engineer shall be submitted.
9. Certification of welder qualification for all operators performing welding of structural framing shall be submitted.
10. Steel Structural Weights

6.2 Roof and Wall Panels

Layouts of panels on walls and roofs, details of edge conditions, joints, corners, custom profiles, supports, anchorages, trim, flashings, closures and special details shall be provided.

6.3 Anchor bolts

Anchor bolt placement plan and column base forces and moments shall be provided.

6.4 Building Accessory Components

Details of metal building accessory components to clearly indicate methods of installation of following shall be provided:

1. Personnel doors

   Elevations and details of each type of door and frame, including anchors and reinforcements, location and installation requirements for finish hardware, schedule of doors and frames including complete hardware schedule shall be provided.
2. Overhead rolling shutters.

   Fully dimensioned details of construction, including 1:50 scale elevations of shutter units and not less than 1:20 scale details showing shutter sections, brackets, guides, hardware and method of operation shall be provided.

3. Sheet Metal Accessories

   Details of openings, gutters, downspouts and other sheet metal accessories showing profiles, methods of joining, anchorage and flashings shall be provided.

6.5 Loads for foundation design

1. Loads for the design of foundations and pedestals shall be provided.
2. Soft copy of the super structure design file shall be provided.

6.6 Samples

Samples for initial selection purposes in the form of manufacturer's colour charts or chips showing colours, textures and pattern closest to those specified for metal roof and wall panels, louvers and windows with shop-applied finishes. Bought out items such as doors, rolling shutters etc shall be got approved by the contractor prior to delivery at site.

6.7 Certification

Professional engineer's certificate verifying that the structural framing and covering panels meet indicated loading requirements and codes of authorities having jurisdiction shall be provided.

6.8 As-Built drawings

On the conclusion of all the erection and finishing works, all As-Built drawings shall be submitted.

7.0 Delivery, Handling and Storage

7.1 Delivery

Prefabricated components, panels, accessories and other manufactured items shall be delivered in such a way that they are not damaged or deformed. Wall and roof panels and accessories shall be packaged for protection against transportation damage. A complete packing list shall accompany each shipment including components provided by sub contractors/suppliers.

7.2 Handling

Care shall be exercised in unloading, storing and handling wall and roof covering panels to prevent bending, warping, twisting and surface damage.

7.3 Storage

Materials shall be stacked on platforms or pallets, covered with tarpaulins or other suitable weather tight ventilated covering and arrangement shall be made to ensure that no water accumulates in the area. Panels shall not be stored in contact with other materials that might cause staining, denting or other surface damage.

8.0 Materials

8.1 General

All materials shall be new and free from defects. All the structural steel shapes shall comply with Indian Standards codes or equivalent American / Australian/ European standards.

8.1.1 Hot-rolled structural steel shapes

Hot-rolled structural steel shapes shall comply with IS: 808.

8.1.2 Steel tubing or pipe

Steel tubing or pipe shall comply with IS: 806 & IS 1161.

8.1.3 Steel Members Fabricated from Plate

Steel Members Fabricated from Plate as per IS:2062

8.1.4 Steel Members by Cold Forming

Steel Members by Cold Forming shall comply with IS:801 or as per manufacturer's standards.

8.1.5 Cold-Rolled Carbon Steel Sheet

Cold-Rolled Carbon Steel Sheet shall comply with requirements of IS:513 or as per manufacturer's standards.

8.1.6 Hot-Rolled Carbon Steel Sheet

Hot-Rolled Carbon Steel Sheet shall comply with requirements of IS:1079 or as per manufacturer's standards.

8.1.7 Structural Quality Zinc-Coated (Galvanised) Steel Sheet

Structural Quality Zinc-Coated (Galvanised) Steel Sheet shall comply with IS:277 or as per manufacturer's standards.

8.1.8 Zinc-Coated (Galvanised) Steel Sheet for Personnel Doors

Commercial Quality Zinc-Coated (Galvanised) Steel Sheet for Personnel Doors shall comply with IS:277 or as per manufacturer's standards.

8.1.9 Aluminium-Zinc-Alloy-Coated Steel Sheet

Aluminium-Zinc-Alloy-Coated Steel Sheet shall comply with ASTM A792 or as per manufacturer's standards.

8.1.10 Bolts for Structural Framing

Bolts for Structural Framing shall comply with IS1363, IS:1364, IS:3757, IS:4000 & IS:6623 as necessary for design loads and connection details.

8.1.11 Thermal Insulation

Glass fibre blanket insulation, complying with IS:8183, thickness as required for specified U-value, with UL flame spread classification of 25 or less and 50 mm wide continuous vapour-tight edge tabs.

8.1.12 Retainer Clips

26-guage (0.45 mm) formed galvanised steel retainer clips to match the insulation facing.

8.1.13 Shop Primer Paint and Coating Materials

Shop primers shall be compatible with field-applied finish coatings. Shop Primer for Ferrous Metal Surfaces shall be fast-curing, lead-free, universal primer, selected by the contractor for resistance to severe atmospheric corrosion, compatibility with finish paint systems and capability to provide a sound foundation for field-applied top coats despite prolonged exposure.

8.1.14 Minimum Thickness

Materials, other than roof and wall covering and wall liner, shall be of thickness necessary to conform to design requirements, however the following table lists the minimum thickness which will be allowed:

ITEMS	MINIMUM UNCOATED THICKNESS
Light Gage Steel-Structural Members other than Wall and Roof Covering	1.2 mm Steel
Gable and Eave Trim, Fascia Closure Strips, Rake Flashing, Coping and Liner Panels	0.5 mm Steel
Gutter and Downspouts	0.5 mm Steel
Roof Ventilators	0.5 mm Steel

8.2 Structural Framing

8.2.1 General Requirements

Fabrication shall be done from hot-rolled structural steel shapes. All framing members shall be shop-welded (complete welding on both sides), & shop-primed. Frames shall be furnished with attachment plates, bearing plates and splice members. Shop drilling shall be done for field-bolted assembly.

8.2.2 Bolts

Shop-primed bolts shall be provided except when structural framing components are in direct contact with roof and wall panels. Zinc-plated or cadmium-plated bolts shall be provided when structural framing components are in direct contact with roof and wall panels.

8.2.3 Shop Primer Painting

Surfaces to be primed shall be cleaned of loose mill scale, rust, dirt, oil grease and other matter detrimental to paint bond. Structural steel primary and secondary framing members shall be provided with specified rust-inhibitive primer, minimum 1 mil dry film thickness.

8.3 Roof and Wall Panels

8.3.1 Roofing

8.3.1.1 Outer Sheeting

The outer roof sheeting shall be as per contractor's standard roof design for mechanical attachment of panels to roof purlins using concealed clips. The sheeting shall be mild steel sheets of minimum 24 gauge (0.60 mm thick) or high tensile sheet of 0.5mm thick, factory coated both sides with aluminium zinc alloy. The coating shall have a minimum coated weight of 0.2 kg per square meter including both faces. The

exposed surface shall have PVF2 coating of 20 microns DFT over corrosion inhibitive primer. Interior surface shall have coating as per contractor's standard.

