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NATIONAL CAPITAL THERMAL POWER PROJECT - DADRI

STAGE-II (2X490 MW)

TENDER NO. CE:ES:DADRI:063:MSU

FOR

Receipt, Unloading, stacking at BHEL Stores/Open yard, shifting to place of installation, Erection, testing, and commissioning assistance of Station C&I equipment for 2x490 MW Unit-5 & 6 (Stage-II), National Capital Thermal Power Project (NCTPP) at Dadri, Distt. Gautam Budh Nagar U.P of National Thermal Power Corporation Ltd.

BHARAT HEAVY ELECTRICALS LIMITED
(A GOVERNMENT OF INDIA UNDERTAKING)
External Services Department
Electronics Division
P.B.No. 2606, Mysore Road
Bangalore 560 026

Tender Enquiry Ref: CE:ES:DADRI:063:MSU
Date: 13/03/2009



BHARAT HEAVY ELECTRICALS LIMITED
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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 RESPECT 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 the work of Receipt, Unloading, stacking at BHEL Stores/Open yard, shifting to place of installation, Erection, testing, and commissioning assistance of Station C&I equipment for 2x490 MW Unit-5 & 6 (Stage-II), National Capital Thermal Power Project (NCTPP) at Dadri ,Distt. Gautam Budh Nagar U.P of National Thermal Power Corporation Ltd.

QUALIFYING REQUIREMENTS:

“Bidder who wish to participate should full fill following ‘Qualifying Requirements’:

- 1.Tenderes who wish to participate should have executed similar nature of work in 60MW Unit or higher capacity (Consisting of Boiler & Steam turbine controls ,Balance of plant controls and related field instrumentation works) in power projects / Industrial Projects during last seven years.
2. Bidder should have an average annual turnover of minimum of Rs 2.00 crores (Rupees Two Crores only) based on the audited accounts of last three financial years (2004-05,2005-06 & 2006-07) or (2005-06,2006-07,& 2007-08).Bidders shall submit audited balance sheets and profit & loss account in support of this.

**3.Bidders selection is subject to approval of BHEL’s Customer for this work.
i.e M/s NTPC Ltd**

Notes:

i) The Tender Documents comprises of following;

- a) Tender Notice, Procedure for submission of Tender
- b) Project Synopsis.
- c) General Conditions of Contract,
- d) Special Conditions of Contract
- e) Rate Schedule

ii) The tender documents with complete details are hosted on BHEL's web page www.bhel.com or www.bheledn.com

Bidders intending to participate may down load the tender document from the web site. Bidders downloading the tender documents from the web site shall remit Rs 1000/= (Rupees One thousand only) in the form of crossed demand draft (non - refundable) ,in favour of "BHEL Bangalore" along with their offer.

iii) Bidders can also purchase hard copy of tender documents from this office. Tender documents (non-transferable) will be issued on all working days between 09.00 Hrs to 15.00 hrs within the sale period i.e up to 02.04.2009 on payment of Rs 1000/= (Rupees One thousand only (non-refundable) by crossed demand draft in favour of BHEL Bangalore. Request for issue of tender document should clearly indicate tender number and work.

iv) Tenders must be submitted to the undersigned latest by 14 00 Hrs on 06.04.2009. Technical bids shall be opened at 14.30 Hrs. on 06.04.2009 at the office of the undersigned. Tenders not accompanied with full Earnest Money Deposit of Rs. 2,00,000/- by Pay Order Or Demand Draft will not be considered. Tenders received after the due date and time shall be liable to be summarily rejected.

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

vi) BHEL reserves the right to accept or reject any or all tenders without assigning any reason whatsoever.

vii) BHEL takes no responsibility for any loss / delay of documents or correspondence s sent by courier / post.

Vii) BHEL reserves the right to go for a Reverse Auction (RA) instead of opening the submitted sealed bid, which will be decided after technical evaluation. As such, bidders should submit their best prices in the “ SEALED PRICE BIDS”. However bidders are required to confirm their acceptance of “General terms and conditions” governing RA specifically in their technical bid. The “General terms & conditions” governing RA are given in the SCC (Annexure IX & IX A) 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 & Designation of Official
2. Complete Postal address
3. Telephone No.s (Land line & Mobile- both)
4. Fax No.
5. E mail address
6. Name of Place/State/Country where from he will participate in the RA

viii) Bids once submitted ,shall not be returned.

ix) Unsolicited rebate / discount shall NOT be accepted after bid opening.

