

TENDER SPECIFICATIONS

TENDER NO. BHEL / NR /SCT / BARH/ ESP/ STR / 538

FOR

Erection, alignment, welding and Handing over of Structure of Electrostatic Precipitators packages of 3 X 660 MW UNIT - 1, 2 and 3 at BARH STPP, PATNA, BIHAR.

PART I – TECHNICAL BID



Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northren Region,
Plot No. 25 , Sector - 16A ,
Dist. Gautam Budh Nagar, NOIDA – 201 301 (INDIA)



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ISO 9001-2000, ISO 14001 and OHSAS 18001 certified company SubContract and Purchase Deptt.

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Bharat Heavy Electricals Limited (A Govt. Of India Undertaking) Power Sector – Northren Region, Plot No. 25 , Sector - 16A ,

Distt. Gautam Budh Nagar, NOIDA – 201 301(INDIA) Phone: 0091-0120-2515476 / 2515464 / 2515479 Fax 091-0120-2515464 / 2515467 Email: sku@bhelsnr.co.in / swapan@bhelsnr.co.in

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IMPORTANT NOTE

PURCHASER OF THIS TENDER DOCUMENT IS ADVISED TO CHECK AND ENSURE COMPLETION OF ALL PAGES OF TENDER DOCUMENT AND REPORT ANY DISCREPANCY TIMELY FOR CORRECTIVE ACTION, IF ANY, TO THE ISSUING AUTHORITY BEFORE THE BIDS ARE SUBMITTED. ORIGINAL COPY OF TENDER DOCUMENT COMPLETE IN ALL RESPECTS MUST BE SUBMITTED BACK AS PART OF THE BID WITHOUT WHICH THE SAME IS LIABLE TO BE REJECTED BY BHEL.

THIS TENDER SPECIFICATION ISSUED TO:

M/S-----

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TENDER NOTICE

Sealed tenders are invited from the contractors fulfilling qualifying requirements for Erection, alignment, welding and Handing over of Structure of Electrostatic Precipitators packages of 3 X 660 MW UNIT - 1, 2 and 3 at BARH STPP, PATNA, BIHAR.

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QUALIFYING REQUIREMENTS:

“Tenderers who wish to participate should fulfill following ‘Qualifying Requirements’;

1.1 “Should have executed erection, alignment and welding work of ESP / Boiler structure for at least 500 MT during last Seven Years.

OR

1.2 “Should have executed erection, alignment and welding work of at least 1000 MT of structure in power house steel structure work for at least one unit during last Seven Years.

OR

1.3 “Should have executed major R&M works which includes either erection, alignment and welding of ESP structure or erection, alignment and welding of boiler pressure parts, ducting etc for at least one unit during last Seven Years.

AND

2.0 Party should also have an average annual turnover of minimum of Rs. 200 lacs during preceding three years (2004-05, 2005-06 & 2006-07).

NOTES:

- (i) **The Tender Documents comprise of following;**
 - (a) General Conditions of Contract
 - (b) Special Conditions of Contract, Tender Notice, Project Synopsis etc.
 - (c) Rate Schedule
 - (d) Specifications
- (ii) Tender Documents with complete details are hosted in this web page. Bidder(s) intending to participate may download the tender document from the web site. Bidder(s) downloading the tender documents from the web site, shall remit Rs.1000/- (Rupees One thousand only) in the

draft (non-refundable), in favour of BHEL, NOIDA along with their

se hard copy of tender documents from this office. Tender
(e) will be issued on all working days between 09.30 Hrs. to 12.30
Hrs within the sale period i.e **upto 01.08.2008** on payment of Rs.1,000/- (non-refundable)
either in cash or by crossed demand draft in favour of BHEL, NOIDA. Request for issue of
tender document should clearly indicate Tender No. and work.

- (iii) Tenders must be submitted to the undersigned **latest by 01.08.2008** before opening of technical bids commences. Technical bids shall **be opened at 15.30 Hrs. on 01.08.2008**.
- (iv) Earnest Money Deposit (EMD) : Refundable, Non-interest bearing **EMD of Rs 2,00,000/-** shall be deposited by Account Payee Pay Order ~~OR~~ Demand Draft in favour of %Bharat Heavy Electricals Limited+payable at Delhi/NOIDA . Those bidders who have already deposited ±One Time ~~EMD~~ of Rs. 2,00,000/- with BHEL, PSNR, NOIDA need not submit EMD with the present tender.
- (v) *BHEL* reserves the right to go for a Reverse Auction instead of Opening the submitted sealed bid, which will be decided after technical evaluation. As such, the bidders should submit their best prices in the ~~Sealed Price Bid~~ However, bidders are required to confirm their acceptance of %General terms and conditions+governing RA specifically in their technical bid. The %General terms and conditions+governing RA are given in the SCC of the NIT. Bidders are also required to furnish following details in their techno-commercial bid, for this purpose (RA).

Authorization of representative who will participate in the on line Reverse Auction Process;

1. Name and Designation of official
 2. Postal Address (Complete)
 3. Telephone Nos. (Land line & Mobile both)
 4. FAX No.
 5. E-mail address
 6. Name of Place/State/Country, wherefrom he will participate in the RA
- (v) BHEL reserves the right to accept or reject any or all tenders without assigning any reason whatsoever.
 - (vi) BHEL takes no responsibility for any delay/loss of documents or correspondences sent by courier/post.
 - (vii) Purchase Preference will be given to CPSUs as per Govt. Guidelines.
 - (viii) **Unsolicited rebate / discount shall not be accepted after bid opening.**

(S. Biswas)
DGM/SCP



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DOMESTIC NOTICE INVITING TENDER

LAST DATE OF SALE : 01.08.2008.
DATE OF OPENING : 01.08.2008.

NIT NO. / NAME OF WORK

TENDER NO. BHEL / NR /SCT / BARH/ ESP/ STR / 538

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NOTES

1. Purchase Preference will be given to CPSU as per Govt. Guidelines.
2. Please visit our website at www.bhel.com for details of NIT including Qualifying Requirements.

DGM/SCP

Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northren Region,
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PROCEDURE FOR SUBMISSION OF SEALED TENDERS:

The tenderers must submit their tenders as required in **two parts** in separate sealed covers **prominently superscribed as Part-I Technical bid and Part-II, Price bid** also indicating on each of the cover tender specification no., date and time as mentioned in tender notice. **Price bids for Part-A and Part-B of Works must be in separate sealed covers indicating clearly the respective “Part of Work “ and tender specification no. etc. on their covers.**


TECHNICAL BID (COVER-I)

Except **Price bid Part-II**, complete set of tender document consisting of General conditions of Contract, Technical specification & Special terms and condition (Part-I) issued by BHEL shall be enclosed in **Part I Technical Bid only**. All schedules, data sheets and details called for in the specification shall also be submitted along with technical bid. All details / Data / Schedules including offer letter duly signed and stamped are to be **submitted in duplicate**.

PRICE BID (COVER-II)

Tenderers may please note that price bid is **to be submitted only in original copy** of Tender i.e. Price bid (Part-II) issued by BHEL and no duplicate copy of same is required. **Price bids for structural works must be in separate sealed covers indicating clearly the respective “PART OF Work” and tender specification no. etc. on their covers.** As such, if Tender quote for both Part-I as well as for Part- II , the Cover-II (Price Bid Cover) will contain two sealed covers of price bids indicating clearly the respective Part of Work and tender specification no. etc. on these covers.

These Two separate covers i.e. cover I & II shall together be enclosed in a **third envelope (Cover-III)** and this sealed cover shall be superscribed with tender specification No., due date, time and submitted to officer inviting tender as indicated in tender notice on or before due date as indicated.



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PROJECT SYNOPSIS

3 x 660 MW, BARH Super Thermal Power Project being set up by NTPC is located at Barh town in Patna district of Bihar State. National Thermal Power Corporation Ltd has entrusted BHEL to supply & setup the ESP's for all the three units.

The proposed project is situated between National Highway (NH-31) and Patna-Mokama main railway line. Barh, the nearest town is about 4.0 Kms away from the project.. The nearest Railway Station (Barh) (on Patna-Mokama section of Main trunk route) is approximately 3.0 km away from the project site.

The nearest airport at Patna is located at a distance of approximately 75 Kms from the project site.

SECTION - III `A`

SPECIAL CONDITIONS OF CONTRACT

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CLAUSE No.	DESCRIPTION
34.0	General
35.0	Civil works, foundation and grouting
36.0	Consumables
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40.0	Preservation of components
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43.0	Progress reporting
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45.0	Income tax, Service Tax, Works Tax AND Sales Tax Registration
46.0	Extra work
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48.0	Rate schedule
49.0	Instructions to tenderers
50.0	Liquidated Damages
51.0	Security Deposit
52.0	Others

GENERAL CONDITIONS OF CONTRACT

34.0 GENERAL

34.1 The intent of this specification is to provide services for execution of the project according to most modern and proven techniques and codes. The omission of specific reference to any method, equipment or material necessary for the proper and efficient services towards installation of the plant shall not relieve the contractor of the responsibility of providing such services / facilities to complete the work or portion of work awarded to him. The quoted / accepted rates / lumpsum price shall deem to be inclusive of all such contingencies.

34.2 The contractor shall carry out the work in accordance with standard practices / codes / instructions / drawings / documents / specification supplied by BHEL from time to time.

34.3 The work shall conform to dimensions and tolerances given in various drawings and documents that will be provided during erection. If any portion of work is found to be defective in workmanship, not conforming to drawings or other stipulations, the contractor shall dismantle and redo the work duly replacing the defective materials at his cost. Failing which the job will be carried out by BHEL by engaging other agencies/ departmentally and recoveries will be affected from contractor's bills towards expenditure incurred including BHEL's usual overhead charges.

34.4 Following shall be the responsibility of contractor and have to be provided within finally accepted rates / prices:

- a Provision, as required, of all types of labour, supervisors, engineers, watch and ward, tools & tackles, calibrated inspection, measuring and testing equipment as specified and otherwise required for the work, consumables for erection, testing and commissioning including material handling.
- b Proper out-turn as per BHEL plan and commitment.
- c Completion of work as per BHEL Schedule.
- d Good quality and accurate workmanship for proper performance of the equipment.
- e Repair and rectification.
- f Preservation / Re-conservation of all components during storage / erection / commissioning till handing over.

34.5 **BHEL-Power Sector (NR) is ISO 9001-2000, ISO 14001-1996 and OHSAS 18001-1999 certified company. Quality of work, to customer's satisfaction and system requirements are the essence of these certifications. The contractor in all respects will organize his work, systems, environment, process control documentation, tools, plant, inspection, measuring and testing equipment etc. as per instructions of BHEL engineer.**

35.0 CIVIL WORKS, FOUNDATIONS AND GROUTING.

Foundation and other necessary civil works for supporting structures, equipment etc, will be provided by BHEL/ NTPC. The dimensions of the foundation and anchor bolt pits shall be checked by contractor for their correctness with respect to the above access as per the erection drawings. Further, top elevation column foundations shall be checked with respect to benchmark etc. All minor adjustment of foundation levels dressing and chipping of foundation surfaces etc. up to 50 mm as may be required for the erection of equipment/plants will be carried out by the contractor at no extra cost.

res equipments, including anchor / foundation bolts, beneath may be applicable, is included in the scope of contractor. materials including ordinary Portland cement as well as quick set grout mix (e.g.srinkcomp , conbextra etc)/**ready mix grout component**, form work, shuttering, and any other requirements is in the contractor's scope. Contractor shall obtain approval of BHEL for all types of cement (ordinary as well as quick setting – free flow – non-shrink grout mix or what ever is applicable) prior to use. Cleaning of foundation surfaces, pocket holes and anchor bolt pits and de-watering and making them free of oil, grease, sand and other foreign materials by soda washing, water washing, compressed air and other approved methods, are within the scope of this specification / work.

Application of the material shall depend on drawing/specification/ instruction of BHEL Engineer. The contractor shall arrange for sand, stone chips, gravels, anti shrink compound, plasticizer, shuttering, grout mixing machine, labors etc at his cost. The contractor shall prepare the required test pieces/test cubes to ensure the strength of grout and get the same tested in laboratory at his cost. Test cube shall also be taken during grouting for testing in the laboratory and shall be tested at his cost. A necessary arrangement along with watering till complete curing has to be arranged by the vendor.

After the grouting has finally set and cured, alignment of equipments involved shall be checked again to verify for any disturbance or any other reason. If required, de-coupling of equipments has to be done for conducting the verification. In case any disturbance is noticed, the cause, if any, shall be removed and re-alignment done as part of work.

- 35.1** NTPC/ BHEL shall provide foundations for all the equipment and columns including their grouting and necessary other civil work. The contractor for their scope shall check the dimensions of the foundations, locations of pockets, pitch of anchor bolts and other inserts as per drawings. Further, top elevation of foundations shall be checked with respect to benchmark etc. All minor adjustments of foundation level, dressing and chipping of foundation surfaces up to 50 mm, enlarging the pockets in foundations etc., as may be required for the erection of equipment / plants shall be carried out by the contractor.
- 35.2** While on the job, care is essential to avoid too much chipping and resultant lowering of level. In case of excess chipping, contractor has to arrange additional packing plates as per requirements provided BHEL Engineer allows it. When required by manufacturers, the embedded sub-sole plates shall be scraped and checked with prussian blue to get the required contact with frames.
- 35.3** The contractor shall ensure perfect matching of packer plates including machining, scraping and blue matching with foundation by dressing the foundation, as well as perfect matching between the packer plates and the base plate of equipment to the satisfaction of BHEL Engineer. If required the packer plates may have to be aligned and fixed on the foundations using approved quality special high strength, non-shrinking and quick-setting grouts. The minimum thickness below the packer plate should be 20 mm. The material required for this has to be arranged for by the contractor at his cost.
- 35.4** Contractor for subject work has to offer neat & clean foundations to the Civil Contractor to ensure perfect grouting. While grouting will be carried out by other agency, the contractor has to ensure that all the matching joints which are not to be grouted shall be kept free from the grouting mixture by applying tape or any other alternative method approved by Engineer. All assistance required has to be provided by the contractor.
- 35.5** The contractor shall check and verify the alignment of equipment, alignment of shafts of rotating machinery, the slopes of all bearing pedestals, centering of rotors with respect to their sealing bores, couplings etc. as applicable and the like items to ensure that no displacement had taken place during grouting. The values recorded prior to grouting shall be used during post grouting check up and verifications. Such pre and post grout records of alignment details shall be maintained by the contractor in a manner acceptable to the

any civil works required for safe and efficient operation of tools excavation/ casting of foundation / anchor points for derricks, g, etc and any other temporary supports shall also be the contractor's responsibility. For these civil works, all materials including cement and required facilities shall have to be arranged by contractor at his own cost.

