

निविदा / Enquiry



भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Limited
 पारेषण व्यापार समूह / Transmission Business Group
 सामग्री प्रबंधन / Materials Management

Project : UPPTCL RASARA (BALLIA)

Enquiry No	Enquiry Dt	Rev No	Rev Dt	PI No	Enquiry Type	Inspection by	Due Dt	Commercial Comments	Technical Comments	Signing Authority
09Q2000103	16-Aug-19	0		09I2000048	Package		30-Aug-19	NIT TERMS AND CONDITION ARE APPLICABLE	TECHNICAL SPECIFICATION IS APPLICABLE	BHAGCHAND KUMAWAT

21-8/19
16-08-19

Document Enclosed

SN	Equipment	HSN Code	Phy Unit	Qty	Plan Dt	Comments
1	SUPPLY- CLAMPS & CONNECTORS : 400KV 50KA FOR 3S 2000A BUSHING CONNECTOR SUITABLE FOR TWIN MOOSE	0	NO	6.0000		EKD ID-8T
2	SUPPLY- CLAMPS & CONNECTORS : 400KV BPI CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, SLIDING THROUGH TYPE	0	NO	6.0000		EKD ID-7TS
3	SUPPLY- CLAMPS & CONNECTORS : 400KV 50KA FOR 3S 2000A WT CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, RIGID TYPE	0	NO	4.0000		EKD ID-6TS
4	SUPPLY- CLAMPS & CONNECTORS : 400KV 50KA FOR 3S 2000A GIS BUSHING CONNECTOR SUITABLE FOR TWIN MOOSE	0	NO	6.0000		EKD ID-1T
5	SUPPLY- CLAMPS & CONNECTORS : 400KV BPI CONNECTOR SUITABLE FOR TWIN MOOSE	0	NO	15.0000		EKD ID-7T
6	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S 2000A GIS BUSHING CONNECTOR SUITABLE FOR TWIN MOOSE	0	NO	6.0000		EKD ID-11T
7	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S 1000A PG CLAMP SUITABLE FOR SINGLE MOOSE TO SINGLE CONDUCTOR AS PER TS	0	NO	16.0000		EKD ID - PG2
8	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S FLEXIBLE SPACER SUITABLE FOR TWIN MOOSE	0	NO	60.0000		EKD ID-23FT
9	SUPPLY- CLAMPS & CONNECTORS : 220KV BPI CONNECTOR SUITABLE FOR TWIN MOOSE	0	NO	12.0000		EKD ID-17T
10	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S 1000A WT CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, RIGID TYPE	0	NO	8.0000		EKD ID-16TS
11	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S 1000A WT CONNECTOR SUITABLE FOR SINGLE MOOSE	0	NO	8.0000		EKD ID - 16S
12	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S 1000A WT CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, EXPANSION TYPE	0	NO	4.0000		EKD ID-16R
13	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S 1600A BUSHING CONNECTOR SUITABLE FOR TWIN MOOSE	0	NO	6.0000		EKD ID-19T
14	SUPPLY- CLAMPS & CONNECTORS : 132KV BPI CONNECTOR SUITABLE FOR SINGLE MOOSE	0	NO	15.0000		EKD ID-37S
15	SUPPLY- CLAMPS & CONNECTORS : 220KV BPI CONNECTOR SUITABLE FOR SINGLE MOOSE	0	NO	12.0000		EKD ID-17S
16	SUPPLY- CLAMPS & CONNECTORS : 132KV BPI CONNECTOR SUITABLE FOR TWIN MOOSE	0	NO	6.0000		EKD ID - 37T

SN	Equipment	HSN Code	Phy Unit	Qty	Plan Dt	Comments
17	SUPPLY- CLAMPS & CONNECTORS : 132KV 40KA FOR 3S 2000A BUSHING CONNECTOR SUITABLE FOR TWIN MOOSE	0	NO	6.0000		EKD ID-39T
18	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S 800A TEE CONNECTOR SUITABLE FOR SINGLE ZEBRA TO SINGLE CONDUCTOR AS PER TS	0	NO	12.0000		EKD ID-T21
19	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S 2000A TEE CONNECTOR SUITABLE FOR TWIN MOOSE TO TWIN CONDUCTOR AS PER TS	0	NO	2.0000		EKD ID-T27
20	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S LA CONNECTOR SUITABLE FOR TWIN MOOSE	0	NO	12.0000		EKD ID-15T
21	SUPPLY- CLAMPS & CONNECTORS : 33KV 25KA FOR 1S 800A ISOLATOR (HDB) CONNECTOR SUITABLE FOR SINGLE MOOSE	0	NO	6.0000		EKD ID-49S
22	SUPPLY- CLAMPS & CONNECTORS : 33KV 25KA FOR 1S 800A PT CONNECTOR SUITABLE FOR SINGLE MOOSE	0	NO	3.0000		EKD ID-48S
23	SUPPLY- CLAMPS & CONNECTORS : 33KV 25KA FOR 1S 800A CT CONNECTOR SUITABLE FOR SINGLE MOOSE	0	NO	6.0000		EKD ID-47S
24	SUPPLY- CLAMPS & CONNECTORS : 33KV 25KA FOR 1S 800A CB CONNECTOR SUITABLE FOR SINGLE MOOSE	0	NO	6.0000		EKD ID-46S
25	SUPPLY- CLAMPS & CONNECTORS : 66KV 25KA FOR 1S 800A ISOLATOR (HCB) CONNECTOR SUITABLE FOR SINGLE MOOSE	0	NO	6.0000		EKD ID-45S
26	SUPPLY- CLAMPS & CONNECTORS : 33KV 25KA FOR 1S 800A BUSHING CONNECTOR SUITABLE FOR SINGLE MOOSE	0	NO	6.0000		EKD ID-44S
27	CLAMPS & CONNECTORS PG CLAMP FOR SHIELD WIRES OF DIA 10.98MM	0	NO	40.0000		EKD ID-PGE
28	CLAMPS & CONNECTORS CLAMP FOR 10.98MM DIA SHIELD WIRE ON LATTICE / PIPE STRUCTURE	0	NO	350.0000		EKD ID - CC1
29	CLAMPS & CONNECTORS PAD CONNECTOR TO SUIT 10.98MM DIA GS WIRE AND 75X12 MM GS FLAT	0	NO	15.0000		EKD ID-PC
30	CLAMPS & CONNECTORS CLAMPS FOR 75X12MM EARTHING STRIP ON LATTICE/PIPE STRUCTURE	0	NO	550.0000		EKD ID-CC4
31	SUPPLY- CLAMPS & CONNECTORS : 220KV BPI CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, RIGID THROUGH TYPE	0	NO	12.0000		EKD ID-17TS
32	SUPPLY- CLAMPS & CONNECTORS : 132KV 40KA FOR 3S 2000A CABLE-SEALING-END CONNECTOR SUITABLE FOR TWIN MOOSE	0	NO	6.0000		EKD ID -30T
33	SUPPLY- CLAMPS & CONNECTORS : 132KV 40KA FOR 3S 800A TEE CONNECTOR SUITABLE FOR CONDUCTOR AS PER TS TO CONDUCTOR AS PER TS	0	NO	15.0000		EKD ID-T31
34	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S 1000A CABLE-SEALING-END CONNECTOR SUITABLE FOR SINGLE MOOSE	0	NO	4.0000		EKD ID-20S
35	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S 2000A BUSHING CONNECTOR SUITABLE FOR TWIN MOOSE	0	NO	6.0000		EKD ID -18T
36	SUPPLY- CLAMPS & CONNECTORS : 400KV 50KA FOR 3S 2000A STRAIGHT CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS TO TWIN CONDUCTOR AS PER TS	0	NO	6.0000		EKD ID-T45
37	SUPPLY- CLAMPS & CONNECTORS : 400KV 50KA FOR 3S 1000A TEE CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS TO SINGLE CONDUCTOR AS PER TS	0	NO	4.0000		EKD ID-T43
38	SUPPLY- CLAMPS & CONNECTORS : 400KV 50KA FOR 3S 2000A TEE CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS TO TWIN CONDUCTOR AS PER TS	0	NO	6.0000		EKD ID-T44
39	SUPPLY- CLAMPS & CONNECTORS : 400KV 50KA FOR 3S 2000A TEE CONNECTOR SUITABLE FOR TWIN MOOSE TO TWIN CONDUCTOR AS PER TS	0	NO	6.0000		EKD ID - T41
40	SUPPLY- CLAMPS & CONNECTORS : 400KV 50KA FOR 3S 2000A REACTOR BUSHING CONNECTOR SUITABLE FOR TWIN MOOSE	0	NO	3.0000		EKD ID-9T
41	SUPPLY- CLAMPS & CONNECTORS : 400KV 50KA FOR 3S 2000A WT CONNECTOR SUITABLE FOR TWIN MOOSE	0	NO	4.0000		EKD ID-9T

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21-7
16-08-19
201305 (1) P.

SN	Equipment	HSN Code	Phy Unit	Qty	Plan Dt	Comments
42	SUPPLY- CLAMPS & CONNECTORS : 400KV 50KA FOR 3S CVT CONNECTOR SUITABLE FOR TWIN MOOSE	0	NO	6.0000		EKD ID-4T
43	SUPPLY- CLAMPS & CONNECTORS : CLAMPS FOR 50X6MM EARTHING STRIP ON LATTICE/PIPE STRUCTURE	0	NO	20.0000		EKD ID-CC2
44	SUPPLY- CLAMPS & CONNECTORS : STRAIN CLAMP FOR SHIELD WIRE 10.98MM DIA	0	NO	6.0000		EKD ID-STE
45	SUPPLY- CLAMPS & CONNECTORS : CORONA BELL SUITABLE FOR 4 INCH IPS AL TUBE	0	NO	4.0000		EKD ID-2B
46	SUPPLY- CLAMPS & CONNECTORS : 72.5KV 25KA FOR 1S 800A PT CONNECTOR SUITABLE FOR SINGLE MOOSE	0	NO	3.0000		EKD ID-43S
47	SUPPLY- CLAMPS & CONNECTORS : 72.5KV 25KA FOR 1S 800A CT CONNECTOR SUITABLE FOR SINGLE MOOSE	0	NO	6.0000		EKD ID-42S
48	SUPPLY- CLAMPS & CONNECTORS : 72.5KV 25KA FOR 1S 800A CB CONNECTOR SUITABLE FOR SINGLE MOOSE	0	NO	6.0000		EKD ID-41S
49	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S RIGID SPACER SUITABLE FOR TWIN MOOSE	0	NO	90.0000		EKD ID-23RT
50	SUPPLY- CLAMPS & CONNECTORS : 132KV 40KA FOR 3S 2000A TEE CONNECTOR SUITABLE FOR TWIN MOOSE TO TWIN CONDUCTOR AS PER TS	0	NO	3.0000		EKD ID-T32
51	SUPPLY- CLAMPS & CONNECTORS : 132KV 40KA FOR 3S 1000A TEE CONNECTOR SUITABLE FOR SINGLE MOOSE TO SINGLE CONDUCTOR AS PER TS	0	NO	6.0000		EKD ID - T33
52	SUPPLY- CLAMPS & CONNECTORS : 132KV 40KA FOR 3S 1000A TEE CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS TO SINGLE CONDUCTOR AS PER TS	0	NO	3.0000		EKD ID-T35
53	SUPPLY- CLAMPS & CONNECTORS : 400KV 50KA FOR 3S 1000A PG CLAMP SUITABLE FOR SINGLE MOOSE TO SINGLE CONDUCTOR AS PER TS	0	NO	24.0000		EKD ID-PG1
54	SUPPLY- CLAMPS & CONNECTORS : 132KV 40KA FOR 3S 1000A CABLE-SEALING-END CONNECTOR SUITABLE FOR SINGLE MOOSE	0	NO	15.0000		EKD ID - 30S
55	SUPPLY- CLAMPS & CONNECTORS : 132KV 40KA FOR 3S 2000A LA CONNECTOR SUITABLE FOR TWIN MOOSE	0	NO	6.0000		EKD ID-35T
56	SUPPLY- CLAMPS & CONNECTORS : 400KV 50KA FOR 3S 2000A GIS BUSHING CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, RIGID TYPE	0	NO	4.0000		EKD ID -1TS
57	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S 1000A CVT CONNECTOR SUITABLE FOR SINGLE MOOSE	0	NO	12.0000		EKD ID - 14T
58	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S 2000A CABLE-SEALING-END CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, RIGID TYPE	0	NO	8.0000		EKD ID - 20TS
59	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S 2000A CABLE-SEALING-END CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, EXPANSION TYPE	0	NO	4.0000		EKD ID - 20E
60	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S 1000A TEE CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS TO SINGLE CONDUCTOR AS PER TS	0	NO	1.0000		EKD ID-T23
61	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S 2000A TEE CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS TO TWIN CONDUCTOR AS PER TS	0	NO	1.0000		EKD ID-T24
62	SUPPLY- CLAMPS & CONNECTORS : 220KV 40KA FOR 3S 2000A STRAIGHT CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS TO TWIN CONDUCTOR AS PER TS	0	NO	6.0000		EKD ID-T25
63	SUPPLY- CLAMPS & CONNECTORS : 132KV BPI CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, RIGID/SLIDING THROUGH TYPE	0	NO	1.0000		EKD ID-37TS
64	SUPPLY- CLAMPS & CONNECTORS : 132KV 40KA FOR 3S 1000A TEE CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS TO TWIN CONDUCTOR AS PER TS	0	NO	1.0000		EKD ID - T36
65	SUPPLY- CLAMPS & CONNECTORS : 400KV CORONA BELL SUITABLE FOR 4 INCH IPS AL TUBE	0	NO	8.0000		EKD ID-4B

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27/05/2018
Rajeev Kumar Roy
Manager (B&M)
Transmission Division
Towers & Poles
Electricals
Towers & Poles
142, Expressway No

SN	Equipment	HSN Code	Phy Unit	Qty	Plan Dt	Comments
66	SUPPLY- CLAMPS & CONNECTORS : 132KV 40KA FOR 3S 1000A TEE CONNECTOR SUITABLE FOR TWIN MOOSE TO SINGLE CONDUCTOR AS PER TS	0	NO	1.0000		EKD ID-T34

You are requested to submit your most competitive offer so as to reach us positively by the tender opening date & time. THE TENDERS NOT RECEIVED WITHIN SCHEDULED DATE AND TIME ARE LIKELY TO BE IGNORED. BHEL shall not be responsible for any postal delay.

In your own interest, you are advised to carefully read "the instructions to bidders". Incomplete bids and/or bids not complying with tender conditions shall be treated as non-responsive and are likely to be ignored.

In case Tender Documents are not received within 7 days of this E-mail message, intimate BHEL accordingly. If no intimation is received, it will be considered that you have received tender enquiry and delay in submission offer due to late receipt of tender documents will not be entertained.

You are requested to submit your most competitive offer as stated in Terms & conditions.

BHEL reserves the right to opt for reverse auction for obtaining best prices.

Offers Through E-MAIL / FAX / E-Procurement Portal:

WHOSOEVER DESIRES TO SEND OFFERS ON THEIR OWN RISK (COMPLETE IN ALL RESPECTS) VIA E-MAIL or FAX HAVE TO SEND THE OFFERS TO THE COMMON E-MAIL ADDRESS tenderbox@bhel.in or 0120-6748581 FAX or bhel.abc.procure.com as instructed.

THE RECEIVED EMAIL OFFERS WILL BE PRINTED BY PURCHASE COORDINATOR AND PUT THEM INTO COVERS AS PER CONVENTIONAL METHOD FOR TENDER OPENING I.E., TECHNO COMMERCIAL & PRICE OFFER SHALL BE PUT INTO TWO SEPARATE COVERS AND BOTH THE COVERS ARE KEPT IN THIRD COVER DULY SUPERSCRIBING ENQY. NO. AND DUE DATE.

OFFERS SENT TO ANY OTHER E-MAIL ID or FAX NO AND INCOMPLETE OFFERS SHALL NOT BE CONSIDERED FOR EVALUATION PURPOSE.

It is suggested that the bidders are advised to send the files with 'password protection'.

The venders who has sent offers with password, the passwords are to be forwarded to another email id: tenderbox@bhel.in

Please acknowledge the receipt of tender enquiry and fax back this letter by ticking the appropriate item below.

भारत हेवी इलेक्ट्रिकल्स लिमिटेड के लिए / for BHARAT HEAVY ELECTRICALS LTD

We acknowledge the receipt of tender.

- (a) The offer against subject enquiry shall be submitted by the scheduled date and time.
- (b) We regret to quote. The item in reference is out of our manufacturing range.
- (c) We regret because of our prior commitments.
- (d) Any other reason.

To
A K Chowdhary
Sr Dy General Manager
BHARAT HEAVY ELECTRICALS LIMITED
TRANSMISSION BUSINESS GROUP
TOWER-A, 5th Floor,
Advant Navis IT Business Park,
Plot No-7, Sector-142, Expressway Noida
Noida-201305
Distt. Gautam BudhNagar, U.P

हस्ताक्षर और निविदाकार की सील / Signature and Seal of Tenderer

Ph: 0120-6748129
Fax: 0120-6748581

Enquiry No : 09Q2000103 Enquiry Dt : 16-Aug-19

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SPECIAL TERMS & CONDITIONS
FOR CLAMPS & CONNECTORS FOR UPPTCL BALLIA (RASHRA) PROJECT
Enquiry No:, Dated.....

1. In case any discrepancy between the requirements mentioned under special terms & conditions and general terms & conditions, special terms and conditions shall prevail.
2. For any technical clarification, kindly contact **Mr. MUNNET MEHTA, DGM (TBEM) / Mr. Vivek Kapil, DGM (TBEM)**
BHEL, Transmission Business Group
Tower-A, 5th Floor, Advant Navis IT Business Park
Plot-7, Sector-142, Expressway Noida, Noida-201305, UP, India
Phone: +91 (0) 0120- 6748539
Fax: +91 (0) 0120 – 6748580.
e-mail : muneet/vivekk@bhel.in
3. For any commercial clarification, kindly contact **Rajeev Kumar Roy, Manager (TBMM);**
BHEL, Transmission Business Group
Tower-A, 5th Floor, Advant Navis IT Business Park
Plot-7, Sector-142, Expressway Noida, Noida-201305, UP, India
Phone: +91 (0) 0120- 6748484
Fax: +91 (0) 0120 – 6748580.
Contact No. 0120 6748484; e-mail: rajeevroy@bhel.in.
4. **Bidder to submit offer directly through E-PROCUREMENT MODE ONLY.** Bidder may visit <https://bhel.abcprocure.com>. No other mode for submission of tender is acceptable. Note: Both bids (Techno-commercial Bid & Price Bid) will be opened immediate after receipt of offer.
5. **Proposed delivery plan: IMMEDIATE.** However, vendor has to examine their best possible delivery plan & mentioned in **ACTIVITY SCHEDULE** to meet the tender delivery requirement. In case, BHEL's delivery requirement is not met by vendor(s), then a chance may be given to all such vendors to review their quoted delivery schedule in line with BHEL's delivery requirement. However, if vendor fails to meet the requisite delivery plan, then BHEL reserves the right not to consider the offer of such vendor(s).
6. **Technical specification No:** BHEL technical specification no: TB-317-316-022A, REV-00 is applicable. No permissible Technical Deviation has been envisaged.
7. **Clause No. 2.1 of General Terms & Conditions (GTC) for tender Enquiry / Contract should be as follows:**

PRICES: A. all prices shall be FIRM & Ex-works price including packing & forwarding charges. No enhancement of rate for whatsoever reasons unless and until asked by BHEL shall be allowed.

PROJECT STATUS: Domestic in nature. GST is applicable as per prevalent law.

SPECIAL TERMS & CONDITIONS
FOR CLAMPS & CONNECTORS FOR UPPTCL BALLIA (RASHRA) PROJECT
Enquiry No:, Dated.....

8. **PERFORMANCE BG (Refer Clause no-7 of General Terms and condition): Option-B is applicable** in case not opt any option as per NIT condition.

9. **Clause No. 33 for Reverse Auction of NIT shall be as follows:**

"BHEL reserves the right to go for Reverse Auction (RA) (Guidelines as available on www.bhel.com) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. Bidders to give their acceptance with the offer for participation in RA. Non-acceptance to participate in RA may result in non-consideration of their bids, in case BHEL decides to go for RA.

Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit 'Process compliance form' (to the designated service provider) as well as 'Online sealed bid' in the Reverse Auction. Non-submission of 'Process compliance form' or 'Online sealed bid' by the agreed bidder(s) will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on www.bhel.com).

The bidders have to necessarily submit online sealed bid less than or equal to their envelope sealed price bid already submitted to BHEL along with the offer.

The envelope sealed price bid of successful L1 bidder in RA, if conducted, shall also be opened after RA and the order will be placed on lower of the two bids (RA closing price & envelope sealed price) thus obtained. The bidder having submitted this offer specifically agrees to this condition and undertakes to execute the contract on thus awarded rates.

If it is found that L1 bidder has quoted higher in online sealed bid in comparison to envelope sealed bid for any item(s), the bidder will be issued a warning letter to this effect. However, if the same bidder again defaults on this count in any subsequent tender in the unit, it will be considered as fraud and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on www.bhel.com)."