The sheeting shall be standing seam type sheets of full lengths to eliminate end laps. The maximum purlin spacing shall be 1.5m. Closer spacing shall be adopted at local high pressure / suction areas of the roof and walls.

8.3.1.2 Inner Sheeting

The inner roof sheeting shall be as per contractor's standard design for mechanical attachment of panels to roof purlins using screws or other suitable device. The sheeting shall be mild steel sheets of minimum 24 gauge (0.60 mm thick) or high tensile sheet of 0.5mm thick, factory coated both sides with aluminium zinc alloy. The coating shall have a minimum coated weight of 0.15 kg per square meter including both faces. The exposed surface shall have PVF2 coating of 20 microns DFT over corrosion inhibitive primer. Interior surface shall have coating as per contractor's standard.

The roof shall be insulated. The thickness of the insulation shall be 200mm.

8.3.1.3 Clips

Minimum 16-guage (1.52 mm) panel clips designed to allow thermal movement of panels shall be provided.

8.3.1.4 Cleats

Factory-caulked, mechanical seamed cleats formed from minimum 24-gage (0.61 mm), Grade C, zinc-coated steel sheets shall be provided.

8.3.2 Wall Cladding

8.3.2.1 Outer & Inner Sheeting

The outer & inner wall cladding sheeting shall be as per contractor's standard design for mechanical attachment of panels to wall runners using screws or other suitable device. The sheeting shall be mild steel sheets of minimum 24 gauge (0.60 mm thick) or high tensile sheet of 0.5mm thick, factory coated both sides with aluminium zinc alloy. The coating shall have a minimum coated weight of 0.15 kg per square meter including both faces. The exposed surface shall have PVF2 coating of 20 microns DFT over corrosion inhibitive primer. Interior surface shall have coating as per contractor's standard.

The wall shall be insulated. The thickness of the insulation shall be 25mm.

8.3.3 Accessories

Sheet metal accessories shop-formed of the same material and shop-applied finish as roof and wall panels, including flashings, closures, filters, ridge covers, fascials and similar items shall be provided.

8.3.4 Flexible Closure Strips

EPDM or closed-cell, expanded cellular rubber, self-extinguishing flexible closure strips shall be cut or premoulded to match configuration of roof and wall panels and

shall be provided wherever necessary to ensure weather tight construction. All roofing & wall cladding should be airtight to prevent ingress of dust and moisture.

8.3.5 Sealing Tape

Pressure-sensitive 100-percent-solids grey polyisobutylene compound sealing tape with release paper backing, elastic, non-sag, non-toxic, non-staining tape 12 mm wide and 3 mm thick shall be provided.

8.3.6 Joint Sealant

One-part elastomeric polyurethane, polysulfide, or silicone rubber sealant.

8.4 Doors

8.4.1 Shutter

Shutters shall comply with IS code with minimum 18-guage galvanised steel faces.

8.4.2 Frames

Pressed steel frames 16 gauge minimum shall be used.

8.4.5 Fabrication

Units shall be fabricated in such a way that they are rigid, neat in appearance and free from defects, warp or buckles. Continuous welds shall be provided on exposed joints, ground,dressed and made smooth, flush & invisible.

8.5 Roller Shutter

8.5.1 General

Complete overhead coiling door assemblies including door curtain, guides, counterbalance, hardware, operators and installation accessories shall be provided.

8.5.2 Door Curtain

Interlocking steel slat door curtain with one-piece slats for the full length of door width and formed from minimum 20-gauge (0.91 mm), Grade A, structural quality, zinc coated steel sheets shall be provided. Shall be phosphate treated before fabrication.

8.5.3 Bottom Bar

Bottom bar on door curtain consisting of two 3 mm angles of the same metal as the door curtain slats shall be provided.

8.5.4 Curtain Jamb Guides

Curtain jamb guides, built up using steel rolled or pressed deep channel sections 75 mm and 25 mm wide fitted with necessary fitting and fixtures and galvanized after fabrication shall be provided.

8.5.5 Weather Seals

3 mm continuous rubber or neoprene sheet weather seals on metal pressure bars shall be secured to inside of curtain coil hood. At door jambs, 3 mm continuous strip shall be secured to exterior side of jamb guide.

8.5.6 Counterbalance

Adjustable steel helical torsion spring counterbalance, mounted around a steel shaft in a spring barrel and connected to door curtain with barrel rings shall be provided.

Grease-sealed bearings or self-lubricating graphite bearings for rotating members shall be used.

8.5.7 Brackets

Cast-iron or cold-rolled steel plate mounting brackets with bell-mouth guide groove for curtain shall be provided.

8.5.8 Hood

Form shall be provided to enclose the coiled curtain and operating mechanism entirely at the opening head and to act as a weather seal. It shall be contoured to suit end brackets to which attached. Top and bottom edges shall be rolled & reinforced for stiffness. Closed ends for surface-mounted hoods, and any portion of between-jamb mounting projecting beyond wall face shall be provided. Intermediate support brackets shall be provided to prevent-sag.

Hoods of minimum 20-guage, zinc-coated steel sheet, phosphate treated before fabrication shall be provided.

8.5.9 Shop Prime Painting

All exposed and concealed ferrous and galvanised metal surfaces except for tightly joined and lubricated surfaces shall be shop-cleaned and primed with the contractor's standard rust-inhibitive primer. Shop primer shall be compatible with field-applied finish coating.

8.5.10 Electrical Operation

All mechanical & electrical accessories suitable for operating the rolling shutter shall be provided.

8.6 Sheet Metal Accessories

8.6.1 General

Sheet metal accessories specified below to match material and finish of roof and wall panels to which they are attached shall be provided.

8.6.2 Gutters

These shall be formed in minimum 2.5 m-long sections, complete with end pieces, outlet tubes and other special pieces as required. Sections shall be joined with riveted and soldered or sealed joints. Expansion-type slip joint at centre of long runs shall be provided. Gutter supports of sufficient thickness spaced maximum 2 m on centre, constructed of same metal as gutters shall be furnished. Dissimilar materials shall not be used.

8.6.3 Downspouts

These shall be formed in minimum 3-m long sections, complete with elbows and offsets. Sections shall be joined with 35 mm telescoping joints. Fasteners designed to hold downspouts securely 25 mm away from walls shall be provided and shall be located at top and bottom and at approximately 1.5 m on centre in between.

8.6.4 Flashing for Wall Penetrations

Metal flashing and sealing materials for all types of wall penetrations, including piping, ducts, conduits, cable trays, bushings and other penetrations shall be provided. Flashing material and finish shall be same as specified for wall panels. Where possible, penetrations shall be centred between joints of wall panels.

9.0 Fabrication

9.1 General

All prefabricated components and necessary field connections required for erection to permit easy assembly and disassembly shall be designed.

Components shall be fabricated in such a manner that once assembled, they may be disassembled, repackaged, and reassembled with a minimum amount of labour.

9.2 Marking

Each piece and part of the assembly shall be clearly and legibly marked to correspond with previously prepared erection drawings, diagrams and instruction manuals.