36.0 CONSUMABLES

36.1 The contractor shall provide within finally accepted price / rates, all consumables like all welding electrodes (including alloy steel and stainless steel), filler wires, TIG filler wires (over & above as supplied by the unit along with the plant materials, which will be given free of cost to bidder all gases (inert, welding, cutting), soldering material, dye penetrants, radiography films. Other erection consumables such as tapes, jointing compound, grease, mobile oil, M-seal, Araldite, petrol, CTC / other cleaning agents, grinding and cutting wheels are to be provided by the contractor. Steel, H&S, packers, shims, wooden planks, scaffolding materials hardware items etc required for temporary works such as supports, scaffoldings are to be arranged by him. Sealing compounds, gaskets, gland packing, wooden sleepers, for temporary work, required for completion of work except those which are specifically supplied by manufacturing unit are also to be arranged by him.

The contractor shall provide all consumables required for carrying out the work covered under these specifications excepting those, which are specifically indicated as BHEL scope. All consumables to be used for the work shall have prior approval of BHEL engineer with regard to brand and quality specifications. Test reports / certificates in respect of these consumables, wherever applicable, shall be submitted to BHEL engineer.

36.2 All the shims, gaskets and packing, which go finally as part of equipment, shall be supplied by BHEL free of cost.

36.3 It shall be the responsibility of the contractor to plan the activities and store sufficient quantity of consumables. Non-availability of any consumable materials or equivalent suggested by BHEL cannot be considered as reason for not attaining the required progress or for additional claim.

36.4 Any special filler wires are supplied by the manufacturing unit as a normal supplies shall be issued free of charge for erection. Required quantity as arrived at by calculation / standards will only be supplied. It would be the contractors' responsibility to account for the consumption of these filler wires. Additional requirement beyond standard / calculated quantity will be at cost recovery basis only unless and otherwise accounted for. Surplus quantity of TIG filler wire, if any, shall be properly stored and returned to BHEL stores. The contractor has to take care of above in their offer.

36.5 It shall be the responsibility of the contractor to obtain prior approval of BHEL, regarding suppliers, type of electrodes etc before procurement of welding electrodes. On receipt of electrodes at site these shall be subjected to inspection and approval by BHEL. The contractor shall inform BHEL details regarding type of electrodes, batch number, date of expiry etc and produce test certificate for each lot / batch with correlation of batch / lot number with respective test certificate. No electrode without a valid test certificate will to be used.

36.6 BHEL reserves the right to reject the use of any consumable including electrodes, gases, lubricants / special consumables if it is not found to be of the required standard / make / purity or when shelf life has expired. Contractor shall ensure display of shelf life on consumable wherever required and records maintained.

36.7 Storage of all consumables including welding electrodes shall be done as per requirement /

- of the contractor at his cost.
- ment for procurement of any consumable, BHEL reserves the right to procure from any source and recover the cost from the Contractor's first bill of materials plus the departmental charges of BHEL from time to time (30% at present). Postponement of such recovery is normally not permitted. The decision of Engineer in this regard shall be final and binding on the Contractor.
- 36.9** All lubricants and chemicals required for cleaning, pre-commissioning, commissioning, testing, preservation and lubricants for trial runs of the equipment shall be supplied by BHEL / BHEL's client. All services including labour and T&P will be provided by the contractor for handling, filling, emptying, refilling etc. the consumption of lubricants / chemicals shall be properly accounted for. Surplus material if any shall be properly stacked and returned to BHEL/ CUSTOMER stores at no extra cost to BHEL. Recoveries shall be affected for wastage by the contractor.
- 36.10** Transportation of oil drums, from stores, filling of oil and filling of oil for flushing, first filling of oil and subsequent changeover or topping / making up till the unit is fully commissioned and handed over to customer is included in scope of this contract. The contractor shall have to return all the empty drums to BHEL / BHEL's client store at no extra cost. Any loss / damage to above drums shall be to contractor's account.
- 36.11** All charges on account of Octroi, terminal or sales tax and other duties on materials obtained for the works from any source shall be borne by the contractor.
- 37.0 TOOLS AND PLANTS / IMTE's**
- 37.1** T&P / IMTE's being provided by BHEL, as per Appendix-II, to sub-contractor free of hire charges shall be shared by other subcontractors working for BHEL at site and the allotment done by BHEL Engineer shall be final and binding.
- 37.2** Besides the T&P and IMTEs being made available to contractor free of hire charges by BHEL, all other T&Ps and IMTEs which are required for successful and timely execution of the work covered within the scope of this tender, shall be arranged and provided by the contractor. Indicative lists of T&Ps and IMTEs to be arranged by the contractor are given as per Appendix-III. He should ensure that these are in good working condition. In the event of the failure of contractor to bring necessary and sufficient T&Ps and IMTEs, BHEL will be at liberty to arrange the same and hire charges as applicable shall be deducted from contractor's bill. Decision of BHEL in this regard shall be final and binding on contractor.
- 37.3** All distribution boards, connecting cables, wire ropes, hoses, pipes etc, including temporary air / water / electrical connections etc shall have to be arranged by the contractor at his own cost.
- 37.4** In case of non-availability of the T&Ps to be provided by BHEL due to breakdown, major overhauls, distribution pattern or any other reason, the contractor shall plan / amend / alter his activities to meet erection / commissioning targets in consultation with BHEL.
- 37.5** The operation of all BHEL's T&P being provided free of hire charges shall be in the scope of the contractor. The contractor shall arrange, at his own cost, trained operators, fuel and other consumables for their operation. **(Operator for the 100/150 MT cranes will be provided by BHEL but one helper, fuel and other consumable shall be provided by contractor within the final accepted rates).** All lubricants for these cranes such as mobil oil, gear oil, brake oil, hydraulic oil, torque converter oil and grease will be provided by BHEL free of cost. The contractor will give the requirement well in advance. For other cranes of lower capacity the contractor shall arrange, at his own cost, trained operators, fuel and other consumables for their operation.
- 37.6** The contractor shall engage trained and experienced operators for the operation of BHEL's T&Ps. Their skill / performance will be checked by BHEL Engineer before they are allowed to operate the same. However checking of skills by BHEL does not absolve the contractor

proper and safe handling of equipment, consistent good and regular performance evaluation of operators.

Inspection of BHEL's T&Ps should be carried out by contractor as per maintenance schedule at his cost. These shall be maintained in good working condition during the entire period of use. T&Ps in defective / damaged condition shall be rectified promptly to the full satisfaction of BHEL engineer. Contractor shall maintain records for maintenance of major T&Ps. These shall be made available for Inspection whenever required. In case of any lapses on the part of the contractor BHEL at its own discretion get the servicing / repair of equipment done at the risk and cost of the contractor with BHEL overheads.

The contractor at his own cost shall arrange all supervision and labour required for maintenance of cranes. For attending breakdowns, the contractor shall arrange for labour. Minimum one mechanic and two helpers shall be exclusively marked for the above work. However specialist's supervision, if required, for attending breakdowns shall be arranged by BHEL as assessed by BHEL Engineer

- 37.8** The contractor shall arrange at his cost all spares needed for upkeep of all T&Ps other than Cranes and Hydraulic Test Pumps supplied by BHEL. For cranes, replacement of filter and repair of batteries, self, dynamo shall be the responsibility of the contractor. **(The cranes shall be fitted with a set of new batteries at the time of initial issue from the stores.)** However, the charges of the replacement of the other damaged / worn out parts of BHEL cranes will be borne by BHEL, provided the damage is not due to the negligence of the contractor. However, if there are breakdowns / damages due to negligence of the contractor, the complete service / repair charges and cost of all the spares damaged with BHEL overheads shall be recovered from contractor's RA bills.
- 37.09** Increasing / shortening of the crane boom to suit work requirements shall have to be arranged by the indenting contractor at his cost. All necessary manpower tools, support, consumables, illumination etc. will have to be arranged by contractor at his cost. If required, contractor has to return the crane with original boom.
- 37.10** All tools and tackles, machinery, equipment, instruments required for the work have to be arranged by the contractor including its transportation before and after work and including storage, insurance etc.
- 37.11** The contractor shall provide all required tools and plants, inspection, measuring and test equipment and handling & transportation equipment for the scope of work covered under these specifications. Some of the major T & Ps to be necessarily provided by the contractor is listed in appendix- III. BHEL will provide the services of their T & Ps listed vide appendix-II, free of charge, on sharing basis.
- 37.12** All tools and tackles to be deployed by the contractor for the work shall have the prior approval of BHEL engineer with regard to brand, quality and specification.
- 37.13** Contractor shall provide all the necessary scaffolding materials, temporary structures, as may be required and necessary safety devices etc.
- 37.14** Contractor's responsibilities with regard to operator, fuel, lubricants and daily upkeep of T & P s provided by BHEL is further detailed in relevant section.
- 37.15** Timely deployment of adequate quantity of T & P is the responsibility of the contractor. The contractor shall be prepared to augment the T & P at short notice to match the planned program and to achieve the milestones.
- 37.16** Contractor shall maintain and operate his tools and plants in such a way that major breakdowns are avoided. In the event of major breakdown, contractor shall make alternative arrangements expeditiously so that the progress of work is not hampered.
- 37.17** The T & P to be arranged by the contractor shall be in proper working condition and their operation shall not lead to unsafe condition. The movements of cranes, and other equipment should be such that no damage / breakage occurs to foundations, other

ty and men. All arrangements for the movement of the T & P responsibility.

adequate nos. of wooden sleepers for compaction of approach material stacking near work site failing which BHEL may get the same done at their risk & cost.

- 37.18** The contractor at his cost shall carry out periodical testing of his construction equipments and calibration of measuring instruments (MMDs) and tests. Test/ calibration certificates shall be furnished to BHEL. MMDs shall be calibrated only at accredited laboratory as per the list available with BHEL or any other laboratory approved by BHEL.
- 37.19** The area and infrastructure development of the area to be carried out by the customer. However in construction projects of this magnitude it is possible that all the areas / approaches may not be ready. In such cases consolidation of ground and arrangement of sleepers / sand bag filling etc for safe operation / movement of equipment including cranes / trailers etc shall be the responsibility of the contractor at his cost. No compensation on this account shall be payable.
- 37.20** In the event of contractor not using and maintaining BHEL T&Ps according to BHEL's instructions. BHEL will have the right to withdraw such item without any notice and no claim in this regard shall be entertained and contractor shall be responsible for delay in execution on this account.
- 37.21** The contractor has to maintain a logbook and shall furnish regular maintenance and utilization report of the BHEL T & P's under his possession, as per requirement of BHEL.
- 37.22** Any loss / damage to any part of BHEL T&Ps and IMTEs shall be to the contractor's account and any expenditure on these accounts by BHEL will be recovered from the contractor's bill in case the contractor fails to make good the loss.
- 37.23** It shall be responsibility of the contractor to take delivery of T&Ps from stores or place of use by other contractor at project site, transport the same to site and return the same to BHEL store / place as intimated by Engineer in project site in good working conditions after use.
- 37.24** The contractor shall return BHEL T&Ps and IMTEs issued to him in good working condition as and when desired by BHEL (on completion or reduction of workload). If contractor delays return of T&P and IMTE, hire charges as applicable shall be levied by BHEL from time, it was requisitioned till the time of actual return.
T&Ps and IMTEs returned in damaged / unserviceable condition shall be got repaired by BHEL at its own discretion and entire cost of repair with BHEL overheads shall be recovered from the contractor.
- 37.25** Replacement cost including BHEL overheads in respect of irreparable / completely damaged / non return of T&Ps and IMTEs shall be recovered from the contractor's running / final bills
- 37.26** Contractor shall ensure deployment of serviced and healthy T&Ps including cranes, lifting tackles, wire ropes, manila ropes, winches and slings etc. History card and maintenance records for major T&Ps will be maintained by the contractor and will be made available to BHEL Engineer for inspection as and when required. Fitness certificate of T&P shall have to be submitted before it is put in use. Identification for such T&Ps will be done as per BHEL Engineer's advice.
- 37.27** Contractor shall ensure deployment of reliable and calibrated IMTEs (Inspection measuring and testing equipment). The IMTEs shall have test / calibration certificates from authorized / Government approved / accredited agencies traceable to National / International standards. Each IMTE shall have a label indicating calibration status i.e. date of calibration, calibration agency and due date for calibration. A list of such instruments deployed by contractor at site with its calibration status is to be submitted to BHEL

shall also be arranged at regular intervals during the period of the contract. The contractor will also have to provide such IMTE so that work does not suffer when the particular instrument is sent for calibration. If any IMTEs not found fit for use, BHEL shall have the right to stop the use of such item. It will be necessary for the contractor to deploy proper item. Any readings taken by the defective instrument will be recalled and repeat the readings taken by that instrument with a proper one. In case he fails to do so, BHEL may deploy IMTEs and retake the readings at contractor's cost.

37.29 BHEL shall have lien on all T&P, IMTEs and other equipment of the contractor brought to the site for the purpose of erection, testing and commissioning. BHEL shall continue to hold the lien on all such items throughout the period of contract / extended period. The contractor and / or his sub-contractors, without the prior written approval of the Engineer, shall remove no material brought to the site.