As a reminder to the bidders, system will flash following message (in RED Color) during the course of 'online sealed bid': *"Bidders to submit online sealed bid less than or equal to their envelope sealed bid already submitted to BHEL."*

In addition to above RA guidelines, bidder note that

(A) In case where RA is conducted successfully Reverse auction shall be conducted as per existing procedure of BHEL. Ranking of bids shall be based on final price fed by respective bidder (including H1 bidder) in reverse auction process. If L1 bid is from a 'Local Supplier', L-1 bidder may be considered for further award of work. No other Bidder shall be invited to match price of L-1 Bidder

If L1 bid is not from a 'Local Supplier', the lowest evaluated bidder among the 'Local Suppliers' based on the ranking of the price after RA, will be invited to match the L1 price provided 'Local

SPECIAL TERMS & CONDITIONS
FOR CLAMPS & CONNECTORS FOR UPPTCL BALLIA (RASHRA) PROJECT
Enquiry No:, Dated.....

Supplier's price is within the Margin of Purchase Preference i.e. +20% of L1 price. In case such local supplier agrees to match the price of L-1 Bidder, such local supplier may be considered for further award of work. In case such lowest eligible 'Local Supplier' fails to match the L1 price, the eligible 'Local Supplier' with the next higher bid within the Margin of Purchase Preference (i.e. 20% of L-1 Price) as above shall be invited to match the L1 price, and so on, and may be considered for award of work accordingly. In case none of the 'Local Suppliers' within the Margin of Purchase Preference (i.e. 20% of L-1 price) matches the L1 price, then the L1 bidder may be considered for award of work.

(B) In case where RA is failed, Price bid shall be opened as per reverse auction procedure of BHEL and based on the same make in India policy shall be implemented.

10. **PRICE BID FORMAT:** Vendor to quote as per specified price format of NIT, otherwise their offer shall be liable to be rejected.
11. **IMPORTANT INSTRUCTION:**
 - Final acceptance of technical qualified vendor for placement of order is subject to approval of CUSTOMER.
 - Bidder who are not approved by customer, needs to submit complete credential for approval from CUSTOMER & placement of order is subject to approval of CUSTOMER.
 - All boxes / Containers are to be distinctly marked with boldly written "TBG" mark on it.
 - PO/LOI shall be placed to L1 bidder project wise. However evaluation shall be done based on overall quantity as per NIT.
12. **Promotion of MAKE IN INDIA:** For this procurement, Public Procurement (Preference to Make in India), Order 2017 dated 15.06.2017 & 28.05.2018 and subsequent orders issued by the respective nodal ministry shall be applicable even if issued after issue of this NIT but before finalization of contract/PO/VO against this NIT.

In the event of any Nodal Ministry prescribing higher or lower percentage of purchase preference and/ or local content in respect of this procurement, same shall be applicable. Preference to Make in India will be as per the Public Procurement (Preference to Make in India), Order 2017 available in the following link:

http://dipp.nic.in/sites/default/files/publicProcurement_MakeinIndia_15June2017.pdf

http://dipp.nic.in/sites/default/files/Revised-PPP-MII-Order-2017_28052018.pdf

For this procurement, Public Procurement (Preference to Make in India) Order, 2017" dated 15/06/2017 & 28/05/2018 and subsequent orders issued by respective nodal ministry shall be applicable even if issued after issue of this NIT but before finalization of contract /PO/VO against this NIT.

In the event of any nodal ministry prescribing higher and lower percentage of purchase preference and/ or local content in respect of this procurement, same shall be applicable.

Note: Bidder to submit FORMAT duly filled & signed and stamped by their authorized persons. It is mandatory against this NIT. Minimum Local content is 87% (being transmission/sub-station package).



SPECIAL TERMS & CONDITIONS
FOR CLAMPS & CONNECTORS FOR UPPTCL BALLIA (RASHRA) PROJECT
Enquiry No:, Dated.....

13. Following confirmation to be provided by vendor:

“We confirm that we have quoted as per specified price format provided along with this tender”.

NAME & SEAL OF TENDERER

Item Name :	CLAMPS & CONNECTROS
Enquiry No. :	
Project :	UPPTCL BALLIA (RASHRA) PROJECT
Type of project	Transmission / Thermal (Coal or Gas) / Hydro
Applicable percentage of Local Content	87 % (Minimum)

Format for Affidavit of Self certification regarding Minimum Local Content in line with PPP-MII order, 2017 if applicable, to be provided on a non-judicial stamp paper of Rs. 100/-.

Date: / /2019

I _____ S/o, _____ D/o, _____ W/o, _____ Resident of _____ hereby solemnly affirm and declare as under:

That I will agree to abide by the terms and conditions of the Public Procurement (Preference to Make in India) Order, 2017 (*hereinafter PPP-MII order*) of Government of India issued vide Notification No:P-45021/2/2017 -BE-II dated 15/06/2017, its revision dated 28/05/2018 and any subsequent modifications/Amendments, if any and

That the information furnished hereinafter is correct to the best of my knowledge and belief and I undertake to produce relevant records before the procuring entity/BHEL or any other Government authority for the purpose of assessing the local content of goods/services/works supplied by me for (*Enter the name of the Equipment/Item for Project*).

That the local content for all inputs which constitute the said goods/services/works has been verified by me and I am responsible for the correctness of the claims made therein.

That the goods/services/works supplied by me for (*Enter the name of the Equipment/Item for Project*) meets the 'Minimum Local Content' as defined in the PPP-MII order.

That the value addition for the purpose of meeting the 'Minimum Local Content' has been made by me at (*Enter the details of the location(s) at which value addition is made*).

That in the event of the local content of the goods/services/works mentioned herein is found to be incorrect and not meeting the prescribed Minimum Local Content criteria, based on the assessment of procuring agency (ies)/BHEL/Government Authorities for the purpose of assessing the local content, action shall be taken against me in line with the PPP-MII order and provisions of the Integrity pact/ Bidding Documents.

I agree to maintain the following information in the Company's record for a period of 8 years and shall make this available for verification to any statutory authority.

x _____



- i. Name and details of the Local Supplier
(Registered Office, Manufacturing unit location, nature of legal entity)
- ii. Date on which this certificate is issued
- iii. Goods/services/works for which the certificate is produced
- iv. Procuring entity to whom the certificate is furnished
- v. Percentage of local content claimed and whether it meets the Minimum Local Content prescribed
- vi. Name and contact details of the unit of the Local Supplier (s)
- vii. Sale Price of the product
- viii. Ex-Factory Price of the product
- ix. Freight, insurance and handling
- x. Total Bill of Material
- xi. List and total cost value of input used to manufacture the Goods/to provide services/in construction of works
- xii. List and total cost of input which are domestically sourced. Value addition certificates from suppliers, if the input is not in-house to be attached
- xiii. List and cost of inputs which are imported, directly or indirectly

For and on behalf of..... (Name of firm/entity)

Authorized signatory (To be duly authorized by the Board of Directors)

<Insert Name, Designation and Contact No.>



**BHARAT HEAVY ELECTRICALS LTD.
(TRANSMISSION BUSINESS GROUP)**

GENERAL TERMS AND CONDITIONS FOR TENDER ENQUIRY / CONTRACT

This is to be submitted duly signed by bidder in original. Clause-wise deviations and / or additional conditions / clarifications, if any, are to be brought out clearly in "Schedule of Commercial Deviation". Deviations and / or additional conditions / clarifications, if any, mentioned elsewhere in the bid / offer, shall not be considered.

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1.	INSTRUCTION TO BIDDERS : 1.1 Sealed bids are invited for the items mentioned in the tender enquiry conforming to the NIT including Technical Specifications. Bids should be typed and free from overwriting and erasures. Corrections or additions / deletions, if any, must be clearly written and attested, otherwise offer may be rejected. 1.2 Bidder must ensure that their bid is submitted / dropped in the tender box on or before 14-00 Hrs. IST on the due date of opening, unless otherwise specified in the NIT, at the address as follows :- Tender Box, Materials Management, Transmission Business Group, Bharat Heavy Electricals Limited, 5th Floor, Tower-A, Advant Navis IT Business Park, Plot-7, Sector-142, Noida Expressway, Noida, Dist. G. B. Nagar, U. P. – 201305 1.3 In case tender enquiry is floated through the e-procurement system, offer / bid has to be submitted through the e-procurement system ONLY as per instructions given in the e-procurement portal (https://bhel.abcprocure.com). 1.4 The bids shall be opened at 14-30 Hrs. IST on the due date of opening, in the presence of participating bidders who may like to be present, unless otherwise specified in the NIT. Bids received late are liable for rejection. Bidders sending bids by courier or post will have to ensure that it is timely delivered at the above address. 1.5 Bids are to be submitted duly signed with seal in two parts :- a) Techno-commercial Bid (Part-I) – To be submitted in 2 sets (original + copy). A copy of Price Bid (Part-II) clearly mentioning all the necessary information as per format without prices "Un-Priced Bid" is also to be enclosed in Part-I Bid. b) Price Bid (Part-II) – To be submitted only in one set in a separate sealed envelope. This should not contain any Technical and / or Commercial Terms and Conditions. The rates should be quoted both in figures and words. 1.6 The Part-I and Part-II Bids are to be sealed in separate envelopes and

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marked as "Techno-commercial Bid (Part-I)" and "Price Bid (Part-II)" respectively. Both the envelopes are to be kept in another common envelope and marked as "BID". Each envelope should be sealed and superscribed with tender enquiry no., item / package name, project name and due date of opening. Bidder's name and address shall also be mentioned on each envelope.

- 1.7 For any technical clarification, please contact official mentioned in the tender enquiry / NIT
- 1.8 For any commercial clarification please contact official issuing tender enquiry / NIT.
- 1.9 Price bid (Part-II) should not contain any additional information / description other than given in "Un-Priced Bid" submitted with "Techno-commercial Bid (Part-I)" except prices, otherwise bid is liable for rejection.
- 1.10 Price Bid submitted along with the bid shall remain valid up to validity of offer. Any discount / revised offer submitted by the bidder on its own shall be accepted provided it is received before the due date and time of offer submission (i.e. Part-I Bid). The discount shall be applied on pro-rata basis to all items including optional items, if any, unless specified otherwise by the bidder. Discount offered shall be valid for full duration of validity of the offer including extension of validity, if any. Unsolicited Supplementary / Revised Price Bid submitted after the due date and time of offer submission (i.e. Part-I Bid), during validity period of offer, unless asked by BHEL, shall not be considered. Withdrawal of quotation by the bidder, at any stage after its opening, may entail suitable action against such bidder by BHEL.
- 1.11 The consultants / firm (and any of its affiliates) shall not be eligible to participate against tender enquiry for the related goods or works or services for the same project, if they were engaged by BHEL-TBG for the consultancy services.
- 1.12 In case any Foreign OEM / Foreign Principal insists on engaging the services of an agent, such agent shall not be allowed to represent more than one manufacturer / supplier in the same tender. Moreover, either the agent could bid on behalf of the manufacturer / supplier or the manufacturer / supplier could bid directly but not both. In case bids are received from the manufacturer / supplier and the agent, bid received from the agent shall be ignored.
- 1.13 Non-conformities / errors / discrepancies in quoted prices in price bids shall be dealt as follows :-
 - a) If, in the price structure quoted for the required goods / services / works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless in the opinion of BHEL there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.
 - b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected

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	c) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above. d) If there is such discrepancy in an offer as mentioned in (a), (b) & (c) above, the same shall be conveyed to the bidder with target date upto which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the BHEL, the bid is liable to be ignored. 1.14 In case the scope of the successful bidder / supplier against this tender enquiry includes Erection, Testing and Commissioning (ETC) of the equipment / material at site in addition to Supply, Purchase Order shall be placed for Supply Portion and Contract shall be separately awarded for ETC at Site Portion. General Terms and Conditions for Tender Enquiry / Contract mentioned herein shall be applicable for both Supply & ETC at Site. Additional Terms and Conditions for Tender Enquiry / Contract for Erection, Testing and Commissioning at Site "BHEL/TBG/GTC-ETC/2016 REV01" shall be applicable for ETC at Site only which is to be read in conjunction with General Terms and Conditions for Tender Enquiry / Contract mentioned herein. However, any breach of either the Purchase Order or the Contract shall be deemed to be breach of the other. 1.15 Taxes and Duties payable extra as per Clause No. 2.3 in NIT, if not specified/quoted clearly as extra shall be considered as included in Ex-works Price and therefore shall not be reimbursed. Taxes and duties not payable extra as per NIT shall be deemed to be included in Ex-works Price. 1.16 If the rates for taxes and duties in respect of the quoted materials and / or services assumed by the Supplier are less than the tariff prevailing at the time of tendering, Supplier will be responsible for such under quotations. However if the rates assumed are higher than the correct rates prevailing at the time tendering, the difference will be to the credit of BHEL. Note : Representative / official deputed by the bidder to witness tender opening must produce authorization letter for the same.
2.	PRICES : 2.1 Unless specifically indicated in the NIT, all prices shall be FIRM. No enhancement of rate for whatsoever reasons unless and until asked by BHEL shall be allowed. 2.2 Unless specifically indicated in the NIT, the prices shall be on INR basis. 2.3 Unless specifically indicated in the NIT, the prices are to be quoted on FOR (Site / Destination) basis excluding GST. The break-up of prices shall be as under :- a) Ex-works Price: Ex-works price including packing & forwarding charges.

Sr. No.	b) Freight: Freight for door delivery up to destination / site / store are to be quoted separately. c) Insurance: Insurance for door delivery up to destination / site / store are to be quoted separately. d) Type Test Charges: If asked in the technical specification, it is to be quoted separately for each test. e) Charges for Supervision of Erection, Testing & Commissioning (ETC) at Site: To be quoted separately if specified in NIT/Price Schedule. f) Charges for Testing & Commissioning at Site: To be quoted separately if specified in NIT/Price Schedule. g) Charges for Erection, Testing & Commissioning at Site: To be quoted separately if specified in NIT/Price Schedule. h) Training Charges: To be quoted separately if specified in NIT/Price Schedule.
	2.4 GST rates along with HSN/SAC code as applicable on Sr No (a) to (h) above is to be mentioned separately in percentage in both un-priced bid and price bid.
	Note : i) Unless otherwise specified in the NIT, the purchase order shall be placed on Ex-works basis for Indian bidders. ii) Prices quoted by Indian bidders shall be in Indian Rupees only. iii) In case Supervision of Erection, Testing & Commissioning (ETC) at Site or Testing & Commissioning at Site or Erection, Testing & Commissioning at Site is also in scope of the bidder along with supply, bidder has to ensure that prices quoted for such services also are in line with special terms & conditions of the NIT, if any. iv) Unless otherwise specified in the NIT, Unloading at Site / Destination shall not be in the scope of the supplier. v) Prices in respect of Sr No (a) to Sr No (h) of Clause 2.3 above are to be quoted inclusive of all taxes & Duties, charges, Levies , royalty etc if any, excluding GST.
3.	TERMS OF PAYMENT :
	3.1 For Supply only in scope of the supplier
	100% of payment within 60 days from the date of receipt of complete invoice along with documents in 3 sets (original + 2 copies) as follows :
	· LR / GR duly endorsed by BHEL Site Official. · Material Receipt Certificate issued by BHEL Site Official. · GST Compliant Tax Invoice · Packing List (Case-wise) · Copy of Transit Insurance Certificate from underwriters. · Material Inspection Clearance Certificate (MICC) issued by BHEL Quality Management · Guarantee Certificate · Copy of Performance Bank Guarantee (PBG) · Certificate of acceptance of Type Test Reports issued by BHEL Engineering Management wherever specifically mentioned in the Purchase Order.

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	3.2 For Supply where Supervision of Erection, Testing & Commissioning (ETC) at Site is in scope of the supplier or Supply where Testing & Commissioning at Site is in scope of the supplier a) 95% of payment within 60 days from the date of receipt of complete invoice along with documents in 3 sets (original + 2 copies) as follows : · LR / GR duly endorsed by BHEL Site Official. · Material Receipt Certificate issued by BHEL Site Official. · GST Compliant Tax Invoice · Packing List (Case-wise) · Copy of Transit Insurance Certificate from underwriters. · Material Inspection Clearance Certificate (MICC) issued by BHEL Quality Management · Guarantee Certificate · Copy of Performance Bank Guarantee (PBG) · Certificate of acceptance of Type Test Reports issued by BHEL Engineering Management wherever specifically mentioned in the Purchase Order. b) 5% of payment within 60 days from the date of receipt of complete invoice along with documents in 3 sets (original + 2 copies) as follows : · Certificate of successful completion of Supervision of Erection, Testing & Commissioning at Site if it is in the scope of the supplier or Certificate of successful completion of Testing & Commissioning at Site if it is in the scope of the supplier. · Certificate of completion of final documentation as per Purchase Order / Technical Specification issued by BHEL Engineering Management 3.3 For Supply where Erection, Testing & Commissioning (ETC) at Site is in scope of the supplier a) 90% of payment within 60 days from the date of receipt of complete invoice along with documents in 3 sets (original + 2 copies) as follows : · LR / GR duly endorsed by BHEL Site Official. · Material Receipt Certificate issued by BHEL Site Official. · GST Compliant Tax Invoice · Packing List (Case-wise) · Copy of Transit Insurance Certificate from underwriters. · Material Inspection Clearance Certificate (MICC) issued by BHEL Quality Management · Guarantee Certificate · Copy of Performance Bank Guarantee (PBG) · Certificate of acceptance of Type Test Reports issued by BHEL Engineering Management wherever specifically mentioned in the Purchase Order b) 10% of payment within 60 days from the date of receipt of complete invoice along with documents in 3 sets (original + 2 copies) as follows : · Certificate of successful completion of Erection, Testing & Commissioning at Site issued by BHEL Site Official / Construction Management · Certificate of completion of final documentation as per Purchase Order / Technical Specification issued by BHEL Engineering Management 3.4 For Type Test Charges 100% payment along with applicable GST within 60 days from the date of receipt

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of complete GST compliant Tax invoice along with copy of Certificate of acceptance of Type Test Reports issued by BHEL Engineering Management in 3 sets (original + 2 copies) on completion of delivery (at site, if F&I is in scope of supplier) of main supplies (excluding spares) for which Type Tests are applicable. List of main supplies (excluding spares) for which Type Tests are applicable shall be certified by BHEL Engineering Management.

3.5 For Charges for Supervision of Erection, Testing & Commissioning at Site

100% payment along with applicable GST within 60 days from the date of receipt of complete GST compliant Tax invoice along with certificate of successful completion of Supervision of Erection, Testing & Commissioning at Site issued by BHEL Site Official / Construction Management in 3 sets (Original + 2 copies).

3.6 For Charges for Testing & Commissioning at Site

100% payment along with applicable GST within 60 days from the date of receipt of complete GST compliant Tax invoice along with certificate of successful completion of Testing & Commissioning at Site issued by BHEL Site Official / Construction Management in 3 sets (Original + 2 copies)

3.7 For Training Charges

100% payment along with applicable GST within 60 days from the date of receipt of complete GST compliant Tax invoice along with certificate of completion of training issued by BHEL Engineering Management in 3 sets (original + 2 copies).