9.3 Structural Framing

Framing components shall be shop-fabricated to required size and section with base plates, bearing plates and other plates necessary for erection. Holes shall be provided for anchoring or connections shop-drilled or punched to template dimensions.

9.4 Shop Connections

Bolted or welded (full on both sides) shop connections shall be provided.

9.5 Field Connections

Bolted field connections shall be provided. Pretensioned HSFG bolted connections shall be preferred.

9.6 Tagging

All steel work members shall be clearly tag marked for easy identification.

10.0 Painting of Structural Steel Works

All shop fabricated & primed structural steel members supplied at site shall be given 2 or more coats of synthetic enamel paint of colour, shade & brand as approved by BHEL/Customer.

11.0 Erection of Structural Steel Works

11.1 Field Measurements

Contractor shall verify that field measurements are as indicated in contract drawings.

11.2 Base Verification

Contractor shall verify that foundation, floor slab, mechanical and electrical utilities, and placed anchors are in correct position and properly squared.

11.3 Inspections

Contractor shall provide access to the work as scheduled for provided inspections. The cost of any required inspections is the responsibility of Customer/BHEL. Work shall not proceed until unsatisfactory conditions have been corrected.

11.4 Framing

Erection of framing shall be in accordance with relevant IS codes. Building frames shall be erected true to line, level, plumb and shall be rigid and secure with vertical members plumb and bracing properly installed. Structural stability of frame during erection shall be ensured.

11.5 Anchor Bolts

Templates shall be used for accurate setting of anchor bolts. All previously placed anchorages shall be checked.

11.6 Base Plates

Base plates shall be levelled to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Non-shrinking grout shall be used to obtain uniform bearing and to maintain a level base line elevation. Grout shall be moist cured for not less than 7 days after placement.

11.7 Stability during Erection

The Contractor shall furnish temporary guys and bracing where needed for squaring, plumbing, and securing the structural framing against loads, such as wind loads acting on the exposed framing and seismic forces, as well as loads due to erection and erection operation, but not including loads resulting from the performance of work by others. Bracing furnished by the contractor for the metal building system cannot be assumed to be adequate during erection and are not to be used to pull frames into plumb condition.

The temporary guys, braces, falseworks and cribbing shall be removed immediately upon completion of erection.

11.8 Field Modifications

No modification or field cutting of structural members shall be done without approval of BHEL/Customer.

11.9 Purlins and Side Rails

Rake or gable purlins shall be provided with tight-fitting closure channels and fascials. Wall side rails shall be located and spaced to suit wall opening arrangements and heights, including doors, windows, louvers, openings and penetrations. Purlins and side rails shall be secured to structural framing and shall be held rigidly to a straight line by sag rods.

11.10 Bracing

Diagonal rod, angle or tubular bracing shall be provided in roof and side walls.

11.11 Framed Openings

Shapes of proper design and size shall be provided to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. These should be securely attached to building structural frame.

11.12 Touch up & Final Coat of Paint

After erection, Contractor shall prime welds, abrasions, and surfaces not shop primed or needing touch-up. A final coat of paint shall be given before handing over.

12.0 Installation of Roof/Wall Panels, Accessories, Doors & Rolling Shutters

12.1 General

1. Sidelap joints shall be arranged so that prevailing winds blow over, not into, lapped joints.
2. Ribbed or fluted sheets shall be lapped one full rib corrugation.
3. Panels and associated items shall be fixed to get a true to line weathertight enclosure.
4. Shop finishes shall be protected from damage.
5. Field cutting of panels by torch is not permitted.
6. Weatherseal shall be provided under ridge cap. Flash and seal roof panels at eaves shall be flashed and sealed and raked with rubber, neoprene or other closures to provide a weathertight, dust-tight and moisture tight enclosure.
7. Corner panels shall be supplied pre-formed by the contractor.
8. Sheeting system shall be fastened to structural supports, using proper fasteners aligned, level and plumb.

12.2 Insulation

12.2.1 Roof Insulation

Thermal insulation shall be installed concurrently with installation of roof panels in accordance with contractor's directions. Blankets shall be installed straight and true in one-piece lengths with both sets of tabs sealed to provide a complete vapour barrier. Insulation shall be located above the inner roof sheets, extending across the bottom flange of purlins members and held taut and snug to roof panels with retainer clips and galvanized wire mesh 75x75x1.6mm thick. Insulation shall be placed with facing exposed to interior of building unless otherwise indicated. Retainer strips shall be installed at each longitudinal joint, straight and taut, nesting with roof rib to hold insulation in place. Retaining material shall be used to prevent sagging. The thickness of the insulation shall be 200mm .

12.2.2 Wall Insulation

Same as roof insulation. The thickness of the insulation shall be 20mm.

12.3 Roof Panel System

1. Roof panels shall be fastened to purlins with concealed clips in accordance with the contractor's instructions for outer sheet.
2. Clips shall be installed over thermal insulation pad at each support with self-drilling fasteners or bolts.
3. At end laps of panels, tape caulk shall be installed between panels.
4. Shop-caulked cleats shall be installed at standing-seam joints. Cleats shall be machine-seamed to the panels to provide a weather tight joint.
5. The inner sheet shall be connected to the purlins using self tapping screws.

12.4 Wall Sheets

1. Elastomeric sealant shall be applied continuously between metal base channel (sill angle) and block work walls and elsewhere as necessary for waterproofing. Apply sealant and backup in accordance with the sealant manufacturer's recommendations.
2. The wall cladding shall be fixed as explained for roof sheeting. Door frames shall be fastened with machine screws or bolts. When building height requires two rows of panels at gable ends, lap of gable panels over wall panels shall be aligned at eaves height.
3. Screw fasteners shall be installed with power tools having controlled torque adjusted to compress neoprene washer tightly without damage to washer, screw threads, or panels. Screws shall be installed in pre-drilled holes.
4. Weatherproof escutcheons and flashings shall be provided for pipe, conduit and other wall penetrations.

12.5 Sheet Metal Accessories

Gutters, downspouts, louvers, roof jacks, pipe flashings and other sheet metal accessories shall be installed in accordance with contractor's recommendations for positive anchorage to building and weather tight mounting.

12.6 Doors and Frames

Doors and frames shall be installed straight, plumb and level. Frames shall be securely anchored to building structure. The units shall be set with 3 mm maximum clearance between door and frame at jambs and head and 20 mm between door and floor. Hardware shall be adjusted for proper operation.

12.7 Rolling Shutters

Rolling shutter and operating equipment shall be set complete with necessary hardware, jamb and head mould stops, anchors, inserts, hangers and equipment supports in accordance with contractor's instructions to ensure smooth & proper functioning. Hardware shall be adjusted for proper operation.

13.0 Factory Tests

Quality assurance plan and procedures shall be furnished to BHEL and got approved prior to commencement of fabrication. All materials shall be tested at contractor's

expense and shall be in accordance with the relevant standards indicated. Certified copies of all factory tests shall be submitted to BHEL/Customer in six (6) copies.

14.0 Changes in the Design

BHEL/Customer reserves the right to get any changes in the design, that may be necessary to make the building conform to the requirements of the specification, done by the Contractor, without any additional cost.