37.30 The **month wise T&P deployment plan** to be submitted as per format (at **Annexure-D** to general conditions of contract) is only to assess the capability as well as understanding of the contractor to execute the work. It shall be the contractor's responsibility to deploy the required T&P, for timely and successful completion of the job, to any extent over and above those indicated in the above deployment plan (including those which are not covered in the plan submitted) without any compensation on this account.

38.0 SUPERVISORY STAFF AND WORKMEN

38.1 The contractor shall deploy all the skilled workmen like millwright fitters, welders, crane operators, drivers, gas cutters, riggers, sarangs, masons, carpenters, electricians, helpers and instrument technicians to carry out the works as per specifications. In addition to skilled, semi-skilled and unskilled workmen required for all the works, suitable workmen required for handling and transporting of equipment from site storage to erection site, erection, testing and commissioning as contemplated under this specification shall be deployed. Only fully trained and competent men with previous experience on the job shall be employed. They shall hold valid certificates wherever necessary.

BHEL reserves the right to decide on the suitability of the workers and other personnel who will be deployed by the contractor. BHEL reserves the right to insist on removal of any employee / workman of the contractor at any time, if they find him unsuitable. The contractor shall remove him forthwith.

38.2 The supervisory staff including qualified Engineers deployed by the contractor shall ensure proper out-turn of work and discipline on the part of the labour put on the job by the contractor. They should in general see and ensure that the works are carried out in a safe and proper manner and in coordination with other labour and staff deployed directly by BHEL or other contractors of BHEL or BHEL's client / other agency.

38.3 The work shall be executed under the usual conditions affecting major power plant construction and in conjunction with numerous other operations / activities at site. The contractor and his personnel shall cooperate with other personnel / contractors, coordinating his work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.

38.4 The contractor's supervisory staff shall execute the work in the most substantial and workman like manner in the stipulated time. Accuracy of work and aesthetic finish are essential part of this contract. The contractor shall be responsible to ensure that assembly and workmanship conforms to the dimensions and tolerances given in the drawings / documents / instructions given by BHEL Engineer from time to time.

38.5 The contractor shall deploy the necessary number of qualified and approved full time electricians at his cost to maintain his temporary electrical installation till the completion of work.

The contractor to engage his workmen in shifts or on overtime as per the rates set by BHEL and also during the period of commissioning. The contractor's finally accepted rates / prices shall include all these

38.7 During the course of erection,

- If the progress is found unsatisfactory,
- If the target dates fixed from time to time for every mile stones are to be advanced / not being met,
- if it is found that the skilled workmen like fitters, operators, technicians etc deployed are not sufficient,

BHEL after giving reasonable opportunity to the contractor will induct on the work the required workmen in addition to contractor's workmen to improve the progress. The expenses so incurred will be recovered from the contractor's bills with overheads.

38.8 If the contractor or his workmen or employees shall break, deface, injure or destroy any part of a building, road kerb, fence, enclosure, water pipes, cables, drains, electric / telephone poles, wire, trees or any other property or to any part of erected components, the contractor shall make the same good at his own expense. In default, BHEL may cause the same to be made good by other workmen or by other means and deduct the expenses from any money due to the contractor. BHEL's decision will be final and binding.

38.9 Though every endeavor shall be made to ensure that all plant materials are supplied as per schedule. However in a job of this kind it is possible that some materials may be delayed. In order to achieve the ultimate targets, the contractor may have to augment his manpower and resources. No compensation on this account shall be admissible.

38.10 The **month wise manpower deployment plan** to be submitted as per format (at **Annexure-C** to general conditions of contract) is only to assess the capability as well as understanding of the contractor to execute the work. It shall be the contractor's responsibility to deploy the required manpower, for timely and successful completion of the job, to any extent over and above those indicated in the above deployment plan (including those which are not covered in the plan submitted) without any compensation on this account. The contractor shall identify separate persons at site for quality control and safety.

39.0 MATERIAL HANDLING AND STORAGE FOR ETC

39.1 All the equipment furnished under this contract shall be received from the project stores, sheds / storage yards and transported to pre assembly area / erection site and stored in the storage spaces in a manner so that they are easily retrievable till the contractor erects them. **While drawing / lifting material from BHEL / customer stores, contractor shall ensure that the balance / other materials are stacked back immediately. No claim is admissible on this account**

39.2 While BHEL will endeavor to store / stack / identify materials properly in their open / close / semi closed / tarpaulins covered storage yard / shed, it shall be contractor's responsibility to assist BHEL in identifying materials well in time for erection. They should take the delivery of the same, following the procedure indicated by BHEL, and transport the material safely to pre-assembly yard / erection site in time, according to program.

39.3 The contractor shall take delivery of components, equipment / consumables from storage area after getting the approval of BHEL Engineer on standard indent forms.

39.4 The contractor shall identify and deploy necessary Engineers / supervisors / workmen for the above work in sufficient number as may be needed by BHEL, for areas covering their scope.

- handled very carefully to prevent any damage or loss. No etc. shall be used for unloading / handling. The equipment to prevent damage either to the equipment or to the floor the equipment from the stores shall be moved to the actual location at the appropriate time so as to avoid damage of such equipment at site.
- 39.6** Contractor shall ensure that while lifting slings shall be put over the points indicated on the equipment or as indicated in the manufacturer's drawings. Slings / shackles of proper size shall be used for all lifting and rigging purposes. All care shall be taken to safe guard the equipment against any damage. Dragging of piping / valves should be avoided. In case of any damage the cost shall be covered from the contractor.
- 39.7** Approach road conditions from the stores / yards to the erection site may not be equipped and ideal for smooth transportation of the equipment. Contractor may have to be adequately prepared to transport the materials under the above circumstances without any extra cost.
- 39.8** Contractor shall be responsible for examining all the plant and materials issued to him and notify the Engineer immediately of any damage, shortage, discrepancy etc before they are moved out of the stores / storage area. The contractor shall be solely responsible for any shortages or damages in transit, handling, storage and erection of the equipment once received by him. As the erection work will be spread in different areas / locations of the project, contractor has to arrange sufficient number of watch / ward personal to avoid any pilferage of material. As per General Conditions of contract under provisions of clause No 29 BHEL will reserve the right to recover the cost of repair / replacement, if any, to bring back the equipment in original order, in case the equipment / material is lost / damaged while in the custody of the contractor. BHEL's decision in this regard shall be final and binding on the contractor.
- 39.9** The contractor shall maintain an accurate and exhaustive record-detailing out the list of all equipment received by him for the purpose of erection and keep such record open for the inspection of the engineer at any time.
- 39.10** All the material in the custody of contractor and stored in the open or dusty locations must be covered with suitable weather proof / fire retardant covering material wherever applicable and shall be blocked up on raised level above ground. All covering materials including blocks and sleeper shall be arranged by the contractor at his cost.
- 39.11** If the material belonging to the contractor are stored in area other than those earmarked for his operation the engineer will have the right to get it moved to the area earmarked for the contractor at the contractors risk and cost.
- 39.12** The contractor shall be responsible for making suitable indoor storage facilities to store all equipment (drawn by the contractor from BHEL / customer stores), which require indoor storage till the time of their installation. The Engineer will direct the contractor in this regard, which item in his opinion will require indoor storage, and the contractor shall comply with Engineer's decision.
- 39.13** The contractor shall ensure that all surplus / damaged / scrap / unused material, packing wood / containers/ special transporting frames etc are returned to BHEL at a place in project area identified by the Engineer. The contractor will maintain an account for all items received and returned to BHEL. Any shortage in returning such items shall be chargeable to the contractor except for a 5% allowable against wastage for packing wood only.
- 39.14** The contractor shall hand over all parts / materials remaining extra over the normal requirement with proper identification tags to the stores as directed by the concerned BHEL engineer.

that all the packing materials and protective devices installed and storage are removed before installation.

of the contractor to keep the work / storage areas in neat, tidy surplus/unusable packing and other materials shall be removed and deposited at location(s) specified by BHEL within the project premises. If required weighing of the same within the project premises will have to be carried out.

39.17 Contractor shall ensure at all times that his work areas & approach/access roads are free from accumulation of water, so that the materials are safe and the erection/progress schedule are not affected. No separate claim in this regards shall be admitted by BHEL. No separate payments for dewatering of sub soil or surface water if required at any time during execution of the work including monsoon period shall be considered by BHEL .

40.0 PRESERVATION OF COMPONENTS

40.1 After taking delivery from BHEL / customer's stores, plant materials storage shall be subjected to the following protection besides other provisions indicated in these specifications elsewhere.

- a) Items stored outdoors shall be blocked up at least six inches (6") off the ground
- b) Motors, valves, electrical equipment, control equipment and instruments etc shall be stored indoors in a warehouse provided by contractor. Motor windings shall be kept dry by use of external heat or space heaters.
- c) Bearings and other wearing surfaces of plant materials shall be protected against corrosion and kept clean.
- d) Insulation materials shall be stored indoors or otherwise protected against getting wet.

40.2 It shall be the responsibility of the contractor to apply preservatives / touch up paints (primer) on equipment handled and erected by him till such time of final painting. It shall be contractor's responsibility to arrange for required paints (primer), thinners, labour, scaffolding materials, cleaning materials like wire brush, emery sheets, etc, cleaning of surface and provide one coat of preservatives / paints (primer) from time to time as decided by BHEL engineer. The accepted rate shall include this work also. It is to be noted that such painting may have to be done as and when required till such time the final painting is carried out.

40.3 The contractor shall effectively protect the finished work from action of weather and from damage or defacement and shall cover the finished parts then and there for their protection. Contractor shall ensure at all times that his work areas & approach/access roads are free from accumulation of water, so that the materials are safe and the erection/progress schedule are not affected. No separate claim in these regards shall be admitted by BHEL. No separate payments for dewatering of sub soil or surface water if required at any time during execution of the work including monsoon period shall be considered by BHEL.

40.4 Any failure on the part of contractor to carry out works according to above clauses will entail BHEL to carry out the job from any other party and recover the cost from contractor.

41.0 ERECTION

41.1 All normal erection and assembly techniques necessary for completion of works under this specification and magnitude have to be carried out. It is not possible to specifically list out all of them. Absence of any specific reference will not absolve the contractor of his responsibility for the particular operation. These would include,

- Scaffolding and rigging operations,
- Machine / flame / electric cutting, grinding, welding, radiography and stress relieving

- ...iling, straightening, chamfering chipping, scrapping, reaming,
...king, leveling, blue matching, aligning and assembly.
- ...e grinding, drilling, doweling, shaping
- ...ions for alignment, dismantling of certain equipment for
checking, cleaning, servicing and site fabrication.
- 41.2** Any fixtures, scaffolding materials, approach ladder, concrete block supports, steel structures required for temporary supporting, pre-assembly or checking, welding, lifting and handling during pre-assembly and erection shall be arranged by contractor at his cost.
- 41.3** No members of any ladder / structure / platform should be cut without specific approval of BHEL. In case it is necessary to cut, the contractor shall rectify / repair in a manner acceptable to BHEL / customer without any additional cost.
- 41.4** The contractor shall erect scaffolding / temporary platforms for erection. These should be of adequate capacity and shall never be over loaded. These should be replaced when not found suitable during erection work and dismantled on work completion and removed from work site.
- 41.5** It shall be the responsibility of the contractor to provide ladders on columns for initial work till such time stairways are completed. For this, the ladder should not be welded on the column and should be pre-fabricated clamping type ladders. No temporary welding on any structural member is permitted except under special circumstances with the approval of BHEL. In case it is absolutely necessary then the contractor shall cut the temporary structure and rectify the column as directed by the engineer.
- 41.6** The contractor is strictly prohibited in using the Boiler / ESP / Auxiliary Components for any temporary supporting or scaffolding works etc. In case of such misuse a sum of determined by Engineer will be recovered from contractor's bills.
- 41.7** Boiler auxiliary columns are plate formed box section and the erection joint is welded type where as the columns are butt type with HSFG bolted flange and partition plates, boiler main column are having flange with splice plates and bolted connections. However, the contractor has to carry out work at site as per drawing.
- 41.8** The material for platform section shall be supplied in running meters. These shall be cut to size / shape / fabricated to required size / shape and to be welded by contractor.
- 41.9** Certain adjustment in length may be necessary while erecting pipelines / ducts / casings etc. The contractor should remove the extra lengths / add extra lengths to suit the final layout after preparing edges afresh by adopting specified heat treatment procedures.
- 41.10** Suspensions for ducting will be supplied in running lengths, which shall be cut to size and adjusted as required. Ducts / expansion bellows are dispatched to site in loose walls plates / pieces and these are to be assembled and welded at site along with stiffeners etc., before erection within the finally accepted rates. All joints connecting duct expansion piece and dampers shall be seal welded on inside as well as on outside.
- 41.11** Packer plates supplied may have to be machined to the correct dimensions. It may also be necessary to blue match the same with each other/ with equipment / with foundations as per BHEL instructions.
- 41.12** Whenever required the contractor shall arrange for pre-qualification of process task performers.
- 41.13** The contractor shall carry out the tightening of the field bolts on the equipment and piping covered under this specification by using either the calibrated torque wrench method or the turn of part method. The methods used the tools and the equipment deployed shall be subject to the approval of Engineer. The competent technicians shall carry out the bolting work.

WELDING, RADIOGRAPHY AND NON-DESTRUCTIVE TESTING

Structural steel and piping shall be erected in conformity with the provisions of the specification in force and as may be directed by BHEL as per any standard / specification in practice in BHEL. The method of welding (arc, gas, TIG or other method) may be indicated in the detailed drawings / schedules. BHEL Engineer will have the option of changing the method of welding as per site requirements. Semi automatic welding (GMAW) process shall be used for non-pressure parts / ducting / structures etc to the maximum possible, considering its cost efficiency, better quality and time saving features.