Note :

- i) Supplier has to submit invoice(s) as per PO or approved billing break-up of prices (if applicable as per NIT).
- ii) In case of supplies for overseas project, Material Receipt Certificate issued by BHEL Authorized Representative shall also be acceptable.
- iii) In case of Transit Insurance under Open Insurance Policy, Intimation / Declaration of Transit Insurance as per terms of the relevant Open Insurance Policy along with copy of Open Insurance Policy from underwriters shall also be acceptable.
- iv) Supplier has to ensure commencement of transit insurance from the date not later than LR / GR date.
- v) Supplier has to submit Tax Invoice(s). Supplier should ensure that Tax Invoice should comply all statutory requirements under GST Law to enable BHEL to avail input credit
- vi) MSMED Act, 2006 and the rules made thereunder as amended from time to time shall be applicable for release of payment to suppliers qualified & registered as Micro & Small Enterprises based on documents mentioned in the NIT for MSME.
- vii) Supplier has to submit PBG (as per BHEL format) & Guarantee Certificate as per

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	PO terms. viii) In case any shortages and / or damages in supplies, an amount calculated based on comments against Material Receipt Certificate issued by the BHEL Site Official shall be withheld from the supply payment against 3.1(a) or 3.2(a) above to be deemed fit by BHEL subject to a minimum of 10% of the total ex-works value of the invoice corresponding to the LR / GR against which any shortages and / or damages are reported. The withheld amount shall be released after the shortages and / or damages in supplies are supplied / replenished against Certification by BHEL Site Official. ix) Payment of GST component shall be made only if vendor has deposited the Tax and credit for the same is reflected in GSTN (GST Network). In case credit of the same is not reflected in GSTN , vendor may alternatively furnish BG of GST Amount for a period valid for not less than 1 month .In case of disallowance of credit /non reflection of credit in GSTN , amount will be recovered from supplier along with applicable Interest , penalty etc from any of his dues. x) If GST is payable by BHEL on reverse Charge Mechanism basis, vendor should ensure the submission of GST compliant Tax invoice immediately on dispatch/ performance of service. In case of non-compliance any additional charges towards interest , penalty etc , will be to vendors account. xi) TDS under GST Act, if applicable, shall be deducted unless Exemption Certificate If applicable, from the appropriate authority is furnished to BHEL along with Invoice.
4.	INTEREST LIABILITY : In case of any delay in payment due to any reason, BHEL shall not pay any interest on delayed payment. Also, no interest shall be payable by BHEL on the bank guarantee / deposit amount or balance payment or any other money which may become due owing to difference or misunderstanding or any dispute before any quasi judicial authority between BHEL and the Supplier / Contractor.
5.	GUARANTEE : The equipment / material supplied and services rendered (if applicable) shall be guaranteed to be free from all defects and faults in design & engineering, material, workmanship & manufacture and in full conformity with the Purchase Order / Contract, Technical Specifications & approved drawings / data sheets, if any, for 18 months from the date of last delivery or 12 months from the date of commissioning, whichever is earlier. Wherever Erection, Testing & Commissioning at Site are also in the scope of the Supplier, the guarantee period shall be 18 months from the date of last delivery or 12 months from the date of commissioning, whichever is later. The defective equipment / material / component shall be replaced free of cost at site. Freight & Insurance during transit shall also be in the scope of the supplier / contractor. Any expenditure for dismantling and re-erection of the replaced equipment / material / component shall be to supplier's / contractor's account. All replacements during the guarantee period shall be delivered at site promptly and satisfactorily within a period not more than 45 days from the date of reporting the defect / rejection etc. In the event of the supplier / contractor failing to replace the defective equipment / material / component within the time period mentioned above, BHEL may proceed to

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6.	LATENT DEFECT : Liability for latent defects shall be for defects inherently lying within material or arising out of design deficiency which does not manifest itself during guarantee period but later and shall be limited to five years from the expiry of the guarantee period.
7.	PERFORMANCE BANK GUARANTEE (PBG) : Supplier shall arrange to submit Performance BG / deposit on a non-judicial stamp paper of appropriate value along with first invoice or within 60 days from placement of Purchase Order (PO) whichever is earlier, in line with one of the applicable options as follows :- <u>Option "A"</u> A single rolling PBG for Rs. 50 Lakhs initially valid for 18 months with claim period of 3 months extra over and above 18 months for all the Purchase Orders being executed for Transmission Business Group, BHEL. However, validity of the PBG shall be extended till 18 months from the date of last delivery with 3 months claim period extra over and above 18 months. Single Rolling PBG option shall not be applicable in case Ex-works value of the PO at the time of placement of PO exceeds Rs. One Crore. <u>Option "B"</u> PBG for 10% of the total Ex-works PO value, valid for 18 months from the date of last delivery with claim period of 3 months extra over and above 18 months. Ex-works PO value at the time of placement of PO shall be considered for calculation of the PBG amount. <u>Option "C"</u> In case the total Ex-works PO value at the time of placement of PO does not exceed Rs. Ten Lakhs, interest free Deposit of 10% of the total Ex-works PO value at the time of placement of PO in form of Demand Draft favouring "Bharat Heavy Electricals Limited" and payable at New Delhi / Delhi / Noida shall also be acceptable to BHEL in lieu of PBG, which shall be released after expiry of 21 months from the date of last delivery after deduction, if any, within 60 days from receipt of invoice in 3 sets (original + 2 copies) to be submitted by the supplier.
	Note : i) The Bank Guarantee shall be from any bank as per Annexure for List of Banks (32 Nos.). The original PBG should be sent by issuing Bank directly to AGM (Finance), TBG, BHEL, Noida. ii) Extension of validity of the PBG in original, as per above clause, should be sent by issuing Bank directly to AGM (Finance), TBG, BHEL, Noida at least 45 days

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	before expiry of validity of the PBG. iii) Unless otherwise specified in the NIT, deviation taken for non-submission of PBG / Deposit, as applicable, shall not be accepted. iv) Supplier has to confirm one of the applicable options for submission of PBG / Deposit before placement of PO. v) In case of non-submission PBG / Deposit, as applicable, BHEL reserve the right for Risk Purchase as per terms of the NIT and impose Suspension of Business Dealings with the Supplier / Contractor. vi) BHEL reserve the right to encash the Bank Guarantee and forfeit the amount in the event of any default, failure or neglect on part of the Supplier in fulfilment of performance of the Purchase Order. vii) Value of the Bank Guarantee (at the time of submission) shall remain unchanged for any subsequent variations in Purchase Order value up to $\pm 20\%$. Beyond this variation of $\pm 20\%$, the Supplier shall arrange to enhance or may reduce the value of the Bank Guarantee accordingly for the total variation promptly. viii) Vendor to ensure submission of Certificate of Final Documentation /Confirmation regarding Non applicability of Final Documentation, as the case may be, as referred in clause No 9 regarding Final Documentation. BG shall be released only after submission of the same to BHEL TBMM.
8.	SUBMISSION OF DRAWINGS / DOCUMENTS FOR APPROVAL : Supplier shall submit the master document list within 7 days from date of Purchase Order / Contract, unless otherwise specified in the NIT, with planned dates for submission which shall be in line with activity schedule as per Purchase Order / Contract and shall be finalized with BHEL Engineering Management. Date of first submission of drawings / documents shall be certified by BHEL Engineering Management after the receipt of applicable drawings / documents (e.g. project specific cover sheet, GTP, OGA drawings, schemes, type test reports etc.) by BHEL. During detailed engineering stage, necessary hard copies of the engineering drawings / documents shall also be submitted by the supplier as per the Purchase Order / Contract requirement. The supplier shall also submit the packing drawings as per technical specifications. In case item(s) offered require any interface details of other item (not in the scope of supplier & required for operating the equipment), the supplier has to submit interfaces schedule along with submission of engineering drawings / documents. It shall be responsibility of the supplier to get the details of the interfaced item from BHEL before manufacturing to avoid any mismatch at site.
9.	FINAL DOCUMENTATION : Final documentation as called in the Technical /contract specification is to be submitted within 3 months from the date of first delivery of respective equipment, item/material. After submission of Final Documentation, BHEL Engineering Management (TBEM) will issue a Certificate of Completion of Final Documentation. Wherever Final Documentation is not applicable, BHEL Engineering Management (TBEM) will issue confirmation regarding the same, Vendor to submit the Certificate of Final Documentation /Confirmation regarding Non applicability of Final Documentation, as the case may be, to BHEL TBMM. In case of Non Submission of Certificate of Final Documentation /Confirmation regarding Non applicability of Final Documentation, BG will be liable for encashment.
10.	INSPECTION : BHEL / customer / third party shall inspect equipment / material before despatch. Stage inspection during manufacturing may also be carried out. Material to be despatched only after getting Material Despatch Clearance Certificate (MDCC) / MICC issued by BHEL. Supplier shall send inspection call on prescribed format / web site only, with an

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11.	DESPATCH DOCUMENTS : Despatch documents to be immediately sent to BHEL on despatch are as follows :- • Copy of Invoice • Copy of LR / GR in case of Indian suppliers or BL / AWB in case of foreign suppliers • Copy of Packing List (Case-wise) • Copy of Transit Insurance Certificate from underwriters • Copy of Guarantee Certificate
12.	DELIVERY PERIOD : Delivery / Completion requirement shall be mentioned in the NIT. Bidder to specify best delivery / completion period possible in weeks from the date of LOI / PO as per activity schedule for consideration by BHEL. Time required for type test, if applicable, is to be separately indicated. Note : LR / GR date or invoice date (whichever is later) for indigenous supplies and BL / AWB date for FOB / CIF (if applicable) contracts shall be considered as delivery date.
13.	LIQUIDATED DAMAGES FOR DELAYED DELIVERY: In case of delay in execution of Purchase Order beyond the contractual delivery time, an amount of 0.5% of the total Purchase Order value for supply (incl. taxes and duties, freight & insurance as applicable) per week of delay or part thereof subject to a maximum of 10% of the total Purchase Order value for supply (incl. taxes and duties, freight & insurance as applicable) shall be deducted as Liquidated Damages (LD) along with applicable GST (if any) on LD. However, in case of staggered (lot-wise) contractual delivery schedule, an amount of 0.5% of the total delayed lot value for supply (incl. taxes, duties, freight & insurance as applicable) per week of delay or part thereof subject to maximum of 10% of the total delayed lot value (Incl taxes, duties, Freight & Insurance as applicable) shall be deducted as Liquidated Damages (LD) along with applicable GST (if any) on LD Note : i) In case of any amendment / revision in P.O./WO, the LD shall be linked to the amended / revised Purchase Order / Contract value and delivery / completion time / schedule, if applicable. ii) LR / GR date or invoice date (whichever is later) for indigenous supplies and BL / AWB date for FOB / CIF (if applicable) for imported supplies shall be treated as the date of dispatch for levying LD as above. iv) However, for indigenous supply, if time period between date of receipt of material at site / destination by Site Official & the date of LR / GR or invoice (whichever is later) is more than 30 days, where distance from place of despatch as per LR / GR is upto 1000 Kms or if time period between date of receipt of material at site / destination by Site Official & the date of LR / GR or invoice (whichever is later) is more than 45 days, where distance from place of despatch as per LR / GR is more than 1000 Kms, such excess period shall also be considered for LD

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	purpose. iv) If, as per supplier, delay is not attributable to the supplier, delay analysis with documentary evidence may be submitted by the supplier at the earliest but not later than six months from the end of the financial year in which the payment is withheld. Based on the above details / documents submitted by the supplier, BHEL shall take final decision and if considered appropriate by BHEL, withheld amount (full or part as the case may be) shall be released, otherwise, full or balance withheld amount shall be treated as deduction of Liquidated Damages (LD) towards delayed delivery.
14.	VALIDITY OF OFFER : The offer shall be valid for 120 days from the due date of opening of tender (i.e. techno-commercial bid unless otherwise specified in the NIT). Prices of Spares, wherever they optional items, shall be valid till two years from the date of placement of PO.
15.	ACCEPTANCE / REJECTION OF TENDER : BHEL reserve the right to reject in full or part, any or all tender without assigning any reason thereof. BHEL also reserve right to vary the quantities as mentioned in the NIT. Acceptance of offer is subject to vendor approval by customer before opening of price bid. BHEL shall not be bound by any power of attorney granted by tenderer or by changes in composition of the firm made subsequent to award of order / contract. BHEL may however recognize such power of attorney and changes after obtaining proper legal advice, cost of which will be chargeable to the seller / contractor concerned. If the tenderer deliberately gives wrong information, BHEL reserves the right to reject such an offer at any stage or cancel the order / contract, if awarded, and forfeit the security deposit and bank guarantee.
16.	DEVIATION : The bids having deviation(s) w.r.t. tender are liable for rejection. However, BHEL, at its discretion, may load the prices for evaluation of offer with prior intimation to bidder.
17.	TENDER EVALUATION : Comparative statement shall be prepared and evaluated on total cost basis at destination/site (as per terms of NIT) considering overall quantity indicated in NIT unless contrary to same is specifically mentioned in the tender enquiry / NIT. Total cost for this purpose shall include cost of scope of work as mentioned in NIT along with applicable taxes & duties, and other services etc. (if applicable). GST input credit available to BHEL shall be reduced from prices while determining L1 status. In case all bidders are foreign & Port of Import (destination port) is same for all the bidders, evaluation of offers shall be done on CIF (Port of Import) basis. Otherwise, evaluation of offers shall be done on the basis of delivered cost at site /destination to BHEL. Further, in case of foreign bidders, marine freight & insurance are to be quoted separately & the purchase order may be placed on FOB basis with an option for delivery on CIF / CFR basis, if required, later. In case of foreign bidders, Exchange Rate (TT selling rate of State Bank of India) as on date of tender opening (Part-I Bid in case of two part bid) shall be considered. If the relevant day happens to be a bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken for tender evaluation.
18.	LOADING CRITERIA : List of permissible deviations & loading criteria thereof are as follows :- a) Payment Terms Base rate of SBI (as applicable on the date of bid opening / techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the

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period of relaxation sought by bidder(s) against terms of payment in the NIT.

- b) Liquidated Damages (LD) for Delayed Delivery
Loading on LD clause shall be to the extent to which it is not agreed to by the bidder (at offered value).
- c) In case of foreign bidders, if the quoted prices is on CIF basis only, it shall be loaded to arrive at total FOR (Site / Destination) price, as applicable, by factors as follows :-
- i) Port handling / clearing charges: @ 1% of CIF value to arrive at Customs Assessable Value.
 - ii) Custom Duty (including CVD & SAD) as per NIT prevailing on date of price bid opening.
 - iii) Inland Freight & Transit Insurance: @ 5% of CIF value where distance between site / destination and Port of Discharge is upto 1000 Kms or @ 7% of CIF value where distance between site / destination and Port of Discharge is more than 1000 Kms.

Note :

Additional deviations (if considered acceptable by BHEL) & the loading criteria shall be communicated to all the qualified bidders before price bid opening.

19. ARBITRATION :

In the event of any dispute emanating from and relating to this contract, the matter shall be referred to the sole arbitration of the person appointed by the competent authority of BHEL. Subject to aforesaid, the provisions of "The Arbitration and Conciliation Act, 1996" and the rules made thereunder as amended from time to time in India shall apply to the arbitration proceedings. The venue of arbitration shall be in New Delhi.

Further there shall be no claim for any pre-reference or pendente-lite interest on the claims and any claim for such interest made shall be void.

However, in case of contract with Public Sector Enterprise / Undertaking (PSE/PSU) or Govt. Dept., the extant guidelines of Govt. of India shall be followed.

20. LEGAL SETTLEMENT :

Indian Courts at New Delhi / Delhi shall have exclusive jurisdiction to decide the dispute, if any, arising out of or in respect of the contract(s) to which these conditions are applicable. Contract, including all matters connected with contract, shall be governed by the Indian Law, both substantive and procedural, for the time being in force including modification thereto.

21. SUB-CONTRACTING :

In case further subcontracting of BHEL Purchase Order / Contract or part thereof is envisaged by supplier, the same can be done after written permission is obtained from BHEL. However it shall not absolve the Supplier / Contractor of the responsibility of fulfilling BHEL Purchase Order / Contract requirements. In case of subcontracting of Purchase Order / Contract awarded by BHEL or part thereof without such permission, BHEL reserve the right to cancel the Purchase Order / Contract and source such material / component / equipment / system from any other agency at the risk and cost of the Supplier / Contractor.

If Supplier / Contractor is an individual or proprietary concern and the individual or the proprietor dies or the partnership is dissolved or substantially affected, then unless BHEL is satisfied that legal representative of individual Supplier / Contractor or proprietor of proprietary concern and surviving partners of partnership firm are capable of carrying out and completing the Purchase Order / Contract, BHEL shall be entitled to cancel the Purchase Order / Contract as to its incomplete portion and without being in any way liable to payment of any compensation to legal

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	representative of Supplier / Contractor and / or to surviving partners of Supplier's / Contractor's firm on account of cancellation of the Purchase Order / Contract. Decision of BHEL that legal representatives of deceased Supplier / Contractor or surviving partners of the Supplier's / Contractor's firm cannot carry out and complete the Purchase Order / Contract shall be final and binding on the parties hereto. Terms and Conditions shall not get affected in case of de-merger / amalgamation / taking-over / re-constitution etc.
22.	RISK PURCHASE : In case the Supplier / Contractor fails to supply or fails to comply with terms & conditions of the Purchase Order / Contract or delivers equipment / material not of the contracted quality or fails to adhere to the contract specifications or fails to perform as per the activity schedule and there are sufficient reasons even before expiry of the delivery / completion period to justify that supplies shall be inordinately delayed beyond contractual delivery / completion period, BHEL reserve the right to cancel the Purchase Order / Contract either in whole or in part thereof without compensation to Supplier / Contractor and if BHEL so desires, may procure such equipment / material / items not delivered or others of similar description where equipment / material / items exactly complying with particulars are not readily procurable in the opinion of BHEL which is final and in such manner as deemed appropriate, at the risk and cost of the Supplier / Contractor and the Supplier / Contractor shall be liable to BHEL for any excess cost to BHEL. However, the Supplier / Contractor shall continue execution of the Purchase Order / Contract to the extent not cancelled under the provisions of this clause. Recovery amount on account of purchases made by BHEL at the risk and cost of Supplier / Contractor shall be the difference of total value of new Purchase Order (PO) value and total value of old Purchase Order for applicable items, where the total value of new PO is more than total value of old PO for applicable items, plus additional 15% of the total ex-works value of new PO as overheads. The Supplier / Contractor shall on no account be entitled to any gain on such risk & cost purchase. In case the purchase order (PO) value of the new PO is less than the PO value of the old PO, 15% of the total ex-works value of the new PO shall be recovered as overheads and the difference between the PO value of the old PO and the new PO shall not be considered for calculation of the recovery amount.
23.	ADJUSTMENT OF RECOVERY : Any amount payable by the Supplier / Contractor under any of the condition of this contract shall be liable to be adjusted against any amount payable to the Supplier / Contractor under any other Purchase Order / Contract awarded to him by any BHEL unit. This is without prejudice to any other action, as may be deemed fit, by BHEL.
24.	FORCE MAJEURE CONDITION : If by reason of war, civil commotion, act of god, Government restrictions, strike, lockout which are not in control of Supplier / Contractor the deliveries / services are delayed, Supplier / Contractor shall not be held responsible. If at any time during the continuance of the Purchase Order / Contract, the performance in whole or in part by either party of any obligations under the Purchase Order / Contract is prevented or delayed by reason of any war hostilities, acts of the public enemy, restrictions by Govt. of India, civil commotion, sabotage, fires, floods, explosion, epidemics, quarantine restrictions, strike, lock-outs or acts of God (hereinafter referred to as "event"), which are not in control of Supplier / Contractor or BHEL, then provided notice of the happening of such event is given by either party to the other within fifteen (15) days from the date of occurrence thereof, neither party shall by reason of such event be entitled to terminate the Purchase Order /

Sr. No.	Contract nor shall have any claim for damages against each other in respect of such non-performance and delay in performance. Performance under the Purchase Order / Contract shall be resumed immediately after such event has come to an end or ceased to exist and decision of BHEL as to whether the deliveries have to be resumed or not shall be final, conclusive and binding on the parties hereto. In the event of the parties hereto not able to agree that a force majeure event has occurred, the parties shall submit the disputes for resolution pursuant to the provisions hereunder, provided that the burden of proof as to whether a force majeure event has occurred shall be upon the party claiming such an event Notwithstanding above provisions, BHEL shall reserve the right to cancel the Purchase Order / Contract, wholly or partly, in order to meet the overall project schedule and make alternative arrangements for completion of delivery and other schedules.
25.	MANUFACTURING QUALITY PLAN (MQP) : Supplier to submit approved MQP in line with requirement of BHEL/customer.
26.	SUPPLIER PERFORMANCE MONITORING AND RATING SYSTEM : BHEL reserve the right for evaluation of Supplier Performance Rating as per Supplier Performance Monitoring and Rating System of BHEL for necessary action. Details are available at BHEL Website www.bhel.com for reference.
27.	DEALING WITH BANNED SUPPLIERS / CONTRACTORS IN BHEL : Offers of the bidders, who are on the banned list, as also the offers of the bidders who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL website www.bhel.com for reference.
28.	ORDER OF PRECEDENCE : The order of precedence shall be as follows :- a) Special Terms & Conditions (STC) for Tender Enquiry / Contract, if any b) General Terms & Conditions (GTC) for Tender Enquiry / Contract & Additional General Terms & Conditions (GTC) for Tender Enquiry / Contract for Erection Testing & Commissioning (ETC) at Site, if applicable Provisions in (a) above shall prevail over (b). In case of conflict, between Technical Specifications and STC / GTC, bidder to seek necessary clarifications from BHEL concerned official as specified in NIT.
29.	PACKING : Packing shall be in conformity with specifications and shall be such as to ensure prevention of damages, corrosion, deterioration, shortages, pilferage and loss in transit or storage. In case of shipment by sea or air, the packing shall be sea-worthy or air-worthy respectively and of international standards. Different types of spares i.e start-up / commissioning spares and initial spares (mandatory spares and recommended O&M spares) are to be packed separately. Packing List shall be submitted as per standard format along with advance set of documents for claiming payment which shall also indicate :- a) Case / Packing size (as applicable). b) Gross weight and net weight of each package c) Detailed contents of the package with quantity of each item separately. Project, Item / Package Description, BHEL's PO No. with date & Case / Packing Mark should also be clearly mentioned on the Case / Packing and Packing List for identification. Also, Packing List must be duly signed & should include respective Invoice No. & LR No.