15.0 Method of Measurement

15.1 Structural Steelworks

The structural steel shall be measured in kgs.

For standard steel sections unit weight shall conform to IS 808 with tolerance in sizes as per IS 1852.

For built up sections unit weight shall be worked out considering theoretical dimensions & density of steel as 7850kg/cum.

Weight of cleats, brackets, packing pieces, bolts nuts, washers, pieces, separators diaphragm, gussets, etc. shall be added to the weight of structural item. No deduction shall be made for bolt holes. Weight of welding material, paint, etc., shall not be added in the weight of members for payment and nothing extra shall be paid for making and filling holes for temporary fastening of members during erection before welding.

15.2 Outer & Inner Sheets

The outer & inner sheets shall be measured in sqm.

For roofing & wall cladding, area shall be worked out considering outer to outer dimensions of sheeting.

No separate payment shall be made for laps & corrugations/profiles, flashings, closure strips, sealing tapes, sealants, etc.

No deductions in measurements shall be made for openings upto 0.4 sqm.

15.3 Mineral Wool Insulation

The mineral wool insulation shall be measured in sqm.

Area shall be worked out considering outer to outer dimensions of mineral wool insulation laid.

No deductions in measurements shall be made for opening upto 0.4 sqm.

15.4 Rolling Shutters

The rolling shutters shall be measured in sqm.

Area shall be worked out considering clear width & clear height of the opening.

15.5 Doors

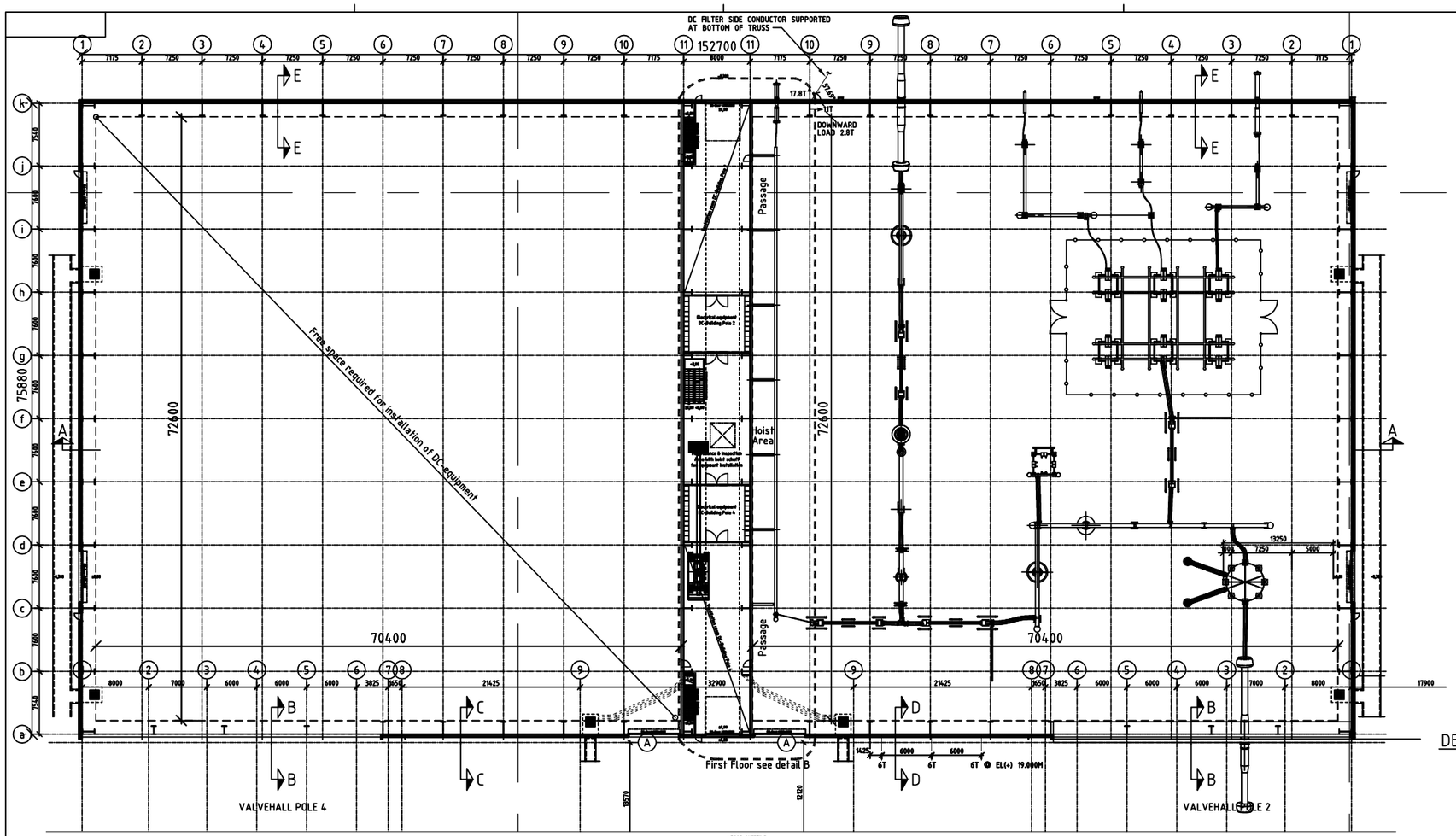
The doors including frames shall be measured in sqm.

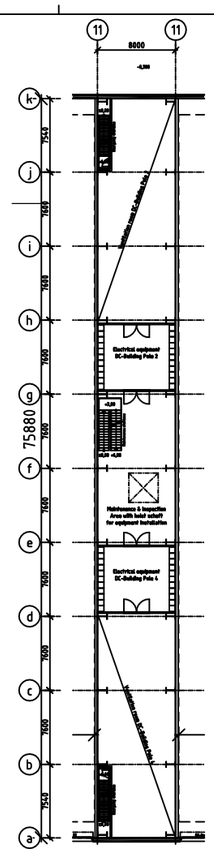
Area shall be worked out considering clear width & clear height of the opening.

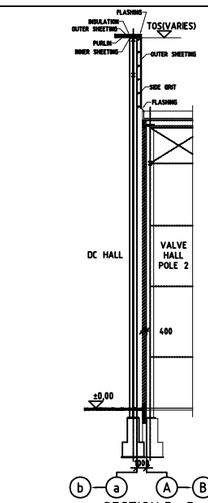
16.0 Structural Stability & Warranty Certificates

16.1 Structural stability certificate for 40 years shall be submitted.

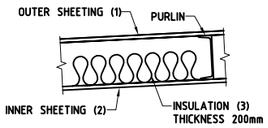
16.2 Warranty certificate for life of all materials used shall be submitted.