DGM (External Services)



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TENDER NOTICE- NEWS PAPER

TENDER REFERENCE	CE:ES:DADRI:0063:MSU
JOB	UNLOADING ,RECEIPT, ERECTION & COMMISSIONING ASSISTANCE FOR STATION C&I AND OFF SITE C&I WORK OF 2X 490 MW UNITS.
PROJECT SITE	NTPC LTD NCTPP STAGE II DADRI DISTRICT GAUTAM BUDHNAGAR UTTAR PRADESH
TENDER TYPE	OPEN TENDER (TWO PART TENDER)
ESTIMATED VALUE	RS 306.25 LAKHS
EMD	RS 200,000/- (RUPEES TWO LAKHS ONLY)
DOCUMENT CHARGES	Rs.1000/= (RUPEES ONE THOUSAND ONLY)
WEB SITE FOR TENDER DETAILS	www.bhel.com & www.bheledn.com
DUE DATE & TIME FOR SUBMISSION	LATEST BY 14 00 HRS ON 06/04/2009 OPENING AT 1430 HRs on 06/04/2009

DGM(EXTERNAL SERVICES)



BHARAT HEAVY ELECTRICALS LIMITED
(A GOVERNMENT OF INDIA UNDERTAKING)
External Services Dept Electronics Division
Mysore Road Bangalore 560 026

PROCEDURE FOR SUBMISSION OF SEALED TENDERS:

The Bidders 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.

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**. The EMD amount & Tender Fee are to be attached in FIRST COVER (TECHNICAL BID)

PRICE BID (COVER-II)

Bidders 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.

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.

PROJECT SYNOPSIS

The NTPC Ltd., New Delhi is setting up a coal fired thermal power station at Dadri called National Capital Thermal Power Plant (NCTPP) in the Gautam Budh Nagar District of Uttar Pradesh. The Stage-I, (4 x 210 MW) of this project has already been commissioned.

BHEL has been awarded the work of supply, material receipt, storage preservation, erection, testing and commissioning of stage II (2 x 490 MW) Unit-5 & 6 Extension Station C& I by NTPC. The site is surrounded by villages Rasulpur, Patadi, Uncha Aminpur and Salarpur Kalan in the Gautam Budh Nagar District of Uttar Pradesh.

On the part of BHEL it has to create its own storage, residential and Office facility at site. NTPC has given the open land for development of infrastructure at site and BHEL shall have to develop it for construction of closed and open storage yard & office complex.

Approach to site

The Project is approachable from Masoori more on Ghaziabad – Hapur NH 91 (12 kms) or 7 km from Dadri Town by all weather road which runs along the Northern Boundary of the plant. Ghaziabad town is approximately 30 KMs from the site.

The distances of Project location from Delhi	:	60 kms
From Ghaziabad	:	30 kms.

SECTION-III

PART-A
SPECIAL CONDITIONS OF CONTRACT
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Clause	Description
34.0	General
35.0	Civil works, foundation and grouting
36.0	Consumables
37.0	Tools & Plants/ IMTE's
38.0	Supervisory staff & workmen
39.0	Material handling and storage
40.0	Preservation of components
41.0	Welding and NDT
42.0	Progress reporting
43.0	Drawings & documents
44.0	Income tax, Service Tax & sales tax etc.
45.0	Extra work
46.0	Price variation
47.0	Rate schedule
48.0	Instructions to Bidder
49.0	Liquidated Damages(LD)
50.0	Security Deposit
51.0	Others

SECTION-III

PART `A`

SPECIAL CONDITIONS OF CONTRACT

34.0 GENERAL

34.1 The intent of this specification is to provide services for execution of 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 / 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 or BHEL Site Engineers Instructions.

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 re do 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 effected 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 of all types of labour, supervisors, Engineers, watch and ward as required , tools & tackles, calibrated inspection, measuring and test equipment as specified and otherwise required for the work and consumable for erection, testing and commissioning including material handling.

(b) The watch and ward as required for safe guarding materials after withdrawal from BHEL stores.

(c) Proper out-turn as per BHEL plan and commitment.

(d) Completion of work as per BHEL Schedule.

(e) Good quality and accurate workmanship for proper performances of equipment.