Note :

Foreign suppliers to furnish details to arrange inland transportation by BHEL, if applicable, as follows :-

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	i) No. of Packages ii) Size with Weight (Gross & Net) of each Package iii) No. of Containers with type & size required for inland transportation iv) Type of Cargo (Break Bulk / LCL / FCL) v) Customs Tariff No.
30.	COLOUR CODING : Aluminium stickers are required to be attached to large components but plastic sheet tags should be tied with small components, giving details like purchase order, description of the component, quantity etc. Tags should be of the colour as follows :- a) Main equipment : Yellow or White tag b) Start-up / Commissioning spares : Blue tag c) Mandatory spares : Pink or Red tag d) Recommended / O&M spares : Green tag
31.	MICRO, SMALL & MEDIUM ENTERPRISES (MSME) : MSMED Act 2006 as amended from time to time & extant regulations of Govt. of India for MSME will be applicable. Micro & Small Enterprises (MSE) can avail the intended benefits only if they submit along with the offer / bid, attested copies of either Acknowledgement of Entrepreneur Memorandum Part-II (EM-II certificate) having deemed validity (five years from the date of issue of acknowledgement in EM-II) or valid NSIC certificate or EM-II certificate along with attested copy of a CA certificate (As per BHEL format where deemed validity of EM-II certificate of five years have expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of opening (for Techno-commercial Bid : Part-I in case of two part bid). Non-submission of such documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested (in original) by a Gazetted officer. Copy of Udyog Aadhaar Memorandum with Acknowledgement of Ministry of Micro, Small & Medium Enterprises should also be furnished.
32.	BUSINESS ETHICS / SUSPENSION OF BUSINESS DEALINGS WITH SUPPLIERS / CONTRACTORS : If any bidder / supplier / contractor during pre-tendering / tendering / post tendering / award / execution / post-execution, indulges in malpractices cheating, bribery, fraud or other misconduct or formation of cartel so as to influence the bidding process or influences the price or fails to perform or is in default without any reasonable cause etc or performs any act considered objectionable as per extant guidelines, action may be taken against such bidders/supplier/contractor as per extant "Guidelines for Suspension of Business Dealings with Suppliers/Contractors". Abridged version of same is available at BHEL website (www.bhel.com) on "Supplier Registration" Page.
33.	REVERSE AUCTION : BHEL reserve the right to go for Reverse Auction (RA) instead of opening the sealed envelope price bid, submitted by the bidder or price bid submitted by the bidder through e-procurement system. This will be decided after techno-commercial evaluation. All bidders to give their acceptance for participation in RA. Non-acceptance to participate in RA may result in non-consideration of their bids, in case BHEL decides to go for RA. In case BHEL decides to go for Reverse Auction, only those bidders who have given their unconditional acceptance to participate in RA will be allowed to participate in the Reverse Auction. Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit "online sealed bid" in the Reverse Auction. Non-submission of "online sealed bid" by the bidder will be

Sr. No.	considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue. General Terms and Conditions of RA are available at Annexure. Business Rules for RA shall be sent to the bidders before conducting RA. Abridged Version of "Common Guidelines for Conducting Reverse Auction" may also be seen at BHEL website (www.bhel.com) on "Supplier Registration" Page & "Tender Notifications" Page.
34.	INTEGRITY PACT : Bidders shall have to enter into Integrity Pact with BHEL, duly signed with seal in original, if specified in NIT / RFQ failing which bidder's offer shall be liable for rejection.
35.	TERMINATION OF CONTRACT : BHEL shall have the right to cancel the Purchase Order / Contract without any financial implication to BHEL if vendor approval by end user / customer is withdrawn or in case of Suspension of Business Dealings with the Suppliers / Contractors by BHEL.
	BHEL shall have the right to cancel Purchase Order / Contract, wholly or in part, in case they are obliged to do so on account of any decline, diminution, curtailment or stoppage of their business and in that event, the Supplier's / Contractor's compensation claim shall be settled mutually. In case of cancellation of Purchase Order / Contract for main supply, all other associated Purchase Orders / Contracts like those for Mandatory Spares / Recommended Spares / Erection, Testing & Commissioning (ETC) / Supervision of ETC, if any, would also get cancelled.
36.	SHELF LIFE : Supplier has to inform the list of the items / sub-items which have limited shelf life like consumables or those required for the first fill and shall indicate the corresponding shelf life period in the offer. Such items / sub-items shall be manufactured / despatched only after getting formal clearance from BHEL.
37.	LIMITATION OF LIABILITY : Notwithstanding any other provisions, except in cases of wilful misconduct and / or criminal negligence / acts, a) Neither the Supplier / Contractor nor BHEL shall be liable to the other, whether in Purchase Order / Contract, tort, or otherwise, for any consequential loss or damage, loss of use, loss of production or loss of profits or interest costs, provided however that this exclusion shall not apply to any obligation of the Supplier / Contractor to pay Liquidated Damages to the BHEL and b) Notwithstanding any other provisions incorporated elsewhere in the contract, the aggregate liability of the Contractor in respect of this contract, whether under the Contract, in tort or otherwise, shall not exceed total Contract Price, provided however that this limitation shall not apply to any obligation of the Vendor to indemnify BHEL with respect to Patent Infringement or Intellectual Property Rights.
38.	SHORTAGES / DAMAGES : a) Against Supply only or Supply where Supervision of Erection, Testing & Commissioning (ETC) at Site or Supply where Testing & Commissioning at Site is in scope of the supplier : Any shortages and / or damages in supplies shall be supplied / replenished free of cost by the supplier as early as possible but not later than 30 days from the date of intimation by BHEL to the supplier.

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	b) Against Supply where Erection, Testing & Commissioning (ETC) at Site is in scope of the supplier : Any shortages and / or damages in supplies and during handling / storage, erection, testing and commissioning at site shall be supplied / replenished free of cost by the Supplier / Contractor, as early as possible, to meet the contractual completion time / schedule. Note: There shall not be any extension in the contractual delivery time / schedule due to any shortages and / or damages in supplies.
39.	VARIATION OF CONTRACT VALUE / QUANTITY VARIATION : BHEL shall have the right to variation in quantities of items within $\pm 30\%$ of the total Purchase Order / Contract value at the time of placement of PO or award of Contract on overall basis for all amendments together within two years from the date of original Purchase Order / Contract or completion of execution of the Purchase Order / Contract whichever is earlier but quantities of individual items may vary to any extent or may get deleted unless otherwise specified in the technical specifications. No compensation is payable due to variation in the quantities and the Supplier / Contractor shall be bound to accept the same the contracted prices / rates without any escalation. However, if the Purchase Order / Contract is on "Lumpsum" basis, no variation of Purchase Order / Contract value shall be admissible to the Supplier / Contractor within the scope of Purchase Order / Contract, as long as the inputs remain unchanged.
40.	STATUTORY VARIATION : GST rates prevailing at the time of dispatch of goods/ completion of services shall be payable by BHEL. All other taxes, duties, charges, royalty, cess, other levies shall be deemed to be included in the Ex Works Prices /Charges quoted by bidders and no variations shall be payable in respect thereof . No other variations such as on customs duty, exchange rate, minimum wages, prices of controlled commodities, any other input etc. shall be payable by the BHEL. Notwithstanding anything above, where the actual completion of the supply / services occurs beyond the period stipulated in the Purchase Order / Contract or any extension thereof, variations referred to above, will be limited to the rates prevailing on the dates of such agreed completion periods only. For variations after the agreed completion periods, the Supplier / Contractor alone shall bear the impact for the upward revisions and for downward revisions BHEL shall be given the benefit of reduction in applicable taxes /GST. This will be without prejudice to the levy of liquidated damages for delay in delivery / completion. If new tax is introduced by Central/ State Govt/ Municipality becomes directly applicable on items specified in Bill of Quantities/Purchase Order/Contract, full reimbursements shall be made provided it becomes applicable on items specified in Bill of Quantities. However, any additional tax implication due to delay in delivery, beyond the Contractual Delivery, attributable to supplier shall be borne by supplier.
41.	MODE OF PAYMENT : Payment shall be made directly to the Supplier / Contractor by BHEL through NEFT / RTGS.
42.	CONFIDENTIALITY : Supplier / Contractor shall, at all times, undertake to maintain complete confidentiality of all data, information, software, drawings & documents etc. belonging to BHEL and also of systems, procedures, reports, input documents, manuals, results and any other BHEL documents discussed and / or finalized during the course of execution of Purchase Order / Contract.

Sr. No.	43. INDEMNIFICATION : The Supplier / Contractor shall indemnify and keep indemnified and hold harmless BHEL and its employees and officers from and against any and all claims, suits, actions or administrative proceedings, demands, losses, damages, costs and expenses and any other claim of whatsoever nature in respect of the death or injury of any person or loss of or damage to any property arising during the course and out of the execution of the Purchase Order / Contract. 44. TITLE OF GOODS : a) Ownership of the equipment / material procured in India, shall be transferred to BHEL upon loading on to the mode of transport to be used for transportation of the said equipment / material from the works to the site / destination and upon endorsement of the dispatch documents in favour of BHEL. b) Ownership of the equipment / material to be imported into the country where the site is located, if not procured in India, shall be transferred to BHEL upon loading on the mode of transport to be used for transportation of the equipment / material from the country of origin to that country / destination and upon endorsement of despatch document in favour of BHEL. c) Notwithstanding the transfer of ownership of the equipment / material, the responsibility for care and safe custody thereof together with the risk of loss or damage thereto for whatsoever reason shall remain with the Supplier. 45. COMPLIANCE OF STATUTORY REQUIREMENTS : The vendor shall comply with all State and Central Laws / Acts, Statutory Rules, Regulations etc., as may be enacted by the Government during the tenure of the Purchase Order / Contract and having in force and applicable to the Purchase Order / Contract and nothing shall be done by the Supplier / Contractor in contravention of any Law / Act and / or Rules / Regulations, thereunder or any amendment thereof. The Supplier / Contractor shall pay all taxes, fees, licence charges / deposits, duties, tolls, royalty, commissions or other charges which may be levied on account of any of his operations connected with the Purchase Order / Contract. In case BHEL is constrained to make any of such payments, BHEL shall recover the same from the Supplier / Contractor either from moneys due to him or otherwise as deemed fit. 46. ACCEPTANCE OF ORDER : Supplier should acknowledge and accept the Letter of Award / Purchase Order issued by BHEL within 7 days of the issue of Letter of Award / Purchase Order. In case of any discrepancy / typographical error in issue of Purchase Order / Contract, the agreed terms & conditions, scope of work, rates / prices for placement of PO / award of contract shall be applicable and BHEL reserves the right to issue amendment(s) to PO / Contract for correction of discrepancies / typographical errors in the PO / Contract at a later date. 47. FRAUD PREVENTION POLICY : The Bidder along with its associate / collaborators / sub-contractors / sub-vendors / consultants / service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website http://www.bhel.com and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.
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Signature of Bidder (Authorized Signatory) with Date & Seal

SCHEDULE OF COMMERCIAL DEVIATION

This Format is to be submitted in original duly signed by bidder.
The following are the deviations/variations/exceptions from the Terms and Conditions :-

S N	CLAUSE NO. OF TERMS AND CONDITIONS	STATEMENT OF DEVIATION

In case, this schedule is not submitted, it will be presumed that the equipment /material to be supplied under this contract is deemed to be in compliance with the Terms and Conditions.

If there is NIL deviation,even then the format to be filled as NIL DEVIATION.

Note : Continuation Sheets of like size and format may be used as per the Bidder's Requirement and shall be annexed to this schedule.

Place :
Date :

Signature of the authorised representative of

Bidder's name :
Designation:.....
Company Seal:.....



SCHEDULE OF TECHNICAL DEVIATION

This Format is to be submitted in original duly signed by bidder.
The following are the deviations/variations/exceptions from the Terms and Conditions :-

S N	CLAUSE NO. OF TERMS AND CONDITIONS	STATEMENT OF DEVIATION

In case, this schedule is not submitted, it will be presumed that the equipment /material to be supplied under this contract is deemed to be in compliance with the Terms and Conditions.

If there is NIL deviation,even then the format to be filled as NIL DEVIATION.

Note : Continuation Sheets of like size and format may be used as per the Bidder's Requirement and shall be annexed to this schedule.

Place :
Date :

Signature of the authorised representative of

Bidder's name :
Designation:.....
Company Seal:.....

ACTIVITY SCHEDULE FOR CLAMPS & CONNECTORS

ENQUIRY NO:....., Dated.....

SN	ACTIVITY	TIME ALLOTTED [in weeks]	CUMULATIVE TIME FROM RECEIPT OF INPUTS FROM BHEL [in weeks]	SCOPE
1.	Submission of Documents necessary for getting manufacturing clearance like drawings, Data sheet.	2	2	BY SUPPLIER
2.	Review and Approval of documents from BHEL/Customer and issue of manufacturing clearance.	2	4	BHEL SCOPE
3.	Manufacturing Time	9	13	BY SUPPLIER
4.	Inspection call	2	15	BY SUPPLIER
5.	Inspection by BHEL/Customer	1	16	BHEL SCOPE
6.	Issue of Dispatch clearance	2	18	BHEL SCOPE
7.	Dispatch	2	20	BY SUPPLIER

1. Inspection call to be issued 2 weeks in advance.
2. Supplier must ensure the completeness and correctness of the requisite documents before submission for approval. Delay in approval on account of incomplete / inadequate information shall be the responsibility of supplier. Supplier must submit revised documents / comments of BHEL ENGG within 7 days.
3. Inspection call should be given in the prescribed format only. Inspection calls not in the prescribed format shall not be entertained.
4. Qty to be offered for inspection should be in accordance within Delivery-schedule – lot. BHEL reserves the right not to entertain multiple inspection calls for a Delivery – lot and delay on this account shall be the responsibility of Supplier.

Signature & Seal of

Supplier

Date:

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SCHEDULE OF PRICE BID

(BIDDERS TO STRICTLY ENSURE SUBMITTING THE PRICE BIDS IN THIS FORMAT)

PROJECT: UPPTCL BALLIA PROJECT

ENQUIRY NO:

ITEM: CLAMPS & CONNECTORS

SN	DESCRIPTION OF ITEM (As per Tech Spec. TB-317-316-022A)	UNIT	QTY	HSN CODE	UNIT PRICE EX. WORKS (Rs.)	TOTAL EX. WORKS (Rs.)	UNIT FREIGHT & INSURANCE UP TO SITE (Rs.)	TOTAL FREIGHT & INSURANCE UP TO SITE (Rs.)	GST @.....% OF TOTAL EX- WORKS (Rs.)	GST @.....% OF (TOTAL FREIGHT & INSURANCE UP TO SITE)	TOTAL F.O.R. DESTINATION PRICE
1	SUPPLY- CLAMPS & CONNECTORS 72.5KV 25KA FOR 1S 800A PT CONNECTOR SUITABLE FOR SINGLE MOOSE	NO	3								
2	SUPPLY- CLAMPS & CONNECTORS 72.5KV 25KA FOR 1S 800A CT CONNECTOR SUITABLE FOR SINGLE MOOSE	NO	6								
3	SUPPLY- CLAMPS & CONNECTORS 72.5KV 25KA FOR 1S 800A CB CONNECTOR SUITABLE FOR SINGLE MOOSE	NO	6								
4	SUPPLY- CLAMPS & CONNECTORS 66KV 25KA FOR 1S 800A ISOLATOR (HCB) CONNECTOR SUITABLE FOR SINGLE MOOSE	NO	6								
5	SUPPLY- CLAMPS & CONNECTORS 400KV 50KA FOR 3S 2000A WT CONNECTOR SUITABLE FOR TWIN MOOSE	NO	4								
6	SUPPLY- CLAMPS & CONNECTORS 400KV 50KA FOR 3S 2000A WT CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS RIGID TYPE	NO	4								
	SUPPLY- CLAMPS & CONNECTORS 400KV 50KA FOR 3S 2000A TEE CONNECTOR SUITABLE FOR TWIN MOOSE TO TWIN CONDUCTOR AS PER TS	NO	6								
8	SUPPLY- CLAMPS & CONNECTORS 400KV 50KA FOR 3S 2000A TEE CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS TO TWIN CONDUCTOR AS PER TS	NO	6								
9	SUPPLY- CLAMPS & CONNECTORS 400KV 50KA FOR 3S 2000A STRAIGHT CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS TO TWIN CONDUCTOR AS PER TS	NO	6								
10	SUPPLY- CLAMPS & CONNECTORS 400KV 50KA FOR 3S 2000A REACTOR BUSHING CONNECTOR SUITABLE FOR TWIN MOOSE	NO	3								
11	SUPPLY- CLAMPS & CONNECTORS 400KV 50KA FOR 3S 2000A GIS BUSHING CONNECTOR SUITABLE FOR TWIN MOOSE	NO	6								
12	SUPPLY- CLAMPS & CONNECTORS 400KV 50KA FOR 3S 2000A GIS BUSHING CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, RIGID TYPE	NO	4								
13	SUPPLY- CLAMPS & CONNECTORS 400KV 50KA FOR 3S 2000A BUSHING CONNECTOR SUITABLE FOR TWIN MOOSE	NO	6								
14	SUPPLY- CLAMPS & CONNECTORS 400KV 50KA FOR 3S 1000A TEE CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS TO SINGLE CONDUCTOR AS PER TS	NO	4								
15	SUPPLY- CLAMPS & CONNECTORS 400KV 50KA FOR 3S 1000A PG CLAMP SUITABLE FOR SINGLE MOOSE TO SINGLE CONDUCTOR AS PER TS	NO	24								
16	SUPPLY- CLAMPS & CONNECTORS 400KV 50KA FOR 3S CVT CONNECTOR SUITABLE FOR TWIN MOOSE	NO	6								
17	SUPPLY- CLAMPS & CONNECTORS 400KV CORONA BELL SUITABLE FOR 4 INCH IPS AL TUBE	NO	8								
	SUPPLY- CLAMPS & CONNECTORS 400KV BPI CONNECTOR SUITABLE FOR TWIN MOOSE	NO	15								
19	SUPPLY- CLAMPS & CONNECTORS 400KV BPI CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, SLIDING THROUGH TYPE	NO	6								
20	SUPPLY- CLAMPS & CONNECTORS 33KV 25KA FOR 1S 800A PT CONNECTOR SUITABLE FOR SINGLE MOOSE	NO	3								
21	SUPPLY- CLAMPS & CONNECTORS 33KV 25KA FOR 1S 800A ISOLATOR (HDB) CONNECTOR SUITABLE FOR SINGLE MOOSE	NO	6								
22	SUPPLY- CLAMPS & CONNECTORS 33KV 25KA FOR 1S 800A CT CONNECTOR SUITABLE FOR SINGLE MOOSE	NO	6								
23	SUPPLY- CLAMPS & CONNECTORS 33KV 25KA FOR 1S 800A CB CONNECTOR SUITABLE FOR SINGLE MOOSE	NO	6								
24	SUPPLY- CLAMPS & CONNECTORS 33KV 25KA FOR 1S 800A BUSHING CONNECTOR SUITABLE FOR SINGLE MOOSE	NO	6								
25	SUPPLY- CLAMPS & CONNECTORS 220KV 40KA FOR 3S 800A TEE CONNECTOR SUITABLE FOR SINGLE ZEBRA TO SINGLE CONDUCTOR AS PER TS	NO	12								
26	SUPPLY- CLAMPS & CONNECTORS 220KV 40KA FOR 3S 2000A TEE CONNECTOR SUITABLE FOR TWIN MOOSE TO TWIN CONDUCTOR AS PER TS	NO	2								
27	SUPPLY- CLAMPS & CONNECTORS 220KV 40KA FOR 3S 2000A TEE CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS TO TWIN CONDUCTOR AS PER TS	NO	1								

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SCHEDULE OF PRICE BID

(BIDDERS TO STRICTLY ENSURE SUBMITTING THE PRICE BIDS IN THIS FORMAT)

PROJECT: UPPTCL BALLIA PROJECT

ENQUIRY NO:

ITEM: CLAMPS & CONNECTORS

SN	DESCRIPTION OF ITEM (As per Tech Spec. TB-317-316-022A)	UNIT	QTY	HSN CODE	UNIT PRICE EX. WORKS (Rs.)	TOTAL EX. WORKS (Rs.)	UNIT FREIGHT & INSURANCE UP TO SITE (Rs.)	TOTAL FREIGHT & INSURANCE UP TO SITE (Rs.)	GST @..... % OF TOTAL EX- WORKS (Rs.)	GST @..... % OF (TOTAL FREIGHT & INSURANCE UP TO SITE)	TOTAL F.O.R. DESTINATION PRICE
28	SUPPLY- CLAMPS & CONNECTORS - 220KV 40KA FOR 3S 2000A STRAIGHT CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS TO TWIN CONDUCTOR AS PER TS	NO	6								
29	SUPPLY- CLAMPS & CONNECTORS - 220KV 40KA FOR 3S 2000A GIS BUSHING CONNECTOR SUITABLE FOR TWIN MOOSE	NO	6								
30	SUPPLY- CLAMPS & CONNECTORS - 220KV 40KA FOR 3S 2000A CABLE-SEALING-END CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, RIGID TYPE	NO	8								
31	SUPPLY- CLAMPS & CONNECTORS - 220KV 40KA FOR 3S 2000A CABLE-SEALING-END CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, EXPANSION TYPE	NO	4								
32	SUPPLY- CLAMPS & CONNECTORS - 220KV 40KA FOR 3S 2000A BUSHING CONNECTOR SUITABLE FOR TWIN MOOSE	NO	6								
33	SUPPLY- CLAMPS & CONNECTORS - 220KV 40KA FOR 3S 1600A BUSHING CONNECTOR SUITABLE FOR TWIN MOOSE	NO	6								
34	SUPPLY- CLAMPS & CONNECTORS - 220KV 40KA FOR 3S 1000A WT CONNECTOR SUITABLE FOR SINGLE MOOSE	NO	8								
35	SUPPLY- CLAMPS & CONNECTORS - 220KV 40KA FOR 3S 1000A WT CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, RIGID TYPE	NO	8								
36	SUPPLY- CLAMPS & CONNECTORS - 220KV 40KA FOR 3S 1000A WT CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, EXPANSION TYPE	NO	4								
37	SUPPLY- CLAMPS & CONNECTORS - 220KV 40KA FOR 3S 1000A TEE CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS TO SINGLE CONDUCTOR AS PER TS	NO	1								
38	SUPPLY- CLAMPS & CONNECTORS - 220KV 40KA FOR 3S 1000A PG CLAMP SUITABLE FOR SINGLE MOOSE TO SINGLE CONDUCTOR AS PER TS	NO	16								
39	SUPPLY- CLAMPS & CONNECTORS - 220KV 40KA FOR 3S 1000A CVT CONNECTOR SUITABLE FOR SINGLE MOOSE	NO	12								
40	SUPPLY- CLAMPS & CONNECTORS - 220KV 40KA FOR 3S 1000A CABLE-SEALING-END CONNECTOR SUITABLE FOR SINGLE MOOSE	NO	4								
41	SUPPLY- CLAMPS & CONNECTORS - 220KV 40KA FOR 3S RIGID SPACER SUITABLE FOR TWIN MOOSE	NO	90								
42	SUPPLY- CLAMPS & CONNECTORS - 220KV 40KA FOR 3S LA CONNECTOR SUITABLE FOR TWIN MOOSE	NO	12								
43	SUPPLY- CLAMPS & CONNECTORS - 220KV 40KA FOR 3S FLEXIBLE SPACER SUITABLE FOR TWIN MOOSE	NO	60								
44	SUPPLY- CLAMPS & CONNECTORS - 220KV BPI CONNECTOR SUITABLE FOR TWIN MOOSE	NO	12								
45	SUPPLY- CLAMPS & CONNECTORS - 220KV BPI CONNECTOR SUITABLE FOR SINGLE MOOSE	NO	12								
46	SUPPLY- CLAMPS & CONNECTORS - 220KV BPI CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, RIGID THROUGH TYPE	NO	12								
47	SUPPLY- CLAMPS & CONNECTORS - 132KV 40KA FOR 3S 800A TEE CONNECTOR SUITABLE FOR CONDUCTOR AS PER TS TO CONDUCTOR AS PER TS	NO	15								
48	SUPPLY- CLAMPS & CONNECTORS - 132KV 40KA FOR 3S 2000A TEE CONNECTOR SUITABLE FOR TWIN MOOSE TO TWIN CONDUCTOR AS PER TS	NO	3								
49	SUPPLY- CLAMPS & CONNECTORS - 132KV 40KA FOR 3S 2000A LA CONNECTOR SUITABLE FOR TWIN MOOSE	NO	6								
50	SUPPLY- CLAMPS & CONNECTORS - 132KV 40KA FOR 3S 2000A CABLE-SEALING-END CONNECTOR SUITABLE FOR TWIN MOOSE	NO	6								
51	SUPPLY- CLAMPS & CONNECTORS - 132KV 40KA FOR 3S 2000A BUSHING CONNECTOR SUITABLE FOR TWIN MOOSE	NO	6								
52	SUPPLY- CLAMPS & CONNECTORS - 132KV 40KA FOR 3S 1000A TEE CONNECTOR SUITABLE FOR TWIN MOOSE TO SINGLE CONDUCTOR AS PER TS	NO	1								
53	SUPPLY- CLAMPS & CONNECTORS - 132KV 40KA FOR 3S 1000A TEE CONNECTOR SUITABLE FOR SINGLE MOOSE TO SINGLE CONDUCTOR AS PER TS	NO	6								
54	SUPPLY- CLAMPS & CONNECTORS - 132KV 40KA FOR 3S 1000A TEE CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS TO TWIN CONDUCTOR AS PER TS	NO	1								
55	SUPPLY- CLAMPS & CONNECTORS - 132KV 40KA FOR 3S 1600A TEE CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS TO SINGLE CONDUCTOR AS PER TS	NO	3								