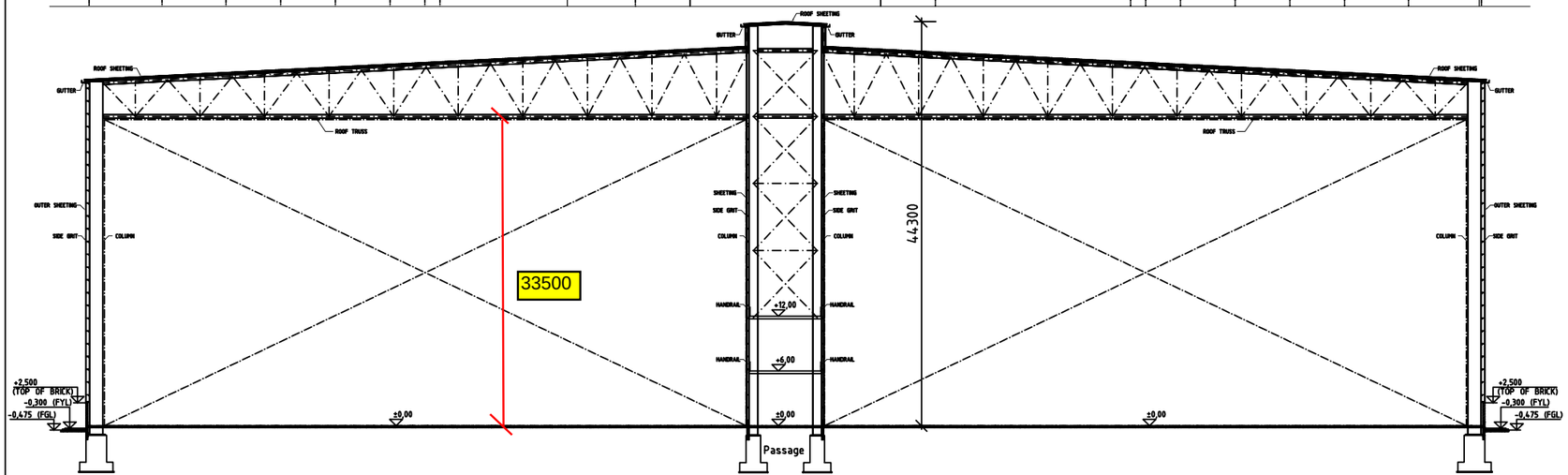


SECTION B- B
(DC BUILDING AT THE LOCATION OF VALVE HALL POLE 2 AND 4)

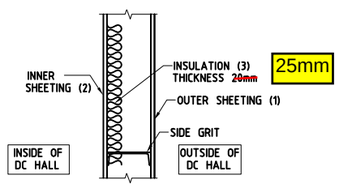


TYPICAL DETAIL OF ROOF SHEETING

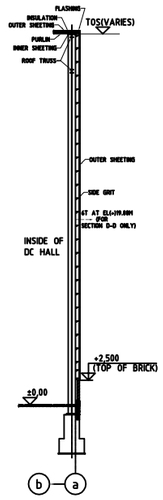
DETAIL B, DC-BUILDING FIRST FLOOR



SECTION A-A, DC-BUILDING



TYPICAL DETAIL OF WALL SECTION



SECTION C- C (AS DRAWN)
SECTION D- D (AS DRAWN AND NOTED)
SECTION E- E (OPP. HAND)

LEGEND

1. OUTER SHEETING : MS SHEET HAVING TROUGHED ZINC ALUMINIUM ALLOY HOT DIP COATED (BOTH SIDES TOGETHER 200GM/SQ.M) HAVING 0.6MM MINIMUM THICKNESS (OR HIGH TENSILE STEEL SHEET OF 0.5MM MINIMUM THICKNESS) EXPOSED SURFACE WITH PVF2 COATING (20 MICRONS DFT) OVER CORROSION INHIBITIVE PRIMER; THE INTERIOR SURFACE SHALL BE COATED AS PER MANUFACTURER'S STANDARD. PAINTS SHALL BE FACTORY APPLIED AND OVEN BAKED. ~~STANDING SEAM SHEET FIXED WITH CLIP LOCK SYSTEM SHALL BE USED.~~
2. INNER SHEETING : MS SHEET HAVING TROUGHED ZINC ALUMINIUM ALLOY HOT DIP COATED (BOTH SIDES TOGETHER 150GM/SQ.M) HAVING 0.6MM MINIMUM THICKNESS (OR HIGH TENSILE STEEL SHEET OF 0.5MM MINIMUM THICKNESS) EXPOSED SURFACE WITH PVF2 COATING (20 MICRONS DFT) OVER CORROSION INHIBITIVE PRIMER; THE INTERIOR SURFACE SHALL BE COATED AS PER MANUFACTURER'S STANDARD. PAINTS SHALL BE FACTORY APPLIED AND OVEN BAKED.
3. INSULATION : MINERAL WOOL INSULATION CONFORMING TO IS:8183 HAVING A DENSITY OF 32KG/CUM FOR GLASS WOOL OR 48KG/CUM ROCK WOOL OF THICKNESS AS PER DETAIL.

4.STANDING SEAM SHEET FIXED WITH CLIP LOCK SYSTEM SHALL BE USED FOR ROOF OUTER SHEETING.

PRELIMINARY DRAWING

POWER GRID CORPORATION OF INDIA LIMITED
(A government of India Enterprise)

±800 kV 6000 MW HVDC Multi Terminal
NER/ER – NR/WR Interconnector–I

ABB AB
S-771 80 LUDVIKA, Sweden
Telephone: +46 240 782000

BHARAT HEAVY ELECTRICALS LTD.
TRANSMISSION PROJECTS DIVISION

Civil and Building Works incl EL and Mech. Services.

ABB'S CONSULTANT
FICHTNER Consulting Engineers (India) Private Limited
Chennai.

AGRA CONVERTER STATION
DC BUILDING
POLE 4 AND 2
MAIN DIMENSIONS AND LAYOUT

Rev.Ind	Revision	Year Week	Appd	Date	Drawn by	Checked by	Scale (A1-Print)	Drawing No.	Rev
				2012-06-12	NAR	RMB	1:1	3-73-001	R0

R0(M)