(f) Repair, rectification and modification in electrical circuits/wiring involving removal of connections & redoing as per modification.

(g) Preservation / Reconservation of all components during storage at contractor's place / erection .

(h) House keeping : The contractor is supposed to carry out house keeping of work area on regular basis to keep the work place neat and tidy. The scrap generated during execution activities is to be dumped at designated area as decided by BHEL / its customer. Compliance report on above shall be submitted by the contractor to BHEL. In case contractor fails to do so , BHEL shall get the same done at the risk and cost of the contractor.

34.5 BHEL- is ISO 9001-2000, ISO 14001-1996, OHSAS 18001-1999 certified company. Quality of work to customer's satisfaction and system requirements is 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 equipments etc. as per instructions of BHEL engineer.

The contractor shall also comply with applicable legislation and regulations (State / Central) with regards to Health, safety and environmental aspects for minimizing risk arising from occupational health, safety hazards, controlling pollution and wastage and he will be responsible for Health, Safety & Environment management at site for the construction activities to be carried out by them.

34.6 Contractor shall ensure availability of the following

- a) Medicines for normal ailments
- b) First Aid Kit
- c) Sufficient no. of Fire fighting equipments in the area of working, Calibration Lab, and pre fabrication area.

The contractor shall comply with following towards Social Accountability

(a) The contractor shall not employ any employee less than 15 years of age in pursuant to ILO convention. If any child labour were found to have been engaged, the Contractor shall be levied with expenses of bearing his education expenditure which will include stipend to substantiate appropriate education or employ any other member of family enabling to bear the child education expenditure.

(b) The contractor shall not engage Forced / Bonded Labour and shall abide by abolition of Bonded Labour System (Abolition) Act, 1976.

- (c) The contractor shall maintain Health & safety requirement as stipulated in the Contract and Contract Labour (Regulation & Abolition) Act,1970.
- (d) The Contractor shall abide by UN convention w.r.t Human Rights and shall be liable for Discrimination / Corporal punishment for failure in meeting with relevant requirements.
- (e) The Contractor shall abide by the requirement of Contract Labour (Regulation & Abolition) Act, 1970 for working hours.
- (f) The Contractor shall abide by the Statutory requirement of Minimum Wages Act 1948, payment of Wages Act 1936.
- (g) The Contractor shall arrange potable drinking water to its employees & workers.
- h) Please refer to clause 26 of GCC .and annexure VIII. The daily wages are indicated. Bidders to ascertain the prevailing rates. The benefits to be considered for contract labour is indicative only and given as guidance to bidders. The format for wage slip & employment card is for information of bidders.**

35.0 CIVIL WORKS, FOUNDATIONS AND GROUTING.

35.1 Foundation for all equipment /Panels shall be provided by client of BHEL.

Minor Civil works like chipping, grouting etc wherever required is to be carried out by the contractor within the quoted price. The contractor has to carry out all material required for carrying out the grouting including supply of cement etc.

36.0 CONSUMABLES

36.1 The contractor shall provide within finally accepted rates, all consumables like, welding electrodes including alloy steel & stainless steel welding electrodes, Primer, Paints , soldering material, Chemicals for dye penetrant Test, other erection consumables such as tapes, jointing compound, grease, M-seal, Araldite, petrol , CTC / other cleaning agents, petroleum jelly, insulation tape, PVC sealing compound, sleeves of all sizes, Nylon cable ties of all required sizes, gaskets, cable lugs (up to 2.5 sq.mm cable size) Cable tags, cable sleeves, ferrules , anchor bolts and fasteners M 12 size and below, saddles, jumpers etc. Please note 0.5 sq.mm cable may be required to be lugged if insisted by NTPC.

36.2 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.

36.3 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/ NTPC.

36.4 BHEL reserves the right to reject the use of any consumable including electrodes, gases, 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 & records maintained.

36.5 Storage of all consumables including welding electrodes shall be done as per requirement / instruction of the Engineer by the contractor at his cost.

36.6 In case of improper arrangement for procurement of any consumable, BHEL reserves the right to procure the same from any source and recover the cost from the Contractor's first subsequent bill at market value 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.

37.0 TOOLS AND PLANTS / IMTEs

37.1 T&Ps & IMTEs are to be arranged by the contractor and the rates quoted are deemed to be inclusive of these charges. List of such T&P and IMTE is indicated separately .

