Bid Number: GEM/2021/B/1681391
Dated: 18-11-2021

Bid Document

Bid Details	
Bid End Date/Time	29-11-2021 15:00:00
Bid Opening Date/Time	29-11-2021 15:30:00
Bid Life Cycle (From Publish Date)	90 (Days)
Bid Offer Validity (From End Date)	75 (Days)
Ministry/State Name	Ministry Of Heavy Industries And Public Enterprises
Department Name	Department Of Heavy Industry
Organisation Name	Bharat Heavy Electricals Limited (bhel)
Office Name	10250020-pem, Noida
Total Quantity	3
Item Category	BOQ (Q3)
MSE Exemption for Years of Experience and Turnover	No
Startup Exemption for Years of Experience and Turnover	No
Document required from seller	Certificate (Requested in ATC),Additional Doc 1 (Requested in ATC),Compliance of BoQ specification and supporting document *In case any bidder is seeking exemption from Experience / Turnover Criteria, the supporting documents to prove his eligibility for exemption must be uploaded for evaluation by the buyer
Bid to RA enabled	Yes
RA Qualification Rule	50% Lowest Priced Technically Qualified Bidders
Primary product category	BOQ
Time allowed for Technical Clarifications during technical evaluation	7 Days
Payment Timelines	Payments shall be made to the Seller within **60** days of issue of consignee receipt-cum-acceptance certificate (CRAC) and on-line submission of bills (This is in supersession of 10 days time as provided in clause 12 of GeM GTC)
Evaluation Method	Total value wise evaluation

EMD Detail

Required	No

ePBG Detail

Advisory Bank	State Bank of India
ePBG Percentage(%)	5.00
Duration of ePBG required (Months).	27

(a). EMD & Performance security should be in favour of Beneficiary, wherever it is applicable.

Beneficiary:
MANAGER, BHEL PEM
10250020-PEM, Noida, Department of Heavy Industry, Bharat Heavy Electricals Limited (BHEL), Ministry of Heavy Industries and Public Enterprises
(Manish Kumar Sinha)

Splitting

Bid splitting not applied.

1. Estimated Bid Value indicated above is being declared solely for the purpose of guidance on EMD amount and for determining the Eligibility Criteria related to Turn Over, Past Performance and Project / Past Experience etc. This has no relevance or bearing on the price to be quoted by the bidders and is also not going to have any impact on bid participation. Also this is not going to be used as a criteria in determining reasonableness of quoted prices which would be determined by the buyer based on its own assessment of reasonableness and based on competitive prices received in Bid / RA process.

2. Reverse Auction would be conducted amongst first 50% of the technically qualified bidders arranged in the order of prices from lowest to highest. Number of sellers eligible for participating in RA would be rounded off to next higher integer value if number of technically qualified bidders is odd (e.g. if 7 bids are technically qualified, then RA will be conducted amongst L-1 to L-4). In case number of technically qualified bidders are 2 or 3, RA will be between all without any elimination. If Buyer has chosen to split the bid amongst N sellers, then minimum N sellers would be taken to RA round. In case Primary products of only one OEM are left in contention for participation in RA based on lowest 50% bidders qualifying for RA, the number of sellers qualifying for RA would be increased to get at least products of one more OEM (directly participated or through its reseller) if available. Further, if bid(s) of any seller(s) eligible for MSE preference is / are coming within price band of 15% of Non MSE L-1 or if bid of any seller(s) eligible for Make in India preference is / are coming within price band of 20% of non MII L-1, then such MSE / Make in India seller shall also be allowed to participate in the RA process.

BOQ (1 pieces)

Brand Type	Unbranded

Technical Specifications

Specification Document	View File
BOQ Document	View File

Advisory-Please refer attached BOQ document for detailed consignee list and delivery period.

Consignees/Reporting Officer and Quantity

S.No.	Consignee/Reporting Officer	Address	Quantity	Delivery Days
1	Narendra Dewangan	495450,BHEL Site Office, Construction Manager NTPC Korba STPP, Dist. Korba, Chhattisgarh, Pin- 495450,	1	600

BOQ (1 pieces)

Brand Type	Unbranded

Technical Specifications

Specification Document	View File
BOQ Document	View File

Advisory-Please refer attached BOQ document for detailed consignee list and delivery period.

Consignees/Reporting Officer and Quantity

S.No.	Consignee/Reporting Officer	Address	Quantity	Delivery Days
1	Ravi Ranjan Prabhat	824303,Construction Manager, 3x660 MW BHEL - NPGCL Nabinagar Project, PO.- Son Samriddhi Complex, NPGCL Township, District- Aurangabad, Bihar-824303	1	600

BOQ (1 pieces)

Brand Type	Unbranded

Technical Specifications

Specification Document	View File
BOQ Document	View File

Advisory-Please refer attached BOQ document for detailed consignee list and delivery period.

Consignees/Reporting Officer and Quantity

S.No.	Consignee/Reporting Officer	Address	Quantity	Delivery Days
1	Burhan Majhi	505215,BHEL Site office, 3X200MW+3X500MW, NTPC Ramagundam Stage-I & II FGD Package, (Telangana), PIN : 505215	1	600

Buyer Added Bid Specific Terms and Conditions

1. **Generic**

   OPTION CLAUSE: The Purchaser reserves the right to increase or decrease the quantity to be ordered up to 25 percent of bid quantity at the time of placement of contract. The purchaser also reserves the right to increase the ordered quantity by up to 25% of the contracted quantity during the currency of the contract at the contracted rates. Bidders are bound to accept the orders accordingly.

2. **Inspection**

   Nominated Inspection Agency: On behalf of the Buyer organization, any one of the following Inspection Agency would be conducting inspection of stores before acceptance:
   Pre-dispatch Inspection at Seller Premises (applicable only if pre-dispatch inspection clause has been selected in ATC): YES, BHEL NOMINATED TPIA/CUSTOMER
   Post Receipt Inspection at consignee site before acceptance of stores: No

3. **Scope of Supply**

   Scope of supply (Bid price to include all cost components) : Only supply of Goods

4. **Buyer Added Bid Specific ATC**

   Buyer Added text based ATC clauses

   PROJECT: - Combined Enquiry for Three FGD Projects (i.e. 3x200+3x500+1x500 MW NTPC KORBA FGD, 3x660 MW NPGCL NABINAGAR FGD, 3x200+3x500 MW NTPC RAMAGUNDAM FGD).

   PACKAGE: - NEUTRAL GROUNDING RESISTOR

   GeM Bid No: - GEM/2021/B/1681391, Dated 18.11.2021

   Additional Terms and Conditions for subject Tender Enquiry to be complied by Bidders for Consideration in this tender:

   -

1) Payment Terms: Payments shall be made to the Seller within 60 days (45 days for seller qualified and registered as Micro or small as per MSMED Act.) of issue of consignee receipt-cum-acceptance certificate

(CRAC) and on-line submission of bills (This is in supersession of 10 days time as provided in clause 12 of GeM GTC).
Supplier has to provide Tax invoice, Packing List, LR/RR, CRAC, Insurance intimation, Guarantee Certificate, E-way bill (as applicable) for payment. Provision of offline payment in GeM shall be utilized.

2) Terms of Delivery: As per cl. no. 13 of GTC on GeM. **However, Transit insurance shall be in the scope of Seller and unloading of items at delivery point shall be in the scope of BHEL. Bidder to quote prices accordingly**.

3) Delivery Period for Main Supply: 210 days from the date of PO.

Delivery Period for Mandatory Spares: 600 days from the date of PO.

However, following related to delivery may be noted -

Delivery Schedule shall be Four (04) months from date of CAT-1 approval of Primary drawing/documents or BHEL manufacturing clearance whichever is later, subjected to drawing/document submission/re-submission schedule as stipulated, in case of any delay in submission/re-submission of Primary drawing/documents, then same shall be reduced from the given delivery period. Delay in BHEL's comments/approval beyond 18 days shall also be considered for delay analysis.

After award of contract - Successful bidders shall be asked to submit following Primary drg/doc:

i) PE-V0-XXX-506-E904 Quality Plan of NGR

ii) PE-V0-XXX-506-E005 Data Sheet of NGR

iii) PE-V0-XXX-506-E279 GA of NGR

R-0 within 14 days from PO & subsequent revisions within 10 days of comments received from BHEL. BHEL shall furnish comments / approval on each submission within 18 days from receipt.

iv). PE-V0-XXX-506-E014 Type test reports / certificates.

R-0 within 02 months of approval of other primary drawings/documents & subsequent revisions within 10 days of comments received from BHEL. BHEL shall furnish comments / approval on each submission within 18 days from receipt.

Approval process of primary documents shall be completed within 90 days from Purchase Order. Seller shall be required to ensure supply as per approved Drawings with modifications as communicated by Buyer. If there is delay from buyer side in approval of drawing - the delivery period shall be re-fixed without LD for the period of delay in approval of Drawing. Only primary documents shall be considered for re-fixation of delivery. Above term 'After award of contract' is proposed from available clauses in ATC library on GEM portal. Material shall be dispatched by vendor after issuance of MDCC by BHEL only.

Secondary document PE-V0-XXX-506-E016 O & M Manual for NGR shall be submitted within 30 days of issuance of MDCC.

Notes -

1. Vendor to start manufacturing activities only after obtaining specific manufacturing clearance from BHEL Purchase group.

2. In case BHEL manufacturing clearance date is later than the date of Cat-1 approval of Primary drawing/documents, then the contractual delivery period will be calculated by setting off the time gap between Cat-1 approval date of Primary drawing/documents and the manufacturing clearance date, from any delay by vendor in submission/re-submission of Primary drawing/documents.

4) Performance Bank Guarantee: 27 Months from the date of PO as per cl. no. 7 of GEM GTC. However, please be noted that as per GEM, Single Purchase order (combined for all three projects) shall be issued. Accordingly, BG for total PO (Ex-works) value shall be applicable and validity of BG shall be 18 months

from the date of last supply of PO.

Please also be noted that PBG value given in ATC will override PBG given elsewhere and PBG calculation shall be as following:

(5% of Consignee wise total Ex-works price for Korba FGD project)

+

(3% of Consignee wise total Ex-works price for Ramagundam & NPGCPL Nabinagar FGD project).

Further, if relaxation from end customer is received for Korba FGD project, same benefit shall be passed on to bidders as well.

5) Liquidated Damage: Purchaser reserves the right to recover from the Seller/ Contractor, as agreed liquidated damages and not by way of penalty, a sum equivalent to half (½) percent and applicable GST thereon, of the total main supply contract price excluding GST per week or part thereof, subject to a maximum of ten (10) percent of the total main supply contract price excluding GST, if the Seller/ Contractor fails to deliver any part of the ordered goods/stores within the period stipulated in the Order/ Contract.

However, LD shall be calculated for Consignee-wise Quantity.

6) Guarantee Terms: As per Cl. No. 10 of GTC on GeM for the bid. However, Guarantee & Warrantee time period shall be 18 months from the date of last supply in the contract.

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7) This is a conditional tender enquiry. Financial Bid (Part-II) opening of a bidder shall be subject to the followings:

i) Techno-Commercial evaluation by BHEL.
ii) Qualification of Technical PQR.
iii) Offered item should mandatorily conform to PP-MII order provisions.

8) This item /package/system falls under the list of items defined in para 3 of ministry of finance guideline date 20.09.16 (procurement of items related to public safety, health, critical security operations and Equipment's etc.) & hence criteria of prior experience /turnover shall be same for all bidders including start up /MSME.

9) For this procurement, the local content to categorize a supplier as a Class I Local Supplier / Class II Local Supplier / Non Local supplier and Purchase preference to Class I local supplier, is as defined in Public Procurement (Preference to Make in India), (PPP-MII) Order 2017 dt. 16/09/2020 issued by DPIIT. In case of subsequent orders issued by the nodal ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before opening of Part-II bids against this NIT.

Regarding verification of local content, the local supplier at the time of tender, bidding or solicitation shall be required to provide certification as per para 9 of PP-MII order revision dated 16.09.2020 (format enclosed with tender specification documents).

10) Bidders to ensure that Third party / customer issued certificates being submitted as proof of PQR qualification should have verifiable details of document / certificate issuing authority such as name & designation of Issuing Authority and its organization contact number and e-mail Id etc. In case the same found not available, Purchaser has right to reject such document from evaluation.

11) Bidders to,

- ensure compliance to Ministry of Power (MoP) Order No. 25-11/6/2018-PG dt. 02/07/2020 & Order No. 11/05/2018-Coord. dt. 23/07/2020, if applicable.
- ensure compliance of Ministry of Finance (MoF) Order (Public Procurement No. 1 & 2) F. No. 6/18/2019/PPD dt. 23/07/2020.
- to submit “Model Certificate for Tenders” as per Annexure-III of Ministry of Finance (MoF) Order (Public Procurement No. 1 & 2) F. No. 6/18/2019/PPD dt. 23/07/2020.

Note: Subsequent orders/circulars to be checked and to be complied.

12) Due to COVID-19 pandemic condition prevailing in the country, BHEL/PEM may go for Remote Inspection of Offered items, if required. Vendors are requested to be equipped with the facilities/gadgets to take up the inspection REMOTELY as indicated in the guidelines available at following link:

https://pem.bhel.com/Documents/VendorSection/Vendor/Guidelines.pdf

Inspection call to be raised by bidder on BHEL CQIR portal (details shall be shared at the of execution of order) and Inspection agency shall attend at the inspection within seven (07) days of the date on which the material is notified as being ready. In case of delay in witnessing of inspection beyond stipulated time (i.e. 7 days from the date on which the material is notified as being ready), by BHEL arising due to reasons not attributable to vendor, BHEL will extend the delivery period for such delay in carrying out inspection. If BHEL is not able to witness inspection up to 15 days then in addition to delay beyond stipulated period, extension in delivery time of 07 days for arranging fresh inspection will be given.

When the tests have been satisfactorily completed at Seller/ Contractor's works, the Inspection Agency shall issue an inspection report that effect within seven (07) days after completion of the tests, but if the tests were not witnessed by the Inspection Agency or his representative, the material acceptance report would be issued within seven (07) days after receipt of the test certificates by the Purchaser.

Purchaser will issue MDCC to the Seller/ Contractor within 7 days based on inspection report/ test certificates/Certificate of Conformance as applicable. In case of delay in issuance of MDCC beyond 7 days stipulated time (i.e. from the date of successful inspection report), by BHEL arising due to reasons not attributable to vendor, BHEL will extend the delivery period for such delay in issuing MDCC. If BHEL is not able to issue MDCC up to 15 days then in addition to delay beyond stipulated period, 7 days’ additional time shall be given to vendor to facilitate the vendor for arranging logistics arrangements.

13) The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/guideline.

14) Evaluation shall be on the basis of total all inclusive, landed price at consignee's destination for all three (03) projects together (Refer cl. no. 6 of GTC on GEM).

15) Consignee wise PQR criteria is uploaded with specification and shall prevail Value of Experience criteria and Past performance parameter mentioned in GeM bid.

16) Risk & Cost: Details as per 'Annexure for Risk & Cost' enclosed with this ATC.

17) Bidders to provide detailed break-up of quoted price in Ex-works, freight & Tax components.

18) Bidders to submit applicable Freight % & GST % included in their prices during tender clarification stage.

19) Bidders to comply with Packing Instructions and others parameters provided in tender specification document.

20) Please furnish NTPC's Main & Sub-supplier questionnaire (enclosed with this enquiry tender specification document) and submit all the supportive documents against details furnished therein (signed & stamped on each page).

21) Consignee Details (for PRC - Provisional Receipt Certificate & CRAC - Consignee's Receipt cum Acceptance Certificate, as applicable) shall be as per Project Site official details. Consignee details of projects considered are mentioned in NIT document for ready reference.

22) All other terms & conditions shall be as per GeM bid, selected Additional Terms & Conditions from GeM library and GTC on GeM version available on GeM Portal as on enquiry floating date.

ANNEXURE FOR RISK & COST

1. In case of delays (beyond the maximum late delivery period as per LD clause) in supplies, or if there be defective supplies or non-fulfilment of any other terms and conditions of the Contract as enumerated subsequently in this clause, then, without prejudice to its right to recover any expenses, losses or damages to which the Buyer may be put to incur or sustain by reason of the Seller/Contractor's default or breach of Order/Contract or to suspend business dealings with the Seller/Contractor in terms of the Buyers' Guidelines for Suspension of Business Dealings as applicable from time to time, the Buyer shall also be entitled to cancel the Order/ Contract either in whole or portion thereof without compensation to Seller. On the occurrence of any of the acts/omissions mentioned below, the Buyer may if it so desires, procure upon such terms and in such manner as deemed appropriate, plant/equipment/ stores not so delivered or others of similar description where plant/ equipment/ stores exactly complying with particulars are not, in the opinion of the Buyer (which shall be final), readily procurable, at the risk and cost of the Seller.

The Seller shall be liable to the Buyer for any excess costs incurred thereof and the Seller shall continue the performance of the Order/Contract to the extent not cancelled under the provisions of this clause. The Seller shall on no account be entitled to any gain on such repurchases. If the Bidder does not agree to this Risk Purchase clause, BHEL reserves the right to reject the bid/offer of the Bidder. The order/contract may be cancelled in whole or part thereof and Risk & Cost Clause in line with terms and conditions of PO/Contract may be invoked by the Buyer in any of the following cases:

i. If the Seller/Contractor fails to deliver the goods or materials or any instalment thereof within the

period(s) fixed for such delivery or the Seller's poor progress of the supply/services vis-à-vis delivery/execution timeline as stipulated in the contract, backlog attributable to the Seller including unexecuted portion of supply does not appear to be executable within balance period available;

ii. delivers goods or materials not of the contracted quality and failing to adhere to the contract specifications/execution methodology;

iii. withdrawal from or repudiation/abandonment of the supply/services by the Seller before completion as per contract or if the Seller refuses or is unable to supply goods or materials covered by the order/Contract either in whole or in part or otherwise fails to perform the Order/Contract.

iv. Non supply by the Seller within scheduled completion/delivery period as per contract or as extended from time to time for reasons attributable to the Seller;

v. Termination of Contract on account of any other reason(s) attributable to the Seller.

vi. Assignment, transfer, sub-letting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.

vii. If the Seller be an individual or a Sole Proprietorship, in the event of death or insanity of the Seller.

viii. If the Seller/Contractor being an individual or if a partnership firm thereof, shall at any time be adjudged insolvent or shall have a receiving order for administration of his estate made against him or shall take any proceeding for composition under any Insolvency Act for the time being in force or make any assignment of the order/Contract or enter into any arrangement or composition with his creditors or suspend payment or if the firm dissolved under the Partnership Act;

ix. If the Seller/Contractor being a Company is wound up voluntarily or by order of a Court or a Receiver, Liquidator or Manager on behalf of the debenture holders and creditors is appointed or circumstances have arisen which entitles the Court of debenture holder and creditors to appoint a receiver, liquidator or manager

x. Non- Compliance to any contractual condition or any other default attributable to the Seller.

Such defaulting vendor/Seller shall not be eligible to participate in re-tendering conducted on account of risk purchase made due to fault of such vendor/Seller.

2. BHEL's right to go for Risk and Cost, Calculation of Risk and Cost amount & LD, recovery options to BHEL are given as under: -

2.1 BHEL reserves the right to terminate the contract or withdraw portion of work and get it done through other agency, at the risk and cost of the contractor *after due notice of a period of 14 days' by BHEL* in any of the following cases:

i) If the Seller/Contractor fails to deliver the goods or materials or any instalment thereof within the period(s) fixed for such delivery or the Seller's poor progress of the supply/ services vis-a-vis delivery/execution timeline as stipulated in the Contract, backlog attributable to seller including unexecuted portion of supply does not appear to be executable within balance available period;

ii) Delivers goods or materials not of the contracted quality and failing to adhere to the contract specifications;

iii) Withdrawal from or repudiation/ abandonment of the supply/ services by Seller before completion as per contract or if the Seller refuses or is unable to supply goods or materials covered by the Order/Contract either in whole or in part or otherwise fails to perform the Order/Contract;

iv) Non-supply by the Seller within scheduled completion/delivery period as per Contract or as extended from time to time, for the reasons attributable to the Seller;

v) Termination of Contract on account of any other reason (s) attributable to Seller.

vi) Assignment, transfer, subletting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.

vii) If the Seller be an individual or a sole proprietorship Firm, in the event of the death or insanity of the Seller;

viii) If the Seller/Contractor being an individual or if a firm on a partnership thereof, shall at any time, be adjudged insolvent or shall have a receiving order for administration of his estate made against him or shall take any proceeding for composition under any Insolvency Act for the time being in force or make any assignment of the Order/Contract or enter into any arrangement or composition with his creditors or suspend payment or if the firm dissolved under the Partnership Act;

ix) If the Seller/Contractor being a company is wound up voluntarily or by order of a Court or a Receiver, Liquidator or Manager on behalf of the debenture holders and creditors is appointed or circumstances shall have arisen which entitles the Court of debenture holder and creditors to appoint a receiver, liquidator or manager;

x) Non-compliance to any contractual condition or any other default attributable to Seller.

2.1.1 Risk & Cost Amount against Balance Work:

Risk & Cost amount against balance work shall be calculated as follows:

Risk & Cost Amount= [(A-B) + (A x H/100)]

Where,

A= Value of Balance scope of Work (*) as per rates of new contract

B= Value of Balance scope of Work (*) as per rates of old contract being paid to the contractor at the time

of termination of contract i.e. inclusive of PVC & ORC, if any.

H = Overhead Factor to be taken as 5

In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).

2.1.2 Balance scope of work (in case of termination of contract):

Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Work for calculating risk & cost amount.

Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities.

Items for which total quantities to be executed have exceeded the Contract Quantities based on drawings issued to contractor from time to time till issue of Termination letter, then for these items total Quantities as per issued drawings would be deemed to be contract quantities.

Substitute/ extra items whose rates have already been approved would form part of contract quantities for this purpose.

Substitute/ extra items which have been executed but rates have not been approved, would also

form part of contract quantities for this purpose and rates of such items shall be determined in line with contractual provisions.

However, increase in quantities on account of additional scope in new tender shall not be considered for this purpose.

NOTE: In case portion of work is being withdrawn at risk & cost of contractor instead of termination of contract, contract quantities pertaining to portion of work withdrawn shall be considered as 'Balance scope of work' for calculating Risk & Cost amount.

2.1.3 LD against delay in executed work in case of Termination of Contract:

LD against delay in executed work shall be calculated in line NIT terms & conditions, for the delay attributable to contractor. For limiting the maximum value of LD, contract value shall be taken as Executed Value of work till termination of contract.

Method for calculation of LD against delay in executed work in case of termination of contract" is given below:

i. Let the time period from scheduled date of start of work till termination of contract excluding the period of Hold (if any) not attributable to contractor = T1

ii. Let the value of executed work till the time of termination of contract = X

iii. Let the Total Executable Value of work for which inputs/fronts were made available to contractor and were planned for execution till termination of contract = Y

iv. Delay in executed work attributable to contractor i.e. T2 = [1-(X/Y)] x T1

v. LD shall be calculated in line with LD clause (clause 16) of the Contract for the delay attributable to contractor taking "X" as Contract Value and "T2" as period of delay attributable to contractor.

2.2 Recoveries arising out of Risk & Cost and LD or any other recoveries due from Contractor:

Without prejudice to the other means of recovery of such dues from the Seller recoveries from the Seller on whom risk

& cost has been invoked shall be made from the following:

a) Dues available in the form of Bills payable to seller, SD, BGs against the same contract.

b) Dues payable to seller against other contracts in the same Region/Unit/ Division of BHEL.

c) Dues payable to seller against other contracts in the different Region/Unit/ division of BHEL.

In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against contractor.

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5. **Buyer Added Bid Specific ATC**

   Buyer uploaded ATC document Click here to view the file.

Disclaimer

The additional terms and conditions have been incorporated by the Buyer after approval of the Competent Authority in Buyer Organization. Buyer organization is solely responsible for the impact of these clauses on the bidding process, its outcome and consequences thereof including any eccentricity / restriction arising in the bidding process due to these ATCs and due to modification of technical specification and / or terms and conditions governing the bid. Any clause incorporated by the Buyer such as demanding Tender Sample, incorporating any clause against the MSME policy and Preference to make in India Policy, mandating any Brand names or Foreign Certification, changing the default time period for Acceptance of material or payment timeline governed by OM of Department of Expenditure shall be null and void and would not be considered part of bid. Further any reference of conditions published on any external site or reference to external documents / clauses shall also be null and void. If any seller has any objection / grievance against these additional clauses or otherwise on any aspect of this bid, they can raise their representation against the same by using the Representation window provided in the bid details field in Seller dashboard after logging in as a seller within 4 days of bid publication on GeM. Buyer is duty bound to reply to all such representations and would not be allowed to open bids if he fails to reply to such representations.

This Bid is also governed by the General Terms and Conditions

In terms of GeM GTC clause 26 regarding Restrictions on procurement from a bidder of a country which shares a land border with India, any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. While participating in bid, Bidder has to undertake compliance of this and any false declaration and non-compliance of this would be a ground for immediate termination of the contract and further legal action in accordance with the laws.

---Thank You---

BOQ KORBA FGD - NGR

Item Number	Item Title	Item Description	Item Quantity	Unit of Measure	Consignee ID	ZipCode	Delivery Period (In number of days)	Unit Price (Inclusive of all taxes)	GST % (Included in Unit Price)	Brand	Model	HSN Code
1	506-15033-A	MAIN SUPPLY : NGR 6.6 KV (600A, 10 SEC, 6.64 OHMS)	7	NOS	PEM_KORBA1	495450	210					
2	506-15020-A	MAIN SUPPLY : HOT DIP GALVANISED MS SUPPORTING STRUCTURE WITH INSULATORS, FOUNDATION HARDWARES etc. FOR 6.6 kV NGR	7	NOS	PEM_KORBA1	495450	210					
3	506-15022-A	MAIN SUPPLY : COPPER BUSBAR 50X8 MM OF 10M LENGTH (For connecting Transformer Neutral with NGR)	7	LOT	PEM_KORBA1	495450	210					
4	506-15033-A	MANDATORY SPARE : NGR 6.6 KV (600A, 10 SEC, 6.64 OHMS)	2	NOS	PEM_KORBA1	495450	600					

BHEL	**PRE-QUALIFICATION REQUIRMENTS FOR NEUTRAL GROUNDING RESISTOR**	PE-PQ-999-505-E001 REVISION NO. 02 DATE 29/04/2016 SHEET NO. 1 OF 1

ITEMS : Neutral grounding resistor a/w supporting structure

SCOPE: Supply : YES; Erection & Commissioning : NO;

1	Availability of type test certificates conducted at independent Lab or witnessed by third party as per relevant IS/ International standard.
2	Vendor should have in-house facility for design and manufacturing of neutral grounding resistor.
3	Vendor should have in-house capability to carry out all routine and type tests. In case facilities for type test are not available with the vendor, these tests can be conducted at Govt. Lab/ Govt. approved independent Lab.
4	Manufacturing capacity of at least 10 nos. neutral grounding resistor per month.
5	Supplied at least 20 nos. of neutral grounding resistor in one or more orders.
6	Minimum two (2) nos. purchase orders for neutral grounding resistor shall be submitted which should not be more than five (5) years old from the date of application for registration or date of techno-commercial bid opening (as applicable) for establishing continuity in business.