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SCHEDULE OF PRICE BID											
(BIDDERS TO STRICTLY ENSURE SUBMITTING THE PRICE BIDS IN THIS FORMAT)											
PROJECT: UPPTCL BALLIA PROJECT											
ENQUIRY NO:											
ITEM: CLAMPS & CONNECTORS											
SN	DESCRIPTION OF ITEM (As per Tech Spec. TB-317-316-022A)	UNIT	QTY	HSN CODE	UNIT PRICE EX. WORKS (Rs.)	TOTAL EX. WORKS (Rs.)	UNIT FREIGHT & INSURANCE UP TO SITE (Rs.)	TOTAL FREIGHT & INSURANCE UP TO SITE (Rs.)	GST @..... % OF TOTAL EX- WORKS (Rs.)	GST @.....% OF (TOTAL FREIGHT & INSURANCE UP TO SITE)	TOTAL F.O.R DESTINATION PRICE
56	SUPPLY- CLAMPS & CONNECTORS 132KV 40KA FOR 3S 1500A CABLE-SEALING-END CONNECTOR SUITABLE FOR SINGLE MOOSE	NO	15								
57	SUPPLY- CLAMPS & CONNECTORS 132KV BPL CONNECTOR SUITABLE FOR TWIN MOOSE	NO	6								
58	SUPPLY- CLAMPS & CONNECTORS 132KV BPL CONNECTOR SUITABLE FOR SINGLE MOOSE	NO	15								
59	SUPPLY- CLAMPS & CONNECTORS 132KV BPL CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS RIGID SLIDING THROUGH TYPE	NO	1								
60	SUPPLY- CLAMPS & CONNECTORS STRAIN CLAMP FOR SHIELD WIRE 10 98MM DIA	NO	6								
61	SUPPLY- CLAMPS & CONNECTORS CORONA BELL SUITABLE FOR 4 INCH IPS AL TUBE	NO	4								
62	SUPPLY- CLAMPS & CONNECTORS CLAMPS FOR 50X6MM EARTHING STRIP ON LATTICE PIPE STRUCTURE	NO	20								
63	CLAMPS & CONNECTORS PG CLAMP FOR SHIELD WIRES OF DIA 10 98MM	NO	40								
64	CLAMPS & CONNECTORS PAD CONNECTOR TO SUIT 10 98MM DIA GS WIRE AND 75X12 MM GS FLAT	NO	15								
65	CLAMPS & CONNECTORS CLAMPS FOR 75X12MM EARTHING STRIP ON LATTICE PIPE STRUCTURE	NO	550								
66	CLAMPS & CONNECTORS CLAMP FOR 10 98MM DIA SHIELD WIRE ON LATTICE PIPE STRUCTURE	NO	350								
A	TOTAL DELIVERED COST TO BHEL=										
NOTE:											
1. PLEASE NOTE THAT UNPRICED COPY OF PRICE BID (i.e. WITH ALL PRICES BLANKED) SHALL BE FURNISHED ALONG WITH TECHNO-COMMERCIAL BID.											
2. REQUIRED COPIES OF FORMAT BE MADE & DETAILS MAY BE ANNEXED.											
3. THE PRICES MUST BE QUOTED IN THE PRESCRIBED UNIT ONLY.											
4. BHEL STANDARD SPECIFICATION NO:TB-404-316-027 IS APPLICABLE											
SIGNATURE & SEAL OF TENDERER											

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BHARAT HEAVY ELECTRICALS LIMITED
TRANSMISSION BUSINESS ENGINEERING MANAGEMENT
 NEW DELHI

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 THE INTEREST OF THE COMPANY

DOCUMENT No.	TB-404-316-027	Rev	00		Prepared	Checked	Approved
CUSTOMER Doc. No.				NAME	MM	VK	AG
TYPE OF DOC.	TECHNICAL SPECIFICATION			SIGN	MM	VK	AG
TITLE 400/220/132/66/33 kV CLAMPS AND CONNECTORS				DATE			
				GROUP			
				W.O. No			
CUSTOMER	UTTAR PRADESH POWER TRANSMISSION CO. LTD.						
PROJECTS	400/220/132 KV GIS s/s at Rasra, Ballia						

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	Annexure – 2 (GTP) (To be filled during detailed engineering stage)	
	Annexure – 3 (Check-list) (To be filled along with offer)	

01	08.08.2019	MM	VK	VK	BOQ REVISED		
Rev	Date	Altered	Checked	Approved	REVISION DETAILS		
Distribution				CUSTOMER	TBMM	O/C	
				-	1	1	

SECTION-1

SCOPE, SPECIFIC TECHNICAL REQUIREMENTS AND QUANTITIES.

1.0 SCOPE

This technical specification covers the requirements of design, manufacture, testing at works, packing and dispatch of Clamps & Connectors to site.

This section covers the scope, quantities, Specific Technical Requirements for Clamps & Connectors as specified by the customer (UPPTCL). The offered equipment shall also comply with the General Technical Requirements for the project as detailed under section-3 of this specification.

In case of any discrepancies between the requirements mentioned under Section-1/Section-2 and those specified in the Section-3, the specifications given under Section-1 shall prevail and shall be treated as binding requirements.

The equipment is required for the following project:

Name of the Customer	:	UTTAR PRADESH TRANSMISSION CORPORATION LTD. (UPPTCL)
Name of Main Contractor	:	Bharat Heavy Electricals Limited
Name of the Project	:	CONSTRUCTION OF 400/220/132 KV GIS SUBSTATION RASRA, BALLIA

Refer Section - 3 for Project Details and General Specifications.

1.2 TECHNICAL PARTICULARS FOR SPACERS AND CLAMP & CONNECTORS

Specific technical requirements like rated voltage, rated current, conductor details and type of connectors etc. are given in enclosed Annexure-I (Bill of Quantities for Equipment connectors). Other technical requirements for the connectors shall be as follows:

System operating voltage	400kV	220kV	132kV	66kV	33kV
Maximum operating voltage	420kV	245kV	145kV	72.5kV	36kV
Short circuit current	50 kA for 3 sec	40 kA for 3 sec	40 kA for 3 sec	25kA for 1 sec	25kA for 1 sec
Sub conductor spacing	450mm	250mm	250mm	-	-
Continuous Current	As per BOQ				

Note: The drawing of the equipment with complete final detail (terminal type, material, fixing details) will be furnished during detailed engineering.

1.3 BILL OF QUANTITIES

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PROJECT : 400/220/132kV GIS s/s at Rasra , Ballia

CUSTOMER: UTTAR PRADESH TRANSMISSION CORPORATION LTD. (UPPTCL)

Technical Specification of Clamps & Connectors

TB-404-316-027

Section-1: Scope, Specific Technical Requirements & Quantities

REV.00

ANNEXURE-BOQ- BOQ for clamps for

The scope of supply shall also include:

- i) All connector hardware along with bimetallic washers / strip/liners as required.
- ii) All hardware required for connecting to the respective equipment terminals.
- iii) Minimum 5 % extra hardware and bimetallic washers/strips/liners of each type.

Note – Individual quantity may vary up to any extend, however total contract value may vary up to $\pm 30\%$.

1.4 TYPE TEST

Bidder shall submit valid type test reports (as per relevant IEC/IS Standard) for approval. The type test reports submitted shall be of tests conducted after 17.04.2013**. The bidder should have conducted type test on identical or similar equipment/ components to those offered. In case type test reports are found to be technically unacceptable to BHEL/UPPTCL, the type test shall be conducted without cost and delivery implication to BHEL.

** For following tests for which type test once conducted shall be applicable (i.e. the requirement of test conducted within last five years shall not be applicable).

(a) Short time current test

(b) Corona (dry) and RIV (dry) test (for 220 KV and above voltage level clamps)

1.5 QUALITY PLAN

Bidder to follow valid UPPTCL approved Quality Plan as per UPPTCL procedure.

Project: 400/220/132 kV GIS , RASRA, BALLIA
Customer: UPPTCL

BILL OF QUANTITY FOR CLAMPS AND CONNECTORS

Rev-01

Sl. NO.	EKD ID	CONNECTOR TYPE	Fault rating	Current rating (A)	Unit	Total Quantity
1	1T	Connector for 400kV SF6-TO AIR-BUSHING suitable for twin moose ACSR conductor for HT terminal with horizontal approach	50kA for 3s	2000	Nos.	6
2	1TS	Connector for 400kV SF6-TO AIR-BUSHING suitable for 4 inch Al. Tube, rigid type	50kA for 3s	2000	Nos.	4
3	4T	Connector for 400 kV CVT suitable for twin moose ACSR conductor (universal approach)	50kA for 3s	-	Nos.	6
4	6TS	Connector for 400kV Wave trap suitable for 4 inc Al. Tube , rigid type	50kA for 3s	2000	Nos.	4
5	6T	Connector for 400 kV Wave trap suitable for twin moose ACSR conductor (universal approach)	50kA for 3s	2000	Nos.	4
6	7T	400kV Buspost insulator clamp suitable for twin moose ACSR conductor (horizontal approach) THROUGH type with horizontal approach	-	-	Nos.	15
7	7TS	400kV Buspost insulator clamp suitable for through type clamp suitable for 4 inch Al. Tube	-	-	Nos.	6
8	8T	Connector for 400kV Bushing of 400/220/132kV ICT suitable for twin moose ACSR conductor for HT terminal with horizontal approach	50kA for 3s	2000	Nos.	2
9	9T	Connector for 400kV Reactor suitable for twin moose ACSR conductor for HT terminal with horizontal approach	50kA for 3s	2000	Nos.	3
10	T41	TEE Connector (400 kV s/s) Twin ACSR Moose to Twin ACSR Moose	50kA for 3s	2000	Nos.	6
11	T43	TEE Connector (400 kV s/s) from 4 inch Al. Tube to Single ACSR Moose	50kA for 3s	2000	Nos.	4
12	T44	TEE Connector (400 kV s/s) from 4 inch Al. Tube to twin ACSR Moose	50kA for 3s	2000	Nos.	6
13	T45	Straight type Connector (400 kV s/s) from 4 inch Al. Tube to twin ACSR Moose	50kA for 3s	2000	Nos.	6

Project: 400/220/132 kV GIS , RASRA, BALLIA
Customer: UPPTCL

BILL OF QUANTITY FOR CLAMPS AND CONNECTORS

Rev-01

Sl. NO.	EKD ID	CONNECTOR TYPE	Fault rating	Current rating (A)	Unit	Total Quantity
14	PG1	PG clamp for 400kV single moose to single moose conductor	50kA for 3s	1000	Nos.	24
15	4D	Corona bell for 400kV - 4 inch Al. Tube			Nos.	8
16	11T	Connector for 220kV SF6-TO AIR-BUSHING suitable for twin moose ACSR conductor for HT terminal with horizontal approach	40kA for 3s	2000	Nos.	6
17	14T	Connector for 220 kV CVT suitable for single moose ACSR conductor (universal approach)	40kA for 3s	-	Nos	12
18	15T	Connector for 198 kV Surge Arrester suitable for twin moose ACSR conductor (universal approach)	40kA for 3s	2000	Nos.	12
19	16TS	Connector for 220kV Wave trap suitable for 4 inch Al. Tube , rigid type	40kA for 3s	1000	Nos	8
20	16R	220KV Wave Trap CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, EXPANSION TYPE	40kA for 3s	1000	Nos	4
21	16S	Connector for 220 kV Wave trap suitable for single moose ACSR conductor (universal approach)	40kA for 3s	1000	Nos	8
22	17S	220kV Buspost insulator clamp suitable for single moose ACSR conductor (horizontal approach) THROUGH type with horizontal approach	40kA for 3s	2000	Nos	12
23	17T	220kV Buspost insulator clamp suitable for twin moose ACSR conductor (horizontal approach) THROUGH type with horizontal approach	40kA for 3s	2000	Nos	12
24	17TS	220kV Buspost insulator clamp suitable for through type clamp suitable for 4 inch Al. Tube	40kA for 3s	2000	Nos	12
25	19T	Connector for 220kV Bushing of 400/220/33kV ICT suitable for twin moose ACSR conductor for HT terminal with horizontal approach	40kA for 3s	2000	Nos	6
26	19T	Connector for 220kV Bushing of 220/132/33kV ICT suitable for twin moose ACSR conductor for HT terminal with horizontal approach	40kA for 3s	2000	Nos	6
27	20TS	Connector for 220kV Cable Sealing End suitable for through type clamp suitable for 4 inch IPS Al Tube	40kA for 3s	2000	Nos	8

Project: 400/220/132 kV GIS , RASRA, BALLIA
Customer: UPPTCL

BILL OF QUANTITY FOR CLAMPS AND CONNECTORS

Rev-01

Sl. NO	EKD ID	CONNECTOR TYPE	Fault rating	Current rating (A)	Unit	Total Quantity
28	20E	220KV CABLE-SEALING-END CONNECTOR SUITABLE FOR AL TUBE 4 INCH IPS, EXPANSION TYPE	40kA for 3s	2000	Nos.	4
29	20S	Connector for 220kV Cable Sealing End suitable for through type clamp suitable for single moose ACSR conductor (universal approach)	40kA for 3s	1000	Nos.	4
30	T21	TEE Connector (220 kV s/s) Single ACSR Zebra to Single ACSR Moose	40kA for 3s	800	Nos.	12
31	T23	TEE Connector (220 kV s/s) from 4 inch Al. Tube to Single ACSR Moose	40kA for 3s	2000	Nos.	1
32	T24	TEE Connector (220 kV s/s) from 4 inch Al. Tube to twin ACSR Moose	40kA for 3s	2000	Nos.	1
33	T25	Straight type Connector (220 kV s/s) from 4 inch Al. Tube to twin ACSR Moose	40kA for 3s	2000	Nos.	6
34	T27	TEE Connector (220 kV s/s) twin ACSR Moose to twin ACSR Moose	40kA for 3s	2000	Nos.	2
35	23FT	Flexible (for main stringing) Spacers for 'Twin Moose' ACSR with 250mm sub-conductor spacing	40kA for 3s	-	Nos.	60
36	23RT	Rigid (for jumpers) Spacers for 'Twin Moose' ACSR with 250mm sub-conductor spacing	40kA for 3s	-	Nos.	90
37	PG2	PG clamp for 220kV single moose to single moose conductor	50kA for 3s	1000	Nos.	16
38	2B	Corona bell for 220kV - 4 inch Al. Tube			Nos.	4
39	30T	Connector for 132kV Cable Sealing End suitable for through type clamp suitable for twin moose ACSR conductor (universal approach)	40kA for 3s	2000	Nos.	6
40	30S	Connector for 132kV Cable Sealing End suitable for through type clamp suitable for single moose ACSR conductor (universal approach)	40kA for 3s	1000	Nos.	15
41	35T	Connector for 120kV Surge Arrester suitable for twin moose ACSR conductor (universal approach)	40kA for 3s	2000	Nos.	6

Project: 400/220/132 kV GIS , RASRA, BALLIA
Customer: UPPTCL

Rev-01

BILL OF QUANTITY FOR CLAMPS AND CONNECTORS

Sl. NO.	EKD ID	CONNECTOR TYPE	Fault rating	Current rating (A)	Unit	Total Quantity
42	37S	132kV Buspost insulator clamp suitable for single moose ACSR conductor (horizontal approach) THROUGH type with horizontal approach	40kA for 3s	2000	Nos.	15
43	37T	132kV Buspost insulator clamp suitable for twin moose ACSR conductor (horizontal approach) THROUGH type with horizontal approach	40kA for 3s	2000	Nos.	6
44	37TS	132kV Buspost insulator clamp suitable for through type clamp suitable for 4 inch Al. Tube	40kA for 3s	2000	Nos.	1
45	39T	Connector for 132kV Bushing of 220/132/33kV ICT suitable for twin moose ACSR conductor for HT terminal with horizontal approach	40kA for 3s	2000	Nos.	6
46	T31	TEE Connector (132 kV s/s) Single ACSR Panther to Single ACSR Moose	40kA for 3s	600	Nos.	15
47	T32	TEE Connector (132 kV s/s) twin ACSR Moose to twin ACSR Moose	40kA for 3s	1000	Nos.	3
48	T33	132KV TEE CONNECTOR SUITABLE FOR SINGLE MOOSE TO SINGLE CONDUCTOR AS PER TS	40kA for 3s	1000	Nos.	6
49	T34	TEE Connector (132 kV s/s) Twin ACSR Moose to single ACSR Moose	40kA for 3s	1000	Nos.	1
50	T35	TEE Connector (132kV s/s) from 4 inch Al. Tube to Single ACSR Moose	40kA for 3s	1000	Nos.	3
51	T36	TEE Connector (132 kV s/s) from 4 inch Al. Tube to twin ACSR Moose	40kA for 3s	2000	Nos.	1
52	STE	Earthwire Strain/ tension clamps (Bolted type) with D-Shackle assembly			Nos.	6
53	PGE	PG-clamp for GS earthwire of 10.98mm dia			Nos.	40
54	CC1	Cleat type clamps for Earthing down conductor (10.98mm dia)			Nos.	350
55	CC2	Cleat type clamps for 50x12 mm G.S. flat for pipe structure			Nos.	550

Project: 400/220/132 kV GIS , RASRA, BALLIA
Customer: UPPTCL

Rev-01
BILL OF QUANTITY FOR CLAMPS AND CONNECTORS

Sl NO	END ID	CONNECTOR TYPE	Fault rating	Current rating (A)	Unit	Total Quantity
56	CC4	Cleat type clamps for 75 x 12mm G.S. flat for lattice structure			Nos	21
57	PC	Pad type clamp For connecting 10.98mm dia. G.I. wire on one side and 75x12mm GS strips on			Nos	15
58	41S	CONNECTOR FOR 72.5KV CB SUITABLE FOR SINGLE MOOSE CONDUCTOR	25kA for 1s	800A	Nos	6
59	42S	CONNECTOR FOR 72.5KV CT SUITABLE FOR SINGLE MOOSE CONDUCTOR	25kA for 1s	800A	Nos	6
60	43S	CONNECTOR FOR 72.5KV PT SUITABLE FOR SINGLE MOOSE CONDUCTOR	25kA for 1s	800A	Nos	3
61	45S	Connector for 72.5kV ISOLATOR, SUITABLE FOR MOOSE CONDUCTOR	25kA for 1s	800A	Nos	6
62	44S	Connector for 33kV STATION TRANSFORMER BUSHING, SUITABLE FOR SINGLE MOOSE CONDUCTOR	25kA for 1s	800A	Nos	6
63	46S	CONNECTOR FOR 33KV CB SUITABLE FOR SINGLE MOOSE CONDUCTOR	25kA for 1s	800A	Nos	6
64	47S	CONNECTOR FOR 33KV CT SUITABLE FOR Single MOOSE CONDUCTOR	25kA for 1s	800A	Nos	6
65	48S	CONNECTOR FOR 33KV PT SUITABLE FOR single MOOSE CONDUCTOR	25kA for 1s	800A	Nos	3
66	49S	Connector for 33kV ISOLATOR, SUITABLE FOR Single MOOSE CONDUCTOR	25kA for 1s	800A	Nos	6

Conductor /Tube Size

- 4" IPS Al Tube (Outer diameter =114.3 mm, Thickness =8.56 mm)
- ACSR Moose conductor (Overall diameter=31.77mm)

Notes:

- Quantity of clamps may vary by -30% to +30% during contract execution
- The sub-conductor spacing for 400kV Twin/Quad conductor is 450mm for 400kV & 250 mm for 220 & 132 kV
- Equipment terminal details / drawings shall be made available at the contract stage for proper matching.
- Bimetallic connectors shall be offered wherever dissimilar materials are coming into contact as detailed above.
- Material / size of equipment terminal given shall be made available at the contract stage.