- 42.2** Welding of pressure parts, equipment, piping, high tensile structural steel shall be done by certified high pressure welders who possess valid certificate of CIB of the State in which the equipment is erected as per provision of IBR. The H.P. welder who possesses necessary certificate shall ensure re-validation as per relevant provisions of IBR and keep the certificate valid till the completion of work. The services of such welders, the validity of whose certificates have expired shall not be utilized for high-pressure works.
- 42.3** All welders including tack welders, structural and high pressure welder shall be tested as per ASME section IX / IBR and approved by BHEL Engineer before they are actually engaged on work even though they may possess a valid IBR certificate. BHEL reserves the right to reject any welder if the welder's performance is not found to be satisfactory. The contractor shall maintain the records of qualification AND performance of welders. BHEL Engineer will issue all the welders qualified for the work, an identity card. The welder will keep the same with him at work place at all times. He may be stopped from work if he is not found in possession of the same.
- 42.4** Engineer may stop any welder from the work if his performance is unsatisfactory for any technical reason or if there is a high percentage of rejection in the joints welded by him. The welder's having passed qualification tests does not absolve the contractor of contractual obligation to continuously check the welder's performance.
- 42.5** Faulty welds caused by the poor workmanship shall be cut and re-welded at the contractor's expense. The Engineer prior to any repair being made shall approve the procedure for the repair of defective welds. After the repair has been carried out, the compliance shall be submitted to the quality engineer.
- 42.6** The contractor shall carry out the root run welding of all HP / LP piping, valves by TIG welding method only. The contractor shall have to carry out full TIG welding of butt weld joints of tubes / pipes of lesser thickness if required. During the root runs of stainless steel joints, the contractor shall before and during welding have to purge the pipes with inert gas. All weld joints for temporary piping required for alkali flushing, acid cleaning and steam blowing should be got done by HP welders only. The root run should be done by TIG welding. All arrangements required for the above shall be the responsibility of the contractor at no additional cost. Argon Purging is to be done for TIG Run of SS Pipes
- 42.7** All expenses for testing of contractor's welders including destructive and nondestructive tests conducted by BHEL at site or at laboratory shall have to be borne by the contractor only. Limited quantity of tube and pipe material required for making test pieces will be supplied by BHEL free of cost.
- 42.8** The regulators used on welding machines shall be calibrated before putting these into use for work. The Contractor at his cost shall also arrange periodic calibration for the same.
- 42.9** **Only BHEL approved electrodes and filler wire will be arranged and used by the contractor**, within the finally quoted price. BHEL reserves the right to test any approved electrode being used by the contractor. Testing charges for the same shall be borne by the contractor. All electrodes shall be baked and dried in the electric electrode-drying oven to the required temperature for the period specified by the Engineer before these are used in erection work. All welders shall have electrodes drying portable oven at the work spot. The electrodes brought to the site will have valid manufacturing test certificate. The test

- o-relation with the lot number / batch number given on codes will be used in the absence of above requirement. The of electrode drying oven will be also calibrated and test ed / accredited test house traceable to National / International standards will be submitted to BHEL before putting the oven in use. The contractor shall also arrange periodical calibration for the same.
- 42.10** All butt / fillet welds shall be subject to dye penetration test/ other tests as per the instructions of the engineer at no additional cost.
- 42.11** The contractor shall maintain a record in the form as prescribed by BHEL of all operations carried out on each weld. He has to maintain a record indicating the number of welds, the names of welders who welded the same, date and time of start and completion, preheat temperature, radiographic results, rejection if any, percentage of rejection etc. and submit copies of the same to the BHEL Engineer as required. Interpretation of the BHEL Engineer regarding acceptability or other wise of the welds shall be final.
- 42.12** The contractor shall carry out the edge preparation of weld joints at site in accordance with the details acceptable to BHEL Engineer. Wherever possible machining or automatic flame cutting should be done. Gas cutting will be allowed only wherever edge preparation otherwise is impractical. All slag / burrs shall be removed from the edge and all the hand cuts shall be ground smooth to the satisfaction of engineer.
- 42.13** All welds shall be painted with anticorrosive red oxide paint once radiography and stress relieving works are over. Necessary consumables and scaffolding etc including paints shall be provided by contractor at his own cost.
- 42.14** Pre-heating, radiography and other NDT tests, post heating and stress relieving after welding of tubes, pipes, including attachment welding wherever necessary, are part of erection work and shall be carried out by the contractor in accordance with the instructions of the Engineer. Contractor at his cost shall arrange all equipment and consumables essential for carrying out the above process.
- 42.16** The contractor shall also be equipped for carrying out other NDT like LPI / MPI / Hardness test etc. as required as per welding schedules / drawings within the finally accepted price / rates. Ultrasonic testing, wherever required, will be arranged by BHEL. Necessary help in conducting the UT shall however be rendered by contractor.
- 42.17** The technical particulars, specification and other general details for radiography work shall be in accordance with ASME, IBR or ISO as specified by BHEL.
- 42.18** The contractor for radiography work shall use iridium-192. The geometric un-sharpness shall not exceed 1.5 mm. The contractor should take adequate safety precautions while carrying out radiography. Contractor at his cost shall arrange necessary safe guards required for radiography (including personnel from BARC).
- 42.19** Low speed high contrasts, fine grain films (D-7 or equivalent) in 10 cm width only be used for weld joint radiography. Film density shall be in between the range of 1.5 to 2.0.
- 42.20** All radiographs shall be free from mechanical, chemical or process marks, to the extent they should not confuse the radiographic image and defect finding. Penetrameter as per ASME or ISO must be used for each exposure.
- 42.21** Lead numbers and letters are to be used (generally 6mm size) for identification of radiographs. Contract number, joint identification, source used, welder's identification and SFD are to be noted down on paper cover of radiograph.
- 42.22** Lead intensifying screens for front and back of the film should be used as per the above-referred ASME specification.
- 42.23** The joint is to be marked with permanent mark A, B, C to identify the segments. For this a low stress stamp shall be used to stamp the pipe on the down streamside of the weld.
- 42.25** Radiography personnel with sufficient experience and certified by M/s BARC for conducting

ance with safety rules laid down by Division of Radiological
employed. These personnel should also be registered with DRP /

properly preserved and shall become the property of BHEL.

They are to be reconciled with the work done, joints radiographed and submitted to BHEL / customer.

- 42.30** Since radioisotopes are being used, all precautions and safety rules as prescribed by BHEL/BARC/ Customer shall be strictly followed. BARC / DRP certificate to be provided before taking up the work.
- 42.31** Radiography of joints shall be so planned after welding, that the same is done either on the same day or next day of the welding to assess the performance of HP welders. If the performance of welder is unsatisfactory, he is to be replaced immediately.
- 42.32** Wherever radiographs are not accepted, on account of bad shot, joints shall be re-radiographed and re- submitted for evaluation.
- 42.33** However, if the defect persists after first repair, further repair work followed with radiography shall be repeated till the joint is made acceptable. In case the joint is not repairable, the same shall be cut, re-welded and re-radiographed at contractor's cost.
- 42.34** If the contractor does not carry out radiography work due to non-availability of source / film / chemical / operator etc., BHEL will get the work done departmentally or through some other agency at the risk and cost of the contractor.

43.0 PROGRESS REPORTING

- 43.1** Contractor is required to draw mutually agreed monthly erection programs in consultation with BHEL well in advance. Contractor shall ensure achievement of agreed program and shall also timely arrange additional resources considered necessary at no extra cost to BHEL.
- 43.2** Weekly progress review meetings will be held at site during which actual progress during the week vis-à-vis scheduled program shall be discussed for actions to be taken for achieving targets. Contractor shall also present the program for subsequent week. The contractor shall constantly update / revise his work program to meet the overall requirement. All quality problems shall also be discussed during above review meetings. Necessary preventive and corrective action shall be discussed and decided upon in such review meetings and shall be implemented by the contractor in time bound manner so as to eliminate the cause of non-conformities.
- 43.3** The contractor shall submit daily, weekly and monthly progress reports, manpower reports, materials reports, consumables (gases / electrodes) report and other reports as per Performa considered necessary by the Engineer.
- 43.4** The progress report shall indicate the progress achieved against planned, with reasons indicating delays, if any. This should give the remedial actions which the contractor intends to take to make good the slippage or lost time, so that further works again proceed as per the original program and the slippage do not accumulate and effect the overall program.
- 43.5** The daily manpower reports shall clearly indicate the manpower deployed, category wise specifying also the activities in which they are engaged.

44.0 DRAWINGS AND DOCUMENTS

- 44.1** The detailed drawings, specifications available with BHEL engineers will form part of this tender specification. These documents will be made available to the contractor during execution of work at site. The contractor will also ensure availability of all drawings / documents at work place.
- 44.2** Necessary drawings to carry out the erection work will be furnished to the contractor by BHEL on loan, which shall be returned to BHEL Engineer at site after completion of work. Contractor shall ensure safe storage and quick retrieval of these documents.

a record of all drawings and documents available with him in a by BHEL Engineer. Contractor shall ensure use of pertinent and removal of obsolete ones from work place and returning to

- 44.4 The data furnished in various annexure enclosed with this tender specification are only approximate and for guidance. However, the change in the design and in the quantity may occur as is usual in any such large scale of work.
- 44.5 Should any error or ambiguity be discovered in the specification or information the contractor shall forthwith bring the same to the notice of BHEL before commencement of work. BHEL's interpretation in such cases shall be final and binding on the contractor.
- 44.6 Deviation from design dimensions should not exceed permissible limit. The contractor shall not correct or alter any dimension / details, without specific approval of BHEL.
- 45.0 **INCOME TAX, SERVICE TAX, WORKS TAX AND SALES TAX REGISTRATION**
- 45.1 **TDS under Income Tax, Sales Tax, VAT etc.**, if any, shall be deducted at prevailing rates on gross invoice value from the running bills unless Exemption Certificate from appropriate Authority / Authorities is furnished.
- 45.2 **Price quoted shall be inclusive of all taxes except service tax.** The service tax, as legally leviable & payable by the contractor under the provisions of applicable law/act, shall be paid by BHEL as per contractor's bill. However, contractor shall have to submit proof of service tax deposited by them immediately after the deposit but not later than the next bill submitted after the due date of deposit. The contractor shall furnish proof of Service Tax registration with Central Excise Division covering the services covered under this contract. Registration should also bear endorsement for the premises from where the billing shall be done by contractor on BHEL for this project The contractor shall obtain prior approval of BHEL before billing the service tax amount.
- With introduction of Cenvat credit rules 2004 which came into force w.e.f. 10.09.2004, excise duty paid on input goods including capital goods used for providing the output service and service tax paid on input service can be taken credit of against the service tax payable on output service. As such, while offering the rates, the contractors may take into account the benefit of above provisions as the cost of input to contractors will be the cost net of excise duty and service tax and adjust their offer price accordingly to make it more competitive.
- 45.3 In VAT applicable States, ~~%~~tax Invoice+if required under the relevant State VAT law shall be submitted alongwith other compliances as per concerned VAT Act.
- 45.3 Contractor shall get his organization registered with concerned sales tax/VAT authorities within 15 days of award of this contract, if applicable. The delay on this account and delay in bringing the material shall be to contractor's account and no extension of time shall be allowed on this account. The sales tax/VAT registration for this contractor shall be forwarded to BHEL within 30 days from the date of LOI. In case the contractor is already registered for sales tax/VAT with Govt. Authorities he must quote his registration no, while submitting their tender.
- 45.4 Contractor has to make his own arrangement at his cost for completing the formalities, if required, with Sales Tax/VAT Authorities, for bringing their materials, plants, and equipment at site for the execution of the work under this contract.
- 46.0 **EXTRA WORK:**
- 46.1 BHEL may consider for payment of extra works on man hour basis @ Rs.30/- (Rupees thirty only) per man hour only for such of those works which:
- A Require major revamping or rework and which are totally unusual to normal erection work.

ation for improvement in the design during commissioning,
components in place of rejected / replaced components.

, shall include over time, if any, consumables, supervision, use
r site expenses and incidentals.

46.3 The extra works, if any, shall be carried out by a separate gang, which will be identified for certification of man-hours. This gang will not be utilized for any other work during the period that they are engaged in the extra-work. Logbook should be maintained and should be signed jointly by the contractor's representative and BHEL Engineer on day-to-day basis. However, signing of the logbook does not necessarily mean acceptance of the extra works, which would be identified by Engineer, whether work is covered in one of the above categories. Only those works and man-hours that are certified by the BHEL Engineer-in-charge will be considered for payment. The decision of BHEL in this regard shall be final and binding on the contractor.

47.0 PRICE VARIATION

47.1 The rate quoted by tenderers shall **remain firm** during contract period and extended period, if any.

48.0 RATE SCHEDULE

48.1 Contractor shall fully understand equipment description and scope of work before quoting. The scope of work and responsibility of the contractor as mentioned under these specifications shall be covered within the quoted rates.

48.2 The tenderer shall quote **the rates** as per the rate schedule only, in **part II price bid** (Original). Conditional price bids or price bids with any deviation / clarification etc. are liable to be rejected. No cutting / erasing / over writing shall be done.

Contractor's total quoted price as per rate schedule will be taken as tentative only. The contractor undertakes to erect actual quantities as per advice of BHEL Engineer and accordingly **the final contract price shall be worked out on the basis of quantities actually erected at site** and payments will also be regulated for the same. The quantities may vary to any extent and no compensation will be payable in variation of quantity. However, in case of over all variation in Contract value (as indicted in LOI), **beyond (minus) 30%, the contractor will be eligible for compensation** as per the following provision:

"The total executed value shall be raised by 10 % subject to the condition that the total value of work executed plus increase as above shall be limited to 70 % of the awarded contract value"

Awarded Unit rates for the work under this contract shall be applicable in case the erected weight of material increases beyond awarded scope of weight of components / structure.

Contractors are requested to take above into account while quoting. The contractor confirms that the rate quoted above takes care of such variation during execution stage.