NOTE:
Supplier to comply to "general points of PQR" available at http://bhelpem.com/vensection/PMD/PMD.aspx
In case supplier is not OEM, the offer shall be evaluated as per point no 1 of "general points of PQR".

PREPARED BY	REVIEWED BY	APPROVED BY
10/05/2016	29/4/16.	29.04.16
NAME: N.N. JAJWARE DESIGNATION: Dy. Mgr.	NAME: RAJNISH GOYAL DESIGNATION: AGM	NAME: MEENA KESRI DESIGNATION: AGM & DH(E)

General Points of PQR

1. Offers of the JV companies/ Joint Bidders/ bidders having collaboration/ licensing agreement/ MOU/ Indian subsidiaries shall be evaluated as follows:

    a. If bidder happens to be an Indian subsidiaries of foreign OEM, then the credentials of the foreign OEM can also be considered for meeting PQR.
    b. If bidder happens to be the Joint Venture Company, then the credentials of any of JV partners can be also considered for meeting PQR.
    c. If bidder happens to bid jointly with their partner, then credentials of both the partners will be considered for meeting PQR as per distribution of the work. In all such cases, lead bidder as specified in bid documents shall be responsible for overall execution of the contract and all guarantee/ warranty.
    d. If bidder happens to be the having valid collaboration agreement/ MOU/ licensing agreement with some other company, then the credentials of collaborator/ MOU partner/ licensing company can also be considered for meeting PQR.

    Note: If bidder(s) qualifies on the basis of credentials of his principal/ JV partner/ Collaborator/ joint bidder etc., then the principal/ JV partner/ Collaborator/ MOU partner/ joint bidder shall be responsible for overall design vetting and warranty/ guarantee of the package. The scope matrix clearly defining their respective roles including design vetting, manufacturing of critical component, E&C etc. etc. and warranty/ guarantee shall be submitted along with the offer.

2. Bidder to note that the arrangement of bidding (joint bid partners/ collaborator/ MOU partner/ licensing company etc.) once offered to BHEL as a part of bidding documents cannot be changed till the execution of the project.

3. Consideration of offer shall be subject to customer's approval of bidders, if applicable.

4. Bidder to submit all supporting documents in English. If documents submitted by bidder are in language other than English, a self-attested English translated document should also be submitted.

5. Any other project specific requirement shall be as per Annexure-I and bidder shall submit relevant supporting documents.

6. Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder/collaborators to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.

7. After satisfactory fulfillment of all the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of the tender.

VOLUME II

3x200 MW+ 3x500 MW+ 1x500 MW NTPC Korba STPS Stage-I, II & III- FGD

TECHNICAL SPECIFICATION

FOR

NEUTRAL GROUNDING RESISTOR

SPECIFICATION NO: ***PE-TS-466-506-E001***

REVISION: **00**

BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, UP (INDIA) – 201301

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TOTAL NO. OF SHEETS= 27

(INCLUDING COVER/ SEPARATOR SHEETS)

COMPLIANCE CERTIFICATE

The bidder shall confirm compliance to the following by signing/ stamping this compliance certificate and furnishing same with the offer.

1. The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusion/ deviation with regard to same

2. There are no deviation with respect to specification other than those furnished in the 'schedule of deviations'

3. Only those technical submittals which are specifically asked for in NIT to be submitted at tender stage shall be considered as part of offer. Any other submission, even if made, shall not be considered as part of offer.

4. Any comments/ clarifications on technical/ inspection requirements furnished as part of bidder's covering letter shall not be considered by BHEL, and bidder's offer shall be construed to be in conformance with the specification.

5. Any changes made by the bidder in the price schedule with respect to the description/ quantities from those given in 'BOQ-Cum-Price schedule' of the specification shall not be considered (i.e., technical description & quantities as per the specification shall prevail).

BIDDER'S STAMP & SIGNATURE

SECTION –I

SPECIFIC TECHNICAL REQUIREMENTS

1.0 SCOPE OF ENQUIRY

1.1 Design, Manufacture, Inspection and Testing at Manufacturer's works, proper packing and delivery to site of NEUTRAL GROUNDING RESISTOR conforming to this specification.

1.2 General technical requirements of the NEUTRAL GROUNDING RESISTOR are indicated in Section-II. Project specific technical/ quality requirements / changes are listed in Section-I.

1.3 **The requirements of Section-I shall prevail and govern in case of conflict between the corresponding requirements of Section-I and Section-II.**

1.4 The documents shall be in English Language and MKS system of units.

2.0 BILL OF QUANTITIES:

2.1 Quantity requirements shall be as per 'BOQ-cum-price schedule' as part of NIT.

2.2 Supplier to also give the following undertaking in the BOM: "The BoM provided herewith completes the scope (in content and intent) of material supply under PO No. ----------, dated ------. Any additional material which may become necessary for the intended application of the supplied item(s)/package will be supplied free of cost in most reasonable time."

3.0 SPECIFIC TECHNICAL REQUIREMENTS

3.1

S.No.	***Reference Clause No. of Section- II***	***Specific Requirement/ Change***
1.	5.1.10	Clause 5.1.10 shall be read as follows: "The connection between neutral terminal of transformer and NGR is through a tinned copper strip of 50 X 8mm. The copper strip shall be supplied by bidder. The required hardware for the termination of copper flat at both ends shall be supplied by the bidder. This item is included in BOQ-cum-Price Schedule in NIT".
2	5.2.1	Clause 5.2.1 shall be read as follows: "Each neutral grounding resistor shall be housed in weather-proof enclosure having Degree of Protection as specified in Data Sheet-A. Enclosure shall be cold rolled sheet steel having a minimum thickness of 2.5 mm. Suitable entilating louvers shall be provided on sides to ensure proper ventilation. The louvers shall be provided with fine wire mesh to make vermin proof."
3.	5.2.2	Clause 5.2.2 shall be read as follows: "The terminals for neutral and earthing connections shall be housed in separate vermin-proof, weather-proof terminal Boxhaving Degree of Protection as specified in Data Sheet-A."
4.	5.2.11	Clause 5.2.11 shall be read as follows: "For connection of other end of NGR to ground, Tinned copper flat (of size 50X8) mm with Fork connector up to 100mm above ground with 2 nos. earthing terminal/pad, tapped holes and bolts suitable for connection of GS Flat shall be supplied by bidder. The tinned copper flat shall be insulated from mounting structure through porcelain insulators. GS flat (size to be informed during detail engineering) for connection of fork connector of NGR to ground shall be in BHEL scope. The length of copper flat shall be suitably decided by bidder."
5.	6.0	In addition to clause 6.0: Following tests shall be conducted on NGR Cubicle 1. **Routine Tests:** DOP test on enclosure (routine test) as follows: It shall not be possible to insert a 2.5mm dia. steel wire into the enclosure from any

		direction without using force
6.	6.2	Clause 6.2 shall be read as follows: Bidder shall furnish Type test certificates (Short time current test along with temperature rise test & Degree of protection test i.e. IP33 for enclosure and IP55 for Terminal box). The type test should have been conducted within 10 yrs from 14.02.2019. Following valid type test report (within last ten years as on 14.02.2019) shall be furnished by the bidder and in absence of the same bidder has to conduct on each type (prototype) of NGR without any commercial/delivery implication to BHEL: 1. Short time current test along with temperature rise test. 2. Degree of protection test for IP33 on enclosure. 3. Degree of protection test for IP55 on Terminal Box.
7.	6.4	This clause stands deleted.
8.	6.5	Clause 6.5 shall be read as follows: All materials & components shall be procured, manufactured, inspected, and tested by vendor/sub-vendor as per applicable clauses of NTPC endorsed quality plan & Annexure-1 to quality plan.
9.	7.0	In addition to clause 7.0: 1. External surface of NGR shall be Chemical resistant epoxy zinc phosphate primer, MIO (Micaceous iron oxide) as intermediate paint followed by polyurethane finish paint of blue colour corresponding to RAL 5012. No. of coats shall be one coats each & total DFT shall not less than 100 microns. 2. Internal surface of NGR shall be Chemical resistant epoxy zinc phosphate primer followed by chemical and heat resistant epoxy enamel white paint. No. of coats shall be one coats each & total DFT shall not less than 100 microns. Colour code shall be subjected to customer approval at contract stage without any commercial implication to BHEL.

3.2 All internal wiring between equipment and terminal block shall be carried out by fire resistance PVC insulated 1100V grade 2.5 Sq.mm Stranded copper conductor wires.

3.3 All devices and terminal blocks within the terminal box shall be clearly identified by symbol corresponding to those used on applicable schematic/wiring diagram. 20% spare terminals shall be provided in terminal block.

3.4 Each cubicle shall be provided with 5A, 5 pin plug socket and door-switch controlled cubicle illumination lamp. Two pole switch fuse unit shall be provided for receiving 240 V single phase AC supply for cubicle lamp and illumination circuit.

3.5 Packing shall be as per Annexure –II to QP.

4.0 DOCUMENTATION

4.1 Documents required along with technical offer shall be as per attachment-I.

4.2 Documents required after award of LOI/PO shall be as per NIT (to be submitted by successful bidder).

ATTACHMENT – I

DOCUMENTS REQUIRED ALONG WITH TECHNICAL OFFER.

Sign & stamped copy of following documents:

a] "Deviation Schedule" with "NO Deviations" and bidder's signature and company stamp.

b] Unpriced Price Schedule as enclosed with NIT with 'Quoted" word against items with bidder's signature and company stamp.

c] A copy of the sheet "Compliance Certificate" with bidder's signature and company stamp.

d] All PQR related documents.

DATA SHEET-A

1.0 SYSTEM DESIGN DATA

1.1	Design Ambient	:	[√] 50°C [ ] 40°C
1.3	Reference Standard	:	IEEE – 32
1.2	Rated Voltage	:	7.2 kV
1.5	Location of NGR	:	Outdoor
1.6	Rated short time current and time	:	600A for 10sec
1.7	Net resistance of resistor unit	:	As specified in BOQ-Cum-Price Schedule in NIT
1.8	Resistance per resistor element	:	As per Requirement
1.9	Material of resistor element		
	i) For high value of current (Say 300/400/500/600A)	:	[√] AISI-304 [√] ASTM-A240 [ ] AISI-406
1.10	No. of parallel Path	:	2 parallel paths
1.11	No. of resistance element par path	:	As per Requirement
1.12	Total no. resistor elements	:	As per Requirement
1.13	Current density of resistor element	:	As per Requirement
1.14	Max. allowable temp. rise (over ambient) of resistor element	:	[ ] 300° C [√] 350° C
			[ ] 500° C [ ] 790° C

2.0 ENCLOSURE

2.1	Material and thickness	:	Sheet Steel and [ ] 2.0 [√] 2.5 [ ] 3.0 mm
2.2	Degree of Protection (As per IS/IEC-60529)		

i) Enclosure : [√] IP-33 with canopy [ ] IP-55 with canopy

ii) Terminal Box : IP-55 with canopy

3.0 SUPPORT INSULATORS

3.1 Material : Porcelain

3.2 Rated voltage

i) For 11/6.6/3.3kV NGR : 7.2 kV

3.3 One minute power frequency dry withstand voltage

i) For 11/6.6/3.3kV NGR : 20 kV (rms)

3.4 Creepage Distance : [ ] 25mm/KV [√] 31 mm/KV

4.0 MOUNTING STRUCTURE (BOLTABLE TYPE)

4.1 Material : Hot dip galvanised M.S

4.2 Thickness/deposit of galvanisation : 75 microns/610 g/m2

4.3 Equipment mounting : Base of NGR enclosure at 2.4m above ground

5.0 TERMINAL CONNECTION

5.1 Type : Bushing

5.2 Material : Porcelain

5.3 Rated voltage

i) For 11/6.6/3.3kV NGR : 7.2 kV

5.4 One minute power frequency dry withstand voltage

i) For 11/6.6/3.3kV NGR : 20 kV (rms)

5.5 Creepage Distance : [ ] 25mm/KV [√] 31 mm/KV

5.6 Connection between NGR & transformer : [ ] Cable [ ] GI Flat [√] Copper Flat (50X 8mm)

DATA SHEET-C
(To be filled up by bidder)

1.0 General

1.1	Make/Type		:
1.2	*Quantity*	Nos.	:
1.3	Service		:
1.4	Reference Standard		:

2.0 Resistor

2.1	Rated Voltage (Volt)	:
2.2	Net Resistance at 50 Deg. C (ohm)	:
2.3	Resistance per resistor element at 50 Deg. C	:
2.4	Tolerance limit on resistance at 50 Deg. C (%)	:
2.5	Total no. of resistor elements per path	:
2.6	No. of parallel path	:
2.7	Material of resistor element	:
2.8	Electrical Resistivity (Ohm-cm)	:
2.9	Temperature Co-efficient of resistance/ DegC	:
2.10	Current rating	
	a) Short time rating Amps., Secs	:
2.11	Types of grid	:
2.12	Temperature rise (over Ambient 50 Deg. C)	:
2.13	Method of connecting elements	:

3.0 Insulation level

3.1 One minute power frequency withstand volt. KVrms :

4.**0**	**Support insulator**	
4.1	Make	:
4.2	Material	:
4.3	Creepage distance	:
4.4	Voltage rating	:
4.5	One minute power frequency withstand volt.(dry) KVrms	:
5.**0**	**Terminal connection**	
5.1	Type	:
5.2	Make	:
5.3	Material	:
5.4	Voltage rating	:
5.5	Power frequency withstand volt. KVrms	:
6.**0**	**Enclosure Cubicle**	
6.1	Enclosure material	:
6.2	Thickness of enclosure materials	:
6.3	Degree of protection	:
6.4	Reference standard	:
6.5	Painting shade	:
6.6	Thickness of paint (mm)	:
6.7	Dimension of NGR cubicle with resistor	:
6.8	Weight of complete NGR cubicle with resistors (W/O Mounting structure)	:
7.**0**	**Test Voltage**	
7.1	One minute power frequency withstand volt.(dry) KVrms	:

8.0	**Mounting Structure**	
8.1	Materials	:
8.2	Dimensions	:
8.3	Paints/Galvanisation	:
8.4	Wt. Of mounting structure	:
9.0	Whether space heater arrangement provided	:
10.0	Whether welded or bolted type	:

SECTION – II

GENERAL TECHNICAL SPECIFICATION

1.0 SCOPE OF ENQUIRY

1.1 This specification covers the design, manufacture, assembly, testing and inspection at vendor's/sub-vendor's works, packing and despatch to site of neutral grounding resistor as described in the various sections of this specification.

1.2 Although erection and commissioning is not included in vendor's scope, the vendor shall still not be absolved of his responsibility of establishing the correctness of equipment at site.

2.0 CODES & STANDARDS

2.1 The material, constructional features and various processes involved in manufacture shall comply with latest revision of Indian Standards.

2.2 The design, material, construction, manufacture, inspection, testing and performance of Neutral Grounding Resistor shall conform to the latest revision of relevant standards and codes of practices mentioned in Datasheet – A.

2.3 In case of conflict between the applicable reference standard and this specification, this specification shall govern.

3.0 DESIGN REQUIREMENTS AND CONSTRUCTIONAL FEATURES

3.1 The NGR is used for medium resistance grounding of MV (11 / 6.6 / 3.3KV) or LV (415 V) system. NGR shall be connected between earth pit and neutral point of applicable transformer.

3.2 The NGR shall be suitable for limiting the desired value of earth fault current and duty as specified in BOQ-Cum-Price Schedule in NIT.

3.3 The resistor unit shall be natural air-cooled type suitable for installation at outdoor/ indoor locations.

3.4 The NGR will be installed in hot humid and tropical atmosphere. All equipment, accessories and wiring shall be provided with tropical finish to prevent fungus growth.

4.0 TERMINAL POINTS OF SUPPLY:

a) Neutral grounding resistor along with suitable cable glands and lugs for incoming cables from transformer neutral.

b) Supporting structure along with insulators and necessary foundation hardware.

c) Bushing along with tinned copper strip of suitable cross-section (as specified in Datasheet-A / BOQ-cum-Price Schedule in NIT) and connecting hardware for neutral connection of transformer. Copper strip will be applicable only when cable connection is not applicable and vice-versa.

d) All Civil works, Erection & commissioning of equipment are excluded from bidder's scope.

e) Termination and Jointing kits are excluded from bidder's cope.

5.0. SPECIFIC TECHNICAL REQUIREMENTS

5.1 NEUTRAL GROUNDING RESISTOR

5.1.1 Each Neutral Grounding Resistor shall be formed of non-aging (grade ASTM-A240/AISI-304 or better) corrosion resistant punched stainless steel elements or FECRAL (AISI-406) as specified in data sheet-A for high value (say 300A/400/500A) of earth fault current and of FECRAL (AISI-406) material for low value (say 1A) of earth fault current. Resistance material mentioned above shall have high electrical resistivity and low temperature co-efficient of resistance.

5.1.2 Resistor bank shall be provided in series and parallel combination to achieve the overall resistance value. Minimum two banks in parallel shall be provided in the system, unless specified otherwise.

5.1.3 The resistor unit shall consist of suitable no. of elements. All the elements shall be mounted inside the cubicle so as to ensure ease of inspection and replacement of individual element. For Low value of earth fault current edge wound configuration of resistance material is also acceptable.

5.1.4 Each resistor element shall possess a balanced combination of both Mechanical and Electrical properties over entire intended operating temperature range without any harmful effect on the elements and their accessories.

5.1.5 All the resistor elements consisting the NGR shall be assembled and supported inside the cubicle in such a way that no distortion or breakage will occur during the passage of specified fault current to earth.

5.1.6 All elements connection shall be bolted type to ensure stable resistance value throughout the working life of the unit.

5.1.7 Wet process type brown glass porcelain insulators shall be used between Tie-rod and end support structure and shall also be used to insulate the resistor bank from enclosure. Porcelain insulators shall have high creepage value (as specified in Data sheet-A) suitable for heavily polluted atmosphere charged with dust particles. Interposing insulator (except Mica) shall be provided to insulate resistor tier.

5.1.8 The resistor elements shall be provided with necessary installations and shall have maximum temperature rise as specified in Data Sheet-A.

5.1.9 The NGR shall be provided with suitable taps for cable/strip connection as specified in Section-I.

5.1.10 In case the connection between neutral terminal of transformer and NGR is through a copper strip, then copper strip shall be supplied by bidder. The required hardware for the termination of copper flat at both ends shall be supplied by the bidder.

5.2 ENCLOSURE:

5.2.1 Each neutral grounding resistor shall be housed in weather-proof enclosure having Degree of Protection as specified in Data Sheet-A. Enclosure shall be cold rolled sheet steel having a minimum thickness of 2 mm. Suitable ventilating louvers shall be provided on sides to ensure proper ventilation. The louvers shall be provided with fine wire mesh to make vermin proof.

5.2.2 The terminals for neutral and earthing connections shall be housed in separate vermin-proof, weather-proof terminal box with min. IP-55 degree of ingress protection.

5.2.3 A separate canopy shall be provided above enclosure roof with a suitable air gap between them. It shall also cover the terminal compartment. Suitable lifting arrangement shall be provided to lift the canopy.

5.2.4 The bottom of the enclosure shall be provided with a drain plug to remove water that may get collected in the enclosure.

5.2.5 The enclosure shall be supported on insulators placed on mounting structure in such a fashion that it is not easily accessible for man standing on ground level. Any part of insulator shall be at a height 2500 mm above ground/plinth.

5.2.6 Each cubicle shall be complete with front access door with handles, lock and also a removable bolted cover. All doors and removable covers shall be properly gasketed with good quality neoprene /synthetic rubber gaskets.

5.2.7 All cubicle door hinges shall be concealed type. Each cubicle shall be complete with suitably mounted cable box fitted with removable gland plate of Aluminium of suitable thickness for fixing cable gland. Double compression brass Cable glands and cable lugs of tinned copper shall be in the scope of bidder.

5.2.8 All necessary galvanised bolts, nuts washers etc. shall be included by the BIDDER for installation of Cubicle at site.

5.2.9 The enclosure shall not be earthed to prevent bypassing of resistor in case of any inadvertent shorting of resistor from inside.

5.2.10 Panel space heater arrangement along with thermostat, suitable for connection to 240V AC single supply, shall be provided at the bottom of the panel. The illumination arrangement and switch socket shall also be provided in the panel. The required cable glands, lug etc. required shall be supplied by the bidder.

5.2.11 For connection of other end of NGR to ground, Tinned copper flat (of size 50mm x 6mm) with Fork connector up to 300mm above ground with 2 nos. earthing terminal/pad, tapped holes and bolts suitable for Connection of GS Flat shall be provided by Bidder. The tinned copper flat shall be insulated from mounting structure through porcelain insulators. GS flat (size to be informed during detail engineering) for connection of fork connector of NGR to ground shall be in BHEL scope.

6.0 INSPECTION & TESTS

6.1 All tests shall be conducted as per relevant IS/IEC/ IEEE standards and shall be performed in the presence of purchaser's representative, if so desired by the purchaser. The bidder shall give at least 21 days advance notice of the date when the tests are to be carried out.

6.2 Bidder shall furnish Type Test certificates (temperature rise and DOP tests) conducted on similar type of equipment for purchaser’s review at contract stage.

6.3 For all components / materials, for which type test reports have been asked for in the specification, such Type tests should have been carried out on identical components / materials. In absence of such type tests reports or in case such reports are not found to be meeting the specification/standards requirements, vendor shall conduct all such type tests without any commercial/delivery implication to BHEL according to the relevant standards and reports shall be submitted to the owner for approval. (Type test charges as per clause 6.4 shall not be applicable in such cases).

6.4 The bidder shall indicate cost of carrying out all the Type tests as specified in the specification. The charges for each of the Type tests shall be given separately as BOQ-cum-price schedule as part of NIT. These prices will be applicable in case a type test is required to be conducted by purchaser despite availability of satisfactory type test report as per clause 6.3 above.

6.5 All materials & components and shall be procured, manufactured, inspected, and tested by vendor/sub-vendor as per applicable clauses of BHEL Quality Plan no. PE-QP-999-505-E001, (subject to approval of customer) enclosed.

6.6 All acceptance and routine tests as per relevant standards shall be carried out by the manufacturer. Charges for all these routine and acceptance tests for all the materials shall be deemed to be included in the bid price.

6.7 Test reports of the various tests conducted at the time of inspection shall be furnished by the vendor.

6.8 Bidder shall furnish unit prices of all items in the prescribed schedule of BOQ-cum-price schedule as part of NIT. Purchaser reserves the right to add/delete the quantity during detailed engineering as finally required for the project. Unit rate quoted shall be applicable for price adjustment in such cases.

6.9 All bought out items shall be procured from reputed manufacturers and shall be subject to approval of purchaser.

7.0 PAINTING

7.1 All bidders must have 7-tank or 8-tank painting procedure.

7.2 All metal parts, surfaces shall be degreased by dipping in hot alkaline solution and rubbed with wire brush to remove oil and scale and then rinsed in water. Alternatively, they may be shot blasted.

7.3 Parts shall be pickled by dipping in hydrochloric acid to remove the rust from the surfaces formed during storage of sheets and then rinsed to remove traces of the acid. The cleaning and pre-treatment of all metal parts shall be as per applicable standard.

7.4 The surfaces to be painted shall then be prepared by phosphatizing to protect them from further rusting and to create a good bond with the paint.

7.5 All parts shall then be subjected to a coat of primer paint. All inside surfaces of enclosure shall be spray painted with black matt finish and outside surfaces of enclosure shall be spray painted with hard semi glossy synthetic enamel or power coated (as specified in Sec-I) of shade as per Sec-I.

7.6 Paint thickness shall be minimum 50 microns unless specified otherwise in Sec-I.

7.7 Electrostatic or powder painting shall be acceptable subject to purchaser's approval.

7.8 Finished parts shall be coated with peelable compound by spraying method to protect the finished product from scratches, grease, dirty and oily spots during handling and transportation.

8.0 PACKING

8.1 Specification for the sea worthy packing, if enclosed, for the export jobs shall form part of the specification.

9.0 SPARES

9.1 A list of Erection & commissioning spares (if required by BHEL) along with quantities considered is indicated in **BOQ-cum-price schedule as part of NIT**.

9.2 A list of Mandatory spares (if required by BHEL) along with quantities considered is indicated in **BOQ-cum-price schedule as part of NIT**.

10.0 GUARANTEED PERFORMANCE REQUIREMENTS

10.1 The vendor shall guarantee satisfactory performance of the equipment supplied under all conditions and requirement as laid down by this specification.

10.2 The vendor shall comply with the general requirements of performance guarantee specified elsewhere.

11.0 O & M MANUAL

O & M manual for installation, operation and maintenance of NGR shall be furnished before despatch of the equipment.

Draft O & M manual shall be submitted for purchaser's approval. Manual shall contain minimum following details:

i) Description of the equipment.

ii) Salient construction features.

iii) Packing details.

iv) Instructions to be followed on receipt at site for storage.

v) Erection procedure & checks.

vi) Test to be conducted at site.

vii) Commissioning procedure.

viii) Maintenance instructions.

13.0 DELIVERY

The delivery shall be as per NIT (Notice Inviting Tender).

एनटीपीसी NTPC	ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC.) : NEUTRAL GROUNDING RESISTOR (UPTO 66KV)	STANDARD QUALITY PLAN CONFORMING TO CODE : NTPC TECHNICAL SPECIFICATION	TO BE FILLED IN BY NTPC QP No: 0000-999-QOE-S-045 Rev. : 0 Date: 15.12..2011 Page: 01 of 02 VALID UPTO: 14.12.2014	REVIEWED BY Banish K. Jha R Garg H Shekhar	APPROVED BY Approved Dt..... A K Garg

Sl No	COMPONENT & OPERATIONS		CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
						M	C/N					M	C	N	
1	2		3	4	5	6		7	8	9	D*	**	10		11
1.0	**RAW MATERIAL BOUHGT OUT ITEM**														
1.01	MS Sheet	a)	Thickness	Major	Visual	100%	100%	Appvd. Drg./Spec.	Appvd. Drg./Spec.	QC Records		P	V	-	
	(For NGR Enclosure)	b)	Surface finish	"	Visual	100%	100%	IS:2062	No damage/ corrossion/Pitting	"		P	V	-	
		c)	Chemical & Mechanical Properties	"	Chem/ Mech	1/Heat	1/Heat	IS:2062	IS:2062	MTC		V	V	V	
1.02	MS Angle/Flat/Channel	a)	Dimensional check	Major	Measure	100%	100%	IS:2062	IS:2062	QC Records		P	V	-	
	(As applicable)	b)	Surface finish	"	Visual	100%	-	"	"	QC Records		P	-	-	
		c)	Chemical &	"	Chem/	1/Heat	-	"	"	MTC		V	-	-	
			Mechanical Properties		Mech										
		d)	Galvanising Check	"	"	100%	-	Relevent Material Standard		"		V	-	-	Proper galvanising of MS Structural members as required shall be ensured by Manufacturer
1.03	Copper Connector	a)	Surface finish	Major	Visual	100%	100%	Relevent Material Standard	No damage/ corrossion/Pitting	MTC		P	V	-	
		b)	Chemical composition	"	Chem	1samp/lot	1samp/lot	Relevent Material Standard				V	V	V	
		c)	Dimensional check	"	Elect.	100%	100%	NTPC Spec./ Appvd.drg/DS	NTPC Spec./ Appvd.drg/DS	"		P	V	-	
1.04	Resistor Grid	a)	Surface finish	Major	Visual	100%	100%	Appvd. Drg/DS	Appvd. Drg/DS	MTC		P	V	-	
	(Punched stainless steel	b)	Chemical composition	"	Chem	1samp/lot	-	Relevent Material Standard				V	V	V	
	grid element type)	c)	Resistivity	"	Elect.	100%	100%	Appvd. Drg/DS	Appvd. Drg/DS	"		P	V	-	
1.05	Porceline Bushing/ Mica	a)	Visual Examination	Major	Visual	100%	100%	IS:5621	IS:5621	QC Records		P	V	-	
	Insulator	b)	Dimensional check	"	Measure	10%	-	IS:3347	IS:3347	MTC		P	-	-	
		c)	Acceptance Test	"	Review	100%	100%	IS:5621	IS:5621	MTC		V	V	V	
2.00	**IN-PROCESS CHECKS**														
2.01	Treatment of Sheet	a)	Surface condition & Galvanising Check	Major	Visual	100%	-	IS:277	IS:277	QC Record		P	-	-	
2.02	Structural Fabrication & Enclosure	a)	Dimensional check	Major	Measure	100%	-	NTPC Spec./ Appvd.drg/DS	NTPC Spec./ Appvd.drg/DS	QC Record		P	-	-	

LEGEND: * RECORDS, INDENTIFIED WITH "TICK" (√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.