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PROJECT : 400/220/132kV GIS s/s at Rasra , Ballia

CUSTOMER: UTTAR PRADESH TRANSMISSION CORPORATION LTD. (UPPTCL)

Technical Specification of Clamps & Connectors

TB-404-316-027

Section-1: Scope, Specific Technical Requirements & Quantities

REV.00

SECTION 2

GENERAL SPECIFICATION

2.1 GENERAL

This section covers the general technical requirements of spacers and clamps & connectors.

2.1.1 Technical Particulars for spacers and Clamp & Connectors

Nominal system voltage	400 kV	220kV	132 kV	66kV	33kV
Highest system voltage	420 kV	245kV	145kV	72.5kV	36kV
Current Rating					
Frequency					
System Earthing					
Spacing between sub-conductors of the bus	450mm for Twin	250mm	250mm	N/A	N/A
Corona extinction Voltage	320kV	156	105kV	--	--
Max. Radio interference voltage for frequency between 0.5MHz and 2 MHz	1000 microvolts at 266 kVrms	1000 microvolts at 266 kVrms	500 micro-volt at 92kVrms	--	--

2.2 Applicable Standards

The spacers and clamps & connectors shall strictly conform to the following Indian and International standards **latest edition** as appropriate:

List of Standards:

IS 617	Aluminium and aluminium alloy ingots and castings for general engineering purposes.
IS 1363 (All Parts)	Hexagon head bolts, screws and nuts of product grade C
IS 1364 (All Parts)	Hexagon head bolts, screws and nuts of product grades A and B
IS 1367 (Part I)	Technical Supply Conditions for threaded fasteners.
IS 1367 (Part 2)	Technical Supply Conditions for threaded fasteners.
IS 1367 (Part 3)	Technical Supply Conditions for threaded fasteners.

PROJECT : 400/220/132kV GIS s/s at Rasra , Ballia

CUSTOMER: UTTAR PRADESH TRANSMISSION CORPORATION LTD. (UPPTCL)

Technical Specification of Clamps & Connectors

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Section-1: Scope, Specific Technical Requirements & Quantities

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IS 1367 (Part 13)	Technical Supply Conditions for threaded fasteners.
IS 2121 (Part -1 & 2)	Specification for conductors and earthwire accessories for overhead power lines
IS 2121 (Part -3)	Specification for conductors and earthwire accessories for overhead power lines.
IS 2121 (Part -4)	Specification for conductors and earthwire accessories for overhead power lines
IS 5561	Electric power connectors.
IS 2633	Methods for testing uniformity of coating of zinc coated articles.
IS 1573 on Iron and Steel	Electroplated coating of Zinc
IS 3138	Hexagonal Bolts & Nuts(M42 to M150)
IS 4218 (Parts 1,2 & 4)	Metric Screw Threads
IS 4218:(Part 3)	Metric Screw Threads
IS 4218:(Part 6)	Metric Screw Threads
IS 10162	Spacers & spacer dampers for twin horizontal bundle conductors
ISO 272	Fasteners: Hexagonal Products -Width across Flats.
ISO 898	Fasteners, Screws & Studs
NEMA CC1	Electric power connectors for sub-station
NEMA CC3	Connectors for use between Aluminium or Aluminium-Copper Overhead Conductors.
IS 816	Code of practice for use of metal arc welding for general construction in mild steel.
IS 4759	Hot dip zinc coatings on structural steel and other allied products.



PROJECT : 400/220/132kV GIS s/s at Rasra , Ballia

CUSTOMER: UTTAR PRADESH TRANSMISSION CORPORATION LTD. (UPPTCL)

Technical Specification of Clamps & Connectors

TB-404-316-027

Section-1: Scope, Specific Technical Requirements & Quantities

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- IS 2633 Methods for testing uniformity of coating of zinc coated articles.
- IS 2629 Recommended practice for hot dip galvanising of iron and steel.

2.3 Clamps and Connectors

All the current carrying parts shall be designed and manufactured to have minimum resistance. Clamps and fittings shall be so designed that the equipment shall not be subject to any abnormal stresses due to thermal changes in conductor. All the clamps and fittings shall enable the connection to be as short as possible. Wherever possible they shall be in two separate halves. No U bolts shall be used. Corona control ring shall be of such design and shape that they will prevent visual discharge forming on the hardware assemblies. They shall have minimum thickness of 2.5mm. All similar parts, particularly the removable one shall be interchangeable with one another.

2.3.1 All power clamps and connectors shall conform to **IS:5561 (latest edition) & NEMA CC1** and shall be made of materials listed below:

- | | |
|--|---|
| a) For connecting ACSR conductors/Aluminium tube | Aluminum alloy casting, conforming to designation A6 of IS:617 and all test shall conform to IS:617 |
| b) For connecting equipment terminals made of copper with ACSR conductors/Aluminium tube | Bimetallic connectors made from aluminum alloy casting, conforming to designation A6 of IS:617 with 2mm thick bimetallic liner/strip and all test shall conform to IS:617 |
| c) For connecting G.I shield wire | Malleable iron casting |
| d) Bolts, nuts & Plain, washers | i) Electro-galvanised for sizes below M12, for others hot dip galvanised. |
| e) Spring washers for items 'a' to 'c' | ii) Electro-galvanised mild steel suitable for atleast service condition-3 as per IS:1573 |
| f) Misc. | Mild steel |

2.3.2 Necessary clamps and connectors shall be supplied for all equipment and connections. The requirement regarding external corona and RIV as specified for any equipment shall include its terminal fittings. If corona rings are required to meet these requirements they shall be considered as part of that equipment and included in the scope of work.

2.3.3 Where copper to aluminum connections are required, bi-metallic clamps shall be used, which shall be properly designed to ensure that any deterioration of the connection is kept to a minimum and restricted to parts which are not current carrying or subjected to stress.



PROJECT : 400/220/132kV GIS s/s at Rasra, Ballia

CUSTOMER: UTTAR PRADESH TRANSMISSION CORPORATION LTD. (UPPTCL)

Technical Specification of Clamps & Connectors

TB-404-316-027

Section-1: Scope, Specific Technical Requirements & Quantities

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- 2.3.4 Low voltage connectors, grounding connectors and accessories for grounding all equipment as specified in each particular case, are also included in the scope of Work.
- 2.3.5 No current carrying part of any clamp shall be less than 10 mm thick. All ferrous parts shall be hot dip galvanised. Copper alloy liner of minimum 2 mm thickness shall be cast integral with aluminum body or 2 mm thick bi-metallic strips shall be provided for Bi-metallic clamps.
- 2.3.6 All casting shall be free from blow holes, surface blisters, cracks and cavities. All sharp edges and corners shall be blurred and rounded off.
- 2.3.7 Flexible connectors, braids or laminated straps made for the terminal clamps for bus posts shall be suitable for both expansion or through (fixed/sliding) type connection of 4" IPS AL. tube as required. In both the cases the clamp height (top of the mounting pad to centre line of the tube) should be same.
- 2.3.8 Clamp shall be designed to carry the same current as the conductor and the temperature rise shall be equal or less than that of the conductor at the specified ambient temperature. The rated current for which the clamp/connector is designed with respect to the specified reference ambient temperature, shall also be indelibly marked on each component of the clamp/connector, except on the hardware.
- 2.3.9 All current carrying parts shall be designed and manufactured to have minimum contact resistance.
- 2.3.10 Clamps and connectors shall be designed to be corona controlled. Corona extinction voltage for 420kV, 220kV, & 132 kV shall not be less than 320, 156 & 105Kv (rms) respectively and RIV level shall not be more than 1000, 1000 & 500 micro volts.
- 2.3.11 Bolts and nuts shall have hexagonal heads and threads as per Indian standard. Rated torque of the nuts shall be indicated on drawing.
- 2.3.12 For flexible connectors, braids or laminated straps shall be made from tinned copper strips or aluminium laminates depending upon the clamp. All Aluminium conductors of adequate current, mechanical stability & flexibility can also be provided.
- 2.3.13 Size of the terminal / conductor for which the clamp/connector is suitable shall be embossed/punched (indelibly marked) on each component of the clamp/connector except hardware.
- 2.3.14 **Designs:**
Responsibility of satisfactory design of the clamps/connectors to safely withstand the specified mechanical stresses and carry the rated current without exceeding the temperature rise specified, shall solely rest with the bidder.
- 2.3.15 **Clamps and Connectors-Tests**

Clamps and connectors should be type tested as per IS:5561 and shall also be subjected to routine tests as per **IS:5561(latest edition)**. Following type test reports shall be submitted for approval as per clause 1.4, Section-1 except for sl. no.(ii) & (iii)

for which type test once conducted shall be applicable (i.e. the requirement of test conducted within last ten years shall not be applicable).

- i) Temperature rise test (maximum temperature rise allowed is 35°C over 50°C ambient)
- ii) Short time current test
- iii) Corona (dry) and RIV (dry) test (for 132 KV and above voltage level clamps)
- iv) Resistance test and tensile test

2.4 SPACERS

2.4.1 General :

Spacer shall conform to IS: 10162. The spacers are to be located at a suitable spacing to limit the short circuit forces as per IEC -60865. For strung buses, flexible type spacers shall be used whereas for jumpers and other connections rigid type spacers shall be used.

2.4.2 Constructional Features

- a) No magnetic material shall be used in the fabrication of spacers except for GI bolts and Nuts.
- b) Spacer design shall be made to take care of fixing and removing during installation and maintenance
- c) The design of the spacers shall be such that the conductor does not come in contact with any sharp edge.

2.4.3 Tests

Each type of spacer shall be subjected to at least the following type tests, acceptance tests and routine tests in addition to all other tests specified in IS 10162:

- A. **Type Tests:** Following type test reports shall be submitted for approval as per clause 1.4 of Section-1.

a) **Clamp slip tests**

The sample shall be installed on test span of twin conductor bundle string or quadruple conductor bundle string (as applicable) at a tension of 44.2kN. One of the clamps of the sample when subjected to a longitudinal pull of 2.5kN parallel to the axis of the conductor shall not slip on the conductor. The permanent displacement between the conductor and the clamp of sample measured after removal of the load shall not exceed 1.0 mm. Similar tests be performed on the other clamps of the same sample.

- b) Fault current test as per Cl 5.14.2 of IS: 10162. Alternatively, the same can be carried by simulated short circuit method for which compressive forces shall be based on IEC-60865.

- c) Corona Extinction Voltage test (Dry)

This test shall be performed as per procedure mentioned at Annexure-A section -2. Minimum corona extinction voltage shall be 320KV (rms) line to ground for 400kV,

PROJECT : 400/220/132kV GIS s/s at Rasra , Ballia

CUSTOMER: UTTAR PRADESH TRANSMISSION CORPORATION LTD. (UPPTCL)

Technical Specification of Clamps & Connectors

TB-404-316-027

Section-1: Scope, Specific Technical Requirements & Quantities

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156Kv line to ground for 220Kv, 105kV (rms) line to ground for 132kV spacers respectively.

d) RIV Test (Dry)

This test shall be performed as per procedure mentioned at Annexure-A, Section-3. Maximum RIV level shall be as per cl. No. 2.1.1 of section -2.

e) Resilience test (if applicable)

f) Tension Test

g) Log decrement test (if applicable)

h) Compression test.

i) Galvanising test.

B. Acceptance Test (As per IS: 10162 (Latest Version))

a) Visual examination

b) Dimensional verification

c) Movement test

d) Clamp slip test

e) Clamp bolt torque test (if applicable)

f) Assembly torque test

g) Compression test

h) Tension test

i) Galvanising test

j) Hardness test for neoprene (if applicable)

The shore hardness of different points on the elastometer surface of cushion grip clamp shall be measured by shore hardness meter. It shall be between 65 to 80.

k) Ultimate Tensile Strength Test

The UTS of the retaining rods shall be measured. It shall not be less than 35 kg/Sq. Mm.

C. Routine test

a) Visual examination

b) Dimensional verification

CORONA AND RADIO INTERFERENCE VOLTAGE (RIV) TEST

1.0 General

Unless otherwise stipulated, all equipment together with its associated connectors, where applicable, shall be tested for external corona (for 400 kV & above) both by observing the voltage level for the extinction of visible corona under falling power frequency voltage and by measurement of radio interference voltage (RIV) for 132 kV above.

2.0 Test Levels

The test voltage levels for measurement of external RIV and for corona extinction voltage are listed under the relevant clauses of the specification.

3.0 Test Methods for RIV

- 3.1 RIV tests shall be made according to measuring circuit as per International Special-Committee on Radio Interference (CISPR) Publication 16-1(1993) Part -1. The measuring circuit shall preferably be tuned to frequency with 10% of 0.5 MHz but other frequencies in the range of 0.5 MHz to 2 MHz may be used, the measuring frequency being recorded. The results shall be in microvolts.
- 3.2 Alternatively, RIV tests shall be in accordance with NEMA standard Publication No. 107-1964, except otherwise noted herein.
- 3.3 In measurement of, RIV, temporary additional external corona shielding may be provided. In measurements of RIV only standard fittings of identical type supplied with the equipment and a simulation of the connections as used in the actual installation will be permitted in the vicinity within 3.5 meters of terminals.
- 3.4 Ambient noise shall be measured before and after each series of tests to ensure that there is no variation in ambient noise level. If variation is present, the lowest ambient noise level will form basis for the measurements. RIV levels shall be measured at increasing and decreasing voltages of 85%, 100%, and 110% of the specified RIV test voltage for all equipment unless otherwise specified. The specified RIV test voltage for 400kV, 220kV, 132kV is listed in the detailed specification together with maximum permissible RIV level in microvolts.
- 3.5 The metering instruments shall be as per CISPR recommendation or equivalent device so long as it has been used by other testing authorities.
- 3.6 The RIV measurement may be made with a noise meter. A calibration procedure of the frequency to which noise meter shall be tuned shall establish the ratio of voltage at the high voltage terminal to voltage read by noise meter.

4.0 Test Methods for Visible Corona

The purpose of this test is to determine the corona extinction voltage of apparatus, connectors etc. The test shall be carried out in the same manner as RIV test described above with the exception that RIV measurements are not required during test and a search technique shall be used near the onset and extinction voltage, when the test voltage is raised

and lowered to determine their precise values. The test voltage shall be raised to 110% of specified corona extinction voltage and maintained there for five minutes. In case corona inception does not take place at 110%, test shall be stopped, otherwise test shall be continued and the voltage will then be decreased slowly until all visible corona disappears. The procedure shall be repeated at least 4 times with corona inception and extinction voltage recorded each time. The corona extinction voltage for purposes of determining compliance with the specification shall be the lowest of the four values at which visible corona (negative or positive polarity) disappears. Photographs with laboratory in complete darkness shall be taken under test conditions, at all voltage steps i.e. 85%, 100%, and 110%. Additional photographs shall be taken at corona inception and extinction voltages. At least two views shall be photographed in each case using Panchromatic film with a ASA daylight rating of 400 with an exposure of two minutes at a lens aperture of f/5.6 or equivalent. The photographic process shall be such that prints are available for inspection and comparison with conditions as determined from direct observation. Photographs shall be taken from above and below the level of connector so as to show corona on bushing, insulators and all parts of energised connectors. The photographs shall be framed such that test object essentially, fills the frame with no cut-off.

For recording purpose, modern devices utilizing UV recording methods such as image intensifier may also be used.

- 4.1 The test shall be recorded on each photograph. Additional photograph shall be taken from each camera position with lights on to show the relative position of test object to facilitate precise corona location from the photographic evidence.
- 4.2 In addition to photographs of the test object preferably four photographs shall be taken of the complete test assembly showing relative positions of all the test equipment and test objects. These four photographs shall be taken from four points equally spaced around the test arrangement to show its features from all sides. Drawings of the laboratory and test set up locations shall be provided to indicate camera positions and angles. The precise location of camera shall be approved by Purchaser's inspector, after determining the best camera locations by trial energisation of test object at a voltage which results in corona.
- 4.3 The test to determine the visible corona extinction voltage need not be carried out simultaneously with test to determine RIV levels.
- 4.4 However, both test shall be carried out with the same test set up and as little time duration between tests as possible. No modification on treatment of the sample between tests will be allowed. Simultaneous RIV and visible corona extinction voltage testing may be permitted at the discretion of Purchaser's inspector if, in his opinion, it will not prejudice other test.

5.0 Test Records

In addition to the information previously mentioned and the requirements specified as per CISPR or NEMA 107-1964 the following data shall be included in test report:

- a) Background noise before and after test.
- b) Detailed procedure of application of test voltage.
- c) Measurements of RIV levels expressed in micro volts at each level.

- d) Results and observations with regard to location and type of interference sources detected at each step.
- e) Test voltage shall be recorded when measured RIV passes through 100 microvolts in each direction.
- f) Onset and extinction of visual corona for each of the four tests required shall be recorded.

ANNEXURE – B

SEISMIC WITHSTAND TEST PROCEDURE

The seismic withstanding test on the complete equipment (for 132 kV and above) shall be carried out alongwith supporting structure.

The Bidder shall arrange to transport the structure from his Contractor's premises/UPPTCL sites for the purpose of seismic withstand test only.

The seismic level specified shall be applied at the base of the structure. The accelerometers shall be provided at the Terminal Pad of the equipment and any other point as agreed by the Purchaser. The seismic test shall be carried out in all possible combinations of the equipment. The seismic test procedure shall be furnished for approval of the Purchaser.

SECTION-3

PROJECT DETAILS & GENERAL SPECIFICATION

SITE INFORMATION

	Particular	Details
a)	Owner	UPPTCL
b)	Customer	UPPTCL
c)	Project Title	400/220/132 kV GIS at Rasra, Ballia
d)	Location	Uttar Pradesh
e)	Transport Facilities	Nearest rail head - Ballia
SITE CONDITIONS		
a)	Max. ambient air temp.	50°C
b)	Min. ambient air temp.	0°C
c)	Max. design ambient emp.	50°C
d)	Design reference temp.	50°C
e)	Average Humidity	Max. 100%
f)	Special corrosion conditions	No
g)	Solar Radiation	
h)	Atmospheric UV radiation	High
i)	Altitude above sea level	Less than 1000meter
j)	Pollution Severity	High Pollution level
k)	Seismic Zone	As per the seismic zone defined in the relevant BIS / IEC-62271-300 but not less than 0.3g horizontal
WIND DATA		
	Wind load	195kg/sqm
	Average No. of thunderstorm days per annum	As per IS

1. GENERAL

This Chapter covers Technical Requirements and requirements of auxiliary items.

- 1.1 Equipments furnished shall be complete in every respect with all mountings, fittings, fixtures and standard accessories specified &/or normally provided with such equipment and/ or needed for erection, completion and safe operation of the equipment as required by applicable codes though they may not have been specifically detailed in the Technical Specifications.

Materials and components not specifically stated in the specification but which are necessary for commissioning and satisfactory operation of the substation unless specifically excluded shall be deemed to be included in the scope of the specification and shall be supplied without any extra cost All similar standard components/ parts of similar standard equipment provided, shall be inter-changeable with one another.

- 1.2 The Bidder shall supply type tested (including special test as per technical specification) equipments and materials. The test reports/details shall be furnished by the Bidder in the bid.

In the event of any discrepancy in the test reports i.e. any test report not acceptable due to any design/manufacturing changes or due to non-compliance with the requirement stipulated in the Technical Specification and/or IEC/ IS, same, shall be carried out without any additional cost implication to the Purchaser. The Purchaser reserves the right to get any or all type tests conducted/ repeated.

The reports for all type tests and additional type tests as per technical specification furnished by the Bidder shall be of the tests conducted within last 05(five) years prior to the date of bid opening. The type tests conducted should have either been conducted in accredited laboratory (accredited based on ISO/ IEC Guide 25/ 17025 or EN 45001 by the national accreditation body of the country where laboratory is located) or witnessed by UPPTCL or representative authorized by UPPTCL or Utility or representative of accredited test lab or reputed consultant.