48.3 " TENDERERS ARE REQUIRED TO SUBMIT BIDS FOR PART-'I' (TECHNICAL BID)

**(ID) IN SEPARATE SEALED ENVELOPS AS PER RATE
RD ENVELOP. FIRST THE TECHNICAL BID SHALL BE
OF ONLY TECHNICALLY QUALIFIED BIDDERS SHALL**

49.0 INSTRUCTIONS TO TENDERER

49.1 Offers received without data / information, required under tender clauses-11.1 to 11.11, is liable to be rejected. All these data / information should be duly supported by documentary evidences (Refer note below clause-11).

49.2 No deviations to the tender conditions will normally be accepted.

49.3 The tenderers are advised to actually visit the site and fully acquaint themselves with site conditions, location of stores, transportation routes, quantum of work etc. before quoting their rates for this work. BHEL shall not be responsible in any way for non-familiarization of the site conditions. Once the tenderer has quoted for the work, it is implied that he has ascertained various site conditions and NO CLAIM whatsoever will be entertained by BHEL on any such account.

49.4 The contractor in the event of this work being awarded to him shall establish a site office at site and keep posted an authorized responsible officer who should hold a valid power of attorney for the purpose of the contract. Any order or instruction of the Engineer or his duly authorized representative communicated to the contractor's representative at site office, will be deemed to have been communicated to the contractor at his legal address.

50.0 LIQUIDATED DAMAGES (LD)

For delay in completion of work attributable to the contractor, the LD shall be applicable at the rate of ½% of the contract value per week of delay or part thereof limited to a ceiling of 10% of the contract value as mentioned under clause no.25.5 of the GCC of the tender.

51.0


SECURITY DEPOSIT

The contractor shall submit Security Deposit within 15 days from the date of issue of LOI as per clause no. 16.2 of the General Conditions of Contract (GCC). In case the contractor opts to furnish Bank Guarantee as a part of Security Deposit, the BG shall be issued as per the Performa enclosed as per Annexure-H of the GCC and also that the BG should be issued preferably through any of the Member Banks listed on Page No. 34(a) of the GCC;

For BG through any other Nationalized Bank (Not covered in the list of Member Banks of GCC), the discretion of its acceptance shall lie solely with BHEL.

52.0 OTHERS

52.1 In case of any contradiction between General Conditions of Contract (GCC) and Special Conditions of Contract (SCC), the latter shall prevail.



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TENDER NO. BHEL / NR /SCT / BARH/ ESP/ STR / 538

...bidders will be opened who will be qualified for the subject job
...tion evaluation / Techno-commercial bids and acceptance of
...the right to reject the bidders with unsatisfactory past
...n of a contract. BHEL's decision in this regard shall be final &

52.3 Unsolicited rebate / discount shall not be accepted after bid opening.



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SECTION - III B

SPECIAL CONDITIONS OF CONTRACT

CLAUSE NUMBER	DESCRIPTION
53	SCOPE OF WORK
54	ECTION OF ELECTROS TATIC PRECIPITATOR
55	MATERIALS HANDLING
56	FACILITIES TO BE PROVIDED BY BHEL / CONTRACTOR
57	TIME SCHEDULE
58	OVER RUN
59	TERMS OF PAYMENT

SECTION - III B

SPECIAL CONDITIONS OF CONTRACT

53.0 SCOPE OF WORK

53.1 BHEL has been awarded the work of Design, Manufacture, supply, installation, erection, testing & commissioning and performance and guarantee testing of 3 x 660 MW ESP Package for unit # 1, 2, & 3, at BARH STPP, PATNA, BIHAR. Electrostatic precipitators along with the associated auxiliaries, supports and controls shall be installed in these units.

The scope of work under this tender consists of:

HANDLING /TRANSPORTATION OF EQUIPMENTS / MATERIALS FOR INSTALLATION, PRE-ASSEMBLY, ERECTION, WELDING, NDT AND HANDING OVER OF STRUCTURE OF ELECTROSTATIC PRECIPITATORS FOR UNIT -2 & 3 OF 3 X 660 MW UNITS AT BARH STPP, PATNA, BIHAR.

The scope of these specifications not limited to but covers mainly following:

- **Taking delivery of the ESP materials from the project storage yard / stores / sheds to erection site.**
- **Their preservation, safe keeping, watches and ward.**
- **Checking, dressing, chipping and leveling of foundations.**
- **Pre-assembly, erection, alignment of various structure, machining and grouting.**
- **Welding, heat treatment, radiography, UT and other non-destructive tests wherever required**
- **All the contract clauses specified or non-specified to complete the structural erection, welding, and non destructive testing work in accordance to applicable drawings documents specifications and engineers instructions at site shall be applicable to this contract.**
- **Handing over ESP's structure to BHEL / NTPC BARH**

The work to be carried out under the scope of this specification covers only the structural work of handling/ transportation at site, temporary storage prior to erection, if required, cleaning, preservative painting, erection, alignment, welding, leveling, adjustment, chipping & leveling of foundation for **UNIT -2 & 3** at BARH STPP (3x660 MW) Unit-1, 2& 3 Electrostatic Precipitators up to handing over of the units to BHEL / its customer. The work shall conform to dimensions and tolerances given in various drawings and documents that will be provided during erection. If any portion of works is found to be defective in workmanship not conforming to drawings/documents or other stipulations, the contractor shall dismantle and re-do the work duly replacing the defective materials at their own cost, failing which recoveries, as determined by BHEL, shall be effected from contractor's bills.

The intent of specification is to provide services according to the most modern and proven

The omission of specific reference to any method, equipment or proper and efficient execution of this work shall not relieve the contractor of the responsibility of providing such facilities to complete the work without any

extra compensation.

NO DEVIATION IN SCOPE OF WORK, WHATSOEVER, SHALL BE ALLOWED BY BHEL.

Only structural erection work is to be carried out under this scope of work for UNIT –

2 & 3 Electrostatic Precipitator (ESP) at **BARH STPP (3 X 660 MW ESP project) each unit having six nos. of independently operated gas streams**, housed in six nos of independent casings including outside shell, structural steel support and frame work, access ladders, platforms, safety rails, stairways, walk ways, access doors and weather proof pent house. Transformer handling system at roof etc.

The work to be carried out under the scope of this specification shall broadly comprise of but not to be limited to the following:

- 53.2 [Civil works for foundations shall be under the scope of this contract as per the SCC clause no, 35](#)
- 53.3 All the necessary lifting tackles, tools and plants including tractors, trailers, Lorries, trucks, Pulley blocks, jacks, winches, wire rope etc. of suitable capacities etc. and other equipment incidental to carry out this work shall have to be arranged by the contractor himself at his cost. However **cranes as per Annex-III will be provided** by BHEL free of cost on time-sharing basis. Fuel and consumables etc. as required for the operation of BHEL provided cranes shall be provided by contractor within the awarded contract price other conditions shall be governed as per the conditions for BHEL T & P mentioned in the tender specifications. [Operator for 150 T / 100 T Crane will be provided by BHEL free of cost as available.](#)
- 53.4 BHEL Engineer reserves the right to inspect lifting tackles and equipment before allowing their use. Such approval however, shall not relieve the contractor of his responsibility to ensure safe handling of equipment taking due precautions to avoid any accident and damage to other equipment and personnel.
- 53.5 All hardware such as rails, sleepers, maxpuller etc., required for dragging or for any other connected works shall be arranged by the contractor at his own cost.
- 53.6 The contractor shall execute the work in the most substantial and workman like manner. The same shall be, handled with care and diligence. Any loss to BHEL due to contractor's lapses shall have to be made good by the contractor. All surplus, damaged, unused materials, package materials/containers, gunny bags etc. shall be returned to BHEL.
- 53.7 If the contractor or his workmen break, deface, injures or destroy any part of building, road, kerbs, fence enclosures, water pipes, drains, electric/telephone poles or wires, trees or any other property or damage any part of erected stores, stored components etc. the contractor shall make the same good at his own expenses (of Which BHEL site Engineer's decision shall be final) failing which the site Engineer shall get the same rectified by other agencies at the risk and cost of the contractor and the same shall be deducted from the sums that may be due then or at any time thereafter become due to the contractor or even from his security deposit.
- 53.8 All the Riggers, Sarangs, etc engaged for the work should have adequate experience, which should be supported by documentary evidence, if called for.
- 53.9 Pre-assembly of equipment to be done at the pre-assembly yard for inspection and checking. It is to be noted that BHEL will provide only reasonably leveled open space for pre-assembly yard. The contractor has to arrange desired leveling of the area at their cost. Entire Pre-assembly area to be covered by P.C.C with 70% ash and this is to be done by the contractor within his quoted rate. The fixtures, steel structures required for temporary supporting for pre-assembly, checking, and welding for lifting and handling during pre-assembly and erection shall be arranged by the contractor at his own cost. The contractor shall arrange steel for such work if required.
- 53.10 All the works such as cleaning, checking, aligning, assembling, temporary erection for

- certain equipment for checking and cleaning, surface preparation, tumfering filing, chipping, drilling, reaming, rapping, shaping, filling s may be applicable in such erection works which are treated as incidental to the erection works and are necessary to complete the work satisfactorily, shall be carried out by the contractor as part of the work. All consumables including
- 53.11 The contractor shall fabricate and install as part of the work, all platforms ladders, and approaches wherever required for facility of operation of equipment/instrument wherever required but not specifically shown in the drawings/bill of materials. However raw materials for the same shall be provided by BHEL.
- 53.12 Attachment welding of necessary seal boxes inspection windows. Instrument tapping points, etc., both for regular measurement and performance testing to be provided on ESP, covered within the scope of this tender, will also be the responsibility of the contractor and the same will be done as per the instructions of BHEL Engineer. The erection and welding of all above items will be the contractor's responsibility, within their quoted rate even if:
- Product groups (PG) under which these items are released are not covered in the scope of this tender.
 - Items are supplied by an agency other than BHEL.
- 53.13 Fabrication of supports wherever required, shall also be carried out by the contractor without any extra cost. Any additional support if required for effective completion of work, as advised by BHEL engineer, shall be fabricated and erected by the contractor at no extra cost. However, the raw material required for such additional supports shall be supplied by BHEL.
- 53.14 All attachment, welding, fixing hooks, supports, anchors, studs, plates, angles and other steel components to support inner roof insulation only shall have to be carried out by the contractors as specified in the drawings and as per instructions of the Engineer. Welding of supports shall be done by Qualified HT welders only.
- 53.15 In case of any class of work for which there is no such specification as laid down in the contract, such as welding of stainless steel parts such work shall be carried out including supply of consumables in accordance with the instructions and requirements of the Engineer at no extra cost.
- 53.16 All lifting tackles including wire-ropes slings, shackles, used by the contractor, shall be got approved by BHEL Engineer. It will be the responsibility of the contractor to ensure safe lifting of the equipment taking due precautions to avoid any accidents and damages to other equipment and personnel. Test certificates and periodical calibration of lifting appliances from a recognised body are to be submitted to BHEL site office, as per requirement of BHEL/ISO system. Expenditure on such works forms a part of the scope of work.
- 53.17 The contractor shall erect scaffoldings/Temporary platforms supports etc required during erection before the permanent supports are erected. These should be of adequate capacity and shall never be overloaded. These should be replaced when not found suitable during erection work. All structure materials required for the above shall be arranged by the contractor at his own cost. No such material shall be supplied by BHEL in any case. Welding of temporary supports, cleats etc on the columns shall be avoided. In case of absolute necessity, contractor shall take prior approval from BHEL Engineer. Further, any cutting or alteration of member of the structure or platform or other equipment shall not be done without specific prior, approval of BHEL Engineer.
- 53.18 Proper account of the packing wood and steel supports forming part of packing will be kept by the contractor and returned to BHEL stores from time to time.
- 53.19 Temporary blanking /restoration of ESP inlet / outlet and hopper flanges for commissioning, if required, has to be done by contractor free of cost. Further to above, any contingency arrangements required to carry out commissioning work is included as normal scope of work. This type of jobs includes removal of temporary arrangements and restoration with the normal items on a later date is treated as normal scope of work. No additional payment shall be given by BHEL to the contractor on this account.
- 53.20 Non-specified jobs at the interface / terminal points like bolting welding, gasket changing etc. have to be done by the contractor within the quoted price.