** **M: MANUFACTURER / SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION. AS APPROPRIATE,**

CHP: NTPC SHALL IDENTIFY IN COLUM "N" AS 'W'.

	ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC.) : NEUTRAL GROUNDING RESISTOR (UPTO 66KV)	STANDARD QUALITY PLAN CONFORMING TO CODE : NTPC TECHNICAL SPECIFICATION	TO BE FILLED IN BY NTPC QP No: 0000-999-QOE-S-045 Rev. : 0 Date: 15.12..2011 Page: 02 of 02 VALID UPTO: 14.12.2014	REVIEWED BY Banish K. Jha R Garg H Shekhar	APPROVED BY Approved Dt..... N.T.P.C., Noida A K Garg

Sl No	COMPONENT & OPERATIONS		CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
						M	C/N					M	C	N	
1	2		3	4	5	6		7	8	9	D*	**	10		11
2.03	Resistance Tier	a)	Resistance	Major	Elect	100%	100%	Appvd.drg/DS	Appvd.drg/DS	QC Record		P	V	-	At amb. Temp
		b)	Insulation Resistance	"	"	100%	100%	"	"	"		P	V	-	
		b)	High Voltage w/s Test	"	"	100%	100%	"	"	"		P	V	V	
3.00	**TYPE TEST**	a)	Review of Type Test clearance from NTPC Engineering	Critical	Review	100%	100%	NTPC Tech. spec./ Apvd Drg/DS	NTPC Tech. spec./ Apvd Drg/DS	TC	√	P	W	W	***CHP***
4.00	**FINAL INSPECTION**														
4.01	Routine Test on assembled NGR	a)	Visula appearance, Rating & GA layout	Critical	Visual	100%	100%	NTPC Technical Specification./ Approved Drawingg/Data Sheet		Test Report	√	P	W	W	
		b)	Dimensional check	"	Measure	"	"			"	√	P	W	W	
		c)	No. of grid & arrangement of resistance tier	"	Elect	"	"			"	√	P	W	W	
		d)	Ohmic value measurement at all taps (if applicable)	Critical	Elect	100%	100%			"	√	P	W	W	Resustance & Reactance shall be measured seperately
		e)	Insulation Resistance	"	"	"	"			"	√	P	W	W	Shall be done before and after HV Test
		f)	HV withstand test	"	"	"	"			"	√	P	W	W	1min. at a Voltage corresponding to the Insulation level of the Resistor
		g)	Degree of Protection test on enclosure	"	Physical/ Measure	"	"			"	√	P	W	W	2.5mm dia Steel Wire should not enter into the enclosure from any direction without using Force.
		h)	Paint Shade & Thickness	"	"	"	"			"	√	P	W	W	
		i)	Functional test of all auxilairy Items/Wirings	"	Elect	"	"			"	√	P	W	W	As applicable
5.00	**DESPATCH**	a)	Packing and Delivery	Major	Physical	"	"	BHEL Specification		"	√	P	W	-	

LEGEND: * RECORDS, INDENTIFIED WITH "TICK" (√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.

** M: MANUFACTURER / SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION. AS APPROPRIATE, CHP: NTPC SHALL IDENTIFY IN COLUM "N" AS 'W'.

ANNEXURE – I

ANNEXURE TO QUALITY PLAN

Following tests shall also be conducted in addition to those mentioned in Quality plan (SQP No. 0000-999-QOE-S-045, Rev.0):

SL. NO.	COMPONENT/OPERATION	CHARACTERISTIC CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY		
							P	W	V
1	COMPLETE NGR	1. HV TEST							
		(a) BETWEEN NEUTRAL BUS AND ENCLOSURE	100%	APPD. DRG./ DATA SHEET BS-587 / STD. IEEE 32	APPD. DRG./ DATA SHEET BS-587 / STD. IEEE 32	TEST REPORT	2	1	-
		(b) BETWEEN RESISTOR ELEMENT AND END SUPPORT STRUCTURE.	100%	STD. IEEE 32 clause 10.3.2	STD. IEEE 32 clause 10.3.2	TEST REPORT	2	1	-

LEGEND : 1 - BHEL/ CUSTOMER 2 - VENDOR 3 - SUB- VENDOR P - PERFORM W - WITNESS V - VERIFICATION

ANNEXURE – II to QUALITY PLAN

Packing:

A. Support Structure of NGR shall be despatched in open in such a manner there shall be no damage during transit.

B. NGR shall be despatched in “Crate Packing” using wood.

1.0 PREPARATION OF PACKING CASES:

1.1 **DIMENSIONS:**

1.1.1 Minimum number of planks shall be used for a shook.
1.1.2 Thickness of planks for Front, rear, top and bottom sides and binding, jointing battens shall be 25/20mm +2/-3 mm
1.1.3 Horizontal, vertical, diagonal planks shall be given for binding
1.1.4 Width of binding planks shall be minimum 100mm
1.1.5 Distance between any 2 binding planks shall be less than 750mm
1.1.6 Diagonal planks shall be used in between vertical binding planks when distance between inner to inner of vertical planks is more than 750mm
1.1.7 Distance of the outer edges of these planks from the edge of case shall be less than 250mm.
1.1.8 Diagonal planks are not required for top planks and width side, if the width of pallet is less than 750mm.

1.2 JOINTING OF PLANKS:

Single length planks shall be used for cubicles whose overall length is less than 2400mm. For cubicles of length more than 2400mm, jointing is permitted. The jointing shall be done with one single or maximum of 2 planks of wood same as other planks of width 250 mm (minimum) with two rows of nails on either side of the joint in zigzag

manner. From the joint along height side, it shall be of lap joint with overlap of at least the width of plank.

1.3 TONGUE AND GROOVE JOINTS

Two consecutive planks shall be joined by tongue and groove joint. Depth of tongue shall be 12+1 mm, thickness of tongue shall be 8 +1 mm. The groove dimensions shall be such that the tongue fits tightly into the groove to make a good joint. This type of joint can be done based on the product requirement wherever required.

1.4 PERMISSIBLE DEFECTS

Wood shall be free from knots, bows, visible sign of infection and any kind of decay caused by insects, fungus, etc.
End splits: Longest end splits at each end shall be measured and lengths added together. The added length shall not exceed 60mm per meter run of shook's. Wood pins shall be used to prevent further development of split.
Surface cracks: Surface cracks with a maximum depth of 3mm are permissible. A continuous crack of any depth all along the length is not allowed.

1.5 OTHER MATERIALS

1.5.1 NAILS

The dia. of the nails shall be 3.15mm. The length of the nails shall be 65mm wherever two planks of 25mm thickness are joined and 75mm wherever a 25mm planks is joined to a 50mm plank.

1.5.2 BLUE NAILS

These are used for nailing bituminized Kraft paper/hessian cloth to the planks. The length of the nails shall be 16mm.

1.5.3 HOOP IRON STRIPS

These are used for strapping the boxes. The width of the strips shall be 19+1mm and thickness 0.6+0.01mm. The material shall be free from rust. If sufficient nailing is done for bigger boxes, strapping need not be done.

1.5.4 CLIPS

These shall be used for strapping the hoop iron strips on the boxes.

1.5.5 BRACKETS

These brackets are used for nailing to the corners of cubicle boxes. The brackets shall be of mild steel of thickness min 2mm and width 25+1mm. The brackets shall be of “L" shape, the length of each side being 100+2mm. Two holes shall be provided towards the end of each side for screwing /nailing.

1.5.6 MULTI LAYERED CROSS LAMINATED POLYTHELENE FILM

100GSM (Colourless) Multi Layered Cross Laminated Polyethylene Film ———————————— are used to make covers to the jobs individually. The cross lamination gives qualities of extra toughness, together with flexibility and lightness coupled with good weather resistance to ultra violet rays.

1.5.6 RUBBERISED COIR:

The rubberized coir is used as cushioning material. For the packing of loose items, items are to be arrested by using rubberized coir. For the packing of cubicles rubberized coir of thickness 25mm and width 75mm shall be used.

1.5.7 FASTENERS

Bolts, double nuts, spring washers will have to be used to hold the job to the bottom plank of the box so that there shall be no jerk on the NGR during transit.

1.5.8 PACKING SLIP:

Packing slip kept in the polyethylene bag shall be placed in the box at appropriate place. In addition, one more packing slip covered in polyethylene cover and packing slip holder shall be nailed to front / rear of case.

1.5.9 MARKING PLATE:

Marking on the packing case shall be done as per the manufacturer standard.

ON COMPANY LETTER HEAD

To,

M/s Bharat Heavy Electricals Ltd.,
Project Engineering Management,
Power Project Engineering Institute,
HRD & ESI Complex, Plot No 25, Sector-16 A,
Noida-201301

Kind Attn. Mr.

Dear Sir,

This has reference to:

1. Our offer for NGR for Combined Tender Enquiry (3X200 + 3X500 MW NTPC RAMAGUNDAM TPP FGD, 3X200+3X500+1x500 MW NTPC KORBA TPP-FGD, 3X660 MW NPGCL NABINAGAR FGD GeM Tender No. ……. dated ……

2. Order no. F. No. 6/18/2019-PPD dt. 23.07.2020 issued by Ministry of Finance, Department of Expenditure Public Procurement Division.

I have read the clause regarding restriction on procurement from a bidder of a country which shares a land border with India; I certify that M/s (Company Name_____) is not from such a country **or,** if from such a country, has been registered with the competent authority. **(Remove the non-applicable)**

I hereby certify that M/s (Company Name_____) fulfil all requirements in this regard and is eligible to be considered.

[where applicable, evidence of valid registration by the competent authority shall be attached]

Thanking You,
Yours faithfully,

Owner, partner, CMD, Director, Authorized Signatory with proof that he/she is authorized to sign on owner's behalf

M/s _____

Letter head of Company (<Rs. 10 Cr value)

Ref…… Date…….

To,

Bharat Heavy Electricals Limited PEM,

PPEI Building, Plot No 25, Sector -16A,

Noida (U.P)-201301

Subject: -Certification regarding local content

Reference: Tender Enquiry No-……

Name of Package: ……..

Dear Sir,

We hereby certify that items offered by us of ……..(package name)…….……for……(Project Name/Rate contract)…….. meets the requirement of minimum local content in line with Cl. No……. of NIT No……. dated……. and the Public Procurement (Preference to Make in India), Order 2017 dated-15.06.2017, 28.05.2018, 29.05.2019 , 04.06.2020 & 16.09.2020.

Local Content- .....%

We further confirms that details of location at which the local value addition is made will be our registered works at ……(address of the works)

Yours very truly

……..(authorized signatory of company)

……..(firm name)

Annexure for Packing List Guidelines (To be complied with during execution)

For faster verification of bills, successful bidder to submit detailed Bill of Material (BOM) at the time of drawings/ documents submission after placement of PO. Each item of the BOM to be uniquely identified with item code no. or item Sl. No.. Supplier to ensure that all items which will find separate mention in the packing list are covered in this detailed BOM.

Supplier to also give the following undertaking in the BOM:
"The BOM provided herewith completes the scope (in content and intent) of material supply under PO No. ……. Dated …… Any additional material which may become necessary for the intended application of the supplied items/package will be supplied free of cost in most reasonable time.

Packing List must indicate:

a) Packing size
b) Gross weight and net weight of each package
c) Contents of the package with cross reference to BOM item code no. / Sl. No.
d) Quantity of each items separately.

The packing list must cover all the BOM items.

Supplier to give following undertaking in the packing list: The Packing list provided herewith is as per BOM approved under PO No. -----

ANNEXURE FOR RISK & COST

1. In case of delays (beyon d the maximu m late delive ry per iod as per LD cl ause) in supplie s, or if there be defective su pplies or no n-fulfilment o f any other terms and conditions of the Co ntract as en umerated subsequently in this clause, then, without prejudice to its right to recover any expenses, losses or damages to which the B uyer may b e put to in cur or sustain by rea son of th e Seller/ Contractor's d efault or b reach of Order/Contract or to suspend business dealings with the Seller/Contractor in terms of the Buyers' Guidelines for Suspension of Business Dealings as applicable from time to time, the Buyer shall also be entitled to cancel the Order/ Contract either in whol e or portion thereof without compensation to Seller. On t he occurrence of any of the acts/omission s mentioned below, the Buyer may if it so desi res, procure upon such terms and i n such manner as deemed appropriate, plant/equipment/ stores not so delivered or others of similar description where plant/ equipment/ stores exactly complying with particulars are not, in the opinion of the Buyer (wh ich shall be final), readily procurable, at the risk and cost of the Seller.

The Seller shall be liable to the Buyer for any excess co sts incurred thereof and the Seller shall continue the performance of the Order/Contract to the extent not cancelled under the provisions of this clause. The Seller shall on no account be entitled to any gain on such repurchases. If the Bidder doe s not agree to thi s Risk Purchase cl ause, BHEL reserves the right to reje ct the bid/offer of the Bidder. The ord er/contract may be cancelled in whole or p art thereof an d Risk & Co st Clause in lin e with term s and conditions of PO/Cont ract may be invoked by the Buyer in any of the following cases:

i. If the Seller/Contra ctor fails to deliver the good s or materials or any instalment thereof within the perio d(s) fixed for such delivery or the Seller's poor progress of the supply/services vis-à-vis delivery/execution timeline as stipulated in the contract, backlog attributable to the Seller including unexecuted portion of supply does not appear to be executable within balance period available;

ii. delivers g oods or mat erials not of the cont racted quality and failing to adhe re to the contra ct specifications/execution methodology;

iii. withdrawal from or repudiation/abandonment of the supply/services by the Seller before completion as per contract or if the Seller refuses or is unable to supply goods or materials covered by the order/Contract either in whole or in part or otherwise fails to perform the Order/Contract.

iv. Non supply by the Seller within scheduled completion/delivery period as per contract or as extended from time to time for reasons attributable to the Seller;

v. Termination of Contract on account of any other reason(s) attributable to the Seller.

vi. Assignment, transfer, sub-letting of Contract with out BHEL's written permission resulting in termination of Contract or part thereof by BHEL.

vii. If the Seller be an individual or a Sole Proprietorship, in the event of death or insanity of the Seller.

viii. If the Seller/Contractor being an individual or if a partnership firm thereof, shall at any time be a djudged insolvent or shall have a receivin g order for administration of his estate made against him or shall take a ny proceeding for composition under any Insolvency Act for the time being in force or make any assignment of the order/Contract or enter into any arrangement or composition with his credi tors or suspend payment or if the firm dissolved under the Partnership Act;

ix. If the Seller/Co ntractor being a Company is wo und up voluntarily or by order of a Cou rt or a Receiver, Liquidator or Manager on behalf of the debenture holders and creditors is appointed or circumstances have arisen which entitles the Court of debenture holder and creditors to appoint a receiver, liquidator or manager

x. Non- Compliance to any contractual condition or any other default attributable to the Seller.

Such defaulting vendor/Seller shall not be eligible to participate in re-tendering conducted on account of risk purchase made due to fault of such vendor/Seller.

2. BHEL's right to go for Risk and Cost, Calculation of Risk and Cost amount & LD, recovery options to BHEL are given as under: -

2.1 BHEL reserves the right to terminate the contract or withdraw portion of work and get it done through other agency, at the risk and cost of the contractor *after due notice of a period of 14 days' by BHEL* in any of the following cases:

i) If the Seller/Contractor fails to deliver the goods or materials or any instalment thereof within the period(s) fixed for such delivery or the Seller's poor progress of the supply/ services vis-a-vis delivery/execution timeline as stipulated in the Contract, backlog attributable to seller including unexecuted portion of supply does not appear to be executable within balance available period;

ii) Delivers goods or materials not of the contracted quality and failing to adhere to the contract specifications;

iii) Withdrawal from or repudiation/ abandonment of the supply/ services by Seller before completion as per contract or if the Seller refuses or is unable to supply goods or materials covered by the Order/Contract either in whole or in part or otherwise fails to perform the Order/Contract;

iv) Non-supply by the Seller within scheduled completion/delivery period as per Contract or as extended from time to time, for the reasons attributable to the Seller;

v) Termination of Contract on account of any other reason (s) attributable to Seller.

vi) Assignment, transfer, subletting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.

vii) If the Seller be an individual or a sole proprietorship Firm, in the event of the death or insanity of the Seller;

viii) If the Seller/Contractor being an individual or if a firm on a partnership thereof, shall at any time, be adjudged insolvent or shall have a receiving order for administration of his estate made against him or shall take any proceeding for composition under any Insolvency Act for the time being in force or make any assignment of the Order/Contract or enter into any arrangement or composition with his creditors or suspend payment or if the firm dissolved under the Partnership Act;

ix) If the Seller/Contractor being a company is wound up voluntarily or by order of a Court or a Receiver, Liquidator or Manager on behalf of the debenture holders and creditors is appointed or circumstances shall have arisen which entitles the Court of debenture holder and creditors to appoint a receiver, liquidator or manager;

x) Non-compliance to any contractual condition or any other default attributable to Seller.

2.1.1 <u>Risk & Cost Amount against Balance Work</u>:

Risk & Cost amount against balance work shall be calculated as follows:

Risk & Cost Amount= [(A-B) + (A x H/100)]

Where,
A= Value of Balance scope of Work (*) as per rates of new contract
B= Value of Balance scope of Work (*) as per rates of old contract being paid to the contractor at the time of termination of contract i.e. inclusive of PVC & ORC, if any.
H = Overhead Factor to be taken as 5

In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).

2.1.2 Balance scope of work (in case of termination of contract):

Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Work for calculating risk & cost amount.

Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities.

Items for which total quantities to be executed have exceeded the Contract Quantities based on drawings issued to contractor from time to time till issue of Termination letter, then for these items total Quantities as per issued drawings would be deemed to be contract quantities.

Substitute/ extra items whose rates have already been approved would form part of contract quantities for this purpose.

Substitute/ extra items which have been executed but rates have not been approved, would also form part of contract quantities for this purpose and rates of such items shall be determined in line with contractual provisions.

However, increase in quantities on account of additional scope in new tender shall not be considered for this purpose.

NOTE: In case portion of work is being withdrawn at risk & cost of contractor instead of termination of contract, contract quantities pertaining to portion of work withdrawn shall be considered as 'Balance scope of work' for calculating Risk & Cost amount.

2.1.3 LD against delay in executed work in case of Termination of Contract:

LD against delay in executed work shall be calculated in line NIT terms & conditions, for the delay attributable to contractor. For limiting the maximum value of LD, contract value shall be taken as Executed Value of work till termination of contract.

Method for calculation of LD against delay in executed work in case of termination of contract" is given below:

i. Let the time period from scheduled date of start of work till termination of contract excluding the period of Hold (if any) not attributable to contractor = T1
ii. Let the value of executed work till the time of termination of contract = X
iii. Let the Total Executable Value of work for which inputs/fronts were made available to contractor and were planned for execution till termination of contract = Y
iv. Delay in executed work attributable to contractor i.e. T2 = [1-(X/Y)] x T1
v. LD shall be calculated in line with LD clause (clause 16) of the Contract for the delay attributable to contractor taking "X" as Contract Value and "T2" as period of delay attributable to contractor.

2.2 Recoveries arising out of Risk & Cost and LD or any other recoveries due from Contractor:

Without prejudice to the other means of recovery of such dues from the Seller recoveries from the Seller on whom risk
& cost has been invoked shall be made from the following:

a) Dues available in the form of Bills payable to seller, SD, BGs against the same contract.
b) Dues payable to seller against other contracts in the same Region/Unit/ Division of BHEL.
c) Dues payable to seller against other contracts in the different Region/Unit/ division of BHEL.

In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against contractor.

CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन

MAIN CONTRACTOR'S PROPOSAL CUM EVALUATION REPORT

मुख्य संविदाकार प्रस्ताव सह मुल्यांकन रिपोर्ट

Ref No: संदर्भ सं.:			***Date:*** तिथिः		
i.	***Main Contractor*** मुख्य संविदाकार				
ii.	***Project*** परियोजना				
iii.	***Package Name*** पैकेज का नाम		***Package No*** पैकेज सं.		
iv.	***Proposed Item/Scope of Sub-contracting*** उप-संविदा(अनुबंध) का प्रस्तावित मद/ दायरा				
v.	***Item covered under*** *निम्नलिखित के अंतर्गत शामिल मद*	***Schedule-1*** */अनुसूची-* ***1***		***As per contract clause No-*** *अनुबंध के अनुसार खंड सं.--* **-**	
		Schedule-2 *अनुसूची-* ***-2***			
vi.	***If item is Schedule-1 and proposed sub-vendor is indigenous, Main Contractor to explain how the contractual provisions will be fulfilled*** /यदि मद अनुसूची **-1** है और प्रस्तावित उप-विक्रेता स्वदेशी है, तो मुख्य संविदाकार को स्पष्ट करना होगा कि संविदा/अनुबंध के प्रावधान कैसे पूरे किए जाएंगे				
vii.	***Name and Address of the proposed Sub-vendor's works*** /प्रस्तावित सब-वेंडर का नाम तथा पता				
viii.	***PO placement date/ Start of manufacturing (if self-manufactured) as per L2 network*** **पीओ नियोजन की तिथि / एल-** 2 **नेटवर्क के अनुसार विनिर्माण (यदि स्व-निर्मित है) की शुरुआत**				

ix.	***Item Description (Type/Size/Rating/Scope of Sub-Contracting)*** मद का विवरण (प्रकार / आकार / रेटिंग / उप-अनुबंध का दायरा)	***Total quantity of proposed item envisaged in this package (Nos/ Running Meters/ Kgs/ Tons etc)*** इस पैकेज में परिकल्पित प्रस्तावित मद की कुल मात्रा (संख्या / क्रियाशील मीटर / किलोग्राम / टन आदि)	***Quantity proposed to be procured from proposed sub-vendor (Nos/ Running Meters /Kgs /Tons etc)*** प्रस्तावित उप-विक्रेता (संख्या / क्रियाशील मीटर / किलोग्राम / टन आदि) से खरीदी जाने वाली मात्रा	***Timeline for quantity requirements as per project schedule & whether the proposed Sub-vendor equipped with adequate capacity to supply proposed order quantity in time*** / परियोजना समय सूची के अनुसार मात्रा आवश्यकताओं के लिए समय-सीमा और क्या प्रस्तावित उप-विक्रेता समय पर प्रस्तावित मांग की मात्रा की आपूर्ति करने में पूरी तरह से सक्षम है

x.	***Supply experience of the proposed sub-vendor (including supplies to Main Contractor, if any) for similar item/scope of sub-contracting, for last 3 years (Note:- Only relevant experience details w.r.t. proposed item/scope of subcontracting to be brought out here)*** पिछले **3** वर्षों के लिए उप-अनुबंध के समान मद / दायरे के लिए प्रस्तावित सब-वेंडर (मुख्य संविदाकार हेतु आपूर्ति, यदि कोई हो, सहित) का आपूर्ति अनुभव (नोट: - उप-अनुबंध के प्रस्तावित मद / दायरे के संबंध में केवल प्रासंगिक अनुभव के विवरण का उल्लेख हो

CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन

MAIN CONTRACTOR'S PROPOSAL CUM EVALUATION REPORT

मुख्य संविदाकार प्रस्ताव सह मुल्यांकन रिपोर्ट

	Project/Package परियोजना/पैकेज	***Customer Name*** ग्राहक का नाम	***Supplied Item (Type/Rating/Model /Capacity/Size etc)*** आपूर्त्तित मद (प्रकार/रेटिंग /मॉडल /क्षमता/आकार आदि)	***PO ref no/date*** पीओ संदर्भ सं. /तिथि	***Supplied Quantity*** आपूर्ति की मात्रा	***Date of Supply*** आपूर्त्ति की तिथि

We confirm that as per our assessment, the proposed sub-vendor has requisite capabilities & supply experience and is suitable for supplying the proposed item/scope of sub-contracting/हम अपने आकलन के अनुसार इस बात की पुष्टि करते हैं कि, प्रस्तावित उप-विक्रेता के पास अपेक्षित क्षमता और आपूर्ति करने का अनुभव है और उप-अनुबंध के दायरे /प्रस्तावित मद की आपूर्ति के लिए उपयुक्त है।

Name: नाम:		***Desig:*** पद:		***Contact No:*** दूरभाष सं.:		***Sign:*** हस्ताक्षर:		***Date:*** तिथि:	