2. SYSTEM PARTICULARS

	Rated System voltage	420 kV, 245kV, 145kV, 36kV
	System frequency	50 Hz, This may vary by $\pm 5\%$
	Number of phases	Three
	Neutral	Effectively Earthed
	Auxiliary power supply:-	
	Auxiliary electrical equipment shall be suitable for operation on the following supply system:	
(a)	Power device (Like drive motors)	400V, 3Phase, 4Wire 50Hz Effectively earthed AC system.
(b)	Lighting fixtures, space heaters, fractional Horse Power motors and control devices.	250V, 2wire, 50Hz, AC supply with one point grounded.
(c)	DC alarm, Control and Protective Devices from sub station batteries as under	2 wire ungrounded DC supplies (i) 400 kV S/S : 220V DC (ii) 220/132kV S/S : 110V DC (iii) Communication : 48 V DC The above supply voltage is subject to variation as follows: All devices must be suitable for a continuous operation over the entire range of voltage variations : (i) AC Voltage may vary by $\pm 10\%$. Frequency by $\pm 5\%$ Combined Voltage & frequency by $\pm 10\%$. (ii) DC a) 220 V may vary between 187 & 242 V b) 110 V may vary between 93 & 121 V c) 48 V may vary between 41 & 53 V

3. System parameters

Sl. No.	Description of Parameters	400 kV System	220 kV System	132 kV System	33 kV System
1	Nominal system voltage	4000kV	220kV	132kV	33kV
2	Maximum operating voltage of the system(rms)	420kV	245kV	145kV	36kV
3	Rated frequency	50Hz	50Hz	50Hz	50Hz
4	No. of phase	3	3	3	3
5	Rated short time current	50 kA for 3 Sec.	40 kA for 3 SEC	40 kA for 3 SEC	25 kA for 3 SEC
6	Dry and wet one minute power frequency withstand voltage	680 kV	460 kV	275 kV	95 kV
7	Dry and wet impulse withstand voltage positive and negative	1550 kVp	1050 kVp	650 kVp	250 kVp
8	Corona extinction voltage	320 kV	156 kV	105 kV	-
9	Max. Radio interference voltage for frequency between 0.5 MHz and 2 MHz at 508 kV rms for 765kV, 320kV rms for 400kV system and 156kV rms for 220kV system & 92kV rms for 132kV system system & 92kV rms for 132kV system	1000 microvolt	1000 microvolt	500 microvolt	-
10	Minimum total creepage	25mm/kV (10500 mm)	25mm/kV (6125 mm)	25mm/kV (3625 mm)	25mm/kV (1300 mm)
11	Min. clearances				
	i. Phase to phase	4000mm (for Conductor-conductor)	2100 mm	1300 mm	320 mm
		4200mm (for rod - Conductor)			
	ii. Phase to earth	3500 mm	2100 mm	1300 mm	320 mm
	iii. Sectional clearances	6500 mm	5000 mm	4000 mm	3000 mm
12.	System neutral earthing	Effectively Earthed			

4. SERVICES TO BE PERFORMED BY THE EQUIPMENT BEING FURNISHED

- 4.1** All equipments shall perform satisfactorily under various electrical, electromechanical and meteorological conditions of the installation site.
- 4.2** All equipment shall be able to withstand all external and internal mechanical thermal and electromechanical forces due to various factors like wind load temperature variation, ice & snow (wherever applicable) short circuit etc for the equipment.



-
- 4.3 The Bidder shall design the various forces which the terminal connectors of the equipment are required to withstand.
- 4.4 All outdoor EHV equipments except marshalling kiosks shall be suitable for hot line washing.
- 4.5 To facilitate erection of equipment, all items to be assembled at site shall be "matchmarked".

5. SUPPORT STRUCTURES (If in the scope of Bidder)

The base design of all the equipments, to be installed on auxiliary structures, shall conform to the standard auxiliary structure designs presently being used in UPPTCL at 400/220/132/33kV Substations.

All equipment support structures shall be supplied along with brackets, angles, stools etc. for attaching the operating mechanism, control cabinets and marshalling box (wherever applicable) etc. The support structures should be hot dip galvanised with minimum 610 gram/sq.m net of zinc.

6. STANDARDS

- 6.1 **Except** as modified by this Bid specification, all material and equipment shall conform to the requirement of the latest editions of relevant ISS/ IEC and other applicable standards. The equipments/ works shall be designed, engineered, manufactured, built, tested and commissioned shall be carried out in accordance with the Acts, Rules, Laws and Regulations in force in India.
- 6.2 In addition to meeting the specific requirements called for in the respective sections of the Technical Specification, the equipment shall also conform to the general requirement of the relevant standards which shall form an integral part of the specification. When the specific requirements stipulated in the specifications exceed or differ than those required by the applicable standards, the stipulation of the specification shall take precedence.
- 6.3 In the event of the Bidder offering equipment conforming to standards other than ISS/IES standards, which ensure equivalent or better performance than that specified in the standards, the salient point of comparison between the standards adopted and relevant ISS/ IEC standards shall be indicated clearly in the proposal, along with English language version of such standard or relevant extract of the same. The equipment conforming to standards other than IS/IEC shall be subject to Purchaser's approval.
- 6.4 The standards mentioned in the respective equipment specifications are not mutually exclusive or complete in themselves. The equipment &/or work shall also conform to any other applicable standard, even if not specifically mentioned in these specifications.
- 6.5 Should the Bidder wish to depart from the provisions of the specifications, either on accounts of manufacturing practices or for any other reason, he shall clearly mention the departure and submit complete justification supported by information, drawings etc. as will enable to assess the suitability of equipment(s) offered. In the event of the Bidder's specifications, drawings, forms and tables etc. being found to disagree with the

requirement of the Bid specifications at any stage, Bid specifications shall be binding, unless the departures have been duly approved in writing by the purchaser.

6.6 REFERENCE OF STANDARDS

Reference	Abbreviation	Name and Address
BS	British Standards,	British Standards Institution, 101, Pentonville Road, N-19-ND UK
ISO	International Organization	Danish Board of Standardization Danish Standardising Sraat, Aurehoegvej-12, DK-2900, Heelstrup, DENMARK
NEMA	For Standardization, National Electric Manufacture Associate	115, East 44th Street, New York NY 10017 U.S.A
BS	British Standards,	British Standards Institution, 101, Pentonville Road, N-19-ND UK
ISO	International Organization	Danish Board of Standardization Danish Standardising Sraat, Aurehoegvej-12, DK-2900, Heelstrup, DENMARK
NEMA	For Standardization, National Electric Manufacture Associate	115, East 44th Street, New York NY 10017 U.S.A

7. ENGINEERING DATA AND DRAWINGS

7.1 SUBMISSION AND APPROVAL OF DRAWINGS/ DOCUMENTS

- 7.1.1 The Bidder shall follow a well-defined coding system for proper and quick identification of all systems/ sub-systems/ equipments/ assemblies/ sub-assemblies/ accessories/ other plant material/ spare parts/ special tools and plants and drawings for the execution of the plant and later for its operation and maintenance.

Copies of coding documents defining the above shall be supplied along with drawings to understand the system.

- 7.1.2 All drawings submitted by the Bidder shall be in sufficient details to indicate the type, size arrangement, weight of each component, details for packing and shipment, the external connections, fixing arrangements, dimensions required for installation arrangement, dimensions required for installation and interconnections with other equipment and other information specifically, as called for in the drawing schedules. All the equipments tapping points etc. shall be numbered according to pre-determined scheme/ system which shall be subject to approval of Purchaser.



7.1.3 Each drawing shall be clearly marked with the name of the Purchaser, unit designation, UPPTCL's Contract No. and the name of the project. If standard catalogue pages are submitted the applicable items shall be indicated therein. All titles, noting, markings and writings on the drawings shall be in English. All the dimensions should be in metric units.

7.1.4 If any dimension figures on a drawing or a plan differs from those obtained by scaling the drawing or plan, the dimensions as mentioned in figures on the drawing or plan shall be taken as correct.

7.2 Submission and distribution of drawings/ documents

All the drawings which do not require approval shall be submitted along with reproducible in required number and those requiring approval shall be initially submitted for comments/ approval before submitting along with reproducible as per "Document Distribution Schedule".

7.3 APPROVAL OF DRAWINGS

7.3.1 The Purchaser shall return to the Bidder one set of drawings, plans and technical data requiring approval after marking them with their comments/ corrections, if any, either (a) marked 'Approved' or (b) marked 'Approved subject to incorporation of comments' or (c) marked 'Not Approved' with comments requiring resubmission of drawings etc. in 14 days or (d) marked 'Approval not required', where drawing is for information only. In case of (a) no further revision of drawings will be required. In case of (b) Bidder can proceed with the work but will resubmit the drawings incorporating the corrections as per comments only within fourteen (14) days. In case of (c) Bidder can proceed with the work only after resubmitting the drawings within fourteen (14) days and getting approval under (a) or (b) categories above. In case of (d) the Bidder drawing is deemed to have been received only for information purpose.

7.3.2 The Purchaser shall have the right to ask the Bidder to make any change in the design/ drawing which may be necessary to make equipment conform to the provisions and intent of the contract, without any extra cost to the Purchaser.

The drawings submitted shall be re-viewed by the Purchaser and shall be modified by the Bidder as required. The Bidder shall incorporate such modifications and/or corrections and submit the final drawings for approval/ reference.

7.3.3 No deviation from the approved drawings shall be permitted without the written approval of the Engineer.

7.3.4 The review of drawings/ data by the Purchaser will cover only general conformance of the data of the specifications and document, interfaces with the equipment provided under the specifications, external connections and the dimensions which might effect substation layout.

This review by the Purchaser may not indicate thorough review of all dimensions, quantities and details of the equipment, wiring, materials, any devices or items indicated or the accuracy of the information submitted. This review and/ or approval by the purchaser shall not be considered by the Bidder, as limiting any of his responsibilities specified under these specifications and documents.

Approval/ comments conveyed as above shall neither relieve the Bidder of his contractual obligations and his responsibilities for correctness of dimensions, material of construction, quantities, design details, assembly fits, performance particulars, guarantees and conformity of the supplies with the specifications, schemes, systems and statutory laws, nor does it limit the Purchasers right under the contract.

- 7.3.5 Should any minor revision be made after 'approval', at the time of erection/ commissioning the Bidder shall redistribute prints and reproducible, clearly certifying the changes incorporated in the drawing and marking it in a block. Every revision shall be marked by a revision number, date and subject, in a revision block provided in the drawing, clearly marking the changes incorporated.
- 7.3.6 The Bidder shall be responsible for and shall pay for any alterations of the work due to any discrepancies, errors and omissions in the drawings or other particulars supplied by him, whether such drawings or particulars have been approved by Engineer or not.

No extension of delivery periods shall be granted on this account.

7.3.7 As- build drawings

Drawings of all equipments as detailed in technical specifications of respective equipments necessarily including schematic drawings and terminal block drawings wherever applicable whether mentioned in respective technical specifications or not.

8. NAME PLATE, MARKING OF PARTS, LABELS

- 8.1 All equipment shall have metal name plates fixed in suitable position with full particulars engraved legibly thereon and not painted.
- 8.2 Each main and auxiliary item of plant is to have permanently attached to it in a conspicuous position, a rating plate of non corrosive material upon which is to be engraved identifying manufacturer's name, equipment type or serial number, rating together with details of the loading/ operating conditions under which the item or plant in question has been designed to operate and such diagram plates as may be required by the Engineer.
- 8.3 Each item of plant is to be provided with a name plate or label designating the service of the particular equipment. These inscriptions are to be approved by the Engineer or as detailed in the appropriate sections of the technical specifications.
- 8.4 Such name plates or labels are to be white non hygroscopic material with engraved block lettering or, alternatively, in the case of indoor equipments of transparent plastic material with suitably colored lettering engraved on the back
- 8.5 Each bay module in GIS room will have a clear marking showing the name of bay, identification, name and rating plate marking for each individual equipment like circuit breaker, disconnectors grounding switches, current transformer, voltage transformers and bushings etc. as per relevant IEC to facilitate identification during routine operation/ maintenance.
- 8.6 All such name plates, instruction plates, lubrication charts etc. shall be bilingual with Hindi inscription first followed by English. Provisions shall be made to fit in name plates, lubrication/ connection diagram plates etc.
- 8.7 In order to facilitate identification, the parts of the equipment shall be suitably marked.

9. INSTRUCTION MANUALS

- 9.1 The Bidder shall submit to the Engineer 'Descriptive Manuals', i.e. system design concept, detailed catalogues of equipment and typical equipment instructions for this project, for all major systems and equipment, covered under this contract along with dispatch of equipment.
These initial copies of descriptive manuals shall be in sufficient details, bringing out detailed internal construction, characteristics, performance parameters, principles of operation, maintenance requirements, replacement and renewals needed, erection and overhauling procedure, testing and operation procedure etc. for various equipment.
- 9.2 The integrated instruction manuals, fully defining the interfaces between various systems and complete in all respects shall be submitted by the Bidder one month before scheduled date of commissioning. The instruction manuals shall contain full details of designation and drawings of all the equipment furnished, the erection procedure, testing procedure, operation and maintenance procedure of the equipment, single line diagrams, and schematics. After the commissioning and initial operation of the plant, modifications/ additions/ changes, wherever required shall be incorporated in the instruction manuals and drawings shall be submitted by the Bidder to the Purchaser.
- 9.3 The manuals shall be specific to the equipment supplied and not of general nature.

10. DOCUMENTS AND ERECTION DRAWINGS

The Bidder shall submit within a reasonable time but at least four (4) weeks before dispatch of equipment (as per distribution schedule) the following drawings/ documents and instruction manuals etc. to the consignee and the Engineer.

- I. List of item-wise equipment as proposed to be dispatched by the Bidder.
- II. Erection drawings along with reproducible prints of each drawings.
- III. Instruction books for proper handling/ checking of material on receipt at site/storage,
- IV. erection and assembly of all equipment and necessary instruction for checking and
- V. recording proper assembly of the plant.
- VI. Instruction sheets for proper balancing, alignment, adjustment, checking and calibrations
- VII. as may be necessary.
- VIII. Descriptive literature and drawings to illustrate the working principals, methods of assembly and dismantling of plants and equipment.
- IX. Testing/commissioning format for recording data during erection/testing/
- XI. commissioning and trial run. These formats/data sheets shall clearly indicate the results
- XII. obtained during shop tests and permissible deviations.

11. QUALITY CONTROL PROGRAMME

To ensure that the equipment construction work and the services covered under this job are in accordance with the specifications and conform to the high standard of workmanship. It is obligatory on the part of the Bidder to adopt a suitable quality control program. Such a program shall include suitable hold point for check for major equipments during manufacture at supplier's work, during erection at site and during the construction



stage such that material checks for attaining proper strength and dimensional checks for attaining close tolerances required for equipment installation can be obtained.

In order to attain the above objectives, the Bidder shall draw out a plan listing all quality control checks in detail, including all hold points at which the quality checks shall be applied, also specifically mentioning those hold points where the Purchaser shall also participate in the quality check to assure him of the quality of the products supplied. Such a program shall be outlined by the Bidder for the acceptance by the Purchaser. The Bidder shall furnish detailed information regarding his quality control program and its strict implementation. Following information shall be included in the proposal along with others regarding quality control program:

- I. The quality control organizations and the proposal of its implementation.
- II. The system for controlling drawings and documents for correctness.
- III. The system of quality control for raw materials, process control and maintaining
- IV. tolerances during manufacturing, assembly and fabrication.
- V. Quality control during purchase of components, sub-systems and assemblies.
- VI. Methods for ensuring selection of proper vendors/ sub-vendors.
- VII. Inspection of testing at shop after assembly.
- VIII. Control of accuracy during calibration of measuring and testing equipments.
- IX. Preservation and quality control during the transit.
- X. Procedure for inspection before erection and quality control during erection.
- XI. System for storage and delivery.

Bidder shall be wholly responsible for the quality control and quality assurance for the manufacture, supply, erection, testing and commissioning etc.

During inspection, destructive testing and non destructive test evaluation shall be done wherever applicable, in presence of Purchaser's representative in accordance with established norms. Directions of Purchaser shall be rigorously followed.

12. INSPECTION

&

TESTING

- 12.1** The Purchaser reserves the right to inspect any machinery and material to ensure that approved Q.A.P. is being strictly implemented by the Bidder or his Sub Bidder/ Supplier under this contract and to reject any item found defective in workmanship or design or otherwise unsuitable for the use and purpose intended or which is not in accordance with the intent of this contract. The Bidder should on demand by the Purchaser, rectify or replace such defective or unsuitable equipment, or the Purchaser may at the Bidder's expense, rectify or replace such defective or unsuitable equipment whether before or after supply.
- 12.2** That Bidder shall, for purpose of clause 15 of the annexed conditions of contract Form-A inform to the Purchaser places of manufacture, testing and inspection of various equipment offered by him. Unless specifically provided otherwise, all tests shall be carried out at the Bidder's work or for bought out items at sub-vendors works before dispatch.
- 12.3** The Bidder shall advise the Purchaser at least 4 weeks in advance as to when the equipment will be ready for stage/ final inspection at the Bidder's works or at his Sub-

Bidder's works.

PENAL CHARGES

In case the equipment is not available for inspection at the time of arrival of inspection officers, the Bidder shall pay to UPPTCL towards futile journey a sum decided by Chief Engineer (765 KV DU), UPPTCL and demanded by "Engineer of Contract". This amount shall be paid within 10 days from the date of demand. Further action for inspection of the material shall be taken only after the said amount is deposited.

- 12.4** During inspection, the Purchaser's Inspecting Engineers at all times have access to all part of shops where the equipment is being manufactured and also shall be provided with all reasonable inspection facilities by the Bidder and/ or sub-Bidders. Even without scheduled inspection, the Engineer and/or his duly authorized representative shall have at all reasonable times access to the Bidder's premises, works or site and shall have the power to inspect and examine the materials and workmanship of the works during it's manufacture or erection.

- 12.5** All plants equipment/ parts, sub assemblies/ assemblies shall comply with the requirement of type tests and shall be subjected to the routine/ acceptance tests specified in the set of standards adopted and to such other tests as are stipulated in the respective technical specifications.

The Purchaser reserves to himself the right of having at his own expense any inspection or special test of a reasonable nature at Bidder's premises or at site, in addition to those prescribed in applicable standards and the enclosed technical specifications.

- 12.6** The Engineer shall either depute his representative to witness the tests as applicable and inspect the material or shall waive the inspection. In case of waiver the Bidder or his sub-Bidder shall carryout the all applicable tests in absence of Purchaser's representative. In both the cases i.e. either inspection or waiver the test certificates shall be submitted to Engineer of Contract for approval and issue of dispatch authorization. In case of inspection the test certificates must bear signatures of the Purchaser's inspecting officer.

The Engineer of Contract, within 10 days of receipt of test certificates, shall issue approval/ dispatch authorization, if test certificates are found satisfactory.

In case test certificates are not found satisfactory the Engineer of Contract, within 10 days of receipt of test certificates, shall communicate his objections and actions required to be taken in writing to the Bidder. The Bidder shall take remedial action and shall re-submit the test certificates or re-offer the material for inspection as asked for by the Engineer. Subsequent actions shall follow as in case of fresh offer for inspection. No extension of delivery/ completion period shall be granted on this account.

12.7 REJECTON

Purchaser reserves the right to reject any equipment if during the tests at works or site, the test value achieved do not comply with the respective standard/ specifications and

exceeds that tolerable limits. Rejection of any equipment will not be held as a valid reason for delay in timely completion of the work.

- 12.8** No equipment to be furnished or used in connection with this contract shall be dispatched until factory inspection and acceptance test have been carried out satisfactorily and dispatch authorization issued by Engineer of Contract. Such factory inspection of the equipment or approval of acceptance tests shall not however, relieve the Bidder from full responsibility for supplying equipment conforming to the requirements of this contract, nor prejudice any claim, right or privilege which the Purchaser may have because of the use of defective or unsatisfactory equipment. Should Purchaser waive the right to inspect any equipment, such waiver shall not relieve the Bidder in any way from his obligations under this contract. The inspection/waiver by Engineer and/ or approval of test certificates shall in no way limit the liabilities and responsibilities of the Bidder in respect of the agreed quality assurance program, and the desired performance of the equipment.
- 12.9** In all cases where the contract provides for tests whether at the premises or works of the Bidder or of any Sub-Bidder, the Bidder shall provide free of charge such items as labour, materials, electricity, fuel, water, stores, apparatus and instruments as may be reasonably required to carry out effectively, such tests on the equipment in accordance with the contract and shall give facilities to the Engineer or to his authorized representative to accomplish inspection. All the expenses incurred for testing including material consumed in testing shall be to the Bidder's account.
- 12.10** Purchaser will not entertain any request for waiver of inspection on the ground that subvendors are not agreeing for the Purchaser's inspection. It is the responsibility of the Bidder to ensure that all the requirements of the Purchaser as envisaged in the technical specifications are incorporated.
- 12.11** The Bidder is required to record the following certificates on the invoices and challans of each and every consignment:
"Certified that material being dispatched against the above invoices and challan has been inspected and tested by the representative of Engineer of the contract on (date) and all the test results were satisfactory, as per approved test certificate enclosed."

Or
Certified that inspection of material being dispatched against the above invoice and challan has been waived off by Engineer of Contract vide letter No.....Dt..... (Copy enclosed) and all the acceptance and routine tests as per relevant standards and those provided in Contract, have been conducted and all the test results were found satisfactory as per test certificates enclosed."
- 12.12** In case the inspection or testing of the material is to be carried out outside India, all the expenditure including boarding and lodging etc. of the inspecting officer/ officers shall be borne by the contractor and information regarding inspection has to be given at least 8 weeks in advance.