37.2 All 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 at his own cost in working condition (As per Annexure-I, II, III & IIIA) . 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 at the risk and cost of contractor 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 / welding cables, wire ropes, hoses etc. including temporary air/water / electrical connections etc. shall have to be arranged by the contractor at his own cost. Power cables including supply of **the main incomer cable of size 3 ½ core x 50 sq.mm Aluminium conductor (from substation to contractors point approx length 500 mtrs) and associated MCCB**

etc of sufficient capacity shall be arranged for the construction power supply requirement of contractor .

37.4 Contractor shall ensure deployment of reliable and calibrated IMTEs (Inspection measuring and Test equipment). The IMTEs shall have test / calibration certificates from authorised / Govt. 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 Engineer for control.

37.5 Retesting/ re-calibration (calibration equipments) shall also be arranged at regular intervals during the period of use as advised by BHEL Engineer within the contract price.

The contractor will also have alternate arrangements for such IMTE so that work does not suffer when the particular instrument is sent for calibration. Also if any IMTEs not found fit for use, BHEL shall have the right to stop the use of such item and instruct the contractor to deploy proper item and recall i.e. repeat the readings taken by that instrument, failing which BHEL may deploy IMTEs and retake the readings at contractor's cost.

37.6 BHEL shall have lien on all T&PS, IMTEs & 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. No material brought to the site shall be removed from the site by the Contractor and/or his Sub-contractors without the prior written approval of the Engineer.

37.7 It shall be the contractor's responsibility to deploy the required T&P, for timely and successful completion of the job.

38.0 SUPERVISORY STAFF AND WORKMEN

38.1 The contractor shall deploy all the skilled workmen like fitters, welders, gas cutter, riggers, electricians, instrument technicians, etc., in addition to other skilled, and unskilled workmen required for all the works of unloading, handling and transporting from site storage to erection site, erection, testing and commissioning as contemplated under these specification.

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 ask for removal of any employee workman of the contractor at any time, if they find him unsuitable and the contractor shall forthwith remove him.

38.2 The adequate supervisory staff, including qualified Engineers, shall be deployed by the contractor to ensure proper out-turn of work and discipline on the part of the labour put on the job by the contractor and in general see 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 at site. The contractor and his personnel shall cooperate with other personnel / contractor, 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 conform 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.

38.6 During the course of erection, if the progress is found unsatisfactory, or if the target dates fixed from time to time for every mile stones are to be advanced or in the opinion of BHEL, if it is found that the skilled workmen like fitters, Electricians , 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 and recover from the contractor's bills any charges incurred for engaging the additional workmen with overheads. Decision of BHEL engineer will be final and binding on the contractor

38.7 It is the responsibility of the contractor to engage his workmen in shifts or on overtime basis for achieving the targets set by BHEL and also during the period of commissioning and testing of unit. The contractor's finally accepted rates / prices shall include all these contingencies.

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

38.9 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 man power, 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. Separate persons shall be identified at site for quality control and safety by the contractor.

39.0 MATERIAL HANDLING AND STORAGE (Contractor's Place)

39.1 All the equipment and material furnished under this contract shall be received from the project stores, sheds/storage yards (any place within site) and transported to erection site and stored (at contractor's stores) in the storage spaces in a manner so that they are easily retrievable till they are erected by the contractor. While drawing / lifting material from BHEL / Customer stores, contractor shall ensure that the balance / other materials are stacked back immediately.

39.2 While BHEL will endeavor to store / stack / identify materials properly in their open / close / semi closed / tarpaulins covered storage yard/ shed (for this separate manpower is sought exclusively for BHEL use), it shall be contractors responsibility to assist (while withdrawing materials only) BHEL in identifying materials well in time for erection, taking 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 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.

39.5 All the equipment shall be handled very carefully to prevent any damage or loss. No untested wire ropes/ slings etc. shall be used for unloading / handling. The equipment shall be properly protected to prevent damage either to the equipment or to the floor where they are stored. 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. Test certificates for lifting tackles shall be produced by the contractor before use.

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. In no case piping should be dragged. 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 to BHEL.

39.8 Contractor shall be responsible for examining all the plant and material 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 submit to the Engineer every week, a report detailing all the receipts during the week. However, 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 no. of watch/ward personal to avoid any pilferage of material. In case any equipment / material is lost / damaged while in the custody of the contractor, the cost of repair / replacement if any to bring back the equipment in original order shall be deducted from the contractor's bill.