Company's Seal/Stamp:- कंपनी का मुहर:-

एनटीपीसी NTPC	**CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन** **SUB-VENDOR QUESTIONNAIRE/ सब-वेंडर प्रश्नावली**

i.	***Item/Scope of Sub-contracting*** **उप-संविदा(अनुबंध) का मद/ दायरा**			
ii.	***Address of the registered office*** पंजीकृत कार्यालय का पता		***Details of Contact Person*** संपर्क व्यक्ति का विवरण ***(Name, Designation, Mobile, Email)*** (नाम, पदनाम, मोबाइल, ईमेल)	
iii.	***Name and Address of the proposed Sub-vendor's works where item is being manufactured*** प्रस्तावित उप-विक्रेता के कार्यों का नाम और पता, जहां मद का निर्माण किया जा रहा है		***Details of Contact Person:*** संपर्क व्यक्ति का विवरण ***(Name, Designation, Mobile, Email)*** (नाम, पदनाम, मोबाइल, ईमेल)	
iv.	***Annual Production Capacity for proposed item/scope of sub-contracting*** **उप-संविदा(अनुबंध)** के प्रस्तावित मद / दायरे के लिए वार्षिक उत्पादन क्षमता			
v.	***Annual production for last 3 years for proposed item/scope of sub-contracting*** **उप-संविदा(अनुबंध)** के प्रस्तावित मद / दायरे के लिए पिछले 3 वर्षों का वार्षिक उत्पादन			
vi.	***Details of proposed works*** **प्रस्तावित कार्यों का विवरण**			
1.	***Year of establishment of present works*** वर्तमान फैक्टरी की स्थापना का वर्ष			
2.	***Year of commencement of manufacturing at above works*** उपरोक्त फैक्टरी में निर्माण कार्य शुरू होने का वर्ष			
3.	***Details of change in Works address in past (if any*** पूर्व में फैक्टरी स्थल में परिवर्तन का विवरण (यदि कोई हो)***)***			
4.	***Total Area*** कुल क्षेत्र			
	Covered Area शामिल क्षेत्र			
5.	***Factory Registration Certificate*** फैक्टरी पंजीकरण प्रमाण पत्र		***Details attached at Annexure – F2.1*** विवरण अनुलग्नक- एफ 2.1 पर संलग्न है	
6.	***Design/ Research & development set-up*** डिजाइन / अनुसंधान और विकास सेटअप ***(No. of manpower, their qualification, machines & tools employed etc.)*** (श्रमिकों की संख्या, उनकी योग्यता, मशीन और उपलब्ध उपकरण आदि)		***Applicable / Not applicable if manufacturing is as per Main Contractor/purchaser design)*** ***Details attached at Annexure – F2.2*** ***(if applicable)*** लागू / लागू नहीं, अगर विनिर्माण मुख्य संविदाकार / खरीददार के डिजाइन के अनुसार है) विवरण अनुलग्नक –एफ 2.2 पर संलग्न है। (यदि लागू हो)	
7.	***Overall organization Chart with Manpower Details (Design/Manufacturing/Quality etc)*** मैनपावर विवरण के साथ समग्र संगठन का चार्ट(डिजाइन / विनिर्माण / गुणवत्ता आदि)		***Details attached at Annexure – F2.3*** विवरण अनुलग्नक – F2.3 में संलग्न है।	

8.	***After sales service set up in India, in case of foreign sub-vendor(Location, Contact Person, Contact details etc.)*** भारत में बिक्री सेवा की स्थापना के बाद, विदेशी उप-विक्रेता के मामले में(स्थल , संपर्क व्यक्ति, संपर्क विवरण आदि)	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure – F2.4*** विवरण अनुलग्नक -2.4 पर संलग्न है ।
9.	***Manufacturing process execution plan with flow chart indicating various stages of manufacturing from raw material to finished product including outsourced process, if any*** फ्लोचार्ट सहित विनिर्माण प्रक्रिया निष्पादन योजना , जिसमें आउटसोर्स प्रक्रिया, यदि कोई हो, सहित कच्चे माल से तैयार उत्पाद तक विनिर्माण के विभिन्न चरणों को दर्शाया गया हो,	***Details attached at Annexure – F2.5*** विवरण अनुलग्नक - F2.5में संलग्न है ।
10.	***Sources of Raw Material/Major Bought Out Item*** कच्चे माल के स्रोत / खरीदे हुए मुख्य मद	***Details attached at Annexure – F2.6*** विवरण अनुलग्नक - F2.6में संलग्न है।
11.	***Quality Control exercised during receipt of raw material/BOI, in-process , Final Testing, packing*** कच्चे माल / खरीदे हुए मद, प्रक्रियाबद्ध, अंतिम परीक्षण, पैकिंग करते समय गुणवत्ता नियंत्रण	***Details attached at Annexure – F2.7*** विवरण अनुलग्नक - F2.7 पर संलग्न है
12.	***Manufacturing facilities*** ***(List of machines, special process facilities, material handling etc.)*** विनिर्माण सुविधा(मशीनों की सूची , विशेष प्रक्रिया सुविधाएं, सामग्री रख-रखाव आदि)	***Details attached at Annexure – F2.8*** विवरण अनुलग्नक - F2.8में संलग्न है ।
13.	***Testing facilities (List of testing equipment)*** परीक्षण सुविधाएं(परीक्षण उपकरण की सूची)	***Details attached at Annexure – F2.9*** विवरण अनुलग्नक – F2. 9 में संलग्न है ।
14.	***If manufacturing process involves fabrication then-*** यदि निर्माण प्रक्रिया में फेब्रिकेशन की गई है तो- ***List of qualified Welders*** पात्र वेल्डर की सूची ***List of qualified NDT personnel with area of specialization*** विशेषज्ञता के क्षेत्र सहित पात्र एनडीटी कार्मिकों की सूची	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure – F2.10*** विवरण अनुलग्नक - F2.10में संलग्न है। ***(if applicable)*** लागू / लागू नहीं
15.	***List of out-sourced manufacturing processes with Sub-Vendors' names & addresses*** सब-वेंडर द्वारा बाह्य स्रोतों (उनके नाम और पते सहित)से करवाएं गए निर्माण प्रक्रियाओं की सूची	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure. –F2.11*** विवरण अनुलग्नक - F2.10में संलग्न है। ***(if applicable)*** (यदि लागू हो)
16.	***Supply reference list including recent supplies*** नवीनतम आपूर्ति सहित आपूर्ति संदर्भ सूची	***Details attached at Annexure – F2.12*** विवरण अनुलग्नक - F2.12 में संलग्न है । ***(as per format given below)*** (नीचे दिए गए प्रारूप के अनुसार)

Project/ package परियोजना /पैकेज	***Customer Name*** ग्राहक का नाम	***Supplied Item (Type/Rating/Model /Capacity/Size etc)*** आपूर्ति की गई वस्तु (प्रकार / रेटिंग / मॉडल / क्षमता / आकार आदि)	***PO ref no/date*** पीओ संदर्भ सं. / तिथि	***Supplied Quantity*** आपूर्ति की मात्रा	***Date of Supply*** आपूर्ति की तारीख

17.	***Product satisfactory performance feedback letter/certificates/End User Feedback*** उत्पाद के संतोषजनक प्रदर्शन संबंधी फीडबैक पत्र / प्रमाण पत्र / अंतिम उपयोगकर्ता फ़ीडबैक	***Attached at annexure - F2.13*** अनुलग्नक F2. 3पर संलग्न है

18.	***Summary of Type Test Report (Type Test Details, Report No, Agency, Date of testing) for the proposed product (similar or higher rating)*** प्रस्तावित उत्पाद (एक समान या उच्च रेटिंग वाले) के लिए टाइप टेस्ट रिपोर्ट (टाइप टेस्ट विवरण, रिपोर्ट संख्या, एजेंसी, जांच की तारीख) का सारांश नोट: - रिपोर्ट प्रस्तुत करने की आवश्यकता नहीं है ***Note:- Reports need not to be submitted***	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure – F2.14*** विवरण अनुलग्नक - F2.1 4में संलग्न है ***(if applicable)*** (यदि लागू हो)
19.	***Statutory / mandatory certification for the proposed product*** प्रस्तावित उत्पाद के लिए वैधानिक / अनिवार्य प्रमाणीकरण	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure – F2.15 (if applicable)*** (यदि लागू हो)
20.	***Copy of ISO 9001 certificate*** आईएसओ 9001 प्रमाण पत्र की प्रति ***(if available***(यदि उपलब्ध हो)	***Attached at Annexure – F2.16*** अनुलग्नक में संलग्न - F2.1 6 है
21.	***Product technical catalogues for proposed item (if available)*** प्रस्तावित मद के लिए उत्पाद तकनीकी कैटलॉग (यदि उपलब्ध हो)	***Details attached at Annexure – F2.17*** विवरण अनुलग्नक - F2.1 7 में संलग्न है

Name: ***नाम:***		***Desig:*** ***पद:***		***Sign:*** ***हस्ताक्षर:***		***Date:*** ***तिथि:***	

Company's Seal/Stamp:- कंपनी की मुहर / मोहर: -

BOQ NPGC NABINAGAR FGD - NGR

Item Number	Item Title	Item Description	Item Quantity	Unit of Measure	Consignee ID	ZipCode	Delivery Period (In number of days)	Unit Price (Inclusive of all taxes)	GST % (Included in Unit Price)	Brand	Model	HSN Code
1	506-15030-A	MAIN SUPPLY : NGR 3.3 KV (600A, 10 SEC, 3.32 OHMS)	3	NOS	RAVI_NABINAGAR	824303	210					
2	506-15021-A	MAIN SUPPLY : HOT DIP GALVANISED MS SUPPORTING STRUCTURE WITH INSULATORS, FOUNDATION HARDWARES etc. FOR 3.3 kV NGR	3	NOS	RAVI_NABINAGAR	824303	210					
3	506-15022-A	MAIN SUPPLY : COPPER BUSBAR 50X8 MM OF 10M LENGTH (For connecting Transformer Neutral with NGR)	3	LOT	RAVI_NABINAGAR	824303	210					
4	506-15030-A	MANDATORY SPARES : NGR 3.3 KV (600A, 10 SEC, 3.32 OHMS)	1	NOS	RAVI_NABINAGAR	824303	600					

BHEL	**PRE-QUALIFICATION REQUIRMENTS FOR NEUTRAL GROUNDING RESISTOR**	PE-PQ-999-505-E001 REVISION NO. 02 DATE 29/04/2016 SHEET NO. 1 OF 1

ITEMS : Neutral grounding resistor a/w supporting structure

SCOPE: Supply : YES; Erection & Commissioning : NO;

1	Availability of type test certificates conducted at independent Lab or witnessed by third party as per relevant IS/ International standard.
2	Vendor should have in-house facility for design and manufacturing of neutral grounding resistor.
3	Vendor should have in-house capability to carry out all routine and type tests. In case facilities for type test are not available with the vendor, these tests can be conducted at Govt. Lab/ Govt. approved independent Lab.
4	Manufacturing capacity of at least 10 nos. neutral grounding resistor per month.
5	Supplied at least 20 nos. of neutral grounding resistor in one or more orders.
6	Minimum two (2) nos. purchase orders for neutral grounding resistor shall be submitted which should not be more than five (5) years old from the date of application for registration or date of techno-commercial bid opening (as applicable) for establishing continuity in business.

NOTE:
Supplier to comply to "general points of PQR" available at http://bhelpem.com/vensection/PMD/PMD.aspx
In case supplier is not OEM, the offer shall be evaluated as per point no 1 of "general points of PQR".

PREPARED BY	REVIEWED BY	APPROVED BY
10/05/2016	29/4/16.	29.04.16
NAME: N.N. JAJWARE DESIGNATION: Dy. Mgr.	NAME: RAJNISH GOYAL DESIGNATION: AGM	NAME: MEENA KESRI DESIGNATION: AGM & DH(E)

General Points of PQR

1. Offers of the JV companies/ Joint Bidders/ bidders having collaboration/ licensing agreement/ MOU/ Indian subsidiaries shall be evaluated as follows:

    a. If bidder happens to be an Indian subsidiaries of foreign OEM, then the credentials of the foreign OEM can also be considered for meeting PQR.
    b. If bidder happens to be the Joint Venture Company, then the credentials of any of JV partners can be also considered for meeting PQR.
    c. If bidder happens to bid jointly with their partner, then credentials of both the partners will be considered for meeting PQR as per distribution of the work. In all such cases, lead bidder as specified in bid documents shall be responsible for overall execution of the contract and all guarantee/ warranty.
    d. If bidder happens to be the having valid collaboration agreement/ MOU/ licensing agreement with some other company, then the credentials of collaborator/ MOU partner/ licensing company can also be considered for meeting PQR.

    Note: If bidder(s) qualifies on the basis of credentials of his principal/ JV partner/ Collaborator/ joint bidder etc., then the principal/ JV partner/ Collaborator/ MOU partner/ joint bidder shall be responsible for overall design vetting and warranty/ guarantee of the package. The scope matrix clearly defining their respective roles including design vetting, manufacturing of critical component, E&C etc. etc. and warranty/ guarantee shall be submitted along with the offer.

2. Bidder to note that the arrangement of bidding (joint bid partners/ collaborator/ MOU partner/ licensing company etc.) once offered to BHEL as a part of bidding documents cannot be changed till the execution of the project.

3. Consideration of offer shall be subject to customer's approval of bidders, if applicable.

4. Bidder to submit all supporting documents in English. If documents submitted by bidder are in language other than English, a self-attested English translated document should also be submitted.

5. Any other project specific requirement shall be as per Annexure-I and bidder shall submit relevant supporting documents.

6. Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder/collaborators to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.

7. After satisfactory fulfillment of all the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of the tender.

VOLUME II

3X660 MW NABINAGAR-I FGD

TECHNICAL SPECIFICATION

FOR

NEUTRAL GROUNDING RESISTOR

SPECIFICATION NO: ***PE-TS-457-506-E001***

REVISION: **00**

BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, UP (INDIA) – 201301

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TOTAL NO. OF SHEETS= 27

(INCLUDING COVER/ SEPARATOR SHEETS)

COMPLIANCE CERTIFICATE

The bidder shall confirm compliance to the following by signing/ stamping this compliance certificate and furnishing same with the offer.

1. The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusion/ deviation with regard to same

2. There are no deviation with respect to specification other than those furnished in the 'schedule of deviations'

3. Only those technical submittals which are specifically asked for in NIT to be submitted at tender stage shall be considered as part of offer. Any other submission, even if made, shall not be considered as part of offer.

4. Any comments/ clarifications on technical/ inspection requirements furnished as part of bidder's covering letter shall not be considered by BHEL, and bidder's offer shall be construed to be in conformance with the specification.

5. Any changes made by the bidder in the price schedule with respect to the description/ quantities from those given in 'BOQ-Cum-Price schedule' of the specification shall not be considered (i.e., technical description & quantities as per the specification shall prevail).

BIDDER'S STAMP & SIGNATURE

SECTION –I

SPECIFIC TECHNICAL REQUIREMENTS

1.0 SCOPE OF ENQUIRY

1.1 Design, Manufacture, Inspection and Testing at Manufacturer's works, proper packing and delivery to site of NEUTRAL GROUNDING RESISTOR conforming to this specification.

1.2 General technical requirements of the NEUTRAL GROUNDING RESISTOR are indicated in Section-II. Project specific technical/ quality requirements / changes are listed in Section-I.

1.3 **The requirements of Section-I shall prevail and govern in case of conflict between the corresponding requirements of Section-I and Section-II.**

1.4 The documents shall be in English Language and MKS system of units.

2.0 BILL OF QUANTITIES:

2.1 Quantity requirements shall be as per 'BOQ-cum-price schedule' as part of NIT.

2.2 Supplier to also give the following undertaking in the BOM: "The BoM provided herewith completes the scope (in content and intent) of material supply under PO No. ----------, dated ------. Any additional material which may become necessary for the intended application of the supplied item(s)/package will be supplied free of cost in most reasonable time."

3.0 SPECIFIC TECHNICAL REQUIREMENTS

3.1

S.No.	***Reference Clause No. of Section- II***	***Specific Requirement/ Change***
1.	5.1.10	Clause 5.1.10 shall be read as follows: "The connection between neutral terminal of transformer and NGR is through a tinned copper strip of 50 X 8mm. The copper strip shall be supplied by bidder. The required hardware for the termination of copper flat at both ends shall be supplied by the bidder. This item is included in BOQ-cum-Price Schedule in NIT".
2	5.2.1	Clause 5.2.1 shall be read as follows: "Each neutral grounding resistor shall be housed in weather-proof enclosure having Degree of Protection as specified in Data Sheet-A. Enclosure shall be cold rolled sheet steel having a minimum thickness of 2.5 mm. Suitable ventilating louvers shall be provided on sides to ensure proper ventilation. The louvers shall be provided with fine wire mesh to make vermin proof."
3.	5.2.2	Clause 5.2.2 shall be read as follows: "The terminals for neutral and earthing connections shall be housed in separate vermin-proof, weather-proof terminal Box having Degree of Protection as specified in Data Sheet-A."
4.	5.2.11	Clause 5.2.11 shall be read as follows: "For connection of other end of NGR to ground, Tinned copper flat (of size 50X8) mm with Fork connector up to 100mm above ground with 2 nos. earthing terminal/pad, tapped holes and bolts suitable for connection of GS Flat shall be supplied by bidder. The tinned copper flat shall be insulated from mounting structure through porcelain insulators. GS flat (size to be informed during detail engineering) for connection of fork connector of NGR to ground shall be in BHEL scope. The length of copper flat shall be suitably decided by bidder."
5.	6.0	In addition to clause 6.0: Following tests shall be conducted on NGR Cubicle 1. **Routine Tests:** DOP test on enclosure (routine test) as follows: It shall not be possible to insert a 2.5mm dia. steel wire into the enclosure from any

		direction without using force
6.	6.2	Clause 6.2 shall be read as follows: Bidder shall furnish Type test certificates (Short time current test along with temperature rise test & Degree of protection test i.e. IP33 for enclosure and IP55 for Terminal box). The type test should have been conducted within 10 yrs from 22.12.2017. Following valid type test report (within last ten years as on 22.12.2017) shall be furnished by the bidder and in absence of the same bidder has to conduct on each type (prototype) of NGR without any commercial/delivery implication to BHEL: 1. Short time current test along with temperature rise test. 2. Degree of protection test for IP33 on enclosure. 3. Degree of protection test for IP55 on Terminal Box.
7.	6.4	This clause stands deleted.
8.	6.5	Clause 6.5 shall be read as follows: All materials & components shall be procured, manufactured, inspected, and tested by vendor/sub-vendor as per applicable clauses of NTPC endorsed quality plan & Annexure-1 to quality plan.
9.	7.0	In addition to clause 7.0: 1. External surface of NGR shall be Chemical resistant epoxy zinc phosphate primer, MIO (Micaceous iron oxide) as intermediate paint followed by polyurethane finish paint of blue colour corresponding to RAL 5012. No. of coats shall be one coats each & total DFT shall not less than 100 microns. 2. Internal surface of NGR shall be Chemical resistant epoxy zinc phosphate primer followed by chemical and heat resistant epoxy enamel white paint. No. of coats shall be one coats each & total DFT shall not less than 100 microns. Colour code shall be subjected to customer approval at contract stage without any commercial implication to BHEL.

3.2 All internal wiring between equipment and terminal block shall be carried out by fire resistance PVC insulated 1100V grade 2.5 Sq.mm Stranded copper conductor wires.

3.3 All devices and terminal blocks within the terminal box shall be clearly identified by symbol corresponding to those used on applicable schematic/wiring diagram. 20% spare terminals shall be provided in terminal block.

3.4 Each cubicle shall be provided with 5A, 5 pin plug socket and door-switch controlled cubicle illumination lamp. Two pole switch fuse unit shall be provided for receiving 240 V single phase AC supply for cubicle lamp and illumination circuit.

3.5 Packing shall be as per Annexure –II to QP.

4.0 DOCUMENTATION

4.1 Documents required along with technical offer shall be as per Attachment-I.

4.2 Documents required after award of LOI/PO shall be as per NIT (to be submitted by successful bidder).

ATTACHMENT – I

DOCUMENTS REQUIRED ALONG WITH TECHNICAL OFFER.

Sign & stamped copy of following documents:

a] "Deviation Schedule" with "NO Deviations" and bidder's signature and company stamp.

b] Unpriced Price Schedule as enclosed with NIT with 'Quoted" word against items with bidder's signature and company stamp.

c] A copy of the sheet "Compliance Certificate" with bidder's signature and company stamp.

d] All PQR related documents.

DATA SHEET-A

1.0 SYSTEM DESIGN DATA

1.1	Design Ambient	:	[√] 50°C [ ] 40°C
1.3	Reference Standard	:	IEEE – 32
1.2	Rated Voltage	:	3.3 KV ± 10%
1.5	Location of NGR	:	Outdoor
1.6	Rated short time current and time	:	600A for 10sec
1.7	Net resistance of resistor unit	:	As specified in BOQ-Cum-Price Schedule in NIT
1.8	Resistance per resistor element	:	As per Requirement
1.9	Material of resistor element		
	i) For high value of current (Say 300/400/500/600A)	:	[√] AISI-304 [√] ASTM-A240 [ ] AISI-406
1.10	No. of parallel Path	:	2 parallel paths
1.11	No. of resistance element par path	:	As per Requirement
1.12	Total no. resistor elements	:	As per Requirement
1.13	Current density of resistor element	:	As per Requirement
1.14	Max. allowable temp. rise (over ambient) of resistor element	:	[ ] 300° C [√] 350° C [ ] 500° C [ ] 790° C

2.0 ENCLOSURE

2.1	Material and thickness	:	Sheet Steel and [ ] 2.0 [√] 2.5 [ ] 3.0 mm
2.2	Degree of Protection (As per IS/IEC-60529)		

i) Enclosure : [√] IP-33 with canopy [ ] IP-55 with canopy

ii) Terminal Box : IP-55 with canopy

3.0 SUPPORT INSULATORS

3.1 Material : Porcelain

3.2 Rated voltage

i) For 3.3kV NGR : 3.6 kV

3.3 One minute power frequency dry withstand voltage

i) For 3.3kV NGR : 10 kV (rms)

3.4 Creepage Distance : [ ] 25mm/KV [√] 31 mm/KV

4.0 MOUNTING STRUCTURE (BOLTABLE TYPE)

4.1 Material : Hot dip galvanised M.S

4.2 Thickness/deposit of galvanisation : 75 microns/610 g/m2

4.3 Equipment mounting : Base of NGR enclosure at 2.4m above ground

5.0 TERMINAL CONNECTION

5.1 Type : Bushing

5.2 Material : Porcelain

5.3 Rated voltage

i) For 3.3kV NGR : 3.6 kV

5.4 One minute power frequency dry withstand voltage

i) For 3.3kV NGR : 10 kV (rms)

5.5 Creepage Distance : [ ] 25mm/KV [√] 31 mm/KV

5.6 Connection between NGR & transformer : [ ] Cable [ ] GI Flat [√] Copper Flat (50X 8mm)

DATA SHEET-C
(To be filled up by bidder)

1.0	**General**		
1.1	Make/Type		:
1.2	*Quantity*	Nos.	:
1.3	Service		:
1.4	Reference Standard		:
2.0	**Resistor**		
2.1	Rated Voltage (Volt)		:
2.2	Net Resistance at 50 Deg. C (ohm)		:
2.3	Resistance per resistor element at 50 Deg. C		:
2.4	Tolerance limit on resistance at 50 Deg. C (%)		:
2.5	Total no. of resistor elements per path		:
2.6	No. of parallel path		:
2.7	Material of resistor element		:
2.8	Electrical Resistivity (Ohm-cm)		:
2.9	Temperature Co-efficient of resistance/ DegC		:
2.10	Current rating		
	a) Short time rating	Amps., Secs	:
2.11	Types of grid		:
2.12	Temperature rise (over Ambient 50 Deg. C)		:
2.13	Method of connecting elements		:
3.**0**	**Insulation level**		
3.1	One minute power frequency withstand volt. KVrms		:

4.**0**	**Support insulator**	
4.1	Make	:
4.2	Material	:
4.3	Creepage distance	:
4.4	Voltage rating	:
4.5	One minute power frequency withstand volt.(dry) KVrms	:
5.**0**	**Terminal connection**	
5.1	Type	:
5.2	Make	:
5.3	Material	:
5.4	Voltage rating	:
5.5	Power frequency withstand volt. KVrms	:
6.**0**	**Enclosure Cubicle**	
6.1	Enclosure material	:
6.2	Thickness of enclosure materials	:
6.3	Degree of protection	:
6.4	Reference standard	:
6.5	Painting shade	:
6.6	Thickness of paint (mm)	:
6.7	Dimension of NGR cubicle with resistor	:
6.8	Weight of complete NGR cubicle with resistors (W/O Mounting structure)	:
7.**0**	**Test Voltage**	
7.1	One minute power frequency withstand volt.(dry) KVrms	:

8.0	**Mounting Structure**	
8.1	Materials	:
8.2	Dimensions	:
8.3	Paints/Galvanisation	:
8.4	Wt. Of mounting structure	:
9.0	Whether space heater arrangement provided	:
10.0	Whether welded or bolted type	:

SECTION – II

GENERAL TECHNICAL SPECIFICATION

1.0 SCOPE OF ENQUIRY

1.1 This specification covers the design, manufacture, assembly, testing and inspection at vendor's/sub-vendor's works, packing and despatch to site of neutral grounding resistor as described in the various sections of this specification.

1.2 Although erection and commissioning is not included in vendor's scope, the vendor shall still not be absolved of his responsibility of establishing the correctness of equipment at site.

2.0 CODES & STANDARDS

2.1 The material, constructional features and various processes involved in manufacture shall comply with latest revision of Indian Standards.

2.2 The design, material, construction, manufacture, inspection, testing and performance of Neutral Grounding Resistor shall conform to the latest revision of relevant standards and codes of practices mentioned in Datasheet – A.

2.3 In case of conflict between the applicable reference standard and this specification, this specification shall govern.

3.0 DESIGN REQUIREMENTS AND CONSTRUCTIONAL FEATURES

3.1 The NGR is used for medium resistance grounding of MV (11 / 6.6 / 3.3KV) or LV (415 V) system. NGR shall be connected between earth pit and neutral point of applicable transformer.

3.2 The NGR shall be suitable for limiting the desired value of earth fault current and duty as specified in BOQ-Cum-Price Schedule in NIT.

3.3 The resistor unit shall be natural air-cooled type suitable for installation at outdoor/ indoor locations.

3.4 The NGR will be installed in hot humid and tropical atmosphere. All equipment, accessories and wiring shall be provided with tropical finish to prevent fungus growth.

4.0 TERMINAL POINTS OF SUPPLY:

a) Neutral grounding resistor along with suitable cable glands and lugs for incoming cables from transformer neutral.

b) Supporting structure along with insulators and necessary foundation hardware.

c) Bushing along with tinned copper strip of suitable cross-section (as specified in Datasheet-A / BOQ-cum-Price Schedule in NIT) and connecting hardware for neutral connection of transformer. Copper strip will be applicable only when cable connection is not applicable and vice-versa.

d) All Civil works, Erection & commissioning of equipment are excluded from bidder's scope.

e) Termination and Jointing kits are excluded from bidder's cope.

5.0. SPECIFIC TECHNICAL REQUIREMENTS

5.1 NEUTRAL GROUNDING RESISTOR

5.1.1 Each Neutral Grounding Resistor shall be formed of non-aging (grade ASTM-A240/AISI-304 or better) corrosion resistant punched stainless steel elements or FECRAL (AISI-406) as specified in data sheet-A for high value (say 300A/400/500A) of earth fault current and of FECRAL (AISI-406) material for low value (say 1A) of earth fault current. Resistance material mentioned above shall have high electrical resistivity and low temperature co-efficient of resistance.

5.1.2 Resistor bank shall be provided in series and parallel combination to achieve the overall resistance value. Minimum two banks in parallel shall be provided in the system, unless specified otherwise.

5.1.3 The resistor unit shall consist of suitable no. of elements. All the elements shall be mounted inside the cubicle so as to ensure ease of inspection and replacement of individual element. For Low value of earth fault current edge wound configuration of resistance material is also acceptable.

5.1.4 Each resistor element shall possess a balanced combination of both Mechanical and Electrical properties over entire intended operating temperature range without any harmful effect on the elements and their accessories.