13. PACKING



- 13.1** All equipment shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at site till the time of erection.
While packing all the materials, the limitations from the point of view of availability of transportation facilities in India should be taken into account. The Bidder shall be responsible for any loss or damage during transportation, handling and storage.
- 13.2** The Bidder shall include and provide for security protection and packing the plant so as to avoid loss or damage during transport by any mode.
- 13.3** All packing shall allow for easy removal and checking at site. Wherever necessary, proper arrangement for attaching slings for lifting shall be provided. All packages shall be clearly marked for with signs showing 'UP' and 'DOWN' side of boxes, and handling and unpacking instructions as considered necessary. Special precautions shall be taken to prevent rusting of steel and iron parts during transit and storage. Gas seals or other methods proposed to be adopted for protection against moisture during transit shall be to the satisfaction of the engineer.
- 13.4** The cases containing easily damageable material shall be very carefully packed and marked with appropriate caution symbols i.e. FRAGILE, HANDLE WITH CARE, USE NO HOOKS etc.
- 13.5** Each package delivered under the contract shall be marked by the Bidder at his expense and such marking must be distinct (all previous irrelevant marking being carefully obliterated). Such marking shall show the description and quantity of contents, the name of consignee and address, the gross and net weights of the package, the name of Bidder with a distinctive number of mark sufficient for purpose of identification. All markings shall be carried out with such materials as to ensure quickness of drying, fastness and legibility.
- 13.6** Each Package shall contain a note quoting specifically the name of the Bidder, the number and date of contract or order and the name of office placing the contract, nomenclature of the stores and include a schedule of parts for each complete equipment giving the parts number with reference to the General Arrangement/ Assembly drawing and the quantity of each part, drawing number and tag numbers.
- 13.7** All equipment/ material shall be suitably packed for transport, carriage at site and outdoor storage during transit. The Bidder shall be responsible for any damage to the equipment during transit. The contents of each package shall bear marking that can be readily identified from the package list and packing shall provide complete protection from moisture, termites and mechanical shocks etc.
- 13.8** Any material found short inside the packing cases shall be supplied by the Bidder without any extra cost.
- 13.9** Notwithstanding anything stated in this clause the Bidder shall be entirely responsible for any loss, damage or depreciation to the stores.

14. DESPATCH OF EQUIPMENT

- 14.1 Detailed dispatch instructions will be intimated to the Bidder. All materials shall be dispatched by road.
- 14.2 The Bidder shall intimate, at least thirty (30) days in advance to the consignee as well as the concerned Superintending Engineer at site, the probable date when the equipment will be ready for dispatch from the works. Notification of delivery or dispatch in regard to each and every consignment shall be made to the Purchaser immediately after dispatch or delivery. The supplier shall further supply to the consignee a priced invoice and packing account of all stores delivered or dispatched by him. All packages, containers, bundles and loose materials forming parts of each and every consignment shall be described fully in the packing account, and full details of the contents of packages and quantity of material shall be given to enable the consignee to check the stores on arrival at destination.
- 14.3 A list in duplicate containing details of equipment for verification at site shall also be placed inside each package and shall correspond with the advice note. One additional copy of each of the package lists shall also be sent to the consignee.

15. TYPE TESTING, INSPECTION, TESTING & INSPECTION CERTIFICATE

The Bidder shall supply type tested (including special test as per technical specification) equipments and materials. The test reports/details shall be furnished by the Bidder in the bid.

In the event of any discrepancy in the test reports i.e. any test report not acceptable due to any design/manufacturing changes or due to non-compliance with the requirement stipulated in the Technical Specification and/or IEC/ IS, same, shall be carried out without any additional cost implication to the Purchaser. The Purchaser reserves the right to get any or all type tests conducted/ repeated.

The reports for all type tests and additional type tests as per technical specification furnished by the Bidder shall be of the tests conducted within last 10(five) years prior to the date of bid opening. The type tests conducted should have either been conducted in accredited laboratory (accredited based on ISO/ IEC Guide 25/ 17025 or EN 45001 by the national accreditation body of the country where laboratory is located) or witnessed by UPPTCL or representative authorized by UPPTCL or Utility or representative of accredited test lab or reputed consultant.

15.1 Pre-commissioning Tests

On completion of erection of the equipment and before charging, each item of the equipment shall be thoroughly cleaned and then inspected jointly by the Purchaser and the Contractor for correctness and completeness of installation and acceptability for charging, leading to initial pre-commissioning tests at Site. The list of pre-commissioning tests to be performed are given in respective chapters and shall be included in the Contractor's quality assurance programme.

15.2 Commissioning Tests

- 15.2.1 The available instrumentation and control equipment will to be used during such tests and the Purchaser will calibrate, all such measuring equipment and devices as far as practicable.

- 15.2.2 Any special equipment, tools and tackles required for the successful completion of the Commissioning Tests shall be provided by the Contractor, free of cost.
- 15.2.3 The specific tests requirement on equipment have been brought out in the respective chapters of the technical specification.
- 15.2.4 The Contractor shall be responsible for obtaining statutory clearances from the concerned authorities for commissioning the equipment and the switchyard. However necessary fee shall be reimbursed by UPPTCL on production of requisite documents.

16. MATERIAL WORKMANSHIP

16.1 General Requirement

Where the specification does not contain references to workmanship, equipment, materials and components of the covered equipment, it is understood that the same must be new, of highest grade of the best quality of their kind, conforming to best engineering practice and suitable for the purpose for which they are intended.

The design of the works shall be such that installation, future expansions, replacements and general maintenance may be undertaken with a minimum of time and expenses. Each component shall be designed to be consistent with its duty and suitable factors of safety, subject to mutual agreements. All joints and fastenings shall be devised, constructed and documented so that the component parts shall be accurately positioned and restrained to fulfil their required function. In general screw threads shall be standard metric threads. The use of other thread forms will only be permitted when prior approval has been obtained from the Purchaser.

Whenever possible, all similar part of the Works shall be made to gauge and shall also be made interchangeable with similar parts. All spare parts shall also be interchangeable and shall be made of the same materials and workmanship as the corresponding parts of the Equipment supplied under the Specification. Where feasible, common component units shall be employed in different pieces of equipment in order to minimize spare parts stocking requirements. All equipment of the same type and rating shall be physically and electrically interchangeable.

All materials and equipment shall be installed in strict accordance with the manufacturer's recommendation(s). Only first-class work in accordance with the best modern practices will be accepted. Installation shall be considered as being the erection of equipment at its permanent location. This, unless otherwise specified, shall include unpacking, cleaning and lifting into position, grouting, leveling, aligning, coupling of or bolting down to previously installed equipment bases/foundations, performing the alignment check and final adjustment prior to initial operation, testing and commissioning in accordance with the manufacturer's tolerances, instructions and the Specification. All factory assembled rotating machinery shall be checked for alignment and adjustments made as necessary to re-establish the manufacturer's limits.

Suitable guards shall be provided for the protection of personnel on all exposed rotating and/ or moving machine parts and shall be designed for easy installation and removal for maintenance purposes. The spare equipment(s) shall be installed at designated locations and tested for healthiness.

The Bidder shall apply oil and grease of the proper specification to suit the machinery, as is necessary for the installation of the equipment. Lubricants used for installation purposes shall be drained out and the system flushed through where necessary for applying the lubricant required for operation. The Bidder shall apply all operational lubricants to the equipment installed by him.

All oil, grease and other consumables used in the Works/ Equipment shall be purchased in India unless the Bidder has any special requirement for the specific application of a type of oil or grease not available in India. In such is the case he shall declare in the proposal, where such oil or grease is available. He shall help Purchaser in establishing equivalent Indian make and Indian Contractor. The same shall be applicable to other consumables too.

A cast iron or welded steel base plate shall be provided for all rotating equipment which are to be installed on a concrete base unless otherwise agreed to by the Purchaser. Each base plate shall support the unit and its drive assembly, shall be of design with pads for anchoring the units and shall have a raised up all around and shall have threaded in air connections, of so required.

16.2 Provisions For Exposure to Hot and Humid climate

Outdoor equipment supplied under the specification shall be suitable for service and storage under tropical conditions of high temperature, high humidity, heavy rainfall and environment favourable to the growth of fungi and mildew. The indoor equipments located in non-air conditioned areas shall also be of same type.

16.3 Space Heaters

The heaters shall be suitable for continuous operation at 240V AC supply. On-off switch and fuse shall be provided for the heater.

One or more adequately rated thermostatically connected heaters shall be supplied to prevent condensation in any compartment. The heaters shall be installed in the lower portion of the compartment and electrical connections shall be made sufficiently away from below the heaters to minimize deterioration of supply wire insulation. The heaters shall be suitable to maintain the compartment temperature to prevent condensation.

The heaters shall be suitably designed to prevent any contact between the heater wire and the air and shall consist of coiled resistance wire centred in a metal sheath and completely encased in a highly compacted powder of magnesium oxide or other material having equal heat conduction and electrical insulation properties, or they shall consist of resistance wire wound on a ceramic and completely covered with a ceramic material to prevent any contact between the wire and the air. Alternatively, they shall consist of a resistance wire mounted into a tubular ceramic body built into an envelope of stainless steel or the resistance wire is wound on a tubular ceramic body and embedded in glaze. The surface temperature of the heaters shall be restricted to a value which will not shorten the life of the heater sheaths or that of insulator wire or other component in the compartments.

16.4 FUNGI STATIC VARNISH



Besides the space heaters, special moisture and fungus resistant varnish shall be applied on parts which may be subjected or predisposed to the formation of fungi due to the presence or deposit of nutrient substances. The varnish shall not be applied to any surface of part where the treatment will interface with the operation or performance of the equipment. Such surfaces or parts shall be protected against the application of the varnish.

16.5 Ventilation opening

In order to ensure adequate ventilation, compartments shall have ventilation openings provided with fine wire mesh of brass to prevent the entry of insects and to reduce to a minimum the entry of dirt and dust. Outdoor compartment openings shall be provided with shutter type blinds and suitable provision shall be made so as to avoid any communication of air/ dust with any part in the enclosures of the Control Cabinets, Junction boxes and Marshalling Boxes, panels etc.

16.6 Degree of Protection

The enclosures of the Control Cabinets, Junction boxes and Marshalling Boxes, panels etc. to be installed shall provide degree of protection as detailed here under:

- a) Installed out door: IP- 55
- b) Installed indoor in air conditioned area: IP-31
- c) Installed in covered area: IP-52
- d) Installed indoor in non air conditioned area where possibility of entry of water is limited: IP-41.
- e) For LT Switchgear (AC & DC distribution Boards) : IP-52

The degree of protection shall be in accordance with IS:13947 (Part-I) / IEC-60947(Part-I) / IS 12063 / IEC-60529. Type test report for degree of protection test, shall be submitted for approval.

16.7 RATING PLATES, NAME PLATES AND LABELS

Each main and auxiliary item of substation is to have permanently attached to it in a conspicuous position a rating plate of non-corrosive material upon which is to be engraved manufacturer's name, year of manufacture, equipment name, type or serial number together with details of the loading conditions under which the item of substation in question has been designed to operate, and such diagram plates as may be required by the Purchaser. The rating plate of each equipment shall be according to IEC requirement.

All such nameplates, instructions plates, rating plates CB, CT, VT, SA, Isolators and Relay & Protection panels equipments shall be bilingual with Hindi inscription first followed by English.

Alternatively, two separate plates one with Hindi and the other with English inscriptions may be provided.

16.8 FIRST FILL OF CONSUMABLES, OIL AND LUBRICANTS

All the first fill of consumables such as oils, lubricants, filling compounds, touch up paints, soldering/brazing material for all copper piping of circuit breakers and essential chemicals etc. which will be required to put the equipment, covered under the scope of the specifications, into successful operation, shall be furnished by the Bidder unless specifically excluded under the exclusions in these specifications and documents.

17. Surface finish

All interiors and exteriors of tanks, control cubicles and other metal parts shall be thoroughly cleaned to remove all rust, scales, corrosion, greases or other adhering foreign matter. All steel surfaces in contact with insulating oil as far as accessible shall be painted with not less than two coats of heat resistant, oil insoluble, insulating paints.

All metal surfaces exposed to atmosphere shall be given two primer coats of zinc chromate and two coats of epoxy paint with epoxy base thinner. All metal parts not accessible for painting shall be made of corrosion resisting material. All machine finished or bright surfaces shall be coated with a suitable preventive compound and suitably wrapped or otherwise protected. All paints shall be carefully selected to withstand tropical heat and extremes of weather within the limit specified. The paint shall not scale off or wrinkle or be removed by abrasion due to normal handling.

All external painting shall be as per shade No. 631 of IS: 5.

18. HOT DIP GALVANISING

All ferrous parts including all sizes of nuts, bolts, plain and spring washers, support channels, structures, shall be hot dip galvanized conforming to latest version of IS: 2629 or any other equivalent authoritative standard. However, hardware less than M12 size shall be electrogalvanized.

Minimum weight of zinc coating shall be 610 gm/ sq.mm and minimum thickness of coating shall be 85 microns for all items thicker than 6 mm. For items lower than 6mm thickness, requirement of coating shall be as per relevant ASTM. For surface which shall be embedded in concrete, the zinc coating shall be 610 gm/sq. m minimum.

The galvanized surfaces shall have a continuous and uniform thick coating of zinc, firmly adhering to the surface of steel. The finished surface shall be clean and smooth and shall be free from defects like discoloured patches, bare spots, unevenness of coating, spelter which is loosely attached to the steel globules, spiky deposits, blistered surface, flaking or peeling off, etc. The presence of any of these defects noticed on visual or microscopic inspection shall render the material liable to rejection.

After galvanizing, no drilling or welding shall be performed on the galvanized parts of the equipment excepting that nuts may be threaded after galvanizing. Sodium dichromate treatment shall be provided to avoid formation of white rust after hot dip galvanization.

Galvanised material must be transported properly to ensure that galvanised surfaces are not damaged during transit. Application of zinc rich paint at site shall not be allowed.



lines and shall be tested as per
IS:617

- c) For connecting G.I.Shield wire Malleable iron casting.
- d) Bolts, nuts and plain washers. Hot dip galvanising mild steel
- 19. e) Spring washers for items 'a' to 'c' Electrogalvanised-suitable for at least 3 service conditions as per IS:3063 & IS:1573
- f) Misc. Mild steel.

20. CLAMPS AND CONNECTORS INCLUDING TERMINAL CONNECTORS

20.1 All power clamps and connectors shall conform to IS:5561 & NEMA CC1 and shall be made of materials listed below:

- a) For connecting ACSR conductors Aluminum alloy casting, conforming to designation A6 of IS:617 and all test shall conform to IS:617
- b) For connecting equipment terminals made of copper with ACSR conductors Bimetallic connectors made from aluminum alloy casting, conforming to designation A6 of IS:617 with 2mm thick bimetallic liner and all test shall conform to IS:617
- c) For connecting G.I Galvanised mild steel shield wire
- d) i) Bolts, nuts & Plain, washers galvanised. i) Electrogalvanised for sizes below M12, for others hot dip
- ii) Spring washers items 'a' to 'c' IS:1573 ii) Electro-galvanised mild for steel suitable for atleast service condition-3 as per

20.2 Necessary clamps and connectors shall be supplied for all equipment and connections. The requirement regarding external corona and RIV as specified for any equipment shall include its terminal fittings. If corona rings are required to meet these requirements they shall be considered as part of that equipment and included in the scope of work.

20.3 Where copper to aluminum connections are required, bi-metallic clamps shall be used, which shall be properly designed to ensure that any deterioration of the connection is kept to a minimum and restricted to parts which are not current carrying or subjected to stress.

20.4 Low voltage connectors, grounding connectors and accessories for grounding allequipment as specified in each particular case, are also included in the scope of Work.

20.5 No current carrying part of any clamp shall be less than 10 mm thick. All ferrous parts shall be hot dip galvanised. Copper alloy liner of minimum 2 mm thickness shall be cast integral with aluminum body or 2 mm thick bi-metallic strips shall be provided for Bi-metallic clamps.

20.6 All casting shall be free from blow holes, surface blisters, cracks and cavities. All sharp edges and corners shall be blurred and rounded off.



- 20.7 Flexible connectors, braids or laminated straps made for the terminal clamps for bus posts shall be suitable for both expansion or through (fixed/sliding) type connection of 4" IPS AL. tube as required. In both the cases the clamp height (top of the mounting pad to centre line of the tube) should be same.
- 20.8 Clamp shall be designed to carry the same current as the conductor and the temperature rise shall be equal or less than that of the conductor at the specified ambient temperature. The rated current for which the clamp/connector is designed with respect to the specified reference ambient temperature, shall also be indelibly marked on each component of the clamp/connector, except on the hardware.
- 20.9 All current carrying parts shall be designed and manufactured to have minimum contact resistance.
- 20.10 Clamps and connectors shall be designed to be corona controlled.
- 20.11 **Tests**
- Clamps and connectors should be type tested as per IS:5561 and shall also be subjected to routine tests as per IS:5561. Following type test reports shall be submitted for approval as per clause 9.2 above except for sl. no.(ii) & (iii) for which type test once conducted shall be applicable (i.e. the requirement of test conducted within last ten years shall not be applicable).
- I. Temperature rise test (maximum temperature rise allowed is 35°C over 50°C ambient)
 - II. Short time current test
 - III. Corona (dry) and RIV (dry) test (for 220 KV and above voltage level clamps)
 - IV. Resistance test and tensile test

ANNEXURE - 1
SCHEDULE OF TECHNICAL DEVIATIONS

Bidder shall list below all technical deviation clause wise w.r.t. tender specifications:

S.No.	Page No.	Clause No.	Deviation	Reason / Justification
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Any deviation not specifically brought out in this section shall not be admissible for any commercial implication at later stage. Except to the technical deviations listed in this schedule, bidder's offer shall be considered in full compliance to the tender specifications irrespective of any such deviation indicated / taken elsewhere in the submitted offer.

Date:

Tenderer's Stamp & Signature

ANNEXURE – 2

**GUARANTEED TECHNICAL PARTICULARS FOR SPACERS
(To be submitted by the supplier at the contract execution stage)**

**GUARANTEED AND TECHNICAL PARTICULARS FOR CLAMPS AND CONNECTORS
Shall be submitted for all applicable class**

- | | |
|---|----------|
| 1) Manufacture's name and address | 1)..... |
| 2) Applicable standards | 2)..... |
| 3) Application | 3)..... |
| 4) Type | 4)..... |
| 5) For connection to | 5)..... |
| a) Conductor size and arrangement | (a)..... |
| b) Equipment terminal and arrangement | (b)..... |
| 6) Material (state percentage - composition of constituents and impurities present) | 6)..... |
| a) Clamp body | (a)..... |
| b) Bolts and nuts | (b)..... |
| c) Spring washers | (c)..... |
| d) Liners, if any | (d)..... |
| 7) Rated current (A) | 7)..... |
| 8) Maximum temperature rise over reference ambient temperature when carrying rated current (°C) | 8)..... |
| 9) Rated terminal load and factor of safety Kg) | 9)..... |
| 10) Minimum thickness of any part (mm) | 10)..... |
| 11) Weight of clamp complete with hardware (Kg) | 11)..... |
| 12) Machine accuracy for matching surface | 12)..... |
| 13) Service (Indoor/Outdoor) | 13)..... |

PROJECT : 400/220/132kV GIS s/s at Rasra , Ballia
CUSTOMER: UTTAR PRADESH TRANSMISSION CORPORATION LTD. (UPPTCL)
Technical Specification of Clamps & Connectors
Section-1: Scope, Specific Technical Requirements & Quantities

TB-404-316-027

REV.00

Annexure - 3

CHECK LIST FOR INFORMATION TO BE FURNISHED WITH OFFER RETURN THIS CHECKLIST AS PART OF THE OFFER DULY SIGNED

The offer may not be considered if the following information and this Checklist are not enclosed with the Offer.

BHEL ENQUIRY. NO:

BIDDER OFFER REFERENCE:

1A. TECHNICAL REQUIREMENTS (FOR CLAMPS & CONNECTORS)

(1) S.No.	(2)/(3) Parameter/ Requirement	(4) Yes / No	(5) Remarks in case reply in Col (4) is NO
1.	Material of Clamps/Fittings		
a)	Clamp body (Designation 4600 of IS 617)	YES/NO	
b)	Bolts, nuts and plain washers (Electro galvanized for sizes below M12, for others hot dip galvanized.)	YES/NO	
c)	Spring washers (Spring steel -E.G)	YES/NO	
2.	Continuous current rating of the clamps/fittings (Is it compatible with the conductor rating/ equipment rating as per BOQ)	YES/NO	
3.	Maximum temperature rise (35°C) of the clamps/fittings over ambient temperature (50°C) when carrying rated current	YES/NO	
4.	Minimum thickness of any part is 10 mm	YES/NO	
5.	Min Corona extinction voltage (kV)		
a)	320 kVrms for 400 kV Voltage Class	YES/NO	
b)	156kV rms for 220kV Voltage class	YES/NO	
c)	105 kVrms for 132 kV Voltage Class	YES/NO	
6.	All hardware required for connecting to the respective equipment terminals included in supplier scope	YES/NO	

1B. TECHNICAL REQUIREMENTS (FOR SPACERS)

(1) S.No.	(2)/(3) Parameter/ Requirement	(4) Yes / No	(5) Remarks in case reply in Col (4) is NO
1.	Spacing between sub-conductors 450mm for ACSR Moose conductor	YES/NO	
2.	Min Corona extinction voltage (kV)		
a)	320 kVrms for 400 kV Voltage Class	YES/NO	
b)	105 kVrms for 132 kV Voltage Class	YES/NO	

2. TYPE TESTS

Whether Type test reports of the tests conducted earlier (not more than five years from the date of bid opening i.e. 17.04.18 on similar material submitted. YES/NO

If type test report submitted, indicate report number.

If the valid type test reports are not available with the bidder then type test shall be conducted by the bidder free of cost YES/NO