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- supports, foreign materials, scraps, debris etc. from inside of the components and thorough cleaning to achieve clearance / IR values setting system shall be done by the contractor.
- 53.22 For all plate welding, seal welding from inside and stitch welding from other side is to be followed as per drawing.
- 53.23 Minor straightening of plates of inner / outer roof, funnels, GD screen sheets, hopper panels damaged during transportation shall be carried out by the vendor within his quoted rate.
- 53.24 The terminal points decided by BHEL should be final and binding on the contractor for deciding the scope of work and effecting payment for the work done.
- 53.25 The work shall be executed under the usual conditions affecting major power plant construction and in conjunction with numerous other operations at site. The contractor and his personnel shall cooperate with personnel of BHEL, BHEL's customer, customer's consultants and other contractors, coordinating his work with others and proceed in a manner that shall not delay or hinder the progress of work of the project as a whole.
- 53.26 **All necessary certificates and licenses, permits & clearances required to carry out this work from the respective statutory / local authorities are to be arranged by the contractor at his cost in time to ensure smooth progress of work.**
- 53.27 BHEL reserves right to recover from the contractor any loss which arises out of undue delay / discrepancy / shortage / damage or any other causes due to contractor's lapse during any stage of work. Any loss to BHEL due to contractor's lapse shall have to be made good by the contractor.
- 53.28 All cranes, transport equipment, handling equipment, tools, tackles, fixtures, equipment, manpower, supervisors / Engineers, consumables etc. except otherwise specified as BHEL scope of free issue, required for this scope of work shall be provided by the contractor. **All expenditure including taxes and incidentals in this connection will have to be borne by the contractor** unless otherwise specified in the relevant clauses. The contractor's quoted rates should be inclusive of all such contingencies.
- 53.29 During the course of erection, testing and commissioning certain rework / modification / rectification / repair / fabrication etc. may become necessary on account of feedback / revision of drawing. This will also include modifications / re-works suggested by BHEL / customer / other inspection group. Contractor shall carry out such rework / modification / rectification / fabrication / repair etc. promptly and expeditiously. Daily log sheets signed by BHEL Engineer and indicating the details of work carried out, man-hours etc. shall be maintained by the contractor for such reworks.
- 53.30 The contractor shall make all fixtures, temporary supports, steel structures required for jigs & fixtures, anchors for load and guide pulleys required for the work. However, necessary steel will be provided by BHEL free of charge from the scrap / surplus materials available at site.
- 53.31 Contractor shall plan and transport equipments, components from storage to erection site and erect them in such a manner and sequence that material accumulation at site does not lead to congestion at site of work. Materials shall be stacked neatly, preserved and stored in the contractor's shed and at work areas in an orderly manner. In case it is necessary to shift and re-stack the materials kept at work areas / site to enable other agencies to carry out their work or for any other reason, same shall be done by contractor most expeditiously. No claim for extra payment for such work will be entertained.
- 53.32 The details of equipments to be erected under this contract** is generally as per the schedule given in **appendix – I**. These details are approximate and meant only to give a general idea to the tenderer about the magnitude of the work involved. Actual quantum and type of equipments will be based on the erection documents which will be furnished in the course of erection and the weight and quantity as per the relevant engineering documents will only be admissible for the billing purpose.
- 53.33 The contractor shall make suitable security arrangements including employment of security personnel and ensure protection of all materials/equipment in their custody and installed equipments from theft/fire/pilferage and any other damages and losses.
- 53.34 The contractor will make his own arrangement for his communication needs at his site office

- colony.
- and pulling devices to be deployed by the contractor must bear for their suitability and the documents shall be preserved at site.
- The contractor shall ensure deployment of reliable and calibrated instrument, measuring and test equipments (IMTE). The IMTE, as required for the job, shall have valid test /calibration certificate from authorised /Govt. approved agencies. The contractor shall also keep provision of alternate arrangement for such IMTE so that the work does not suffer when a particular IMTE is sent for calibration. Re-testing / re-calibration shall also to be arranged by the contractor at their own cost at regular interval during the period of use as advised by BHEL.
- 53.36 The contractor shall submit a list of various tools, plants, material handling equipment etc. being provided by them, to the Construction Manager, BHEL Barh site before taking up the work in hand. The above items shall be deployed by the contractor after taking prior approval of the Construction Manager with respect to their suitability and quality. These equipments shall not be removed from site without the written permission of the Construction Manager, BHEL - Barh Site.
- 53.37 In event of any failure on the part of the contractor in providing necessary T&P etc BHEL may at its discretion also terminate the contract on this ground and take out any or whole amount of the contract from the scope of the contractor or impose penalty as per panal rates of BHEL. Decision of BHEL in this regard will be final and binding on the contractor.
- 53.38 The contractor at his own cost shall provide all consumables required for the work excepting those, specified in other clauses shall be provided by BHEL. The consumables supplied by the contractor shall be subject to prior approval of BHEL.
- 53.39 During the period of contract the contractor shall be responsible for keeping the entire area allotted to him clean and free from rubbish debris etc. to entire satisfaction of BHEL. The contractor shall provide proper sanitary arrangement in the work area & office.
- 53.40 The contractor shall have total responsibility for all materials in his custody, and shall ensure protection of all materials from theft, fire, pilferage and any other damage and loss. The contractor shall make suitable security arrangement to ensure the above.
- 53.41 The contractor shall be responsible to ensure that none of the personnel move beyond the areas marked out for his operation. In case of a need for the contractor's personnel to move beyond the area marked for him, the same shall be done with a written permission of the construction manager.
- 53.42 Contractor shall be responsible for examining all the shipment and notify the BHEL engineer immediately of any damage, shortage, discrepancies etc. for the purpose of engineer's information only. The contractor shall submit to the engineer a report detailing all the receipts after actual receipts of consignments. However, the contractor shall be solely responsible for any shortage or damage after giving a clear receipt to railway/transport companies, and for shortages/damages during transit from material receipt /unloading point to stores/storage yard/work site.
- 53.43 The contractor shall maintain an accurate and exhaustive record detailing out the list of all materials/equipment received by him and keep such records both in hard copies and also in soft copies ready for the inspection of the engineer at any time.
- 53.44 The materials/equipment which are stored in the open or dusty location and required to be covered must be covered with suitable weatherproof and flameproof covering materials wherever applicable at any number of times at no additional cost. Such weatherproof/flameproof covering which gets worn out from uses should be replaced periodically as per instruction of BHEL Engineer at no additional cost. In no occasion, this work can be linked with preservation. All materials /Equipment shall be handled very carefully to prevent any damage/loss. No bare wire ropes/slings etc shall be used without the specific approval of BHEL.
- 53.45 If the materials/equipments belonging to the contractor are stored in areas other than those earmarked for him, the engineer will have the right to get it shifted to the area earmarked for the contractor at the contractor's cost.

- The contractor may have to work in one or more shifts. He will not be
on account of this.
The contractor shall carry identification cards/gate passes while working at
site.
- 53.48 The contractor, during execution of the work under scope, shall take utmost care in
preserving the identification marks/tags as available on the materials.
- 53.49 Although all tools and plants of suitable capacities required for timely and safe completion of
work under the specification shall be provided by the contractor at his own cost, based on
contractor's demand (depending upon load to be lifted or approach availability at site), BHEL
will provide free of cost as per Annex-III (including operator as available) suitable crane on
shared basis for erection & material handling. However, such requirement shall be intimated
in writing by vendor suitably to the construction manager. Daily routine maintenance, monthly
servicing of crane etc. of BHEL, will be under the scope of BHEL. Provision of T&Ps by
BHEL shall be subject to following-
- a) Actual use of T&P including marching as per entry in log-book duly certified by BHEL
Engineer shall be considered for calculation of overtime charges.
 - b) The contractor shall be responsible for the safe and proper use of T&P issued to him. Any
loss/damage to any part of the above T&P, for reason attributable to the contractor shall be
to his account. In case contractor fails to make good the loss, and expenditures on these
account will be recovered from contractor's bills. BHEL's decision in this regard shall be final
and binding on the contractor.
 - c) The contractor shall have to return the above T&Ps at the earliest in good working condition,
subject to normal wear & tear.
 - d) T&P issued shall be used only for the designated scope of work under specification.
 - e) If at any time, it is noticed that contractor is not using any of the T&Ps properly according to
the instruction of BHEL, BHEL will have the right to withdraw any and all such T&P and any
cost due to this shall be to contractor's account.
The contractor shall also submit to BHEL for approval a list of T&P, tackle etc., prior to
commencement of site activities. These tools & tackles shall not be removed from site
without written permission of BHEL.
- 53.50 The PG wise break up is tentative as indicated under Appendix-I. Certain PGs
have been indicated under both the Packages to have faster systems readiness.
In case of dispute regarding the tonnage indicated, the decision of the BHEL
Engineer with respect to scope, and keeping the work suitability, quality and
time schedule will be final and binding on the contractor.
The terminal points are indicated in enclosed annexure.**

Painting and insulation shall not be covered in the scope of this contract.

**Approx. weight to be erected for each ESP shall be 1600 MT as indicated in
Appendix-I.** The contractor is required to erect actual tonnage (irrespective of any variation
plus or minus) which may be necessary to complete their work and commission above boiler
and complete the work in all respects as detailed in tender specifications, for which
payments shall be released on finally accepted tonnage rates. The contractor undertakes to
erect / commission actual quantities as per advice of BHEL Engineer and accordingly the final
contract price shall be worked out on the basis of quantities actually erected at site and
payments will also be regulated for the same. **However, in case of overall reduction in
contract value beyond 30%, the contractor will be eligible for compensation as
per the following provision:**

"The actual executed value shall be raised by 10 % subject to the condition that

executed plus increase as above shall be limited to 70 %
: value”

However, the work for increased weight shall have to be carried out on awarded unit rates in this contract as per the applicable drawing, documents & specifications.

Contractors shall take above into account while quoting the unit rates quoted as per Rate Schedule so as to take care of such variation during execution stage

53.51 The customer M/s. NTPC and / or their Consultant may depute their representative for checking and supervision of important stages of work. The contractor shall be required to provide all facilities for inspection of works, without any cost implications to the BHEL. Any defect in quality of work or deviations from drawings / specifications pointed out during such inspection shall be made good by the contractor in the same way as if pointed out by the BHEL Engineer, without any cost implication to BHEL

53.52 The contractor will be responsible for **Health, Safety & Environment management at site** for the construction activities to be carried out by them in accordance with requirements given under section I (a) of GCC.

Some of the common safety rules to be followed during working are as follows: -

- No outsider is allowed to enter construction area without permission.
- No body is allowed to enter at construction site without Safety Shoe.
- Never enter work area without Safety helmet & chin strap in place.
- No climbing/working allowed without proper safety belt above 2 m. height.
- Do not exceed the speed limit 25 Kmph within premises.
- No debris obstacles allowed on the roads & passages.
- All accidents/incidents to be reported to site Incharge.
- Do not walk on pipelines or false ceiling.
- Maintain good Housekeeping at work site.
- No photography/ Videography allowed without permission
- Risk factor in construction is approximately 3 times the manufacturing sector.
- 85% of the workforce is drawn from rural background. They lack technical perspective & relevant industrial common sense. Safety awareness to be developed among these workers employed by Sub-contractors.
- Infrastructure to be developed for carrying out jobs properly in a safe manner.
- All Site supervisors & engineers (including subcontractor's) must be imparted structured training on construction safety before start of the job & record to be maintained.
- Availability of qualified & trained Site Engineer at site during all working hours.
- Site Safety training to be imparted to all workers & plan to be made to cover every worker.
- Tools box talk (5-15 minutes) by supervisor prior to commencement of any job.
- All accident / incidents (Near Miss) to be reported & investigated.(formats & procedure should be finalized)
- Daily Safety Checking by Each Site Engineer along with Safety engineer.
- Weekly co-ordination meeting of all Safety engineers with BHEL safety officer.
- Monthly safety meeting with Site In-charges.
- Reports: Weekly/monthly/annual SHE report format should be finalized.

- must be ISI marked & checked by Safety officer before use.
- & use of scaffoldings.
- holding material not allowed.
- LPG cylinders not allowed for gas cutting.
 - Good House keeping. Separate waste bins to be used for flammable & non-flammable material.
 - Safety awareness programs for workers by display of boards, posters, competitions, talks etc.
 - Deployment of Safety Supervisors for every 250 workers and part there of at work site.
 - Display of List of First Aid trained persons.
 - Testing certificates for lifting tools & tackle.
 - Provision & maintenance of fire extinguishers at construction site & material stores.
 - Display of emergency telephone numbers at various locations.
 - For work in confined space use 24 V lamp fitting & use tools with air motors or electric tools with max. 24 V.
 - For confined space entry Gas test must be done before & at regular intervals.
 - Checking & tag of equipment like grinding machine, welding machine, gas cutting set etc. by supervisors before use.

Further, the contractor is required to provide proper Safety Net System wherever the hazard of fall from height is present as per instructions of BHEL Engineer at site. The safety net shall be fire resistant, duly tested and shall be of ISI mark and the nets shall be located as per site requirement to arrest or to reduce the consequences of a possible fall of persons working at different heights.

53.53

Contractor shall make necessary arrangements to ensure that the atmosphere in working area (under the scope of work in this tender) and on roads is free from particulate matter like dust, sand etc. by keeping the top surface wet for ease in breathing. Provision of required tanker with spraying arrangement has to be ensured by contractor within the quoted rates, at no extra cost to BHEL

Contractor shall ensure following:

1. Contractor has to maintain contact with local hospital having ambulance, scanning & other ultra modern medical facilities required during emergency.
2. Contractor has to ensure pre employment medical check for all staff & workers.
3. Contractor has to ensure that adequate First Aid facilities with trained nurse & ambulance are available at work site for emergency purpose. This emergency set-up should include, but not limited to, following
 - Male nurse (in shifts)
 - Oxygen set up
 - Breathing apparatus
 - Eye wash facility
 - Stretcher
 - Trauma blanket
 - Medicines.

This emergency facility set up if any including ambulance, male nurse etc. by any other sub contractor of BHEL will be shared by contractor for this work

Contractor may avail the medical facilities available with the NTPC at the rates applicable to

g medicines.

necessary arrangements to ensure following:

- 1. Contractor shall ensure deployment of qualified Engineer for Welding / NDT services at site as per requirement of work.**
- 2. Contractor shall ensure deployment of Qualified & Experienced Safety Engineer / Officer at site.**
3. Contractor shall ensure that all the **T & Ps deployed** by them, including cranes, (Indicative lists of **T&Ps and IMTE's** to be arranged by the contractor are given as per Appendix-III.) **are regularly certified by approved testing agency** & the relevant certificates to this effect are to be given to BHEL for records.

It may be noted that **non-compliance to the above three conditions** will result in **penal action** as may be decided by the competent authority of BHEL.

The Contractor shall be fully responsible for accidents caused due to him or his agents or workmen's negligence or carelessness in regard to the observance of the safety requirements and shall be liable to pay compensation for injuries. It may be noted that non-compliance to HSE requirements will result in penal action. **In case of violations of safety requirements, the Contractor shall be liable for a penalty of Rs. 200/- for the first violation and Rs. 500/- for the subsequent violations. For serious lapses, as decided by BHEL Engineer, fines upto Rs. 5000/- at a time can be imposed.**

The amount towards penalties as above will be deducted from running bills of the Contractor. The amount so collected above will be utilized for supporting the safety activities at site. The decision of BHEL on above will be final and binding on the Contractor.

53.55

SUBMISSION OF PERIODICAL REPORTS

Contractor shall submit periodical reports in respect of following aspects of operation:

- 1) Consumption of consumables like welding electrodes, gases and paints.
- 2) Consumption of construction power
- 3) Availability and utilization of BHEL & tools & plants
- 4) Availability and utilization of contractor's tools & plants
- 5) Daily manpower reports
- 6) Daily progress reports of activities & incidents
- 7) Test / Calibration reports
- 8) Records of wages, EPF payment.
- 9) BHEL/client may specify any other report/record as required.
- 10) Record of Protocol / Logsheets

53.56

STATUTORY INSPECTION OF WORK

The work to be executed under these specifications has to be offered for inspection, at appropriate stages of work to statutory authorities to comply with applicable regulations.