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 ensure that all the packing materials and protective devices used for various equipment during transit and storage are removed before the equipment are installed.

39.13 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

39.14 The contractor shall ensure that all surplus / damaged / scrap / unused material, packing wood / containers/ special transporting frames etc. are returned to BHEL / NTPC at a place in project area identified by the Engineer. An account will be maintained by the contractor for all such items received and returned to BHEL and duly reconciled before closing of the contract.

39.15 The contractor shall hand over all parts / materials remaining extra over the normal requirement with proper identification tags to the concerned BHEL / Customer or at a place in project area as directed by BHEL Engineer.

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 stored in such a way that item is at least six inches (6") above the ground
- b) Panels and other electronics components should be protected from rain / water

40.2 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 WELDING and NDT

41.1 The method of manual welding (ARC welding) to be carried out shall be indicated in the detailed drawings / schedules/BHEL Engineers instruction. BHEL Engineer will have the option of changing the method of welding as per site requirements. For P91 material welding, pre heating ,post heating, and post weld stress relief operations shall be performed as per the welding procedure of BHEL/NTPC. Heating may be by means of electric induction coils or electric resistance coils .Please refer WPS Form No. 101-401(Pages 1-2) enclosed.

41.2 All welders including tack welder , structural and pipe welder shall be tested and approved by NTPC./ FQA dept before they are actually engaged on work. BHEL reserves the right to reject any welder if the welder's performance is not found to be satisfactory. All charges for testing of contractor's welders including destructive and non destructive tests conducted by NTPC at site or at laboratory shall have to be borne by the contractor only.

41.3 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 of joints welded by a particular welder which, in the opinion of the Engineer will adversely affect the quality of the welding though the welder has earlier passed the tests prescribed by Engineer. The welder's having passed qualification tests does not absolve the contractor of contractual obligation to continuously check the welder's performance.

41.4 Faulty welds shall be cut and re-welded at the contractors expenses. The procedure for the repair of defective welds shall be approved by the Engineer prior to any repair being made. Records of such repairs and defects shall be maintained by the contractor as per BHEL Engineer's advice

41.5 All charges for testing of contractor's welders including destructive and non destructive tests conducted by BHEL/ NTPC at site or at laboratory shall have to be borne by the contractor only.

41.6 Only BHEL/NTPC approved make electrodes will be used. All electrodes shall be baked and dried in the electric electrode baking 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. Electrodes from holding oven shall be transferred to portable ovens. The electrodes brought to the site will have valid manufacturing test certificate.

41.7 All welds shall be painted with anticorrosive red oxide paint. Necessary consumables and scaffolding etc. including paints shall be provided by contractor at his own cost and deemed to have been included in the rates quoted in the rate schedule.

41.8 Non-destructive testing are part of erection work and shall be carried out by the contractor in accordance with the quality plan and as per instruction of Engineer. Decision of Engineer shall be final and binding on the contractor.

42.0 PROGRESS REPORTING

42.1 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

42.2 Weekly progress review meetings will be held at site during which actual progress during the week vis-a-vis scheduled program shall be discussed for actions to be taken for achieving targets. The program for subsequent week shall also be presented by contractor for discussions. 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.

42.3 The contractor shall submit compulsorily daily, weekly and monthly progress reports, manpower reports, materials reports, consumables (gases / electrodes) report and other reports as per proforma considered necessary by the Engineer.

42.4 The progress report shall indicate the progress achieved against planned, with reasons indicating delays, if any, and shall 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 slippages do not accumulate and effect the overall program.

42.5 The daily manpower reports shall clearly indicate the manpower deployed, category wise specifying also the activities in which they are engaged.

43.0 DRAWING AND DOCUMENTS

43.1 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.

43.2 The contractor shall maintain a record of all drawings and documents available with him in a register as per format given by BHEL Engineer. Contractor shall ensure use of pertinent drawings / data / documents and removal of obsolete ones from work place and returning to BHEL.

43.3 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.

43.4 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.

43.5 Deviation from design dimensions should not exceed permissible limit. The contractor shall not correct or alter any dimension / details, without specific approval of BHEL.

44.0 INCOME TAX , SERVICE TAX AND SALES TAX ETC

44.1 Income tax & surcharge, if any at prevailing rates shall be deducted on gross invoice value from the running bills unless Exemption Certificate from appropriate Income Tax Authority is furnished.