5.1.5 All the resistor elements consisting the NGR shall be assembled and supported inside the cubicle in such a way that no distortion or breakage will occur during the passage of specified fault current to earth.

5.1.6 All elements connection shall be bolted type to ensure stable resistance value throughout the working life of the unit.

5.1.7 Wet process type brown glass porcelain insulators shall be used between Tie-rod and end support structure and shall also be used to insulate the resistor bank from enclosure. Porcelain insulators shall have high creepage value (as specified in Data sheet-A) suitable for heavily polluted atmosphere charged with dust particles. Interposing insulator (except Mica) shall be provided to insulate resistor tier.

5.1.8 The resistor elements shall be provided with necessary installations and shall have maximum temperature rise as specified in Data Sheet-A.

5.1.9 The NGR shall be provided with suitable taps for cable/strip connection as specified in Section-I.

5.1.10 In case the connection between neutral terminal of transformer and NGR is through a copper strip, then copper strip shall be supplied by bidder. The required hardware for the termination of copper flat at both ends shall be supplied by the bidder.

5.2 ENCLOSURE:

5.2.1 Each neutral grounding resistor shall be housed in weather-proof enclosure having Degree of Protection as specified in Data Sheet-A. Enclosure shall be cold rolled sheet steel having a minimum thickness of 2 mm. Suitable ventilating louvers shall be provided on sides to ensure proper ventilation. The louvers shall be provided with fine wire mesh to make vermin proof.

5.2.2 The terminals for neutral and earthing connections shall be housed in separate vermin-proof, weather-proof terminal box with min. IP-55 degree of ingress protection.

5.2.3 A separate canopy shall be provided above enclosure roof with a suitable air gap between them. It shall also cover the terminal compartment. Suitable lifting arrangement shall be provided to lift the canopy.

5.2.4 The bottom of the enclosure shall be provided with a drain plug to remove water that may get collected in the enclosure.

5.2.5 The enclosure shall be supported on insulators placed on mounting structure in such a fashion that it is not easily accessible for man standing on ground level. Any part of insulator shall be at a height 2500 mm above ground/plinth.

5.2.6 Each cubicle shall be complete with front access door with handles, lock and also a removable bolted cover. All doors and removable covers shall be properly gasketed with good quality neoprene /synthetic rubber gaskets.

5.2.7 All cubicle door hinges shall be concealed type. Each cubicle shall be complete with suitably mounted cable box fitted with removable gland plate of Aluminium of suitable thickness for fixing cable gland. Double compression brass Cable glands and cable lugs of tinned copper shall be in the scope of bidder.

5.2.8 All necessary galvanised bolts, nuts washers etc. shall be included by the BIDDER for installation of Cubicle at site.

5.2.9 The enclosure shall not be earthed to prevent bypassing of resistor in case of any inadvertent shorting of resistor from inside.

5.2.10 Panel space heater arrangement along with thermostat, suitable for connection to 240V AC single supply, shall be provided at the bottom of the panel. The illumination arrangement and switch socket shall also be provided in the panel. The required cable glands, lug etc. required shall be supplied by the bidder.

5.2.11 For connection of other end of NGR to ground, Tinned copper flat (of size 50mm x 6mm) with Fork connector up to 300mm above ground with 2 nos. earthing terminal/pad, tapped holes and bolts suitable for Connection of GS Flat shall be provided by Bidder. The tinned copper flat shall be insulated from mounting structure through porcelain insulators. GS flat (size to be informed during detail engineering) for connection of fork connector of NGR to ground shall be in BHEL scope.

6.0 INSPECTION & TESTS

6.1 All tests shall be conducted as per relevant IS/IEC/ IEEE standards and shall be performed in the presence of purchaser's representative, if so desired by the purchaser. The bidder shall give at least 21 days advance notice of the date when the tests are to be carried out.

6.2 Bidder shall furnish Type Test certificates (temperature rise and DOP tests) conducted on similar type of equipment for purchaser’s review at contract stage.

6.3 For all components / materials, for which type test reports have been asked for in the specification, such Type tests should have been carried out on identical components / materials. In absence of such type tests reports or in case such reports are not found to be meeting the specification/standards requirements, vendor shall conduct all such type tests without any commercial/delivery implication to BHEL according to the relevant standards and reports shall be submitted to the owner for approval. (Type test charges as per clause 6.4 shall not be applicable in such cases).

6.4 The bidder shall indicate cost of carrying out all the Type tests as specified in the specification. The charges for each of the Type tests shall be given separately as BOQ-cum-price schedule as part of NIT. These prices will be applicable in case a type test is required to be conducted by purchaser despite availability of satisfactory type test report as per clause 6.3 above.

6.5 All materials & components and shall be procured, manufactured, inspected, and tested by vendor/sub-vendor as per applicable clauses of BHEL Quality Plan no. PE-QP-999-505-E001, (subject to approval of customer) enclosed.

6.6 All acceptance and routine tests as per relevant standards shall be carried out by the manufacturer. Charges for all these routine and acceptance tests for all the materials shall be deemed to be included in the bid price.

6.7 Test reports of the various tests conducted at the time of inspection shall be furnished by the vendor.

6.8 Bidder shall furnish unit prices of all items in the prescribed schedule of BOQ-cum-price schedule as part of NIT. Purchaser reserves the right to add/delete the quantity during detailed engineering as finally required for the project. Unit rate quoted shall be applicable for price adjustment in such cases.

6.9 All bought out items shall be procured from reputed manufacturers and shall be subject to approval of purchaser.

7.0 PAINTING

7.1 All bidders must have 7-tank or 8-tank painting procedure.

7.2 All metal parts, surfaces shall be degreased by dipping in hot alkaline solution and rubbed with wire brush to remove oil and scale and then rinsed in water. Alternatively, they may be shot blasted.

7.3 Parts shall be pickled by dipping in hydrochloric acid to remove the rust from the surfaces formed during storage of sheets and then rinsed to remove traces of the acid. The cleaning and pre-treatment of all metal parts shall be as per applicable standard.

7.4 The surfaces to be painted shall then be prepared by phosphatizing to protect them from further rusting and to create a good bond with the paint.

7.5 All parts shall then be subjected to a coat of primer paint. All inside surfaces of enclosure shall be spray painted with black matt finish and outside surfaces of enclosure shall be spray painted with hard semi glossy synthetic enamel or power coated (as specified in Sec-I) of shade as per Sec-I.

7.6 Paint thickness shall be minimum 50 microns unless specified otherwise in Sec-I.

7.7 Electrostatic or powder painting shall be acceptable subject to purchaser's approval.

7.8 Finished parts shall be coated with peelable compound by spraying method to protect the finished product from scratches, grease, dirty and oily spots during handling and transportation.

8.0 PACKING

8.1 Specification for the sea worthy packing, if enclosed, for the export jobs shall form part of the specification.

9.0 SPARES

9.1 A list of Erection & commissioning spares (if required by BHEL) along with quantities considered is indicated in **BOQ-cum-price schedule as part of NIT**.

9.2 A list of Mandatory spares (if required by BHEL) along with quantities considered is indicated in **BOQ-cum-price schedule as part of NIT**.

10.0 GUARANTEED PERFORMANCE REQUIREMENTS

10.1 The vendor shall guarantee satisfactory performance of the equipment supplied under all conditions and requirement as laid down by this specification.

10.2 The vendor shall comply with the general requirements of performance guarantee specified elsewhere.

11.0 O & M MANUAL

O & M manual for installation, operation and maintenance of NGR shall be furnished before despatch of the equipment.

Draft O & M manual shall be submitted for purchaser's approval. Manual shall contain minimum following details:

i) Description of the equipment.

ii) Salient construction features.

iii) Packing details.

iv) Instructions to be followed on receipt at site for storage.

v) Erection procedure & checks.

vi) Test to be conducted at site.

vii) Commissioning procedure.

viii) Maintenance instructions.

13.0 DELIVERY

The delivery shall be as per NIT (Notice Inviting Tender).

एनटीपीसी NTPC	ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC.) : NEUTRAL GROUNDING RESISTOR (UPTO 66KV)	STANDARD QUALITY PLAN CONFORMING TO CODE : NTPC TECHNICAL SPECIFICATION	TO BE FILLED IN BY NTPC QP No: 0000-999-QOE-S-045 Rev. : 0 Date: 15.12..2011 Page: 01 of 02 VALID UPTO: 14.12.2014	REVIEWED BY Banish K. Jha R Garg H Shekhar	APPROVED BY Approved Dt..... A K Garg

Sl No	COMPONENT & OPERATIONS		CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
						M	C/N					M	C	N	
1	2		3	4	5	6		7	8	9	D*	**	10		11
1.0	**RAW MATERIAL BOUHGT OUT ITEM**														
1.01	MS Sheet	a)	Thickness	Major	Visual	100%	100%	Appvd. Drg./Spec.	Appvd. Drg./Spec.	QC Records		P	V	-	
	(For NGR Enclosure)	b)	Surface finish	"	Visual	100%	100%	IS:2062	No damage/ corrossion/Pitting	"		P	V	-	
		c)	Chemical & Mechanical Properties	"	Chem/ Mech	1/Heat	1/Heat	IS:2062	IS:2062	MTC		V	V	V	
1.02	MS Angle/Flat/Channel	a)	Dimensional check	Major	Measure	100%	100%	IS:2062	IS:2062	QC Records		P	V	-	
	(As applicable)	b)	Surface finish	"	Visual	100%	-	"	"	QC Records		P	-	-	
		c)	Chemical &	"	Chem/	1/Heat	-	"	"	MTC		V	-	-	
			Mechanical Properties		Mech										
		d)	Galvanising Check	"	"	100%	-	Relevent Material Standard		"		V	-	-	Proper galvanising of MS Structural members as required shall be ensured by Manufacturer
1.03	Copper Connector	a)	Surface finish	Major	Visual	100%	100%	Relevent Material Standard	No damage/ corrossion/Pitting	MTC		P	V	-	
		b)	Chemical composition	"	Chem	1samp/lot	1samp/lot	Relevent Material Standard				V	V	V	
		c)	Dimensional check	"	Elect.	100%	100%	NTPC Spec./ Appvd.drg/DS	NTPC Spec./ Appvd.drg/DS	"		P	V	-	
1.04	Resistor Grid	a)	Surface finish	Major	Visual	100%	100%	Appvd. Drg/DS	Appvd. Drg/DS	MTC		P	V	-	
	(Punched stainless steel	b)	Chemical composition	"	Chem	1samp/lot	-	Relevent Material Standard				V	V	V	
	grid element type)	c)	Resistivity	"	Elect.	100%	100%	Appvd. Drg/DS	Appvd. Drg/DS	"		P	V	-	
1.05	Porceline Bushing/ Mica	a)	Visual Examination	Major	Visual	100%	100%	IS:5621	IS:5621	QC Records		P	V	-	
	Insulator	b)	Dimensional check	"	Measure	10%	-	IS:3347	IS:3347	MTC		P	-	-	
		c)	Acceptance Test	"	Review	100%	100%	IS:5621	IS:5621	MTC		V	V	V	
2.00	**IN-PROCESS CHECKS**														
2.01	Treatment of Sheet	a)	Surface condition & Galvanising Check	Major	Visual	100%	-	IS:277	IS:277	QC Record		P	-	-	
2.02	Structural Fabrication & Enclosure	a)	Dimensional check	Major	Measure	100%	-	NTPC Spec./ Appvd.drg/DS	NTPC Spec./ Appvd.drg/DS	QC Record		P	-	-	

LEGEND: * RECORDS, INDENTIFIED WITH "TICK" (√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.

** **M: MANUFACTURER / SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION. AS APPROPRIATE,**

CHP: NTPC SHALL IDENTIFY IN COLUM "N" AS 'W'.

	ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC.) : NEUTRAL GROUNDING RESISTOR (UPTO 66KV)	STANDARD QUALITY PLAN CONFORMING TO CODE : NTPC TECHNICAL SPECIFICATION	TO BE FILLED IN BY NTPC QP No: 0000-999-QOE-S-045 Rev. : 0 Date: 15.12..2011 Page: 02 of 02 VALID UPTO: 14.12.2014	REVIEWED BY Banish K. Jha R Garg H Shekhar	APPROVED BY Approved Dt..... N.T.P.C., Noida A K Garg

Sl No	COMPONENT & OPERATIONS		CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
						M	C/N					M	C	N	
1	2		3	4	5	6		7	8	9	D*	**	10		11
2.03	Resistance Tier	a)	Resistance	Major	Elect	100%	100%	Appvd.drg/DS	Appvd.drg/DS	QC Record		P	V	-	At amb. Temp
		b)	Insulation Resistance	"	"	100%	100%	"	"	"		P	V	-	
		b)	High Voltage w/s Test	"	"	100%	100%	"	"	"		P	V	V	
3.00	**TYPE TEST**	a)	Review of Type Test clearance from NTPC Engineering	Critical	Review	100%	100%	NTPC Tech. spec./ Apvd Drg/DS	NTPC Tech. spec./ Apvd Drg/DS	TC	√	P	W	W	***CHP***
4.00	**FINAL INSPECTION**														
4.01	Routine Test on assembled NGR	a)	Visula appearance, Rating & GA layout	Critical	Visual	100%	100%	NTPC Technical Specification./ Approved Drawingg/Data Sheet		Test Report	√	P	W	W	
		b)	Dimensional check	"	Measure	"	"			"	√	P	W	W	
		c)	No. of grid & arrangement of resistance tier	"	Elect	"	"			"	√	P	W	W	
		d)	Ohmic value measurement at all taps (if applicable)	Critical	Elect	100%	100%			"	√	P	W	W	Resustance & Reactance shall be measured seperately
		e)	Insulation Resistance	"	"	"	"			"	√	P	W	W	Shall be done before and after HV Test
		f)	HV withstand test	"	"	"	"			"	√	P	W	W	1min. at a Voltage corresponding to the Insulation level of the Resistor
		g)	Degree of Protection test on enclosure	"	Physical/ Measure	"	"			"	√	P	W	W	2.5mm dia Steel Wire should not enter into the enclosure from any direction without using Force.
		h)	Paint Shade & Thickness	"	"	"	"			"	√	P	W	W	
		i)	Functional test of all auxilairy Items/Wirings	"	Elect	"	"			"	√	P	W	W	As applicable
5.00	**DESPATCH**	a)	Packing and Delivery	Major	Physical	"	"	BHEL Specification		"	√	P	W	-	

LEGEND: * RECORDS, INDENTIFIED WITH "TICK" (√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.

** M: MANUFACTURER / SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION. AS APPROPRIATE, CHP: NTPC SHALL IDENTIFY IN COLUM "N" AS 'W'.

ANNEXURE – I

ANNEXURE TO QUALITY PLAN

Following tests shall also be conducted in addition to those mentioned in Quality plan (SQP No. 0000-999-QOE-S-045, Rev.0):

SL. NO.	COMPONENT/OPERATION	CHARACTERISTIC CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY		
							P	W	V
1	COMPLETE NGR	1. HV TEST							
		(a) BETWEEN NEUTRAL BUS AND ENCLOSURE	100%	APPD. DRG./ DATA SHEET BS-587 / STD. IEEE 32	APPD. DRG./ DATA SHEET BS-587 / STD. IEEE 32	TEST REPORT	2	1	-
		(b) BETWEEN RESISTOR ELEMENT AND END SUPPORT STRUCTURE.	100%	STD. IEEE 32 clause 10.3.2	STD. IEEE 32 clause 10.3.2	TEST REPORT	2	1	-

LEGEND : 1 - BHEL/ CUSTOMER 2 - VENDOR 3 - SUB- VENDOR P - PERFORM W - WITNESS V - VERIFICATION

ANNEXURE – II to QUALITY PLAN

Packing:

A. Support Structure of NGR shall be despatched in open in such a manner there shall be no damage during transit.

B. NGR shall be despatched in “Crate Packing” using wood.

1.0 PREPARATION OF PACKING CASES:

1.1 **DIMENSIONS:**

1.1.1 Minimum number of planks shall be used for a shook.
1.1.2 Thickness of planks for Front, rear, top and bottom sides and binding, jointing battens shall be 25/20mm +2/-3 mm
1.1.3 Horizontal, vertical, diagonal planks shall be given for binding
1.1.4 Width of binding planks shall be minimum 100mm
1.1.5 Distance between any 2 binding planks shall be less than 750mm
1.1.6 Diagonal planks shall be used in between vertical binding planks when distance between inner to inner of vertical planks is more than 750mm
1.1.7 Distance of the outer edges of these planks from the edge of case shall be less than 250mm.
1.1.8 Diagonal planks are not required for top planks and width side, if the width of pallet is less than 750mm.

1.2 JOINTING OF PLANKS:

Single length planks shall be used for cubicles whose overall length is less than 2400mm. For cubicles of length more than 2400mm, jointing is permitted. The jointing shall be done with one single or maximum of 2 planks of wood same as other planks of width 250 mm (minimum) with two rows of nails on either side of the joint in zigzag

manner. From the joint along height side, it shall be of lap joint with overlap of at least the width of plank.

1.3 TONGUE AND GROOVE JOINTS

Two consecutive planks shall be joined by tongue and groove joint. Depth of tongue shall be 12+1 mm, thickness of tongue shall be 8 +1 mm. The groove dimensions shall be such that the tongue fits tightly into the groove to make a good joint. This type of joint can be done based on the product requirement wherever required.

1.4 PERMISSIBLE DEFECTS

Wood shall be free from knots, bows, visible sign of infection and any kind of decay caused by insects, fungus, etc.
End splits: Longest end splits at each end shall be measured and lengths added together. The added length shall not exceed 60mm per meter run of shook's. Wood pins shall be used to prevent further development of split.
Surface cracks: Surface cracks with a maximum depth of 3mm are permissible. A continuous crack of any depth all along the length is not allowed.

1.5 OTHER MATERIALS

1.5.1 NAILS

The dia. of the nails shall be 3.15mm. The length of the nails shall be 65mm wherever two planks of 25mm thickness are joined and 75mm wherever a 25mm planks is joined to a 50mm plank.

1.5.2 BLUE NAILS

These are used for nailing bituminized Kraft paper/hessian cloth to the planks. The length of the nails shall be 16mm.

1.5.3 HOOP IRON STRIPS

These are used for strapping the boxes. The width of the strips shall be 19+1mm and thickness 0.6+0.01mm. The material shall be free from rust. If sufficient nailing is done for bigger boxes, strapping need not be done.

1.5.4 CLIPS

These shall be used for strapping the hoop iron strips on the boxes.

1.5.5 BRACKETS

These brackets are used for nailing to the corners of cubicle boxes. The brackets shall be of mild steel of thickness min 2mm and width 25+1mm. The brackets shall be of “L" shape, the length of each side being 100+2mm. Two holes shall be provided towards the end of each side for screwing /nailing.

1.5.6 MULTI LAYERED CROSS LAMINATED POLYTHELENE FILM

100GSM (Colourless) Multi Layered Cross Laminated Polyethylene Film ———————————— are used to make covers to the jobs individually. The cross lamination gives qualities of extra toughness, together with flexibility and lightness coupled with good weather resistance to ultra violet rays.

1.5.6 RUBBERISED COIR:

The rubberized coir is used as cushioning material. For the packing of loose items, items are to be arrested by using rubberized coir. For the packing of cubicles rubberized coir of thickness 25mm and width 75mm shall be used.

1.5.7 FASTENERS

Bolts, double nuts, spring washers will have to be used to hold the job to the bottom plank of the box so that there shall be no jerk on the NGR during transit.

1.5.8 PACKING SLIP:

Packing slip kept in the polyethylene bag shall be placed in the box at appropriate place. In addition, one more packing slip covered in polyethylene cover and packing slip holder shall be nailed to front / rear of case.

1.5.9 MARKING PLATE:

Marking on the packing case shall be done as per the manufacturer standard.

ON COMPANY LETTER HEAD

To,

M/s Bharat Heavy Electricals Ltd.,
Project Engineering Management,
Power Project Engineering Institute,
HRD & ESI Complex, Plot No 25, Sector-16 A,
Noida-201301

Kind Attn. Mr.

Dear Sir,

This has reference to:

1. Our offer for NGR for Combined Tender Enquiry (3X200 + 3X500 MW NTPC RAMAGUNDAM TPP FGD, 3X200+3X500+1x500 MW NTPC KORBA TPP-FGD, 3X660 MW NPGCL NABINAGAR FGD GeM Tender No. ……. dated ……

2. Order no. F. No. 6/18/2019-PPD dt. 23.07.2020 issued by Ministry of Finance, Department of Expenditure Public Procurement Division.

I have read the clause regarding restriction on procurement from a bidder of a country which shares a land border with India; I certify that M/s (Company Name_____) is not from such a country **or,** if from such a country, has been registered with the competent authority. **(Remove the non-applicable)**

I hereby certify that M/s (Company Name_____) fulfil all requirements in this regard and is eligible to be considered.

[where applicable, evidence of valid registration by the competent authority shall be attached]

Thanking You,
Yours faithfully,

Owner, partner, CMD, Director, Authorized Signatory with proof that he/she is authorized to sign on owner's behalf

M/s _____

Letter head of Company (<Rs. 10 Cr value)

Ref…… Date…….

To,

Bharat Heavy Electricals Limited PEM,

PPEI Building, Plot No 25, Sector -16A,

Noida (U.P)-201301

Subject: -Certification regarding local content

Reference: Tender Enquiry No-……

Name of Package: ……..

Dear Sir,

We hereby certify that items offered by us of ……..(package name)…….……for……(Project Name/Rate contract)…….. meets the requirement of minimum local content in line with Cl. No……. of NIT No……. dated……. and the Public Procurement (Preference to Make in India), Order 2017 dated-15.06.2017, 28.05.2018, 29.05.2019 , 04.06.2020 & 16.09.2020.

Local Content- .....%

We further confirms that details of location at which the local value addition is made will be our registered works at ……(address of the works)

Yours very truly

……..(authorized signatory of company)

……..(firm name)

Annexure for Packing List Guidelines (To be complied with during execution)

For faster verification of bills, successful bidder to submit detailed Bill of Material (BOM) at the time of drawings/ documents submission after placement of PO. Each item of the BOM to be uniquely identified with item code no. or item Sl. No.. Supplier to ensure that all items which will find separate mention in the packing list are covered in this detailed BOM.

Supplier to also give the following undertaking in the BOM:
"The BOM provided herewith completes the scope (in content and intent) of material supply under PO No. ……. Dated …… Any additional material which may become necessary for the intended application of the supplied items/package will be supplied free of cost in most reasonable time.

Packing List must indicate:

a) Packing size
b) Gross weight and net weight of each package
c) Contents of the package with cross reference to BOM item code no. / Sl. No.
d) Quantity of each items separately.

The packing list must cover all the BOM items.

Supplier to give following undertaking in the packing list: The Packing list provided herewith is as per BOM approved under PO No. -----

ANNEXURE FOR RISK & COST

1. In case of delays (beyon d the maximu m late delive ry per iod as per LD cl ause) in supplie s, or if there be defective su pplies or no n-fulfilment o f any other terms and conditions of the Co ntract as en umerated subsequently in this clause, then, without prejudice to its right to recover any expenses, losses or damages to which the B uyer may b e put to in cur or sustain by rea son of th e Seller/ Contractor's d efault or b reach of Order/Contract or to suspend business dealings with the Seller/Contractor in terms of the Buyers' Guidelines for Suspension of Business Dealings as applicable from time to time, the Buyer shall also be entitled to cancel the Order/ Contract either in whol e or portion thereof without compensation to Seller. On t he occurrence of any of the acts/omission s mentioned below, the Buyer may if it so desi res, procure upon such terms and i n such manner as deemed appropriate, plant/equipment/ stores not so delivered or others of similar description where plant/ equipment/ stores exactly complying with particulars are not, in the opinion of the Buyer (wh ich shall be final), readily procurable, at the risk and cost of the Seller.

The Seller shall be liable to the Buyer for any excess co sts incurred thereof and the Seller shall continue the performance of the Order/Contract to the extent not cancelled under the provisions of this clause. The Seller shall on no account be entitled to any gain on such repurchases. If the Bidder doe s not agree to thi s Risk Purchase cl ause, BHEL reserves the right to reje ct the bid/offer of the Bidder. The ord er/contract may be cancelled in whole or p art thereof an d Risk & Co st Clause in lin e with term s and conditions of PO/Cont ract may be invoked by the Buyer in any of the following cases:

i. If the Seller/Contra ctor fails to deliver the good s or materials or any instalment thereof within the perio d(s) fixed for such delivery or the Seller's poor progress of the supply/services vis-à-vis delivery/execution timeline as stipulated in the contract, backlog attributable to the Seller including unexecuted portion of supply does not appear to be executable within balance period available;

ii. delivers g oods or mat erials not of the cont racted quality and failing to adhe re to the contra ct specifications/execution methodology;

iii. withdrawal from or repudiation/abandonment of the supply/services by the Seller before completion as per contract or if the Seller refuses or is unable to supply goods or materials covered by the order/Contract either in whole or in part or otherwise fails to perform the Order/Contract.

iv. Non supply by the Seller within scheduled completion/delivery period as per contract or as extended from time to time for reasons attributable to the Seller;

v. Termination of Contract on account of any other reason(s) attributable to the Seller.

vi. Assignment, transfer, sub-letting of Contract with out BHEL's written permission resulting in termination of Contract or part thereof by BHEL.

vii. If the Seller be an individual or a Sole Proprietorship, in the event of death or insanity of the Seller.

viii. If the Seller/Contractor being an individual or if a partnership firm thereof, shall at any time be a djudged insolvent or shall have a receivin g order for administration of his estate made against him or shall take a ny proceeding for composition under any Insolvency Act for the time being in force or make any assignment of the order/Contract or enter into any arrangement or composition with his credi tors or suspend payment or if the firm dissolved under the Partnership Act;

ix. If the Seller/Co ntractor being a Company is wo und up voluntarily or by order of a Cou rt or a Receiver, Liquidator or Manager on behalf of the debenture holders and creditors is appointed or circumstances have arisen which entitles the Court of debenture holder and creditors to appoint a receiver, liquidator or manager

x. Non- Compliance to any contractual condition or any other default attributable to the Seller.

Such defaulting vendor/Seller shall not be eligible to participate in re-tendering conducted on account of risk purchase made due to fault of such vendor/Seller.