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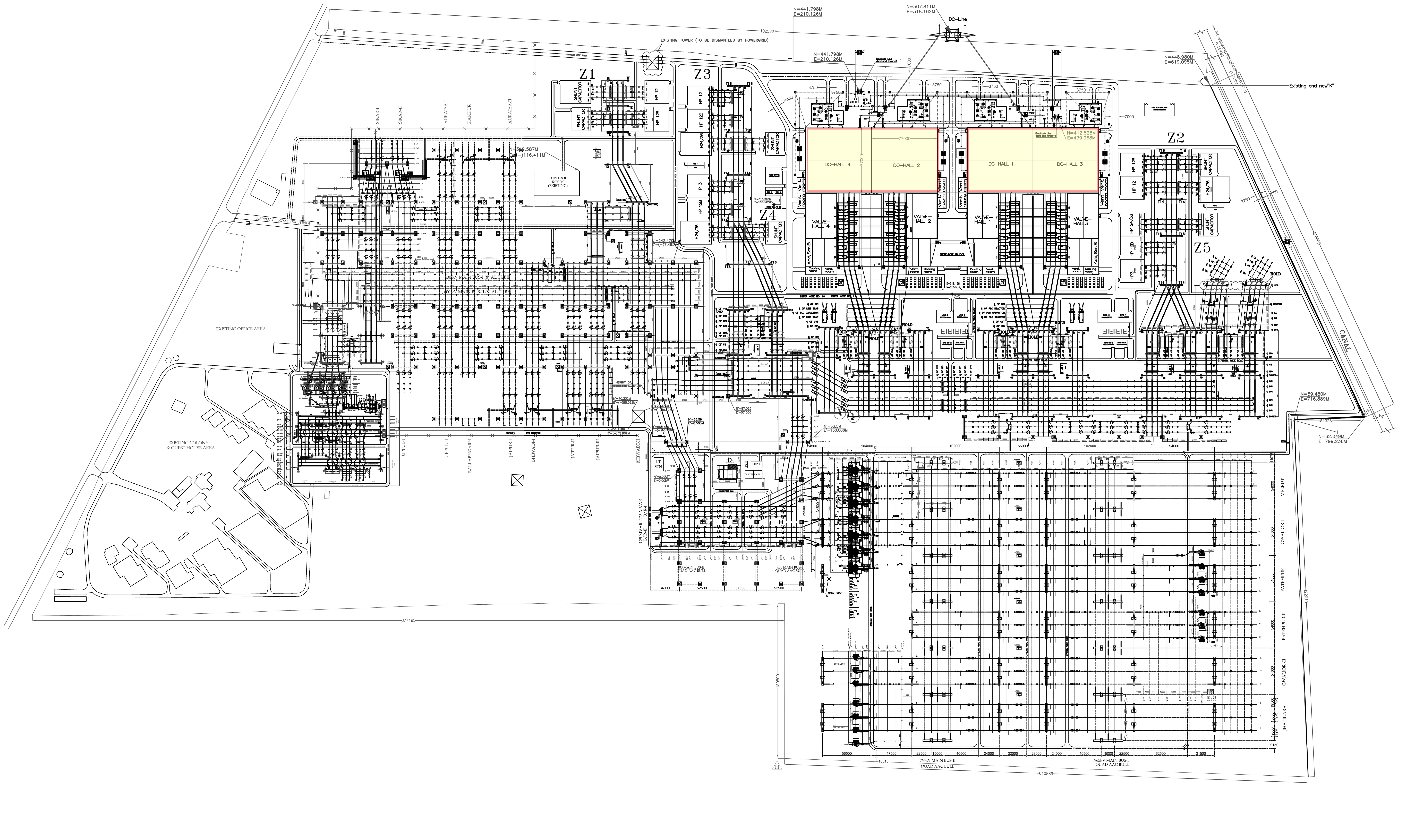
IF NOT 100 mm ON THIS COPY, ADJUST SCALES ACCORDINGLY.



NOTE–

1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED.
2. LOCATION OF DEADEND DC TRANSMISSION TOWER, POINTS AT BOUNDARY, EXISTING FACILITIES etc. SHALL BE CONFIRMED BY POWERGRID.
3. TRANSFORMER MOVEMENT AND TURNING RADIUS SHALL BE CONFIRMED AFTER FINALISING CONVERTER TRANSFORMER DESIGN

Rev	Revision	Approved	Date
02	UPDATED AS PER COMMENTS FROM POWERGRID Dtd.2011–12–29	SOFIA HAKANSSON	2012–02–16
01	UPDATED AS PER COMMENTS FROM POWERGRID Dtd.2011–11–04	SOFIA HAKANSSON	2011–12–22

Contract No:

Client: POWER GRID CORPORATION OF INDIA LIMITED (A government of India Enterprise)

Project: ±800kV, 6000MW HVDC MULTI TERMINAL NER/ER–NR/WR INTERCONNECTOR–I

Station: AGRA	Document Type: LAYOUT DRAWING	Language: En	Equipment Group:
Prepared by: RAJAN.P	Date: 2011–10–13	Item Desigination:	Resp Dept: ABB AB DCTPM
Checked by: PER H K	2011–10–14	RS Document id:	
Approve by: PER H J	2011–10–14	Based on: 1JNL100122–185 Rev.05	

Document Title: OVERALL GA LAYOUT AGRA

Document Number: 1JNL100409–604

Revision: 02

Sheets/of: 1of1

ABB AB HVDC

(A2)

Queries and Clarifications of Bidders for HVDC-Agra PEB (Pkg-III) Tender

Bidder's Name	Query Subject	Queries/Clarifications from Bidders	BHEL's Response
M/s Richa Industries Ltd.	PQR criteria	1. Qualification of the prty w.r.t. PQR criteia (similar work values indicated doest not qualify the PQR)	Pre-Qualifying requirements are as per CVC guidelines. Tech. part of pre-qualifying criteria is changed in Amendment 2.
	Mono rail	2. Running distance of mono rail.	For preliminary design mono rail is not required. Please refer our revised tender drawing No: 3-73-001 R0(M). Details shall be provided during contract stage if mono rail is required.
	Mezzanine Floor	3. What to consider on mezzanine area-Decking Sheet or chequred plate and the thickness.	It will be RCC slabs. Construction is not in scope of bidder. Only loading from slab shall be considered in design.
	Technical query	4.Hoist load 25 MT of Hoist or EOT crane and its details.	For preliminary design mono rail is not required. Please refer our revised tender drawing No: 3-73-001 R0(M). Details shall be provided during contract stage if mono rail is required.
	Technical query	5. insulation with wire mesh-no need of wire mesh if bidder is taking Liner.	Shall be as per technical specification & standard practice.
	Technical query	6. Has assumed thickness of 1.2 mm for Cold Form.	Shall be as per technical specification & design.
	Standing Seam	7. Roof sheeting is Standing Seam which can not be provided in wall, it must be KLIP on or screwed.	Noted.
	Insulation	8. Insulation should be with outer sheet.	Noted.

Queries and Clarifications of Bidders for HVDC-Agra PEB (Pkg-III) Tender

Bidder's Name	Query Subject	Queries/Clarifications from Bidders	BHEL's Response
	Terms of Payment	9. Payment terms: (SUPPLY ITEMS) a) 80% payment afetr material receipt at site on pro rata basis. b) 10% payment after completion and handing over of building to BHEL.	**Modified supply terms & conditions** a) 80% of payment on sequential supply as certified by BHEL Site Incharge on prorate basis after receipt of the material at site, proper storage and certification from site in charge.The invoice must contain following documents in 3 sets (Original+2 copies) - Proof of receipt at site/ Receipted LR. - Transit insurance certificate from under writers or copy of intimation of transit insurance duly endorsed by under writers. - Excise invoice - Delivery challan/ Packing list (Casewise) - Dispatch clearance given by BHEL. - Guarantee certificate. - Inspection clearance reports b) 10% on progress of erection works on the basis of per metric ton erected. c) 5% on completion of all erection work d) 5% payment shall be paid after commissioning of the work and issuance of Operational Acceptance Certificate by the authorized Project Manager of the Principal Employer and after complete handing over to the principal employer/customer or last 5% can also be released against submission of additional bank guarantee of equivelent amount valid for 24 months after completion of erection. **For Services/ erection payment terms shall remain unchanged**
	Security deposit	10. Security deposit in the form of B.G.	Security deposit can be submitted in the form of Bank Guarantee. Please refer clause No. A.17 of 'conditions of contract' for more ways of SD submission, procedure & other details.
	C-Form	11. whether C-Form will be provided	YES
	Service tax	12. Quoted prices for installaion part with or without Service tax.	For sevices (BOQ-Part 2) bidders quoted price should be inclusive of all taxes & duties except service tax. Refer clause no. 5 of special terms & conditions of contract for services.