The work related statutory inspections, though not limited to, are as under:

Factory inspector, labour commissioner, electrical inspector PF commissioner and other authority connected to this project work.

The scope includes getting the approvals from the statutory authorities, which includes arranging for inspection visits of statutory authority periodically as per BHEL engineer's instructions, submitting co-related inspection reports, documents etc. and following up the matter with them. Contractor shall also make all arrangements for offering the products / systems for inspection at location, as applicable, to the concerned authority.

It shall be contractor's responsibility to obtain approval of statutory authorities, whenever

ecting of any work which comes under the purview of these
from this shall be contractor's account.

STATIC PRECIPITATOR

- 54.1 The details of equipments to be erected under this work are generally as per the weight schedule given in [appendix-I](#). These details are approximate and meant only to give a general idea to the tenderer about the magnitude of the work involved, actual quantum and type of equipments will be based on the erection documents, which will be furnished in the course of erection.
- 54.2 Wherever called for, pre-assembly of supporting structures, casing walls have to be done on ground.
- 54.3 All site welds for casing, inlet & outlet duct connections have to be kerosene tested for establishing leak proof-ness.
- 54.4 Loading of collecting electrodes either from top or bottom, to be decided suiting site conditions, shall be done with due care as per BHEL's instructions.
- 54.5 Straightness of all collecting electrodes has to be checked on ground prior to loading in to the field. Straightening of the collecting electrodes, if necessary, shall be done by the contractor within the quoted price as per instruction of BHEL engineer.
- 54.6 Bundle of collecting electrodes should be handled only with special fixture supplied for the purpose as regular DU.
- 54.7 BHEL will provide huck-bolting m/c with necessary auxiliaries free of charges. However, the contractor shall arrange electrical connections, operation etc. Vendor shall also arrange for minor maintenance of the Huck-bolting machine, including changing of some frequent worn-out spares. Required Jaws, spares and Hydraulic oil of the Machine only will be supplied by BHEL free of any charges.
- 54.8 Clearances as prescribed between collecting electrodes and with casing wall / emitting electrodes have to be maintained. Spot heating of collecting electrodes wherever called for, shall be done as part of work.
- 54.9 Erection, alignment/ fixing in final position, of high voltage rectifiers of ESP is in the scope of work.
- 54.10 Installation of interlocks is in the scope of work.
- 54.11 Complete erection, alignment, testing, pre-commissioning and commissioning etc for drive motors of collecting electrodes and emitting electrode rapping mechanism is in the scope of work.
- 54.12 Contractor has to fabricate and erect canopies for motors, actuators etc. as per instruction of BHEL if the same is not indicated in the drawings. However, the contractor will be paid for this work on accepted extra work rate for ESP. BHEL will supply the material required for platforms/canopies in random lengths & sizes.
- 54.13 It shall be the responsibility of the contractor to provide temporary ladders on columns for initial works, if required, till permanent ladder/ stairways are completed.. Material and fabrication of temporary ladders is in the scope of contractor. All temporary ladders are to be of bolting type and no welding on to permanent members will be permitted.
- 54.14 Following installation jobs are also to be carried out by the contractor within his quoted price.
- A) Matching flanges along with all bolts, nuts, gaskets, and all the expansion joints etc. as required to be connected to the ESPs to the duct wall.
 - B) Flue gas inlet distribution system complete with perforated plates, turning vanes, deflector plates, flow splitters, guide vanes and all necessary gas flow control devices in the inlet and outlet cones and duct warranted by the results of flow model test, complete duct stiffening devices, interior bracings, slide plates, access doors, brackets, supporting structures, hangers, sampling connections, etc.
 - C) Rapping system complete with structural supporting frame, drives, and automatic rapping control, etc.
 - D) Ash hoppers complete with panel type heaters, level monitors and indicators, outlet flanges, jointing material, poke holes, access doors and walkways beneath the hoppers.
 - E) Opacity monitors complete with all accessories at the outlet of each gas stream of each

the ID Fan i.e four (4) nos. per set of ESP serving one steam barriers, etc.

- G) Monorails with electrically operated hoists on the roof for handling transformer rectifiers. Water washing system for the precipitator and hoppers along with all piping, valves and nozzles etc.
- 54.15 BHEL will provide free of cost only the shims and packer plates (either machined or plain) which go as permanent part of the equipment. Certain packer plates and shims over and above the quantity received as a part of supplies from manufacturing units of BHEL, will have to be cut out from steel plates / steel sheets at site to meet site requirement. Contractor shall cut and prepare packers and shims by gas cutting /chiseling / grinding/machining and de-burr the same. However, the contractor shall arrange machining of the packers wherever necessary.
- 54.16 All lifting tackles including wire-ropes slings, shackles, used by the contractor, shall be got approved by BHEL Engineer. It will be the responsibility of the contractor to ensure safe lifting of the equipment taking due precautions to avoid any accidents and damages to equipment and personnel. Calibration/fitness testing certificates from recognized agency are to be submitted to BHEL site office for equipment/instrument/appliances to be used, as per requirement of BHEL/ISO system. Expenditure on such works forms a part of the scope of work.
- 54.17 The contractor shall erect scaffoldings/Temporary platforms supports etc required during erection before the permanent supports are erected. These should be of adequate capacity and shall never be overloaded. These should be replaced when not found suitable during erection work. All structure materials required for the above shall be arranged by the contractor at his own cost. No such material shall be supplied by BHEL in any case. Welding of temporary supports, cleats etc on the columns shall be avoided. In case of absolute necessity, contractor shall take prior approval from BHEL Engineer. Further, any cutting or alteration of member of the structure or platform or other equipment shall not be done without specific prior approval of BHEL Engineer.
- 54.18 Proper account of the packing wood and steel supports forming part of packing will be kept by the contractor and returned to BHEL / Customer designated stores /areas from time to time.
- 54.19 Temporary blanking of ESP inlet / outlet for commissioning, if required, has to be done by contractor free of cost.
- 54.20 Non-specified jobs at the interface / terminal points like bolting welding, gasket changing etc. have to be done by the contractor within the quoted price.
- 54.21 Instrument tapping coming on the ESP to be welded/fitted by the contractor within the quoted price.
- 54.22 Fixing of deflection plates in the inlet screen sheet of ESP as per flow model report, drawing ,to be provided by BHEL. However, adjustment / re-positioning of the plates may be required to be done by the contractor during gas distribution test within the quoted rate.
- 54.23 All the collecting and emitting frames are to be checked in dimension and pitches before erection. All the readings are to be logged.
- 54.24 Using certified welders, who posses requisite certificate and who are approved by BHEL Engineer/customer, shall do welding of high tensile structural steel.
- 54.25 All welders shall be tested and approved by BHEL Engineer/ customer before they are actually engaged on the work even though they may posses the requisite certificates. BHEL reserves the right to reject any welder without assigning any reasons. The contractor will be responsible for the periodic renewal, re-testing of the welders as demanded by BHEL/statutory requirements.
- 54.26 BHEL Engineer/ customer may stop any contractor's welders from his work if his work is unsatisfactory for any technical reason or in the opinion of BHEL Engineer, will adversely affect the quality of welding. Even though the welder has earlier passed the tests it does not relieve the contractor from his contractual obligations, to check the performance of the

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	<p>welders including destructive and non destructive tests, if the inspecting authority shall have to be borne by the contractor.</p> <p>All testing facility shall be made available by contractor.</p>
54.28	<p>Approved list of welding electrodes are given with the specification. It is mandatory on part of the vendor to use welding electrodes strictly in conformance of the list. For use of any alternative brand in case of necessity,, necessary written permission from BHEL / Customer need to be obtained.</p>
54.29	<p>Baking and holding of welding consumables shall be as per BHEL Welding Manual. Electrodes shall be baked and dried in Thermostat controlled oven before they are used in erection work, and all welders shall have a portable electrode drying oven at the work spot.</p>
54.30	<p>The contractor shall also be equipped for carrying out NDT, like liquid penetrant inspection, magnetic particle inspection, etc as & when required for work within the quoted rates.</p>
55	MATERIALS HANDLING
55.1	<p>Loading/unloading at storage yard, transport to site, unloading at site/working area, preassembly of equipments at the preassembly yard or at working areas for inspection, checking, erection including entire scope of materials Indicated in cl no.39</p>
56.0	FACILITIES TO BE PROVIDED BY BHEL/ CONTRACTOR
56.1	<p>BHEL shall provide limited open space for office and store/ workshop at site free of rental charge. It is the responsibility of the contractor to construct sheds, provide all utilities like electricity, drinking water etc., as a part of his scope of work within the accepted rates. Raw Water/ potable water at site will not be provided by BHEL the contractor has to make his own arrangement for the water source and the water pipe lines required for the work at premises / plant. Free Electricity for office and workshop will be provided at one point as decided by BHEL. Further distribution will have to be made by the contractors at their own cost. Energy Meter for electricity will have to be provided by the Contractor at his own cost. All safety regulations are to be followed by the contractor.</p> <p>Construction power will be provided at one point near the site free of charge by BHEL / customer. Accordingly, required energy meter, all cables, fuses, distribution boards, switches, switchboards, bus bars, earthing arrangements, protection devices e.g. ELCB if any, and any other installation as specified by statutory authority, client in this regard, for drawl of construction power shall be arranged by the contractor. Obtaining approvals, payment of necessary fees, duties etc towards the clearance of such installations, prior to their being put to use or as may be specified, shall be the responsibility of the contractor.</p> <p>It shall be the responsibility of the contractor to provide, maintain the complete installation on the load side of the supply with due regard to the safety requirements at site. All cabling and installations shall comply in all respects with the appropriate statutory requirements. Licensed and experienced electrician shall do the installation and maintenance of this.</p> <p>In case of non-availability of customer supplied power, it is the responsibility of the contractor to make alternative arrangements. Contractor shall be adequately equipped to arrange standby diesel welding generators in the event of construction power failure. Essential welding jobs shall not be stopped on account of main construction power failure</p> <p>Contractor shall make all arrangements himself for the supply & distribution of construction water as well as potable water for labour and other personnel at work site /colony . Taxes, duties, levies, charges, if any, shall be born by the contractor.</p>
56.2	<p>The contractor has to make his own arrangement for accommodation and transportation of his workmen and other employees. Only open space will be provided by BHEL/</p>

as per availability of space if provided by NTPC else the
by the contractor.

er will not be provided for the use in the labour and staff colony. Power supply for the labour and staff colony shall be provided at one point the plant boundary. It shall be responsibility of the contractor to take the power supply up to the point of his use. The contractor shall be charged for the power supply to labour and staff colony at rates prevalent at the site. A source point for water supply may also be provided by NTPC at the labour colony on free / chargeable bases. The contractor for his laboures may also utilise this facility as per prevailing conditions. All arrangements for the distribution of water from source point for use at labour colony are in t he scope of contractor.

56.3 The Contractor shall be responsible for providing all necessary facilities like residential accommodation, transport, electricity, water, medical facilities etc. at his own cost as required under various labour laws and statutory rules and regulations framed there under to the personnel employed by him.

56.4 **Construction power, for construction purposes will be provided free of cost** at one point near erection site (at a distance upto 500 meters) from supply point The contractor shall submit to the Engineer his electrical power requirements. Contractor at his cost shall do further distribution of power. All wiring must comply with local regulations and will be subject to Engineer's inspection and approval before connecting supply

NOTE:

- The contractor will be provided construction power free of charge.
- They will however ensure that there is no wastage. Periodical audits will be held to ensure that these resources are being optimally used. For this the contractor has to provide an energy meter at his end.
- In case any wastage is observed bhel reserves the right to recover any charges / penalty as deemed fit.
- Contractor will have to provide proper insulated cables for power distribution and joints, if any, will be done with proper jointing kits .

56.5 NTPC/ BHEL shall supply electricity free of charge for construction, operation of EOT cranes, plant start-up, pre-commissioning, commissioning activities including testing. Electricity for construction power and light will be brought by NTPC / BHEL at one point. Contractor shall arrange further distribution of water for construction purposes.

56.6 Contractor shall arrange adequate floodlights, hand lamps and area lighting. Provision of distribution lines for lighting from the single point to the required place with proper distribution boards, observing the safety rules laid down by the electrical authorities of the state shall be done by the contractor. Contractor shall use his own materials like cables, fuses, switchboards etc.

NTPC shall provide and maintain all station illumination at site. Till such time such arrangements are made, the contractor at his cost should arrange for temporary lighting in and around his work area. However adequate lighting facilities such as flood lamps, hand lamps and area lighting shall be arranged by the contractor at the site of construction, contractor's material storage area etc. within finally accepted rates.

56.7 BHEL will not be responsible for any loss or damage to the contractor's equipment as a result of variation in voltage or frequency or interruptions in power supply.

56.8 Provision of distribution lines of both electrical power and water from the central points to the required place with proper distribution boards observing the safety rules laid down by the electrical authorities of the state shall be done by the contractor, supplying all the

tribution board, switch boards, TPN, CBS, ELCBS/ MCCBS/ Copper /
ductor, change over switches pipes etc. If any failure is caused in
water, it is the responsibility of the contractor to make alternate
arrangements at his own cost. The contractor shall adjust his working shifts / hours
accordingly and deploy additional manpower if necessary so as to achieve the targets.

56.9

The contractor while drawing construction power supply from Distribution Board should strictly adhere to following points.