2. BHEL's right to go for Risk and Cost, Calculation of Risk and Cost amount & LD, recovery options to BHEL are given as under: -

2.1 BHEL reserves the right to terminate the contract or withdraw portion of work and get it done through other agency, at the risk and cost of the contractor *after due notice of a period of 14 days' by BHEL* in any of the following cases:

i) If the Seller/Contractor fails to deliver the goods or materials or any instalment thereof within the period(s) fixed for such delivery or the Seller's poor progress of the supply/ services vis-a-vis delivery/execution timeline as stipulated in the Contract, backlog attributable to seller including unexecuted portion of supply does not appear to be executable within balance available period;

ii) Delivers goods or materials not of the contracted quality and failing to adhere to the contract specifications;

iii) Withdrawal from or repudiation/ abandonment of the supply/ services by Seller before completion as per contract or if the Seller refuses or is unable to supply goods or materials covered by the Order/Contract either in whole or in part or otherwise fails to perform the Order/Contract;

iv) Non-supply by the Seller within scheduled completion/delivery period as per Contract or as extended from time to time, for the reasons attributable to the Seller;

v) Termination of Contract on account of any other reason (s) attributable to Seller.

vi) Assignment, transfer, subletting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.

vii) If the Seller be an individual or a sole proprietorship Firm, in the event of the death or insanity of the Seller;

viii) If the Seller/Contractor being an individual or if a firm on a partnership thereof, shall at any time, be adjudged insolvent or shall have a receiving order for administration of his estate made against him or shall take any proceeding for composition under any Insolvency Act for the time being in force or make any assignment of the Order/Contract or enter into any arrangement or composition with his creditors or suspend payment or if the firm dissolved under the Partnership Act;

ix) If the Seller/Contractor being a company is wound up voluntarily or by order of a Court or a Receiver, Liquidator or Manager on behalf of the debenture holders and creditors is appointed or circumstances shall have arisen which entitles the Court of debenture holder and creditors to appoint a receiver, liquidator or manager;

x) Non-compliance to any contractual condition or any other default attributable to Seller.

2.1.1 <u>Risk & Cost Amount against Balance Work</u>:

Risk & Cost amount against balance work shall be calculated as follows:

Risk & Cost Amount= [(A-B) + (A x H/100)]

Where,
A= Value of Balance scope of Work (*) as per rates of new contract
B= Value of Balance scope of Work (*) as per rates of old contract being paid to the contractor at the time of termination of contract i.e. inclusive of PVC & ORC, if any.
H = Overhead Factor to be taken as 5

In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).

2.1.2 Balance scope of work (in case of termination of contract):

Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Work for calculating risk & cost amount.

Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities.

Items for which total quantities to be executed have exceeded the Contract Quantities based on drawings issued to contractor from time to time till issue of Termination letter, then for these items total Quantities as per issued drawings would be deemed to be contract quantities.

Substitute/ extra items whose rates have already been approved would form part of contract quantities for this purpose.

Substitute/ extra items which have been executed but rates have not been approved, would also form part of contract quantities for this purpose and rates of such items shall be determined in line with contractual provisions.

However, increase in quantities on account of additional scope in new tender shall not be considered for this purpose.

NOTE: In case portion of work is being withdrawn at risk & cost of contractor instead of termination of contract, contract quantities pertaining to portion of work withdrawn shall be considered as 'Balance scope of work' for calculating Risk & Cost amount.

2.1.3 LD against delay in executed work in case of Termination of Contract:

LD against delay in executed work shall be calculated in line NIT terms & conditions, for the delay attributable to contractor. For limiting the maximum value of LD, contract value shall be taken as Executed Value of work till termination of contract.

Method for calculation of LD against delay in executed work in case of termination of contract" is given below:

i. Let the time period from scheduled date of start of work till termination of contract excluding the period of Hold (if any) not attributable to contractor = T1
ii. Let the value of executed work till the time of termination of contract = X
iii. Let the Total Executable Value of work for which inputs/fronts were made available to contractor and were planned for execution till termination of contract = Y
iv. Delay in executed work attributable to contractor i.e. T2 = [1-(X/Y)] x T1
v. LD shall be calculated in line with LD clause (clause 16) of the Contract for the delay attributable to contractor taking "X" as Contract Value and "T2" as period of delay attributable to contractor.

2.2 Recoveries arising out of Risk & Cost and LD or any other recoveries due from Contractor:

Without prejudice to the other means of recovery of such dues from the Seller recoveries from the Seller on whom risk
& cost has been invoked shall be made from the following:

a) Dues available in the form of Bills payable to seller, SD, BGs against the same contract.
b) Dues payable to seller against other contracts in the same Region/Unit/ Division of BHEL.
c) Dues payable to seller against other contracts in the different Region/Unit/ division of BHEL.

In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against contractor.

CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन

MAIN CONTRACTOR'S PROPOSAL CUM EVALUATION REPORT

मुख्य संविदाकार प्रस्ताव सह मुल्यांकन रिपोर्ट

Ref No: संदर्भ सं.:			***Date:*** तिथिः		
i.	***Main Contractor*** मुख्य संविदाकार				
ii.	***Project*** परियोजना				
iii.	***Package Name*** पैकेज का नाम		***Package No*** पैकेज सं.		
iv.	***Proposed Item/Scope of Sub-contracting*** उप-संविदा(अनुबंध) का प्रस्तावित मद/ दायरा				
v.	***Item covered under*** *निम्नलिखित के अंतर्गत शामिल मद*	***Schedule-1*** */अनुसूची-* ***1***		***As per contract clause No-*** *अनुबंध के अनुसार खंड सं.--* **-**	
		Schedule-2 *अनुसूची-* ***-2***			
vi.	***If item is Schedule-1 and proposed sub-vendor is indigenous, Main Contractor to explain how the contractual provisions will be fulfilled*** /यदि मद अनुसूची **-1** है और प्रस्तावित उप-विक्रेता स्वदेशी है, तो मुख्य संविदाकार को स्पष्ट करना होगा कि संविदा/अनुबंध के प्रावधान कैसे पूरे किए जाएंगे				
vii.	***Name and Address of the proposed Sub-vendor's works*** /प्रस्तावित सब-वेंडर का नाम तथा पता				
viii.	***PO placement date/ Start of manufacturing (if self-manufactured) as per L2 network*** **पीओ नियोजन की तिथि / एल-** 2 **नेटवर्क के अनुसार विनिर्माण (यदि स्व-निर्मित है) की शुरुआत**				

ix.	***Item Description (Type/Size/Rating/Scope of Sub-Contracting)*** मद का विवरण (प्रकार / आकार / रेटिंग / उप-अनुबंध का दायरा)	***Total quantity of proposed item envisaged in this package (Nos/ Running Meters/ Kgs/ Tons etc)*** इस पैकेज में परिकल्पित प्रस्तावित मद की कुल मात्रा (संख्या / क्रियाशील मीटर / किलोग्राम / टन आदि)	***Quantity proposed to be procured from proposed sub-vendor (Nos/ Running Meters /Kgs /Tons etc)*** प्रस्तावित उप-विक्रेता (संख्या / क्रियाशील मीटर / किलोग्राम / टन आदि) से खरीदी जाने वाली मात्रा	***Timeline for quantity requirements as per project schedule & whether the proposed Sub-vendor equipped with adequate capacity to supply proposed order quantity in time*** / परियोजना समय सूची के अनुसार मात्रा आवश्यकताओं के लिए समय-सीमा और क्या प्रस्तावित उप-विक्रेता समय पर प्रस्तावित मांग की मात्रा की आपूर्ति करने में पूरी तरह से सक्षम है

x.	***Supply experience of the proposed sub-vendor (including supplies to Main Contractor, if any) for similar item/scope of sub-contracting, for last 3 years (Note:- Only relevant experience details w.r.t. proposed item/scope of subcontracting to be brought out here)*** पिछले **3** वर्षों के लिए उप-अनुबंध के समान मद / दायरे के लिए प्रस्तावित सब-वेंडर (मुख्य संविदाकार हेतु आपूर्ति, यदि कोई हो, सहित) का आपूर्ति अनुभव (नोट: - उप-अनुबंध के प्रस्तावित मद / दायरे के संबंध में केवल प्रासंगिक अनुभव के विवरण का उल्लेख हो

CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन

MAIN CONTRACTOR'S PROPOSAL CUM EVALUATION REPORT

मुख्य संविदाकार प्रस्ताव सह मुल्यांकन रिपोर्ट

	Project/Package परियोजना/पैकेज	***Customer Name*** ग्राहक का नाम	***Supplied Item (Type/Rating/Model /Capacity/Size etc)*** आपूर्त्तित मद (प्रकार/रेटिंग /मॉडल /क्षमता/आकार आदि)	***PO ref no/date*** पीओ संदर्भ सं. /तिथि	***Supplied Quantity*** आपूर्ति की मात्रा	***Date of Supply*** आपूर्त्ति की तिथि

We confirm that as per our assessment, the proposed sub-vendor has requisite capabilities & supply experience and is suitable for supplying the proposed item/scope of sub-contracting/हम अपने आकलन के अनुसार इस बात की पुष्टि करते हैं कि, प्रस्तावित उप-विक्रेता के पास अपेक्षित क्षमता और आपूर्ति करने का अनुभव है और उप-अनुबंध के दायरे /प्रस्तावित मद की आपूर्ति के लिए उपयुक्त है।

Name: नाम:		***Desig:*** पद:		***Contact No:*** दूरभाष सं.:		***Sign:*** हस्ताक्षर:		***Date:*** तिथि:	

Company's Seal/Stamp:- कंपनी का मुहर:-

एनटीपीसी NTPC	**CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन** **SUB-VENDOR QUESTIONNAIRE/ सब-वेंडर प्रश्नावली**

i.	***Item/Scope of Sub-contracting*** **उप-संविदा(अनुबंध) का मद/ दायरा**			
ii.	***Address of the registered office*** पंजीकृत कार्यालय का पता		***Details of Contact Person*** संपर्क व्यक्ति का विवरण ***(Name, Designation, Mobile, Email)*** (नाम, पदनाम, मोबाइल, ईमेल)	
iii.	***Name and Address of the proposed Sub-vendor's works where item is being manufactured*** प्रस्तावित उप-विक्रेता के कार्यों का नाम और पता, जहां मद का निर्माण किया जा रहा है		***Details of Contact Person:*** संपर्क व्यक्ति का विवरण ***(Name, Designation, Mobile, Email)*** (नाम, पदनाम, मोबाइल, ईमेल)	
iv.	***Annual Production Capacity for proposed item/scope of sub-contracting*** **उप-संविदा(अनुबंध)** के प्रस्तावित मद / दायरे के लिए वार्षिक उत्पादन क्षमता			
v.	***Annual production for last 3 years for proposed item/scope of sub-contracting*** **उप-संविदा(अनुबंध)** के प्रस्तावित मद / दायरे के लिए पिछले 3 वर्षों का वार्षिक उत्पादन			
vi.	***Details of proposed works*** **प्रस्तावित कार्यों का विवरण**			
1.	***Year of establishment of present works*** वर्तमान फैक्टरी की स्थापना का वर्ष			
2.	***Year of commencement of manufacturing at above works*** उपरोक्त फैक्टरी में निर्माण कार्य शुरू होने का वर्ष			
3.	***Details of change in Works address in past (if any*** पूर्व में फैक्टरी स्थल में परिवर्तन का विवरण (यदि कोई हो)***)***			
4.	***Total Area*** कुल क्षेत्र			
	Covered Area शामिल क्षेत्र			
5.	***Factory Registration Certificate*** फैक्टरी पंजीकरण प्रमाण पत्र		***Details attached at Annexure – F2.1*** विवरण अनुलग्नक- एफ 2.1 पर संलग्न है	
6.	***Design/ Research & development set-up*** डिजाइन / अनुसंधान और विकास सेटअप ***(No. of manpower, their qualification, machines & tools employed etc.)*** (श्रमिकों की संख्या, उनकी योग्यता, मशीन और उपलब्ध उपकरण आदि)		***Applicable / Not applicable if manufacturing is as per Main Contractor/purchaser design)*** ***Details attached at Annexure – F2.2*** ***(if applicable)*** लागू / लागू नहीं, अगर विनिर्माण मुख्य संविदाकार / खरीददार के डिजाइन के अनुसार है) विवरण अनुलग्नक –एफ 2.2 पर संलग्न है। (यदि लागू हो)	
7.	***Overall organization Chart with Manpower Details (Design/Manufacturing/Quality etc)*** मैनपावर विवरण के साथ समग्र संगठन का चार्ट(डिजाइन / विनिर्माण / गुणवत्ता आदि)		***Details attached at Annexure – F2.3*** विवरण अनुलग्नक – F2.3 में संलग्न है।	

8.	***After sales service set up in India, in case of foreign sub-vendor(Location, Contact Person, Contact details etc.)*** भारत में बिक्री सेवा की स्थापना के बाद, विदेशी उप-विक्रेता के मामले में(स्थल , संपर्क व्यक्ति, संपर्क विवरण आदि)	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure – F2.4*** विवरण अनुलग्नक -2.4 पर संलग्न है ।
9.	***Manufacturing process execution plan with flow chart indicating various stages of manufacturing from raw material to finished product including outsourced process, if any*** फ्लोचार्ट सहित विनिर्माण प्रक्रिया निष्पादन योजना , जिसमें आउटसोर्स प्रक्रिया, यदि कोई हो, सहित कच्चे माल से तैयार उत्पाद तक विनिर्माण के विभिन्न चरणों को दर्शाया गया हो,	***Details attached at Annexure – F2.5*** विवरण अनुलग्नक - F2.5में संलग्न है ।
10.	***Sources of Raw Material/Major Bought Out Item*** कच्चे माल के स्रोत / खरीदे हुए मुख्य मद	***Details attached at Annexure – F2.6*** विवरण अनुलग्नक - F2.6में संलग्न है।
11.	***Quality Control exercised during receipt of raw material/BOI, in-process , Final Testing, packing*** कच्चे माल / खरीदे हुए मद, प्रक्रियाबद्ध, अंतिम परीक्षण, पैकिंग करते समय गुणवत्ता नियंत्रण	***Details attached at Annexure – F2.7*** विवरण अनुलग्नक - F2.7 पर संलग्न है
12.	***Manufacturing facilities*** ***(List of machines, special process facilities, material handling etc.)*** विनिर्माण सुविधा(मशीनों की सूची , विशेष प्रक्रिया सुविधाएं, सामग्री रख-रखाव आदि)	***Details attached at Annexure – F2.8*** विवरण अनुलग्नक - F2.8में संलग्न है ।
13.	***Testing facilities (List of testing equipment)*** परीक्षण सुविधाएं(परीक्षण उपकरण की सूची)	***Details attached at Annexure – F2.9*** विवरण अनुलग्नक – F2. 9 में संलग्न है ।
14.	***If manufacturing process involves fabrication then-*** यदि निर्माण प्रक्रिया में फेब्रिकेशन की गई है तो- ***List of qualified Welders*** पात्र वेल्डर की सूची ***List of qualified NDT personnel with area of specialization*** विशेषज्ञता के क्षेत्र सहित पात्र एनडीटी कार्मिकों की सूची	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure – F2.10*** विवरण अनुलग्नक - F2.10में संलग्न है। ***(if applicable)*** लागू / लागू नहीं
15.	***List of out-sourced manufacturing processes with Sub-Vendors' names & addresses*** सब-वेंडर द्वारा बाह्य स्रोतों (उनके नाम और पते सहित)से करवाएं गए निर्माण प्रक्रियाओं की सूची	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure. –F2.11*** विवरण अनुलग्नक - F2.10में संलग्न है। ***(if applicable)*** (यदि लागू हो)
16.	***Supply reference list including recent supplies*** नवीनतम आपूर्ति सहित आपूर्ति संदर्भ सूची	***Details attached at Annexure – F2.12*** विवरण अनुलग्नक - F2.12 में संलग्न है । ***(as per format given below)*** (नीचे दिए गए प्रारूप के अनुसार)

Project/ package परियोजना /पैकेज	***Customer Name*** ग्राहक का नाम	***Supplied Item (Type/Rating/Model /Capacity/Size etc)*** आपूर्ति की गई वस्तु (प्रकार / रेटिंग / मॉडल / क्षमता / आकार आदि)	***PO ref no/date*** पीओ संदर्भ सं. / तिथि	***Supplied Quantity*** आपूर्ति की मात्रा	***Date of Supply*** आपूर्ति की तारीख

17.	***Product satisfactory performance feedback letter/certificates/End User Feedback*** उत्पाद के संतोषजनक प्रदर्शन संबंधी फीडबैक पत्र / प्रमाण पत्र / अंतिम उपयोगकर्ता फ़ीडबैक	***Attached at annexure - F2.13*** अनुलग्नक F2. 3पर संलग्न है

18.	***Summary of Type Test Report (Type Test Details, Report No, Agency, Date of testing) for the proposed product (similar or higher rating)*** प्रस्तावित उत्पाद (एक समान या उच्च रेटिंग वाले) के लिए टाइप टेस्ट रिपोर्ट (टाइप टेस्ट विवरण, रिपोर्ट संख्या, एजेंसी, जांच की तारीख) का सारांश नोट: - रिपोर्ट प्रस्तुत करने की आवश्यकता नहीं है ***Note:- Reports need not to be submitted***	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure – F2.14*** विवरण अनुलग्नक - F2.1 4में संलग्न है ***(if applicable)*** (यदि लागू हो)
19.	***Statutory / mandatory certification for the proposed product*** प्रस्तावित उत्पाद के लिए वैधानिक / अनिवार्य प्रमाणीकरण	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure – F2.15 (if applicable)*** (यदि लागू हो)
20.	***Copy of ISO 9001 certificate*** आईएसओ 9001 प्रमाण पत्र की प्रति ***(if available***(यदि उपलब्ध हो)	***Attached at Annexure – F2.16*** अनुलग्नक में संलग्न - F2.1 6 है
21.	***Product technical catalogues for proposed item (if available)*** प्रस्तावित मद के लिए उत्पाद तकनीकी कैटलॉग (यदि उपलब्ध हो)	***Details attached at Annexure – F2.17*** विवरण अनुलग्नक - F2.1 7 में संलग्न है

Name: ***नाम:***		***Desig:*** ***पद:***		***Sign:*** ***हस्ताक्षर:***		***Date:*** ***तिथि:***	

Company's Seal/Stamp:- कंपनी की मुहर / मोहर: -

BOQ RAMAGUNDAM FGD - NGR

Item Number	Item Title	Item Description	Item Quantity	Unit of Measure	Consignee ID	ZipCode	Delivery Period (In number of days)	Unit Price (Inclusive of all taxes)	GST % (Included in Unit Price)	Brand	Model	HSN Code
1	506-15033-A	MAIN SUPPLY : NGR 6.6 KV (600A, 10 SEC, 6.64 OHMS)	5	NOS	PEM_RAMA_CON	505215	210					
2	506-15020-A	MAIN SUPPLY : HOT DIP GALVANISED MS SUPPORTING STRUCTURE WITH INSULATORS, FOUNDATION HARDWARES etc. FOR 6.6 kV NGR	5	NOS	PEM_RAMA_CON	505215	210					
3	506-15022-A	MAIN SUPPLY : COPPER BUSBAR 50X8 MM OF 10M LENGTH (For connecting Transformer Neutral with NGR)	5	LOT	PEM_RAMA_CON	505215	210					
4	506-15033-A	MANDATORY SPARE : NGR 6.6 KV (600A, 10 SEC, 6.64 OHMS)	2	NOS	PEM_RAMA_CON	505215	600					

BHEL	**PRE-QUALIFICATION REQUIRMENTS FOR NEUTRAL GROUNDING RESISTOR**	PE-PQ-999-505-E001 REVISION NO. 02 DATE 29/04/2016 SHEET NO. 1 OF 1

ITEMS : Neutral grounding resistor a/w supporting structure

SCOPE: Supply : YES; Erection & Commissioning : NO;

1	Availability of type test certificates conducted at independent Lab or witnessed by third party as per relevant IS/ International standard.
2	Vendor should have in-house facility for design and manufacturing of neutral grounding resistor.
3	Vendor should have in-house capability to carry out all routine and type tests. In case facilities for type test are not available with the vendor, these tests can be conducted at Govt. Lab/ Govt. approved independent Lab.
4	Manufacturing capacity of at least 10 nos. neutral grounding resistor per month.
5	Supplied at least 20 nos. of neutral grounding resistor in one or more orders.
6	Minimum two (2) nos. purchase orders for neutral grounding resistor shall be submitted which should not be more than five (5) years old from the date of application for registration or date of techno-commercial bid opening (as applicable) for establishing continuity in business.

NOTE:
Supplier to comply to "general points of PQR" available at http://bhelpem.com/vensection/PMD/PMD.aspx
In case supplier is not OEM, the offer shall be evaluated as per point no 1 of "general points of PQR".

PREPARED BY	REVIEWED BY	APPROVED BY
10/05/2016	29/4/16.	29.04.16
NAME: N.N. JAJWARE DESIGNATION: Dy. Mgr.	NAME: RAJNISH GOYAL DESIGNATION: AGM	NAME: MEENA KESRI DESIGNATION: AGM & DH(E)

General Points of PQR

1. Offers of the JV companies/ Joint Bidders/ bidders having collaboration/ licensing agreement/ MOU/ Indian subsidiaries shall be evaluated as follows:

    a. If bidder happens to be an Indian subsidiaries of foreign OEM, then the credentials of the foreign OEM can also be considered for meeting PQR.
    b. If bidder happens to be the Joint Venture Company, then the credentials of any of JV partners can be also considered for meeting PQR.
    c. If bidder happens to bid jointly with their partner, then credentials of both the partners will be considered for meeting PQR as per distribution of the work. In all such cases, lead bidder as specified in bid documents shall be responsible for overall execution of the contract and all guarantee/ warranty.
    d. If bidder happens to be the having valid collaboration agreement/ MOU/ licensing agreement with some other company, then the credentials of collaborator/ MOU partner/ licensing company can also be considered for meeting PQR.

    Note: If bidder(s) qualifies on the basis of credentials of his principal/ JV partner/ Collaborator/ joint bidder etc., then the principal/ JV partner/ Collaborator/ MOU partner/ joint bidder shall be responsible for overall design vetting and warranty/ guarantee of the package. The scope matrix clearly defining their respective roles including design vetting, manufacturing of critical component, E&C etc. etc. and warranty/ guarantee shall be submitted along with the offer.

2. Bidder to note that the arrangement of bidding (joint bid partners/ collaborator/ MOU partner/ licensing company etc.) once offered to BHEL as a part of bidding documents cannot be changed till the execution of the project.

3. Consideration of offer shall be subject to customer's approval of bidders, if applicable.

4. Bidder to submit all supporting documents in English. If documents submitted by bidder are in language other than English, a self-attested English translated document should also be submitted.

5. Any other project specific requirement shall be as per Annexure-I and bidder shall submit relevant supporting documents.

6. Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder/collaborators to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.

7. After satisfactory fulfillment of all the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of the tender.

VOLUME II

3X200 MW +3X500 MW RAMAGUNDAM FGD

TECHNICAL SPECIFICATION

FOR

NEUTRAL GROUNDING RESISTOR

SPECIFICATION NO: ***PE-TS-467-506-E001***

REVISION: **00**

BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, UP (INDIA) – 201301

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	(INCLUDING COVER/ SEPARATOR SHEETS)	

COMPLIANCE CERTIFICATE

The bidder shall confirm compliance to the following by signing/ stamping this compliance certificate and furnishing same with the offer.

1. The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusion/ deviation with regard to same

2. There are no deviation with respect to specification other than those furnished in the 'schedule of deviations'

3. Only those technical submittals which are specifically asked for in NIT to be submitted at tender stage shall be considered as part of offer. Any other submission, even if made, shall not be considered as part of offer.

4. Any comments/ clarifications on technical/ inspection requirements furnished as part of bidder's covering letter shall not be considered by BHEL, and bidder's offer shall be construed to be in conformance with the specification.

5. Any changes made by the bidder in the price schedule with respect to the description/ quantities from those given in 'BOQ-Cum-Price schedule' of the specification shall not be considered (i.e., technical description & quantities as per the specification shall prevail).

BIDDER'S STAMP & SIGNATURE

SECTION –I

SPECIFIC TECHNICAL REQUIREMENTS

1.0 SCOPE OF ENQUIRY

1.1 Design, Manufacture, Inspection and Testing at Manufacturer's works, proper packing and delivery to site of NEUTRAL GROUNDING RESISTOR conforming to this specification.

1.2 General technical requirements of the NEUTRAL GROUNDING RESISTOR are indicated in Section-II. Project specific technical/ quality requirements / changes are listed in Section-I.

1.3 **The requirements of Section-I shall prevail and govern in case of conflict between the corresponding requirements of Section-I and Section-II.**

1.4 The documents shall be in English Language and MKS system of units.

2.0 BILL OF QUANTITIES:

2.1 Quantity requirements shall be as per 'BOQ-cum-price schedule' as part of NIT.

2.2 Supplier to also give the following undertaking in the BOM: "The BoM provided herewith completes the scope (in content and intent) of material supply under PO No. ----------, dated ------. Any additional material which may become necessary for the intended application of the supplied item(s)/package will be supplied free of cost in most reasonable time."

3.0 SPECIFIC TECHNICAL REQUIREMENTS

3.1

S.No.	***Reference Clause No. of Section- II***	***Specific Requirement/ Change***
1.	5.1.10	Clause 5.1.10 shall be read as follows: "The connection between neutral terminal of transformer and NGR is through a tinned copper strip of 50 X 8mm. The copper strip shall be supplied by bidder. The required hardware for the termination of copper flat at both ends shall be supplied by the bidder. This item is included in BOQ-cum-Price Schedule in NIT".
2	5.2.1	Clause 5.2.1 shall be read as follows: "Each neutral grounding resistor shall be housed in weather-proof enclosure having Degree of Protection as specified in Data Sheet-A. Enclosure shall be cold rolled sheet steel having a minimum thickness of 2.5 mm. Suitable entilating louvers shall be provided on sides to ensure proper ventilation. The louvers shall be provided with fine wire mesh to make vermin proof."
3.	5.2.2	Clause 5.2.2 shall be read as follows: "The terminals for neutral and earthing connections shall be housed in separate vermin-proof, weather-proof terminal Boxhaving Degree of Protection as specified in Data Sheet-A."
4.	5.2.11	Clause 5.2.11 shall be read as follows: "For connection of other end of NGR to ground, Tinned copper flat (of size 50X8) mm with Fork connector up to 100mm above ground with 2 nos. earthing terminal/pad, tapped holes and bolts suitable for connection of GS Flat shall be supplied by bidder. The tinned copper flat shall be insulated from mounting structure through porcelain insulators. GS flat (size to be informed during detail engineering) for connection of fork connector of NGR to ground shall be in BHEL scope. The length of copper flat shall be suitably decided by bidder."
5.	6.0	In addition to clause 6.0: Following tests shall be conducted on NGR Cubicle 1. **Routine Tests:** DOP test on enclosure (routine test) as follows: It shall not be possible to insert a 2.5mm dia. steel wire into the enclosure from any

		direction without using force
6.	6.2	Clause 6.2 shall be read as follows: Bidder shall furnish Type test certificates (Short time current test along with temperature rise test & Degree of protection test i.e. IP33 for enclosure and IP55 for Terminal box). The type test should have been conducted within 10 yrs from 14.02.2019. Following valid type test report (within last ten years as on 14.02.2019) shall be furnished by the bidder and in absence of the same bidder has to conduct on each type (prototype) of NGR without any commercial/delivery implication to BHEL: 1. Short time current test along with temperature rise test. 2. Degree of protection test for IP33 on enclosure. 3. Degree of protection test for IP55 on Terminal Box.
7.	6.4	This clause stands deleted.
8.	6.5	Clause 6.5 shall be read as follows: All materials & components shall be procured, manufactured, inspected, and tested by vendor/sub-vendor as per applicable clauses of NTPC endorsed quality plan & Annexure-1 to quality plan.
9.	7.0	In addition to clause 7.0: 1. External surface of NGR shall be Chemical resistant epoxy zinc phosphate primer, MIO (Micaceous iron oxide) as intermediate paint followed by polyurethane finish paint of blue colour corresponding to RAL 5012. No. of coats shall be one coats each & total DFT shall not less than 100 microns. 2. Internal surface of NGR shall be Chemical resistant epoxy zinc phosphate primer followed by chemical and heat resistant epoxy enamel white paint. No. of coats shall be one coats each & total DFT shall not less than 100 microns. Colour code shall be subjected to customer approval at contract stage without any commercial implication to BHEL.