Queries and Clarifications of Bidders for HVDC-Agra PEB (Pkg-III) Tender

Bidder's Name	Query Subject	Queries/Clarifications from Bidders	BHEL's Response
	Design	13. Design to be vetted from BHEL or not.	Design shall be vetted by BHEL/ABB or its Consultant and approved by POWERGRID
M/s Interarch Building Products Pvt. Ltd.	Warranty	1. Warranty will be given for sheeting materials for 20 years and 12 months for all other items from the date of bulding completion. Bidder will be giving Structural Stability certificate for 40 years	Noted.
	Technical scope	2. Exclusions: a) civil, mechanical and electrical design and materials. b) Concrete embed plates or weld plates or weld plate of any kind. c) Foundation and masonry design/work/materials. d) grouting-grouting under column base plates with high strength grout. e) Setting of Anchor Bolt-(physical setting or fixing). Wall vents, fans, windows etc.	Exclusions shall be as per Clause 1.1.3 of Doc. No: TB-343-607-003 - PKG III, Rev. No: 02.
	Mono rail	3. Details of Mono rail (capacity, wheel base, wheel load etc.) are required for designing purpose. However, cranes required for erection of steel structure will be in bidder's scope.	For preliminary design mono rail is not required. Please refer our revised tender drawing No: 3-73-001 R0(M). Details shall be provided during contract stage if mono rail is required.
	Collateral Loads	4. Details of Collateral loads required from client.	Shall be provided during contract stage as required.
	Calculations	5. Structural calculations done by the bidder's qualified engineers, however, third party vetting can be done from IIT Delhi, wherein cost to be borne by BHEL .	Design shall be vetted by BHEL/ABB or its Consultant and approved by POWERGRID
	Standing Seam	7. Screw fixed sheet is recommended for wall or clip-on type concealed fixed profile. Standing seam not possible.	Noted.
	Design	8. As a general practice simulation study is not required. The bidder will submit the design report based on critical load combination, however, if required , it can be submitted from Iit Delhi, cost to be borne by BHEL.	Noted.
	Defect Liability Period	13. Defect liability period to be 12 months from the date of completion and handing over of building.	In case of discrepancy, clauses given under special conditions of contract for supply and services shall supercedes the clauses mentioned elsewhere in the tender documents. For supply part guarantee period shall be as per cl. No.9 of "special terms & conditions for supply part". and for services part guarantee period shall be as per cl. no.9 of "special terms & conditions for services"

Queries and Clarifications of Bidders for HVDC-Agra PEB (Pkg-III) Tender

Bidder's Name	Query Subject	Queries/Clarifications from Bidders	BHEL's Response
	Technical scope	14. Supply & laying of non-shrinking grout under column base plate will be under civil work & not in bidder's scope.	Noted.
	Approved vendors for Steel procurement	15. Bidder use high tensile steel plates which is not readily available from these suppliers. They procure steel plates from ESSAR / JSW / JSW-ISPAT/ BHUSHAN etc and other materials like galvalume sheets from Dongbu Steel / Union Steel / Tata Bluescope etc (a list of suppliers can be submitted for reference and approval).	Steel shall be procured from SAIL, RINL, TISCO or authorised parties approved by POWERGRID. List available in POWERGRID Compendium of Venders at http://www.powergridindia.com
M/s ERA Buildsys Ltd.	Standing seam	3. The Standing Seam roof Sheeting will be applicable only in roofing. For wall panel normal panel with 22-28 rib is suitable.	Noted
	Insulation	4. The insulation would be to inner side of Outer wall panel instead of outer side of inner panel.	Noted
	Warranty	5. Warranty & guarantee: a) the warranty for stability will be provided for 25 years but for individual components will be provided as per manufacturer's warranty clause for sheeting and Roofing as per manufacturer's Warranty. b) For insulation as per manufacturer's warranty. c) For FRP/Polycarbonate sheet otheraccessories. d) Roof ventilators & doors and rolling shutter. e) painting etc.	Structural stability certificate for 40 years shall be provided and for other materials warranty on back to back basis as received from suppliers shall be provided.
M/s Lloyd Insulations (India) Ltd.	EMD	1. Request for submitting EMD in the form of Bank Guarantee	Submission of EMD shall be as per NIT Condition.
	Warranty	2. The bidder can offer: a) Structural Stability certificate for 40 years subject to maintenance as per manufacturer manual. b) Sheeting warranty for color fading shall be as per manufacturer standard which is normally given for 10- years. c) Rock, wool insulation will perform subject to protection from rain.	Structural stability certificate for 40 years shall be provided and for other materials warranty on back to back basis as received from suppliers shall be provided.
	PVC for Steel	3. Request for including PVC as the prices of steel are volatile.	PVC for Installation work has been provided in tender.
	Rolling Shutter and door	4. To incorporate supply of Rolling shutter & Door (mentioned in Service part BOQ) in Supply part BOQ.	Incorporated in revised BOQ.
	Technical Query	5. Recommends to use pre-fabricated factory made rockwool panels for sturdiness, faster construction and good aesthetics, in view of height of the Building.	Shall be as per technical specification.

Queries and Clarifications of Bidders for HVDC-Agra PEB (Pkg-III) Tender

Bidder's Name	Query Subject	Queries/Clarifications from Bidders	BHEL's Response
	Standing seam	6. Standing seam specified for wall cladding practically difficult to installRecommends to use Lloyd kiplok sheet or Hi Rib for the wall instead of those mentioned in BOQ.	Shall be as per technical specification.
	Approved vendors for Steel procurement	7. request for including M/s Essar Steel / M/s Jindal Steel also in approved list.	Steel shall be procured from SAIL, RINL, TISCO or authorised parties approved by POWERGRID. List available in POWERGRID Compendium of Venders at http://www.powergridindia.com
	Mono Rail	10. Whether design of mono rail is to be considered while designing.	For preliminary design mono rail is not required. Please refer our revised tender drawing No: 3-73-001 R0(M). Details shall be provided during contract stage if mono rail is required.
	Technical Query	11. Whether the live load of 400 kg/m^2 for mezzanine at 6 & 12 m level is to be considered.	For preliminary design purpose you may consider 10kN/sqm at 6m lvl & 1.5kN/sqm at 12m lvl as per technical specification.
	Mezzanine Floor	12. Only loading for mezzanine on columns at 6 m and 12 m is to be considered. Mo mezzanine structure and decking sheet would be in bidder's scope.	Accepted
	Technical Query	13. 3-nos. fo conductors load @ 6MT each at 19 meter level on end wall column at GL-7A, 8-A & 9-A (this load will applied on building as concentrated load in horizontal load in horizontal direction beyond GL-A) is to be considered?	Please refer our revised tender drawing no: 3-73-001 R0(M)
	Technical Query	14. Wall cladding along line GL-11 is to be considered as single skin or double skin?	For preliminary design this may be considered as single skin. However since this tender is quantity based hence whatever is finalised during contract stage shall be paid.
	Technical Query	15. Whether the bidder has to consider double side welding?	Yes
M/s Tiger Steel Engineering (I) Pvt. Ltd.	Fabrication drawing	1.Submission of Fabrication Drawings is necessary.	Yes
	Warranty	2. Stability Certificate for 40 years will be provided by the PEB vendor but Guarantee for Sheeting, Insulation & PVF2 coating and all the others brought out items shall be back to back basis as provided by the supplier. PEB company will not take any guarantee for such items.	Noted.
	Mono rail	3. Capacity and length of run of the Mono rails as shown in the drawings.	For preliminary design mono rail is not required. Please refer our revised tender drawing No: 3-73-001 R0(M). Details shall be provided during contract stage if mono rail is required.