44.2 Price quoted shall be exclusive of 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

44.3 Contractor shall get his organization registered with concerned Sales Tax/VAT authorities within 15 days of award of this contract. 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.

44.4 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.

45.0 EXTRA WORK:

45.1 BHEL may consider for **payment of extra works on man hour basis @Rs.30/= (Rupees Thirty Only) for such of those works which:**

- a) Require major revamping or rework and which are totally unusual to normal erection work.
- b) Require rectification / modification for improvement in the design during commissioning,
- c) Requiring fresh fabrication of components in place of rejected / replaced components.

However reworks carried out by a gang of one technician, two helpers for less than 4 hrs will not be considered for extra work.

45.2 The rates indicated as above , shall include over time, if any, consumables, supervision, use of tools and tackles and other site expenses and incidentals.

45.3 The extra works, if any, shall be carried out by a separate gang or beyond working hours which can be identified for certification of man hours. Log book should be maintained and should be signed (within a week's time) jointly by the contractor's site in charge and the BHEL Engineer on day to day basis. However, signing of the log book 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 which are certified by the BHEL Engineer-in-charge, may be considered for payment. The decision of BHEL in this regard shall be final and binding on the contractor.

46.0 PRICE VARIATION

46.1 The finally accepted rates for scope of work as defined in this tender shall be **FIRM for the entire contract** period. No price variation on accepted unit rates is allowed.

47.0 RATE SCHEDULE

47.1 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 / price.

47.2 The Bidder shall quote the rates / Price 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.

47.3 Contractor's total quoted price as per rate schedule will be taken as tentative only.

The quantities indicated in the rate schedule against each item may vary as per the actual engineering / requirement to complete the work.

Some of the items may be added or deleted which shall have to be executed by the contractor within his scope of work and shall be paid as per the rates awarded in the contract. 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 on the basis of unit rates.

48.0 INSTRUCTIONS TO TENDERER

48.1 Offers received without data / information required to be submitted under tender

clauses-11.1 to 11.11 of GCC are to be furnished by the tenderer. All these data / information should be duly supported by documentary evidences (Refer note below clause-11)

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

48.3 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 site conditions. Once the tenderer has quoted for the work, it is implied that he has ascertained various site condition and NO CLAIM whatsoever will be entertained by BHEL on any such account.

48.4 The contractor in the event of this work awarded to him, shall establish a site office at site and keep posted an authorised 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 authorised representative shall be communicated to the contractor's representative at site office and the same will be deemed to have been communicated to the contractor at his legal address.

49.0 LIQUIDATED DAMAGES

49.1 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 (excluding the safety penalty if any levied) as mentioned under the **clause 25.5 of** GCC of the tender.

49.2 PENALTIES:

If the contractor fails in providing safe working environment as per the safety rules of NTPC or continues to work even after being instructed to stop the work by the Engineer in charge / Safety co-ordinator the contractor shall be penalized at the rate of Rs. 25000/ per day or part thereof till the instructions are complied with and so certified by the Engineer in charge.

If the contractor does not take all safety precautions or fails to comply with the safety rules as prescribed by the owner or under the applicable law for the safety of the plant and equipment, the contractor shall be responsible for payment of penalty to NTPC as per the following schedule:

- a) Fatal injury or accident causing death.
Penalty @ 10% of contract value or Rs. 5,00,000/- per person, whichever is less.
- b) Major injuries or accident causing 25% or more permanent disablement to workmen or employees.

Penalty @ 2.5 % of contract value or Rs.1,00,000/- per person which ever is less.

If any worker of the contractor is found working without safety equipment like safety helmet, safety shoes, safety belts etc. The safety officer of NTPC / BHEL shall have the right to penalize the contractor for Rs. 200/- per person per day and such worker shall be sent out of the work place and shall not be allowed to work on that day.

50.0 SECURITY DEPOSIT

50.1 The contractor shall submit Security Deposit within 15 days from the date of issue of LOI as per the General Conditions of Contract (GCC). In case the contractor opts to furnish Bank Guarantee as a part Security Deposit, the BG shall be issued as per the Proforma enclosed as per Annexure-H of the GCC and also that the BG should be issued preferably through any of the Member Banks listed in 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.