3.2 All internal wiring between equipment and terminal block shall be carried out by fire resistance PVC insulated 1100V grade 2.5 Sq.mm Stranded copper conductor wires.

3.3 All devices and terminal blocks within the terminal box shall be clearly identified by symbol corresponding to those used on applicable schematic/wiring diagram. 20% spare terminals shall be provided in terminal block.

3.4 Each cubicle shall be provided with 5A, 5 pin plug socket and door-switch controlled cubicle illumination lamp. Two pole switch fuse unit shall be provided for receiving 240 V single phase AC supply for cubicle lamp and illumination circuit.

3.5 Packing shall be as per Annexure –II to QP.

4.0 DOCUMENTATION

4.1 Documents required along with technical offer shall be as per Attachment-I.

4.2 Documents required after award of LOI/PO shall be as per NIT (to be submitted by successful bidder).

ATTACHMENT – I

DOCUMENTS REQUIRED ALONG WITH TECHNICAL OFFER.

Sign & stamped copy of following documents:

a] "Deviation Schedule" with "NO Deviations" and bidder's signature and company stamp.

b] Unpriced Price Schedule as enclosed with NIT with 'Quoted" word against items with bidder's signature and company stamp.

c] A copy of the sheet "Compliance Certificate" with bidder's signature and company stamp.

d] All PQR related documents.

DATA SHEET-A

1.0 SYSTEM DESIGN DATA

1.1	Design Ambient	:	[√] 50°C [ ] 40°C
1.3	Reference Standard	:	IEEE – 32
1.2	Rated Voltage	:	7.2 kV
1.5	Location of NGR	:	Outdoor
1.6	Rated short time current and time	:	600A for 10sec
1.7	Net resistance of resistor unit	:	As specified in BOQ-Cum-Price Schedule in NIT
1.8	Resistance per resistor element	:	As per Requirement
1.9	Material of resistor element		
	i) For high value of current (Say 300/400/500/600A)	:	[√] AISI-304 [√] ASTM-A240 [ ] AISI-406
1.10	No. of parallel Path	:	2 parallel paths
1.11	No. of resistance element par path	:	As per Requirement
1.12	Total no. resistor elements	:	As per Requirement
1.13	Current density of resistor element	:	As per Requirement
1.14	Max. allowable temp. rise (over ambient) of resistor element	:	[ ] 300° C [√] 350° C
			[ ] 500° C [ ] 790° C

2.0 ENCLOSURE

2.1	Material and thickness	:	Sheet Steel and [ ] 2.0 [√] 2.5 [ ] 3.0 mm
2.2	Degree of Protection (As per IS/IEC-60529)		

i) Enclosure : [√] IP-33 with canopy [ ] IP-55 with canopy

ii) Terminal Box : IP-55 with canopy

3.0 SUPPORT INSULATORS

3.1 Material : Porcelain

3.2 Rated voltage

i) For 11/6.6/3.3kV NGR : 7.2 kV

3.3 One minute power frequency dry withstand voltage

i) For 11/6.6/3.3kV NGR : 20 kV (rms)

3.4 Creepage Distance : [ ] 25mm/KV [√] 31 mm/KV

4.0 MOUNTING STRUCTURE (BOLTABLE TYPE)

4.1 Material : Hot dip galvanised M.S

4.2 Thickness/deposit of galvanisation : 75 microns/610 g/m2

4.3 Equipment mounting : Base of NGR enclosure at 2.4m above ground

5.0 TERMINAL CONNECTION

5.1 Type : Bushing

5.2 Material : Porcelain

5.3 Rated voltage

i) For 11/6.6/3.3kV NGR : 7.2 kV

5.4 One minute power frequency dry withstand voltage

i) For 11/6.6/3.3kV NGR : 20 kV (rms)

5.5 Creepage Distance : [ ] 25mm/KV [√] 31 mm/KV

5.6 Connection between NGR & transformer : [ ] Cable [ ] GI Flat [√] Copper Flat (50X 8mm)

DATA SHEET-C
(To be filled up by bidder)

1.0 General

1.1	Make/Type		:
1.2	*Quantity*	Nos.	:
1.3	Service		:
1.4	Reference Standard		:

2.0 Resistor

2.1	Rated Voltage (Volt)	:
2.2	Net Resistance at 50 Deg. C (ohm)	:
2.3	Resistance per resistor element at 50 Deg. C	:
2.4	Tolerance limit on resistance at 50 Deg. C (%)	:
2.5	Total no. of resistor elements per path	:
2.6	No. of parallel path	:
2.7	Material of resistor element	:
2.8	Electrical Resistivity (Ohm-cm)	:
2.9	Temperature Co-efficient of resistance/ DegC	:
2.10	Current rating	
	a) Short time rating Amps., Secs	:
2.11	Types of grid	:
2.12	Temperature rise (over Ambient 50 Deg. C)	:
2.13	Method of connecting elements	:

3.0 Insulation level

3.1 One minute power frequency withstand volt. KVrms :

4.**0**	**Support insulator**	
4.1	Make	:
4.2	Material	:
4.3	Creepage distance	:
4.4	Voltage rating	:
4.5	One minute power frequency withstand volt.(dry) KVrms	:
5.**0**	**Terminal connection**	
5.1	Type	:
5.2	Make	:
5.3	Material	:
5.4	Voltage rating	:
5.5	Power frequency withstand volt. KVrms	:
6.**0**	**Enclosure Cubicle**	
6.1	Enclosure material	:
6.2	Thickness of enclosure materials	:
6.3	Degree of protection	:
6.4	Reference standard	:
6.5	Painting shade	:
6.6	Thickness of paint (mm)	:
6.7	Dimension of NGR cubicle with resistor	:
6.8	Weight of complete NGR cubicle with resistors (W/O Mounting structure)	:
7.**0**	**Test Voltage**	
7.1	One minute power frequency withstand volt.(dry) KVrms	:

8.0	**Mounting Structure**	
8.1	Materials	:
8.2	Dimensions	:
8.3	Paints/Galvanisation	:
8.4	Wt. Of mounting structure	:
9.0	Whether space heater arrangement provided	:
10.0	Whether welded or bolted type	:

SECTION – II

GENERAL TECHNICAL SPECIFICATION

1.0 SCOPE OF ENQUIRY

1.1 This specification covers the design, manufacture, assembly, testing and inspection at vendor's/sub-vendor's works, packing and despatch to site of neutral grounding resistor as described in the various sections of this specification.

1.2 Although erection and commissioning is not included in vendor's scope, the vendor shall still not be absolved of his responsibility of establishing the correctness of equipment at site.

2.0 CODES & STANDARDS

2.1 The material, constructional features and various processes involved in manufacture shall comply with latest revision of Indian Standards.

2.2 The design, material, construction, manufacture, inspection, testing and performance of Neutral Grounding Resistor shall conform to the latest revision of relevant standards and codes of practices mentioned in Datasheet – A.

2.3 In case of conflict between the applicable reference standard and this specification, this specification shall govern.

3.0 DESIGN REQUIREMENTS AND CONSTRUCTIONAL FEATURES

3.1 The NGR is used for medium resistance grounding of MV (11 / 6.6 / 3.3KV) or LV (415 V) system. NGR shall be connected between earth pit and neutral point of applicable transformer.

3.2 The NGR shall be suitable for limiting the desired value of earth fault current and duty as specified in BOQ-Cum-Price Schedule in NIT.

3.3 The resistor unit shall be natural air-cooled type suitable for installation at outdoor/ indoor locations.

3.4 The NGR will be installed in hot humid and tropical atmosphere. All equipment, accessories and wiring shall be provided with tropical finish to prevent fungus growth.

4.0 TERMINAL POINTS OF SUPPLY:

a) Neutral grounding resistor along with suitable cable glands and lugs for incoming cables from transformer neutral.

b) Supporting structure along with insulators and necessary foundation hardware.

c) Bushing along with tinned copper strip of suitable cross-section (as specified in Datasheet-A / BOQ-cum-Price Schedule in NIT) and connecting hardware for neutral connection of transformer. Copper strip will be applicable only when cable connection is not applicable and vice-versa.

d) All Civil works, Erection & commissioning of equipment are excluded from bidder's scope.

e) Termination and Jointing kits are excluded from bidder's cope.

5.0. SPECIFIC TECHNICAL REQUIREMENTS

5.1 NEUTRAL GROUNDING RESISTOR

5.1.1 Each Neutral Grounding Resistor shall be formed of non-aging (grade ASTM-A240/AISI-304 or better) corrosion resistant punched stainless steel elements or FECRAL (AISI-406) as specified in data sheet-A for high value (say 300A/400/500A) of earth fault current and of FECRAL (AISI-406) material for low value (say 1A) of earth fault current. Resistance material mentioned above shall have high electrical resistivity and low temperature co-efficient of resistance.

5.1.2 Resistor bank shall be provided in series and parallel combination to achieve the overall resistance value. Minimum two banks in parallel shall be provided in the system, unless specified otherwise.

5.1.3 The resistor unit shall consist of suitable no. of elements. All the elements shall be mounted inside the cubicle so as to ensure ease of inspection and replacement of individual element. For Low value of earth fault current edge wound configuration of resistance material is also acceptable.

5.1.4 Each resistor element shall possess a balanced combination of both Mechanical and Electrical properties over entire intended operating temperature range without any harmful effect on the elements and their accessories.

5.1.5 All the resistor elements consisting the NGR shall be assembled and supported inside the cubicle in such a way that no distortion or breakage will occur during the passage of specified fault current to earth.

5.1.6 All elements connection shall be bolted type to ensure stable resistance value throughout the working life of the unit.

5.1.7 Wet process type brown glass porcelain insulators shall be used between Tie-rod and end support structure and shall also be used to insulate the resistor bank from enclosure. Porcelain insulators shall have high creepage value (as specified in Data sheet-A) suitable for heavily polluted atmosphere charged with dust particles. Interposing insulator (except Mica) shall be provided to insulate resistor tier.

5.1.8 The resistor elements shall be provided with necessary installations and shall have maximum temperature rise as specified in Data Sheet-A.

5.1.9 The NGR shall be provided with suitable taps for cable/strip connection as specified in Section-I.

5.1.10 In case the connection between neutral terminal of transformer and NGR is through a copper strip, then copper strip shall be supplied by bidder. The required hardware for the termination of copper flat at both ends shall be supplied by the bidder.

5.2 ENCLOSURE:

5.2.1 Each neutral grounding resistor shall be housed in weather-proof enclosure having Degree of Protection as specified in Data Sheet-A. Enclosure shall be cold rolled sheet steel having a minimum thickness of 2 mm. Suitable ventilating louvers shall be provided on sides to ensure proper ventilation. The louvers shall be provided with fine wire mesh to make vermin proof.

5.2.2 The terminals for neutral and earthing connections shall be housed in separate vermin-proof, weather-proof terminal box with min. IP-55 degree of ingress protection.

5.2.3 A separate canopy shall be provided above enclosure roof with a suitable air gap between them. It shall also cover the terminal compartment. Suitable lifting arrangement shall be provided to lift the canopy.

5.2.4 The bottom of the enclosure shall be provided with a drain plug to remove water that may get collected in the enclosure.

5.2.5 The enclosure shall be supported on insulators placed on mounting structure in such a fashion that it is not easily accessible for man standing on ground level. Any part of insulator shall be at a height 2500 mm above ground/plinth.

5.2.6 Each cubicle shall be complete with front access door with handles, lock and also a removable bolted cover. All doors and removable covers shall be properly gasketed with good quality neoprene /synthetic rubber gaskets.

5.2.7 All cubicle door hinges shall be concealed type. Each cubicle shall be complete with suitably mounted cable box fitted with removable gland plate of Aluminium of suitable thickness for fixing cable gland. Double compression brass Cable glands and cable lugs of tinned copper shall be in the scope of bidder.

5.2.8 All necessary galvanised bolts, nuts washers etc. shall be included by the BIDDER for installation of Cubicle at site.

5.2.9 The enclosure shall not be earthed to prevent bypassing of resistor in case of any inadvertent shorting of resistor from inside.

5.2.10 Panel space heater arrangement along with thermostat, suitable for connection to 240V AC single supply, shall be provided at the bottom of the panel. The illumination arrangement and switch socket shall also be provided in the panel. The required cable glands, lug etc. required shall be supplied by the bidder.

5.2.11 For connection of other end of NGR to ground, Tinned copper flat (of size 50mm x 6mm) with Fork connector up to 300mm above ground with 2 nos. earthing terminal/pad, tapped holes and bolts suitable for Connection of GS Flat shall be provided by Bidder. The tinned copper flat shall be insulated from mounting structure through porcelain insulators. GS flat (size to be informed during detail engineering) for connection of fork connector of NGR to ground shall be in BHEL scope.

6.0 INSPECTION & TESTS

6.1 All tests shall be conducted as per relevant IS/IEC/ IEEE standards and shall be performed in the presence of purchaser's representative, if so desired by the purchaser. The bidder shall give at least 21 days advance notice of the date when the tests are to be carried out.

6.2 Bidder shall furnish Type Test certificates (temperature rise and DOP tests) conducted on similar type of equipment for purchaser’s review at contract stage.

6.3 For all components / materials, for which type test reports have been asked for in the specification, such Type tests should have been carried out on identical components / materials. In absence of such type tests reports or in case such reports are not found to be meeting the specification/standards requirements, vendor shall conduct all such type tests without any commercial/delivery implication to BHEL according to the relevant standards and reports shall be submitted to the owner for approval. (Type test charges as per clause 6.4 shall not be applicable in such cases).

6.4 The bidder shall indicate cost of carrying out all the Type tests as specified in the specification. The charges for each of the Type tests shall be given separately as BOQ-cum-price schedule as part of NIT. These prices will be applicable in case a type test is required to be conducted by purchaser despite availability of satisfactory type test report as per clause 6.3 above.

6.5 All materials & components and shall be procured, manufactured, inspected, and tested by vendor/sub-vendor as per applicable clauses of BHEL Quality Plan no. PE-QP-999-505-E001, (subject to approval of customer) enclosed.

6.6 All acceptance and routine tests as per relevant standards shall be carried out by the manufacturer. Charges for all these routine and acceptance tests for all the materials shall be deemed to be included in the bid price.

6.7 Test reports of the various tests conducted at the time of inspection shall be furnished by the vendor.

6.8 Bidder shall furnish unit prices of all items in the prescribed schedule of BOQ-cum-price schedule as part of NIT. Purchaser reserves the right to add/delete the quantity during detailed engineering as finally required for the project. Unit rate quoted shall be applicable for price adjustment in such cases.

6.9 All bought out items shall be procured from reputed manufacturers and shall be subject to approval of purchaser.

7.0 PAINTING

7.1 All bidders must have 7-tank or 8-tank painting procedure.

7.2 All metal parts, surfaces shall be degreased by dipping in hot alkaline solution and rubbed with wire brush to remove oil and scale and then rinsed in water. Alternatively, they may be shot blasted.

7.3 Parts shall be pickled by dipping in hydrochloric acid to remove the rust from the surfaces formed during storage of sheets and then rinsed to remove traces of the acid. The cleaning and pre-treatment of all metal parts shall be as per applicable standard.

7.4 The surfaces to be painted shall then be prepared by phosphatizing to protect them from further rusting and to create a good bond with the paint.

7.5 All parts shall then be subjected to a coat of primer paint. All inside surfaces of enclosure shall be spray painted with black matt finish and outside surfaces of enclosure shall be spray painted with hard semi glossy synthetic enamel or power coated (as specified in Sec-I) of shade as per Sec-I.

7.6 Paint thickness shall be minimum 50 microns unless specified otherwise in Sec-I.

7.7 Electrostatic or powder painting shall be acceptable subject to purchaser's approval.

7.8 Finished parts shall be coated with peelable compound by spraying method to protect the finished product from scratches, grease, dirty and oily spots during handling and transportation.

8.0 PACKING

8.1 Specification for the sea worthy packing, if enclosed, for the export jobs shall form part of the specification.

9.0 SPARES

9.1 A list of Erection & commissioning spares (if required by BHEL) along with quantities considered is indicated in **BOQ-cum-price schedule as part of NIT**.

9.2 A list of Mandatory spares (if required by BHEL) along with quantities considered is indicated in **BOQ-cum-price schedule as part of NIT**.

10.0 GUARANTEED PERFORMANCE REQUIREMENTS

10.1 The vendor shall guarantee satisfactory performance of the equipment supplied under all conditions and requirement as laid down by this specification.

10.2 The vendor shall comply with the general requirements of performance guarantee specified elsewhere.

11.0 O & M MANUAL

O & M manual for installation, operation and maintenance of NGR shall be furnished before despatch of the equipment.

Draft O & M manual shall be submitted for purchaser's approval. Manual shall contain minimum following details:

i) Description of the equipment.

ii) Salient construction features.

iii) Packing details.

iv) Instructions to be followed on receipt at site for storage.

v) Erection procedure & checks.

vi) Test to be conducted at site.

vii) Commissioning procedure.

viii) Maintenance instructions.

13.0 DELIVERY

The delivery shall be as per NIT (Notice Inviting Tender).

एनटीपीसी NTPC	ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC.) : NEUTRAL GROUNDING RESISTOR (UPTO 66KV)	STANDARD QUALITY PLAN CONFORMING TO CODE : NTPC TECHNICAL SPECIFICATION	TO BE FILLED IN BY NTPC QP No: 0000-999-QOE-S-045 Rev. : 0 Date: 15.12..2011 Page: 01 of 02 VALID UPTO: 14.12.2014	REVIEWED BY Banish K. Jha R Garg H Shekhar	APPROVED BY Approved Dt..... A K Garg

Sl No	COMPONENT & OPERATIONS		CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
						M	C/N					M	C	N	
1	2		3	4	5	6		7	8	9	D*	**	10		11
1.0	**RAW MATERIAL BOUHGT OUT ITEM**														
1.01	MS Sheet	a)	Thickness	Major	Visual	100%	100%	Appvd. Drg./Spec.	Appvd. Drg./Spec.	QC Records		P	V	-	
	(For NGR Enclosure)	b)	Surface finish	"	Visual	100%	100%	IS:2062	No damage/ corrossion/Pitting	"		P	V	-	
		c)	Chemical & Mechanical Properties	"	Chem/ Mech	1/Heat	1/Heat	IS:2062	IS:2062	MTC		V	V	V	
1.02	MS Angle/Flat/Channel	a)	Dimensional check	Major	Measure	100%	100%	IS:2062	IS:2062	QC Records		P	V	-	
	(As applicable)	b)	Surface finish	"	Visual	100%	-	"	"	QC Records		P	-	-	
		c)	Chemical &	"	Chem/	1/Heat	-	"	"	MTC		V	-	-	
			Mechanical Properties		Mech										
		d)	Galvanising Check	"	"	100%	-	Relevent Material Standard		"		V	-	-	Proper galvanising of MS Structural members as required shall be ensured by Manufacturer
1.03	Copper Connector	a)	Surface finish	Major	Visual	100%	100%	Relevent Material Standard	No damage/ corrossion/Pitting	MTC		P	V	-	
		b)	Chemical composition	"	Chem	1samp/lot	1samp/lot	Relevent Material Standard				V	V	V	
		c)	Dimensional check	"	Elect.	100%	100%	NTPC Spec./ Appvd.drg/DS	NTPC Spec./ Appvd.drg/DS	"		P	V	-	
1.04	Resistor Grid	a)	Surface finish	Major	Visual	100%	100%	Appvd. Drg/DS	Appvd. Drg/DS	MTC		P	V	-	
	(Punched stainless steel	b)	Chemical composition	"	Chem	1samp/lot	-	Relevent Material Standard				V	V	V	
	grid element type)	c)	Resistivity	"	Elect.	100%	100%	Appvd. Drg/DS	Appvd. Drg/DS	"		P	V	-	
1.05	Porceline Bushing/ Mica	a)	Visual Examination	Major	Visual	100%	100%	IS:5621	IS:5621	QC Records		P	V	-	
	Insulator	b)	Dimensional check	"	Measure	10%	-	IS:3347	IS:3347	MTC		P	-	-	
		c)	Acceptance Test	"	Review	100%	100%	IS:5621	IS:5621	MTC		V	V	V	
2.00	**IN-PROCESS CHECKS**														
2.01	Treatment of Sheet	a)	Surface condition & Galvanising Check	Major	Visual	100%	-	IS:277	IS:277	QC Record		P	-	-	
2.02	Structural Fabrication & Enclosure	a)	Dimensional check	Major	Measure	100%	-	NTPC Spec./ Appvd.drg/DS	NTPC Spec./ Appvd.drg/DS	QC Record		P	-	-	

LEGEND: * RECORDS, INDENTIFIED WITH "TICK" (√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.

** **M: MANUFACTURER / SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION. AS APPROPRIATE,**

CHP: NTPC SHALL IDENTIFY IN COLUM "N" AS 'W'.

	ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC.) : NEUTRAL GROUNDING RESISTOR (UPTO 66KV)	STANDARD QUALITY PLAN CONFORMING TO CODE : NTPC TECHNICAL SPECIFICATION	TO BE FILLED IN BY NTPC QP No: 0000-999-QOE-S-045 Rev. : 0 Date: 15.12..2011 Page: 02 of 02 VALID UPTO: 14.12.2014	REVIEWED BY Banish K. Jha R Garg H Shekhar	APPROVED BY Approved Dt..... N.T.P.C., Noida A K Garg

Sl No	COMPONENT & OPERATIONS		CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
						M	C/N					M	C	N	
1	2		3	4	5	6		7	8	9	D*	**	10		11
2.03	Resistance Tier	a)	Resistance	Major	Elect	100%	100%	Appvd.drg/DS	Appvd.drg/DS	QC Record		P	V	-	At amb. Temp
		b)	Insulation Resistance	"	"	100%	100%	"	"	"		P	V	-	
		b)	High Voltage w/s Test	"	"	100%	100%	"	"	"		P	V	V	
3.00	**TYPE TEST**	a)	Review of Type Test clearance from NTPC Engineering	Critical	Review	100%	100%	NTPC Tech. spec./ Apvd Drg/DS	NTPC Tech. spec./ Apvd Drg/DS	TC	√	P	W	W	***CHP***
4.00	**FINAL INSPECTION**														
4.01	Routine Test on assembled NGR	a)	Visula appearance, Rating & GA layout	Critical	Visual	100%	100%	NTPC Technical Specification./ Approved Drawingg/Data Sheet		Test Report	√	P	W	W	
		b)	Dimensional check	"	Measure	"	"			"	√	P	W	W	
		c)	No. of grid & arrangement of resistance tier	"	Elect	"	"			"	√	P	W	W	
		d)	Ohmic value measurement at all taps (if applicable)	Critical	Elect	100%	100%			"	√	P	W	W	Resustance & Reactance shall be measured seperately
		e)	Insulation Resistance	"	"	"	"			"	√	P	W	W	Shall be done before and after HV Test
		f)	HV withstand test	"	"	"	"			"	√	P	W	W	1min. at a Voltage corresponding to the Insulation level of the Resistor
		g)	Degree of Protection test on enclosure	"	Physical/ Measure	"	"			"	√	P	W	W	2.5mm dia Steel Wire should not enter into the enclosure from any direction without using Force.
		h)	Paint Shade & Thickness	"	"	"	"			"	√	P	W	W	
		i)	Functional test of all auxilairy Items/Wirings	"	Elect	"	"			"	√	P	W	W	As applicable
5.00	**DESPATCH**	a)	Packing and Delivery	Major	Physical	"	"	BHEL Specification		"	√	P	W	-	

LEGEND: * RECORDS, INDENTIFIED WITH "TICK" (√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.

** M: MANUFACTURER / SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION. AS APPROPRIATE, CHP: NTPC SHALL IDENTIFY IN COLUM "N" AS 'W'.

ANNEXURE – I

ANNEXURE TO QUALITY PLAN

Following tests shall also be conducted in addition to those mentioned in Quality plan (SQP No. 0000-999-QOE-S-045, Rev.0):

SL. NO.	COMPONENT/OPERATION	CHARACTERISTIC CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY		
							P	W	V
1	COMPLETE NGR	1. HV TEST							
		(a) BETWEEN NEUTRAL BUS AND ENCLOSURE	100%	APPD. DRG./ DATA SHEET BS-587 / STD. IEEE 32	APPD. DRG./ DATA SHEET BS-587 / STD. IEEE 32	TEST REPORT	2	1	-
		(b) BETWEEN RESISTOR ELEMENT AND END SUPPORT STRUCTURE.	100%	STD. IEEE 32 clause 10.3.2	STD. IEEE 32 clause 10.3.2	TEST REPORT	2	1	-

LEGEND : 1 - BHEL/ CUSTOMER 2 - VENDOR 3 - SUB- VENDOR P - PERFORM W - WITNESS V - VERIFICATION

ANNEXURE – II to QUALITY PLAN

Packing:

A. Support Structure of NGR shall be despatched in open in such a manner there shall be no damage during transit.

B. NGR shall be despatched in “Crate Packing” using wood.

1.0 PREPARATION OF PACKING CASES:

1.1 **DIMENSIONS:**

1.1.1 Minimum number of planks shall be used for a shook.
1.1.2 Thickness of planks for Front, rear, top and bottom sides and binding, jointing battens shall be 25/20mm +2/-3 mm
1.1.3 Horizontal, vertical, diagonal planks shall be given for binding
1.1.4 Width of binding planks shall be minimum 100mm
1.1.5 Distance between any 2 binding planks shall be less than 750mm
1.1.6 Diagonal planks shall be used in between vertical binding planks when distance between inner to inner of vertical planks is more than 750mm
1.1.7 Distance of the outer edges of these planks from the edge of case shall be less than 250mm.
1.1.8 Diagonal planks are not required for top planks and width side, if the width of pallet is less than 750mm.

1.2 JOINTING OF PLANKS:

Single length planks shall be used for cubicles whose overall length is less than 2400mm. For cubicles of length more than 2400mm, jointing is permitted. The jointing shall be done with one single or maximum of 2 planks of wood same as other planks of width 250 mm (minimum) with two rows of nails on either side of the joint in zigzag

manner. From the joint along height side, it shall be of lap joint with overlap of at least the width of plank.

1.3 TONGUE AND GROOVE JOINTS

Two consecutive planks shall be joined by tongue and groove joint. Depth of tongue shall be 12+1 mm, thickness of tongue shall be 8 +1 mm. The groove dimensions shall be such that the tongue fits tightly into the groove to make a good joint. This type of joint can be done based on the product requirement wherever required.

1.4 PERMISSIBLE DEFECTS

Wood shall be free from knots, bows, visible sign of infection and any kind of decay caused by insects, fungus, etc.
End splits: Longest end splits at each end shall be measured and lengths added together. The added length shall not exceed 60mm per meter run of shook's. Wood pins shall be used to prevent further development of split.
Surface cracks: Surface cracks with a maximum depth of 3mm are permissible. A continuous crack of any depth all along the length is not allowed.