Queries and Clarifications of Bidders for HVDC-Agra PEB (Pkg-III) Tender

Bidder's Name	Query Subject	Queries/Clarifications from Bidders	BHEL's Response
	Rolling Shutters	4. Requires Sizes of Rolling Shutters (if any).	Shall be provided during contract stage.
	Technical query	5. Roof slope not mentioned in the drawing.	Shall be designed for proper drainage as per technical specification.
	Technical query	6. Requires sizes of framed openings (if any).	Shall be provided during contract stage.
	Painting	7. Bidder have to provide 2 coats of Synthetic enamel paint at site.	Shall be as per technical specification
	Mezzanine Floor	8. Whether the bidder has to provide Decking Sheets or Chequered Sheets on mezzanine floors	It will be RCC slabs. Construction is not in scope of bidder. Only loading from slab shall be considered in design.
	Civil Works	9. Civil Works schedule for the project.	In BHEL Scope
	Techical query	10. To clarify the fundamentals of the section-12 of IS 800-2007 for the subjected works.	All designs shall be as per technical specification.
	Calculations	11. Bidder needs 30 days for the STAAD calculations and to submit the same.	Not accepted. Offer with complete details as required shall be submitted within the extended period.
	Techical query	12. Table of thickness given in tender documents is not related to PEB vendors.	Query is not clear.
	Collateral Loads	13. Requires collateral loads on the building and to be confirmed whether they are point load on the rafters or along the length or along the width of the building.	Shall be provided during contract stage, if required.
	Techical query	14. What will be our method of measurement. To be specified that after submittiing the weighing bridge slip BHEL or Power Grid will further measure the material Grid wise.	Shall be as per technical specification.
	Techical query	15. whether inner sheet is trimmed or not.	Shall be as per technical specification.
	Techical query	16. Is thre are any restrictions for the cross bracings anywhere in the building?	Shall be provided during contract stage.
	drawings	17. Updated detailed drawings are required for estimation.	Please refer our revised tender drawing.
	Techical query	18. Building having a clear height of 33.55 m. It is adviceable to put the inner sheet over the purlins. Whereas in the drawings it has been shown below the purlins. It will save more time it is highly unsafe to do the installation of sheeting at 33.55 m.	Noted.
	Purlins	19. Whether purlins are GI or not?	Shall be as per technical specification.
	Techical query	20. requires detail of wall sheeting & linear Panel. Also requires the detail of outer & inner wall sheet.	Shall be as per technical specification.

Queries and Clarifications of Bidders for HVDC-Agra PEB (Pkg-III) Tender

Bidder's Name	Query Subject	Queries/Clarifications from Bidders	BHEL's Response
	Techical query	21. The no. of buildings to be specified and whether, the BOQ is for 2 buildings or more.	Two numbers of structures of identical size and shape are envisaged for housing the Pole 1&3 and Pole 2&4 DC equipments. The BOQ is for 2 buildings.
	Techical query	22. Can wall sheeting can be done in a way that the inner part of the girts expose means inner sheet will be placed at the outer flange of girt.	Shall be as per technical specification & standard practice.
M/s Octamec Engineering Ltd.	Warranty	1. Bidder will provide 40 years of warranty for structure and design only.	Noted.
	Mono rail	3. request for removing the 25 ton mono rail crane and standing seam sheet on wall as its difficult to provide the same.	Noted.
M/s Vardhman Precision Pro	RA process	2. Base price by BHEL in RA process	In BHEL Scope
	PQR criteria	3. Not clarified about similar works.	Similar work will be as defined in Technical part of pre-qualification criteria.
	PQR criteria	Requirement of 10,000 MT in pre-qualification criteria may be re considered.	Revised pre-qualification criteria is issued with amendment-2.
	PQR criteria	5. Point Epoint E of the technical pre-qualification criteria states that the bidder should have executed a PEB project with a building of 45 m or more or a clear height of 20 m or more. Please confirm if thr works as executed under point B of Financial pre-qualification criteria should be same as above.	No
	PQR criteria	6. Point F of the technical pre-qualification criteria requests bidders to submit preliminary analysis (in STAAD)-These are usually submitted only after award of works, please confirm.	Preliminary analysis & design shall be submitted with the tender.
	C-Form	7. Will form C be issued by BHEL for works under subject?	Yes.
	Service Tax	8. Service tax as applicable under this contract will be borne by the bidder and should be bult in the prices as quoted under the bill of quantities "OR" will the same be refunded by the client as extra beyond the contract value as submitted.	For supply part, quoted price should be inclusive of all taxes & duties. For installation services service tax is payable extra as per NIT Conditions.
	Work Order	9. The purchase order as will be issued after award of works by the client will be separate for supply & Services - please confirm	Confirmed.
	Evaluation of Bids	11. Evaluation shall be done on the basis of total cost to BHEL. Total input credit in respect of VAT (available to BHEL as per law), as indicated by the bidders in hteir price bid, shall be deducted from the cost for purpose of ascertaining total cost to BHEL, for purpose of evaluation. Please explain as to what value will be considered for evalution of the price bids as submitted by bidders.	A model calculation sheet will be issued to all technically qualified bidders before RA.

Queries and Clarifications of Bidders for HVDC-Agra PEB (Pkg-III) Tender

Bidder's Name	Query Subject	Queries/Clarifications from Bidders	BHEL's Response
	PVC	12. Will price variation clause as per the varying index prices during the tenure of the contract under office of economic advisor be applicable for the said contract works. Although the same is applicable and clearly defined under services whereas the same should be applicable for supply as well-Please confirm.	Prices quoted should be firm for supply part. PVC is applicable only for Installation services part.
	Drawings	13. The drawings as provided with the tender documents are not very clear, hence it is requested to provide soft copies of the drawings preferably in AutoCAD format for better understanding of the buildings.	Clear copy is attached in the revised Doc. No: TB-343-607-003 - PKG III, Rev. No: 02.
	Technical query	14. Since the plan and section for only one of the " DC Building" is provided with the tender documents, please confirm if the plan and sections for all the buildings is exactly the same.	Yes it will be generally same or mirror image. However, please note that drawing has been provided only for better understanding of the scope. Since it is a BOQ based tender, bidders are required to quote the rates of different items involved.