- a) All electrical installations should be as per Indian Electricity rules.
- b) All distribution Boards installed by the contractor should be constructed with fireproof materials viz. Steel frames, Bakelite sheets etc.
- c) Connection for single phase should be taken from phase and neutral. Nowhere the connection should be taken with earth as neutral.
- d) Contractors have to make their own arrangement for their equipment/ DB earthing
- e) All electrical connections should be made through connectors, nuts and bolts, switches, plug and sockets. Loose connections or hooking up of wires shall not be permitted.
- f) All electrical equipment / tools and plants should be properly earthed. DBs to be earthed diagonally opposite at two points.
- g) Contractor should use "MCCB" and "ELCB" either on incoming or outgoing connections to the DBs.
- h) Contractor should ensure that all the CBs / TPNs/ Fuses/ MCCB / ELCB cables etc. should be of adequate rating/ capacity.

For permission of supply connections contractor has to submit a test report of their installations with a single line diagram of connected/ proposed loads.

56.10

ELCB will be tested once in a week or as directed by BHEL by actually simulating the earth leakage for all installations and the same shall be recorded in the logbook to be maintained by the contractor.

56.11

In case of power cuts / load shedding no compensation for idle labour or extension of time for completion of work will be given to contractor.

56.13

On completion of work or as and when required by BHEL, all the temporary buildings, structures, pipe lines, cables etc shall be dismantled and leveled and debris shall be removed, as per instructions of BHEL, by the contractor at his cost. In the event of his failure to do so, the Engineer will get it done and expanses incurred shall be recovered from the contractor along with prevailing overheads. The decision of BHEL Engineer in this regard shall be final.

56.16

Compressed air if required for construction purposes shall be arranged by Contractor. However, compressed air required for the instrumentation, start-up and plant operation purposes shall be provided by the owner as per the requirement and specifications indicated by the contractor

57.0

TIME SCHEDULE

57.1

The contractor is required **to commence the work within 10 days from the date of issue of letter of intent** unless BHEL decides to fix any other later date.

57.2

Entire scope of work as detailed in tender specification **shall be completed in 6 Months for entire scope** from the scheduled date of start of work as per the programs / milestones indicated by BHEL from time to time.

tion may be extended proportionately on increase of weight of

the contractor shall have adequate resources to meet BHEL's commitments to their customer as indicated from time to time. **In case due to reasons not attributable to the contractor, the work gets delayed and additional manpower / resources have to be mobilized so as to expedite the work to meet various milestones, same shall be done within the quoted rates as per Rate Schedule, at no extra cost to BHEL. In the event the contractor fails to respond to these requirements, BHEL shall take appropriate actions to meet customer's commitments in line with the provisions of General Conditions of Contract.**

57.3 The various mile stone dates to be achieved, for **ESPs**, as per the current status of contract are as below:

MILE STONES	MONTH
Start of Erection	within 10 days from issue of LOI
Completion of erection & Handing over	6 Months

57.4 The work under the scope of this contract is deemed to be completed in all respects, only when the contractor has discharged all the responsibilities laid down in the contract. The decision of BHEL on completion date shall be final and binding on the contractor.

58.0 OVER RUN

58.1 In case due to reasons not attributable to the contractor, the work gets delayed and the scheduled completion gets extended, the contractor shall not be entitled for any over run compensation for the entire scope of work. a period of first **one month** after the contractual completion date. In case the scheduled completion time gets **extended beyond 1 (one) month** as stated above, the contractor shall be considered for payment of fixed over run charges, @ **Rs.50,000/- per month** on receipt of advance notice intending to claim over run and on fulfillment of following conditions:-

- (a) The reasons for delay in completion of work are not attributable to contractor but however subject to the provisions of clause – 31.
- (b) Contractor achieves the targets fixed during the over run period.

58.2 Once the claim of over run charges is admitted no other compensation whatsoever (like for delays in receipt of materials, availability of fronts etc.) will be entertained.

58.3 The contractor shall maintain sufficient workforce (both skilled and unskilled) and other resources required for completion of the job expeditiously for the entire contractual period including total extended period.

59.0 TERMS OF PAYMENT

59.1 The 'Engineer' will certify regarding the actual work executed in the measurement books and bills, which shall be accepted by the contractor in measurement book.

59.2 Contractor shall submit bills for the work completed under the specification, once in a month detailing work done during the month. The format for billing shall be approved by BHEL.

that BHEL may be authorised to make under the contract, the contractor on the certificate of the Engineer at site be entitled for payment as explained hereunder.

I.A PROGRESSIVE PAYMENT on pro-rata basis

I-AA 1.0% of the awarded contract value on start of pre assembly work by deploying hydra cranes in working condition at site.

I-AB 1 % of the awarded contract value on complete mobilization & start of erection work of ESP column after checking its trueness on certification by BHEL Engineer.

**I.B PROGRESSIVE PAYMENT on pro-rata basis
(90 % of unit rates)**

(Applicable for installation of all items except Insulation work for sl. No. 1 of main rate)

1 20 % of the applicable contract unit rate on pro-rata basis on completion of pre assembly wherever required and 20% of the applicable contract unit rate on pro-rata basis on placement in position and rough alignment.

OR

40% of the applicable contract unit rate on pro-rata basis on placement in position and rough alignment for the items where pre-assembly is not involved.

2 50% of the applicable contract unit rate on pro-rata basis on completion of final alignment / fastening / welding / grouting along with proper supports including radiography / NDT / stress relieving wherever involved.

NOTE: BHEL site incharge, at his discretion can split / re-group above payments schedule, to facilitate site operations.

I.C An amount limited to 3.0 % of the awarded contract value shall be payable in one or more installments, solely at the discretion of Construction Manager/ BHEL at different stages of the contract execution to facilitate resource augmentation or to meet any exigency of work. In case of its non-utilization 'OR' its part utilization the residual amount shall be paid along with cl 62 (II)

II 2.5 % of contract value will be payable on handing over of the ESP's structure to BHEL and its acceptance or 3 months after contractor has discharged his responsibilities as stipulated in this contract, whichever is earlier, if delay in handing over is not attributable to contractor.

III The balance 2.5 % CV shall be payable on completion of all pending work, rework wherever required, area cleaning, reconciliation of materials, fulfillment of contractual obligations, and on submission and passing of Final Bill.

NOTE:

1. Payments at II & III shall be released after adjustment of the CV based on actual work carried out.

☆ LIST OF TENTATIVE QUANTITIES OF MATERIAL TO BE ERECTED UNDER THIS CONTRACT PER UNIT

PGMA	DUS	TOTAL WEIGHT	ERECTABLE WT	REMARKS
78-681	103 NOS	948,864 KG		
	076 TO 099	267,483 KG	200 MT	DIAGONAL BRACINGS
	049 TO 075	95,782	NIL	HORIZONTAL BRACINGS
			600 MT	OTHER COLUMNS/ STRUCTURE
			800 MT	APPROXIMATE ERECTABLE WEIGHT PER UNIT

NOTE :

- Besides product groups indicated herein, there is likelihood of addition of new product groups by BHEL's unit for release of some items, integral to this work. Tenderers' quoted unit rates shall be applicable for such product groups also.
- BHEL's decision with regard to classification of a particular product group is binding on the contractor.

APPENDIX – II

☆ LIST OF T&Ps & IMTEs BEING PROVIDED BY BHEL FOR USE OF CONTRACTOR
FREE OF HIRE CHARGES ON SHARING BASIS.

SL NO.	DESCRIPTION & CAPACITY OF T & P	QUANTITY
1	NIL	NIL

Note :

1. Any other special IMTEs if supplied by the manufacturer will also be provided to the contractor free of hire charges as and when made available. Special IMTEs are to be used only for the purpose for which these are meant and to be returned in good condition.
2. Other terms and conditions regarding above items shall be as per Clause for T&P/IMTEs.

APPENDIX – III

☆ **INDICATIVE LIST OF MAJOR T&P AND IMTE'S TO BE PROVIDED BY CONTRACTOR FOR EXECUTION OF TENDERED WORKS FOR MOST DURATION OF THE CONTRACT UNLESS OTHERWISE SPECIFIED.**

A: TOOL & PLANTS

LIST OF T & Ps TO BE ARRANGED BY SUB VENDOR

Sl. No.	Description	Capacity	Quantity
1	Hydra Crane	10 T / 12 T	01 no
2	Hydra / Crawler Crane	16 / 18 T / Higher capacity	02 no
3	Trailer	20 T capacity	01 no

NOTE:

1. Above are major Tools & Plants and MMDs to be deployed by the contractor.
2. The above list specifies only major T&P & IMTEs (may not be complete) to be deployed by the contractor as per the work requirement. All additional IMTEs / other tools and plants including suitable capacity welding machines, ovens, jacks, cutting M/cs, grinding M/cs, hand tools, crimping tools, D shackles, slings, rails, sleepers, hydraulic / mechanical jacks and main switches for tapping construction power etc. which are required for satisfactory & timely completion of work shall also be deployed by the contractor within finally accepted rate / price.
3. Other terms and conditions regarding above items shall be as per applicable clause of contract for Tools & Plants / IMTE.

B: MEASURING AND MONITORING DEVICES (MMD):

As per requirement to be finalized at site.



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TENDER NO. BHEL / NR /SCT / BARH/ ESP/ STR / 538

APPENDIX – IV

EXCLUSIONS:

The following are excluded from the subcontractor's scope:-

ESP column foundation, equipment foundation, paving and ash trenches below ESP excepting chipping & leveling/dressing etc.

Note:

The aforesaid exclusions should not be construed as exhaustive. They are meant for general guideline. BHEL reserves the right to include or exclude any item which is required for completing the job as per rates indicated in rate schedule. Contractor should carry out all such jobs as per the instructions of BHEL engineer.



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ANNEXURE-V

CERTIFICATE OF DECLARATION FOR CONFIRMING THE KNOWLEDGE OF SITE CONDITIONS

We,.....
 Hereby declare and confirm that we have visited the project site under the subject namely,and acquired full knowledge and information about the **site conditions, wage structure, Industrial climate and total work involved**. We further confirm that the above information is true and correct and we will not raise any claim of any nature due to lack of knowledge of site condition.

Tenderers Name and Address

Place: (Signature of the Tenderer with stamp)

Date:



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ANNEXURE-VI

**NON DISCLOSURE AGREEMENT
Memorandum of Understanding**

BHEL PSNR is committed to Information Security Management System as per Information Security Policy.

M/s [redacted], providing [redacted] ..service to BHEL PSNR, Noida hereby undertake to comply with the following in line with Information Security Policy of BHEL PSNR;

- To maintain confidentiality of documents & information which shall be used during the execution of the Contract.
- The documents & information shall not be revealed to or shared with third party which shall not be in the business interest of BHEL PSNR.

([redacted])
M/s. BHEL, PSNR

([redacted])
M/s [redacted] ..

GENERAL TERMS AND CONDITIONS OF REVERSE AUCTION (RA)

Against this NIT for the subject work, **tender shall be processed through Reverse Auction mode i.e., ON LINE BIDDING ON INTERNET. The General Terms and Conditions of the RA shall be as follows;**

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
2. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
3. BHEL will inform to the vendor in writing, in case of reverse auction along with the details of Service Provider to enable them to contact & get trained.
4. **'Business rules'** like event date, time, Start price, bid decrement, extensions etc. also will be communicated through service provider for compliance.
5. Vendors have to fax the Compliance form in the prescribed format (provided by Service provider) before start of Reverse auction. Without this, the vendor will not be eligible to Participate in the event.
6. BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at "Total Cost to BHEL".
7. Reverse auction will be conducted on scheduled date & time.
8. At the end of Reverse Auction event, the lowest bidder value will be known on the network.
9. The lowest bidder has to Fax the duly signed Filled-in prescribed format as provided on case-to-case basis to BHEL through Service provider within 24 hours of Auction without fail.
10. During Reverse Auction, if no bid is received within the specified time, BHEL at its discretion, may decide to revise opening price/scrap the reverse auction process/proceed with conventional mode of tendering.
11. **Sealed bid Reverse Auction:** The opening bid (In the initial auction) of the bidders shall be same as that quoted in their Final Sealed price submitted to BHEL. **The bidders shall confirm in writing to BHEL that their opening bid (In both cases) shall be same as that quoted in their final sealed price bids submitted to BHEL against this NIT along with Technical Bid (Part-I).**
12. BHEL reserves the right to cancel Reverse Auction (RA) without assigning any reasons and resort to considering the sealed bids submitted by vendor for processing and finalizing the tender.
13. Any variation between the on-line bid value and the signed document will be considered as sabotaging the tender process and will invite disqualification of vendor to conduct business with BHEL as per prevailing procedure.
14. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL's standard practice.
15. Bids-given by the bidders during the Reverse Auction process will be taken as an offer to execute the work. Bids once made by the bidder, can not be cancelled/withdrawn and bidders shall be bound to execute the work as mentioned above at the final bid price. Should be bidder (Lowest) back out and not execute the contract as per the rates quoted, BHEL shall take action as appropriate.



**FORMAT FOR NO DEVIATION CERTIFICATE
(To be submitted in the bidder's letter head)**

**Bharat Heavy Electricals Limited
Power Sector – Northren Region,
Plot No. 25 , Sector - 16A ,
Distt. Gautam Budh Nagar,
NOIDA – 201 301.INDIA**

Sub.: No Deviation Certificate for the work of Erection, alignment, welding and Handing over of Structure of Electrostatic Precipitators packages of 3 X 660 MW UNIT - 1, 2 and 3 at BARH STPP, PATNA, BIHAR.

TENDER NO. BHEL / NR /SCT / BARH/ ESP/ STR / 538

Dear Sirs,

With reference to above, this is to confirm that as per tender conditions, we have visited site before submission of our offer and noted the job content & site conditions etc. We also confirm that we have not changed / modified the tender documents as appeared in the website and in case of observance at any stage; it shall be treated as null and void. We hereby confirm that we have not taken any deviation from tender clauses together with other references as enumerated in the above referred NIT and confirm our acceptance to reverse auctioning process and we hereby convey our unqualified acceptance to all terms and conditions as stipulated in the tender and NIT. In the event of observance of any deviation in any part of our offer at a later date whether implicit or explicit, the deviations shall stand null & void.

We confirm to have submitted offer strictly in accordance with tender instructions.

Thanking you,

Yours faithfully,

(Signature, date & seal of authorized representative of the bidder)