1.5 OTHER MATERIALS

1.5.1 NAILS

The dia. of the nails shall be 3.15mm. The length of the nails shall be 65mm wherever two planks of 25mm thickness are joined and 75mm wherever a 25mm planks is joined to a 50mm plank.

1.5.2 BLUE NAILS

These are used for nailing bituminized Kraft paper/hessian cloth to the planks. The length of the nails shall be 16mm.

1.5.3 HOOP IRON STRIPS

These are used for strapping the boxes. The width of the strips shall be 19+1mm and thickness 0.6+0.01mm. The material shall be free from rust. If sufficient nailing is done for bigger boxes, strapping need not be done.

1.5.4 CLIPS

These shall be used for strapping the hoop iron strips on the boxes.

1.5.5 BRACKETS

These brackets are used for nailing to the corners of cubicle boxes. The brackets shall be of mild steel of thickness min 2mm and width 25+1mm. The brackets shall be of “L" shape, the length of each side being 100+2mm. Two holes shall be provided towards the end of each side for screwing /nailing.

1.5.6 MULTI LAYERED CROSS LAMINATED POLYTHELENE FILM

100GSM (Colourless) Multi Layered Cross Laminated Polyethylene Film ———————————— are used to make covers to the jobs individually. The cross lamination gives qualities of extra toughness, together with flexibility and lightness coupled with good weather resistance to ultra violet rays.

1.5.6 RUBBERISED COIR:

The rubberized coir is used as cushioning material. For the packing of loose items, items are to be arrested by using rubberized coir. For the packing of cubicles rubberized coir of thickness 25mm and width 75mm shall be used.

1.5.7 FASTENERS

Bolts, double nuts, spring washers will have to be used to hold the job to the bottom plank of the box so that there shall be no jerk on the NGR during transit.

1.5.8 PACKING SLIP:

Packing slip kept in the polyethylene bag shall be placed in the box at appropriate place. In addition, one more packing slip covered in polyethylene cover and packing slip holder shall be nailed to front / rear of case.

1.5.9 MARKING PLATE:

Marking on the packing case shall be done as per the manufacturer standard.

Letter head of Company (<Rs. 10 Cr value)

Ref…… Date…….

To,

Bharat Heavy Electricals Limited PEM,

PPEI Building, Plot No 25, Sector -16A,

Noida (U.P)-201301

Subject: -Certification regarding local content

Reference: Tender Enquiry No-……

Name of Package: ……..

Dear Sir,

We hereby certify that items offered by us of ……..(package name)…….……for……(Project Name/Rate contract)…….. meets the requirement of minimum local content in line with Cl. No……. of NIT No……. dated……. and the Public Procurement (Preference to Make in India), Order 2017 dated-15.06.2017, 28.05.2018, 29.05.2019 , 04.06.2020 & 16.09.2020.

Local Content- .....%

We further confirms that details of location at which the local value addition is made will be our registered works at ……(address of the works)

Yours very truly

……..(authorized signatory of company)

……..(firm name)

ON COMPANY LETTER HEAD

To,

M/s Bharat Heavy Electricals Ltd.,
Project Engineering Management,
Power Project Engineering Institute,
HRD & ESI Complex, Plot No 25, Sector-16 A,
Noida-201301

Kind Attn. Mr.

Dear Sir,

This has reference to:

1. Our offer for NGR for Combined Tender Enquiry (3X200 + 3X500 MW NTPC RAMAGUNDAM TPP FGD, 3X200+3X500+1x500 MW NTPC KORBA TPP-FGD, 3X660 MW NPGCL NABINAGAR FGD GeM Tender No. ……. dated ……

2. Order no. F. No. 6/18/2019-PPD dt. 23.07.2020 issued by Ministry of Finance, Department of Expenditure Public Procurement Division.

I have read the clause regarding restriction on procurement from a bidder of a country which shares a land border with India; I certify that M/s (Company Name_____) is not from such a country **or,** if from such a country, has been registered with the competent authority. **(Remove the non-applicable)**

I hereby certify that M/s (Company Name_____) fulfil all requirements in this regard and is eligible to be considered.

[where applicable, evidence of valid registration by the competent authority shall be attached]

Thanking You,
Yours faithfully,

Owner, partner, CMD, Director, Authorized Signatory with proof that he/she is authorized to sign on owner's behalf

M/s _____

Annexure for Packing List Guidelines (To be complied with during execution)

For faster verification of bills, successful bidder to submit detailed Bill of Material (BOM) at the time of drawings/ documents submission after placement of PO. Each item of the BOM to be uniquely identified with item code no. or item Sl. No.. Supplier to ensure that all items which will find separate mention in the packing list are covered in this detailed BOM.

Supplier to also give the following undertaking in the BOM:
"The BOM provided herewith completes the scope (in content and intent) of material supply under PO No. ……. Dated …… Any additional material which may become necessary for the intended application of the supplied items/package will be supplied free of cost in most reasonable time.

Packing List must indicate:

a) Packing size
b) Gross weight and net weight of each package
c) Contents of the package with cross reference to BOM item code no. / Sl. No.
d) Quantity of each items separately.

The packing list must cover all the BOM items.

Supplier to give following undertaking in the packing list: The Packing list provided herewith is as per BOM approved under PO No. -----

ANNEXURE FOR RISK & COST

1. In case of delays (beyon d the maximu m late delive ry per iod as per LD cl ause) in supplie s, or if there be defective su pplies or no n-fulfilment o f any other terms and conditions of the Co ntract as en umerated subsequently in this clause, then, without prejudice to its right to recover any expenses, losses or damages to which the B uyer may b e put to in cur or sustain by rea son of th e Seller/ Contractor's d efault or b reach of Order/Contract or to suspend business dealings with the Seller/Contractor in terms of the Buyers' Guidelines for Suspension of Business Dealings as applicable from time to time, the Buyer shall also be entitled to cancel the Order/ Contract either in whol e or portion thereof without compensation to Seller. On t he occurrence of any of the acts/omission s mentioned below, the Buyer may if it so desi res, procure upon such terms and i n such manner as deemed appropriate, plant/equipment/ stores not so delivered or others of similar description where plant/ equipment/ stores exactly complying with particulars are not, in the opinion of the Buyer (wh ich shall be final), readily procurable, at the risk and cost of the Seller.

The Seller shall be liable to the Buyer for any excess co sts incurred thereof and the Seller shall continue the performance of the Order/Contract to the extent not cancelled under the provisions of this clause. The Seller shall on no account be entitled to any gain on such repurchases. If the Bidder doe s not agree to thi s Risk Purchase cl ause, BHEL reserves the right to reje ct the bid/offer of the Bidder. The ord er/contract may be cancelled in whole or p art thereof an d Risk & Co st Clause in lin e with term s and conditions of PO/Cont ract may be invoked by the Buyer in any of the following cases:

i. If the Seller/Contra ctor fails to deliver the good s or materials or any instalment thereof within the perio d(s) fixed for such delivery or the Seller's poor progress of the supply/services vis-à-vis delivery/execution timeline as stipulated in the contract, backlog attributable to the Seller including unexecuted portion of supply does not appear to be executable within balance period available;

ii. delivers g oods or mat erials not of the cont racted quality and failing to adhe re to the contra ct specifications/execution methodology;

iii. withdrawal from or repudiation/abandonment of the supply/services by the Seller before completion as per contract or if the Seller refuses or is unable to supply goods or materials covered by the order/Contract either in whole or in part or otherwise fails to perform the Order/Contract.

iv. Non supply by the Seller within scheduled completion/delivery period as per contract or as extended from time to time for reasons attributable to the Seller;

v. Termination of Contract on account of any other reason(s) attributable to the Seller.

vi. Assignment, transfer, sub-letting of Contract with out BHEL's written permission resulting in termination of Contract or part thereof by BHEL.

vii. If the Seller be an individual or a Sole Proprietorship, in the event of death or insanity of the Seller.

viii. If the Seller/Contractor being an individual or if a partnership firm thereof, shall at any time be a djudged insolvent or shall have a receivin g order for administration of his estate made against him or shall take a ny proceeding for composition under any Insolvency Act for the time being in force or make any assignment of the order/Contract or enter into any arrangement or composition with his credi tors or suspend payment or if the firm dissolved under the Partnership Act;

ix. If the Seller/Co ntractor being a Company is wo und up voluntarily or by order of a Cou rt or a Receiver, Liquidator or Manager on behalf of the debenture holders and creditors is appointed or circumstances have arisen which entitles the Court of debenture holder and creditors to appoint a receiver, liquidator or manager

x. Non- Compliance to any contractual condition or any other default attributable to the Seller.

Such defaulting vendor/Seller shall not be eligible to participate in re-tendering conducted on account of risk purchase made due to fault of such vendor/Seller.

2. BHEL's right to go for Risk and Cost, Calculation of Risk and Cost amount & LD, recovery options to BHEL are given as under: -

2.1 BHEL reserves the right to terminate the contract or withdraw portion of work and get it done through other agency, at the risk and cost of the contractor *after due notice of a period of 14 days' by BHEL* in any of the following cases:

i) If the Seller/Contractor fails to deliver the goods or materials or any instalment thereof within the period(s) fixed for such delivery or the Seller's poor progress of the supply/ services vis-a-vis delivery/execution timeline as stipulated in the Contract, backlog attributable to seller including unexecuted portion of supply does not appear to be executable within balance available period;

ii) Delivers goods or materials not of the contracted quality and failing to adhere to the contract specifications;

iii) Withdrawal from or repudiation/ abandonment of the supply/ services by Seller before completion as per contract or if the Seller refuses or is unable to supply goods or materials covered by the Order/Contract either in whole or in part or otherwise fails to perform the Order/Contract;

iv) Non-supply by the Seller within scheduled completion/delivery period as per Contract or as extended from time to time, for the reasons attributable to the Seller;

v) Termination of Contract on account of any other reason (s) attributable to Seller.

vi) Assignment, transfer, subletting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.

vii) If the Seller be an individual or a sole proprietorship Firm, in the event of the death or insanity of the Seller;

viii) If the Seller/Contractor being an individual or if a firm on a partnership thereof, shall at any time, be adjudged insolvent or shall have a receiving order for administration of his estate made against him or shall take any proceeding for composition under any Insolvency Act for the time being in force or make any assignment of the Order/Contract or enter into any arrangement or composition with his creditors or suspend payment or if the firm dissolved under the Partnership Act;

ix) If the Seller/Contractor being a company is wound up voluntarily or by order of a Court or a Receiver, Liquidator or Manager on behalf of the debenture holders and creditors is appointed or circumstances shall have arisen which entitles the Court of debenture holder and creditors to appoint a receiver, liquidator or manager;

x) Non-compliance to any contractual condition or any other default attributable to Seller.

2.1.1 <u>Risk & Cost Amount against Balance Work</u>:

Risk & Cost amount against balance work shall be calculated as follows:

Risk & Cost Amount= [(A-B) + (A x H/100)]

Where,
A= Value of Balance scope of Work (*) as per rates of new contract
B= Value of Balance scope of Work (*) as per rates of old contract being paid to the contractor at the time of termination of contract i.e. inclusive of PVC & ORC, if any.
H = Overhead Factor to be taken as 5

In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).

2.1.2 Balance scope of work (in case of termination of contract):

Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Work for calculating risk & cost amount.

Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities.

Items for which total quantities to be executed have exceeded the Contract Quantities based on drawings issued to contractor from time to time till issue of Termination letter, then for these items total Quantities as per issued drawings would be deemed to be contract quantities.

Substitute/ extra items whose rates have already been approved would form part of contract quantities for this purpose.

Substitute/ extra items which have been executed but rates have not been approved, would also form part of contract quantities for this purpose and rates of such items shall be determined in line with contractual provisions.

However, increase in quantities on account of additional scope in new tender shall not be considered for this purpose.

NOTE: In case portion of work is being withdrawn at risk & cost of contractor instead of termination of contract, contract quantities pertaining to portion of work withdrawn shall be considered as 'Balance scope of work' for calculating Risk & Cost amount.

2.1.3 LD against delay in executed work in case of Termination of Contract:

LD against delay in executed work shall be calculated in line NIT terms & conditions, for the delay attributable to contractor. For limiting the maximum value of LD, contract value shall be taken as Executed Value of work till termination of contract.

Method for calculation of LD against delay in executed work in case of termination of contract" is given below:

i. Let the time period from scheduled date of start of work till termination of contract excluding the period of Hold (if any) not attributable to contractor = T1
ii. Let the value of executed work till the time of termination of contract = X
iii. Let the Total Executable Value of work for which inputs/fronts were made available to contractor and were planned for execution till termination of contract = Y
iv. Delay in executed work attributable to contractor i.e. T2 = [1-(X/Y)] x T1
v. LD shall be calculated in line with LD clause (clause 16) of the Contract for the delay attributable to contractor taking "X" as Contract Value and "T2" as period of delay attributable to contractor.

2.2 Recoveries arising out of Risk & Cost and LD or any other recoveries due from Contractor:

Without prejudice to the other means of recovery of such dues from the Seller recoveries from the Seller on whom risk
& cost has been invoked shall be made from the following:

a) Dues available in the form of Bills payable to seller, SD, BGs against the same contract.
b) Dues payable to seller against other contracts in the same Region/Unit/ Division of BHEL.
c) Dues payable to seller against other contracts in the different Region/Unit/ division of BHEL.

In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against contractor.

CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन

MAIN CONTRACTOR'S PROPOSAL CUM EVALUATION REPORT

मुख्य संविदाकार प्रस्ताव सह मुल्यांकन रिपोर्ट

Ref No: संदर्भ सं.:			***Date:*** तिथिः		
i.	***Main Contractor*** मुख्य संविदाकार				
ii.	***Project*** परियोजना				
iii.	***Package Name*** पैकेज का नाम		***Package No*** पैकेज सं.		
iv.	***Proposed Item/Scope of Sub-contracting*** उप-संविदा(अनुबंध) का प्रस्तावित मद/ दायरा				
v.	***Item covered under*** *निम्नलिखित के अंतर्गत शामिल मद*	***Schedule-1*** */अनुसूची-* ***1***		***As per contract clause No-*** *अनुबंध के अनुसार खंड सं.--* **-**	
		Schedule-2 *अनुसूची-* ***-2***			
vi.	***If item is Schedule-1 and proposed sub-vendor is indigenous, Main Contractor to explain how the contractual provisions will be fulfilled*** /यदि मद अनुसूची **-1** है और प्रस्तावित उप-विक्रेता स्वदेशी है, तो मुख्य संविदाकार को स्पष्ट करना होगा कि संविदा/अनुबंध के प्रावधान कैसे पूरे किए जाएंगे				
vii.	***Name and Address of the proposed Sub-vendor's works*** /प्रस्तावित सब-वेंडर का नाम तथा पता				
viii.	***PO placement date/ Start of manufacturing (if self-manufactured) as per L2 network*** **पीओ नियोजन की तिथि / एल-** 2 **नेटवर्क के अनुसार विनिर्माण (यदि स्व-निर्मित है) की शुरुआत**				

ix.	***Item Description (Type/Size/Rating/Scope of Sub-Contracting)*** मद का विवरण (प्रकार / आकार / रेटिंग / उप-अनुबंध का दायरा)	***Total quantity of proposed item envisaged in this package (Nos/ Running Meters/ Kgs/ Tons etc)*** इस पैकेज में परिकल्पित प्रस्तावित मद की कुल मात्रा (संख्या / क्रियाशील मीटर / किलोग्राम / टन आदि)	***Quantity proposed to be procured from proposed sub-vendor (Nos/ Running Meters /Kgs /Tons etc)*** प्रस्तावित उप-विक्रेता (संख्या / क्रियाशील मीटर / किलोग्राम / टन आदि) से खरीदी जाने वाली मात्रा	***Timeline for quantity requirements as per project schedule & whether the proposed Sub-vendor equipped with adequate capacity to supply proposed order quantity in time*** / परियोजना समय सूची के अनुसार मात्रा आवश्यकताओं के लिए समय-सीमा और क्या प्रस्तावित उप-विक्रेता समय पर प्रस्तावित मांग की मात्रा की आपूर्ति करने में पूरी तरह से सक्षम है

x.	***Supply experience of the proposed sub-vendor (including supplies to Main Contractor, if any) for similar item/scope of sub-contracting, for last 3 years (Note:- Only relevant experience details w.r.t. proposed item/scope of subcontracting to be brought out here)*** पिछले **3** वर्षों के लिए उप-अनुबंध के समान मद / दायरे के लिए प्रस्तावित सब-वेंडर (मुख्य संविदाकार हेतु आपूर्ति, यदि कोई हो, सहित) का आपूर्ति अनुभव (नोट: - उप-अनुबंध के प्रस्तावित मद / दायरे के संबंध में केवल प्रासंगिक अनुभव के विवरण का उल्लेख हो

CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन

MAIN CONTRACTOR'S PROPOSAL CUM EVALUATION REPORT

मुख्य संविदाकार प्रस्ताव सह मुल्यांकन रिपोर्ट

	Project/Package परियोजना/पैकेज	***Customer Name*** ग्राहक का नाम	***Supplied Item (Type/Rating/Model /Capacity/Size etc)*** आपूर्त्तित मद (प्रकार/रेटिंग /मॉडल /क्षमता/आकार आदि)	***PO ref no/date*** पीओ संदर्भ सं. /तिथि	***Supplied Quantity*** आपूर्ति की मात्रा	***Date of Supply*** आपूर्त्ति की तिथि

We confirm that as per our assessment, the proposed sub-vendor has requisite capabilities & supply experience and is suitable for supplying the proposed item/scope of sub-contracting/हम अपने आकलन के अनुसार इस बात की पुष्टि करते हैं कि, प्रस्तावित उप-विक्रेता के पास अपेक्षित क्षमता और आपूर्ति करने का अनुभव है और उप-अनुबंध के दायरे /प्रस्तावित मद की आपूर्ति के लिए उपयुक्त है।

Name: नाम:		***Desig:*** पद:		***Contact No:*** दूरभाष सं.:		***Sign:*** हस्ताक्षर:		***Date:*** तिथि:	

Company's Seal/Stamp:- कंपनी का मुहर:-

एनटीपीसी NTPC	**CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन** **SUB-VENDOR QUESTIONNAIRE/ सब-वेंडर प्रश्नावली**

i.	***Item/Scope of Sub-contracting*** **उप-संविदा(अनुबंध) का मद/ दायरा**			
ii.	***Address of the registered office*** पंजीकृत कार्यालय का पता		***Details of Contact Person*** संपर्क व्यक्ति का विवरण ***(Name, Designation, Mobile, Email)*** (नाम, पदनाम, मोबाइल, ईमेल)	
iii.	***Name and Address of the proposed Sub-vendor's works where item is being manufactured*** प्रस्तावित उप-विक्रेता के कार्यों का नाम और पता, जहां मद का निर्माण किया जा रहा है		***Details of Contact Person:*** संपर्क व्यक्ति का विवरण ***(Name, Designation, Mobile, Email)*** (नाम, पदनाम, मोबाइल, ईमेल)	
iv.	***Annual Production Capacity for proposed item/scope of sub-contracting*** **उप-संविदा(अनुबंध)** के प्रस्तावित मद / दायरे के लिए वार्षिक उत्पादन क्षमता			
v.	***Annual production for last 3 years for proposed item/scope of sub-contracting*** **उप-संविदा(अनुबंध)** के प्रस्तावित मद / दायरे के लिए पिछले 3 वर्षों का वार्षिक उत्पादन			
vi.	***Details of proposed works*** **प्रस्तावित कार्यों का विवरण**			
1.	***Year of establishment of present works*** वर्तमान फैक्टरी की स्थापना का वर्ष			
2.	***Year of commencement of manufacturing at above works*** उपरोक्त फैक्टरी में निर्माण कार्य शुरू होने का वर्ष			
3.	***Details of change in Works address in past (if any*** पूर्व में फैक्टरी स्थल में परिवर्तन का विवरण (यदि कोई हो)***)***			
4.	***Total Area*** कुल क्षेत्र			
	Covered Area शामिल क्षेत्र			
5.	***Factory Registration Certificate*** फैक्टरी पंजीकरण प्रमाण पत्र		***Details attached at Annexure – F2.1*** विवरण अनुलग्नक- एफ 2.1 पर संलग्न है	
6.	***Design/ Research & development set-up*** डिजाइन / अनुसंधान और विकास सेटअप ***(No. of manpower, their qualification, machines & tools employed etc.)*** (श्रमिकों की संख्या, उनकी योग्यता, मशीन और उपलब्ध उपकरण आदि)		***Applicable / Not applicable if manufacturing is as per Main Contractor/purchaser design)*** ***Details attached at Annexure – F2.2*** ***(if applicable)*** लागू / लागू नहीं, अगर विनिर्माण मुख्य संविदाकार / खरीददार के डिजाइन के अनुसार है) विवरण अनुलग्नक –एफ 2.2 पर संलग्न है। (यदि लागू हो)	
7.	***Overall organization Chart with Manpower Details (Design/Manufacturing/Quality etc)*** मैनपावर विवरण के साथ समग्र संगठन का चार्ट(डिजाइन / विनिर्माण / गुणवत्ता आदि)		***Details attached at Annexure – F2.3*** विवरण अनुलग्नक – F2.3 में संलग्न है।	

8.	***After sales service set up in India, in case of foreign sub-vendor(Location, Contact Person, Contact details etc.)*** भारत में बिक्री सेवा की स्थापना के बाद, विदेशी उप-विक्रेता के मामले में(स्थल , संपर्क व्यक्ति, संपर्क विवरण आदि)	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure – F2.4*** विवरण अनुलग्नक -2.4 पर संलग्न है ।
9.	***Manufacturing process execution plan with flow chart indicating various stages of manufacturing from raw material to finished product including outsourced process, if any*** फ्लोचार्ट सहित विनिर्माण प्रक्रिया निष्पादन योजना , जिसमें आउटसोर्स प्रक्रिया, यदि कोई हो, सहित कच्चे माल से तैयार उत्पाद तक विनिर्माण के विभिन्न चरणों को दर्शाया गया हो,	***Details attached at Annexure – F2.5*** विवरण अनुलग्नक - F2.5में संलग्न है ।
10.	***Sources of Raw Material/Major Bought Out Item*** कच्चे माल के स्रोत / खरीदे हुए मुख्य मद	***Details attached at Annexure – F2.6*** विवरण अनुलग्नक - F2.6में संलग्न है।
11.	***Quality Control exercised during receipt of raw material/BOI, in-process , Final Testing, packing*** कच्चे माल / खरीदे हुए मद, प्रक्रियाबद्ध, अंतिम परीक्षण, पैकिंग करते समय गुणवत्ता नियंत्रण	***Details attached at Annexure – F2.7*** विवरण अनुलग्नक - F2.7 पर संलग्न है
12.	***Manufacturing facilities*** ***(List of machines, special process facilities, material handling etc.)*** विनिर्माण सुविधा(मशीनों की सूची , विशेष प्रक्रिया सुविधाएं, सामग्री रख-रखाव आदि)	***Details attached at Annexure – F2.8*** विवरण अनुलग्नक - F2.8में संलग्न है ।
13.	***Testing facilities (List of testing equipment)*** परीक्षण सुविधाएं(परीक्षण उपकरण की सूची)	***Details attached at Annexure – F2.9*** विवरण अनुलग्नक – F2. 9 में संलग्न है ।
14.	***If manufacturing process involves fabrication then-*** यदि निर्माण प्रक्रिया में फेब्रिकेशन की गई है तो- ***List of qualified Welders*** पात्र वेल्डर की सूची ***List of qualified NDT personnel with area of specialization*** विशेषज्ञता के क्षेत्र सहित पात्र एनडीटी कार्मिकों की सूची	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure – F2.10*** विवरण अनुलग्नक - F2.10में संलग्न है। ***(if applicable)*** लागू / लागू नहीं
15.	***List of out-sourced manufacturing processes with Sub-Vendors' names & addresses*** सब-वेंडर द्वारा बाह्य स्रोतों (उनके नाम और पते सहित)से करवाएं गए निर्माण प्रक्रियाओं की सूची	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure. –F2.11*** विवरण अनुलग्नक - F2.10में संलग्न है। ***(if applicable)*** (यदि लागू हो)
16.	***Supply reference list including recent supplies*** नवीनतम आपूर्ति सहित आपूर्ति संदर्भ सूची	***Details attached at Annexure – F2.12*** विवरण अनुलग्नक - F2.12 में संलग्न है । ***(as per format given below)*** (नीचे दिए गए प्रारूप के अनुसार)

Project/ package परियोजना /पैकेज	***Customer Name*** ग्राहक का नाम	***Supplied Item (Type/Rating/Model /Capacity/Size etc)*** आपूर्ति की गई वस्तु (प्रकार / रेटिंग / मॉडल / क्षमता / आकार आदि)	***PO ref no/date*** पीओ संदर्भ सं. / तिथि	***Supplied Quantity*** आपूर्ति की मात्रा	***Date of Supply*** आपूर्ति की तारीख

17.	***Product satisfactory performance feedback letter/certificates/End User Feedback*** उत्पाद के संतोषजनक प्रदर्शन संबंधी फीडबैक पत्र / प्रमाण पत्र / अंतिम उपयोगकर्ता फ़ीडबैक	***Attached at annexure - F2.13*** अनुलग्नक F2. 3पर संलग्न है

18.	***Summary of Type Test Report (Type Test Details, Report No, Agency, Date of testing) for the proposed product (similar or higher rating)*** प्रस्तावित उत्पाद (एक समान या उच्च रेटिंग वाले) के लिए टाइप टेस्ट रिपोर्ट (टाइप टेस्ट विवरण, रिपोर्ट संख्या, एजेंसी, जांच की तारीख) का सारांश नोट: - रिपोर्ट प्रस्तुत करने की आवश्यकता नहीं है ***Note:- Reports need not to be submitted***	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure – F2.14*** विवरण अनुलग्नक - F2.1 4में संलग्न है ***(if applicable)*** (यदि लागू हो)
19.	***Statutory / mandatory certification for the proposed product*** प्रस्तावित उत्पाद के लिए वैधानिक / अनिवार्य प्रमाणीकरण	***Applicable / Not applicable*** लागू / लागू नहीं ***Details attached at Annexure – F2.15 (if applicable)*** (यदि लागू हो)
20.	***Copy of ISO 9001 certificate*** आईएसओ 9001 प्रमाण पत्र की प्रति ***(if available***(यदि उपलब्ध हो)	***Attached at Annexure – F2.16*** अनुलग्नक में संलग्न - F2.1 6 है
21.	***Product technical catalogues for proposed item (if available)*** प्रस्तावित मद के लिए उत्पाद तकनीकी कैटलॉग (यदि उपलब्ध हो)	***Details attached at Annexure – F2.17*** विवरण अनुलग्नक - F2.1 7 में संलग्न है

Name: ***नाम:***		***Desig:*** ***पद:***		***Sign:*** ***हस्ताक्षर:***		***Date:*** ***तिथि:***	

Company's Seal/Stamp:- कंपनी की मुहर / मोहर: -