51.0 OTHERS

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

51.2 The tenderer shall specifically confirm he has inspected the site of work and is fully conversant with the prevailing conditions under which work is to be executed and will not raise claim of any nature due to lack of knowledge of site condition. He will also confirm that local taxation laws at the site have been clearly understood by him.

51.3 For reverse auction / for price bid opening, only those bidders will be considered who will be qualified for the subject job on the basis of pre-qualification evaluation/ techno commercial bids. BHEL reserves the right to reject the bidders with unsatisfactory past performance in the execution of the contract. BHEL's decision in this regard shall be final & binding. **It may be noted that the sealed price bid of L1 bidder will be opened by BHEL after reverse auction so as to apportion difference between the initial price & final price proportionately on all the items of the rate schedule.**

SPECIAL CONDITIONS OF CONTRACT

SECTION III - PART-B

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SPECIAL CONDITIONS OF CONTRACT

SECTION-III (PART-B)

52.0 SCOPE OF WORK

52.1 Scope of these specifications cover complete work of Receipt, Unloading, stacking at BHEL Stores/Open yard, shifting to place of installation, Erection, testing, and commissioning assistance of Station C&I equipment for 2x490 MW Unit-5 & 6 (Stage-II), National Capital Thermal Power Project (NCTPP) at Dadri, Distt. Gautam Budh Nagar U.P of National Thermal Power Corporation Ltd. The work also includes checking, testing, pre-assembly, erection, calibration, alignment, grouting, welding, NDT wherever required, preservative / touch-up painting (including supply of paints), earthling of equipment, any other activities required for erection, testing, commissioning assistance, post commissioning assistance, trial operations assistance for items indicated in the rate schedule covered within the scope of these specifications for 2 x 490 MW units at NCTPP - Dadri Unit-5 & 6

The work is distributed through out the plant including the off sites like CHP,AHP,switch yard ,AWRS,CWPH,FOPH and also the Stage I area.

52.1.1 The scope of work will also **include providing free of cost services of qualified and experienced Diploma/ degree electrical / Instrumentation Engineer having experience in respective field entirely for the commissioning activities** and for direct supervision of various works of power plant as suggested by BHEL. The qualification & experience of the Engineers shall be acceptable to the BHEL Engineer in charge. These qualified personnel shall be provided for 64 man months as per site conditions. These Engineers shall be reporting directly to the BHEL Engineer In charge for the main work. No separate payment shall be paid for providing the services as per this clause. The contractor shall provide these free of cost services within the quoted rates.

52.1.2 The contractor under this contract shall also provide free of cost services of skilled persons for a total period of 64 man months exclusively for use by BHEL.

This Manpower requirement may vary depending on the activities at site. The purpose of this manpower is for meeting the commissioning, post commissioning and trial operation activities as required by BHEL i.e up to 3 months of achievement of full load of second Unit.

NOTE: In case contractor fails to provide above mentioned manpower as desired by BHEL, latter shall have the right to hire such services from other agencies at the risk and cost of the contractor. However if BHEL does not utilize the man months as per above provision, fully or partly a lump sum amount per man month (Same as indicated in Sr.No.216 of rate schedule / Sr.No. 217 of rate schedule)) for the unutilized period (man months) will be recovered from the bills of the contractor.

In case the manpower is needed by BHEL beyond the contractual schedule OR beyond 64 man months, contractor shall provide the same at the rates indicated in rate schedule for the respective category. Payment will be made by BHEL for this extended period. Depending on the site conditions (requirement of manpower for post commissioning services /AMC/availability test /PG test etc) at that time, a separate contract may be made delinking from the main contract. Decision of BHEL in this regard is final & binding on the Contractor. It is preferred that the contractor maintains the same set of manpower as long as the requirement is needed by BHEL.

52.2 The contractor shall also provide the services of Stores assistant, Office assistant and Helpers (at Site Office & Field Hostel) for the exclusive use of BHEL for the entire contract duration. The services of these manpower will be paid as per the rates indicated in Sr.No.213 to 215 of the rate schedule. In case the services of these personnel are required beyond the contractual period, the contractor shall provide the same at rates indicated in rate schedule under Sr.No.213 to 215.

Persons so deployed under CI 52.1 & 52.2 shall have to work in extended hours, Sundays & Holidays whenever required. Workman provided as per the above provisions shall be fully trained and experienced in the nature of work for which they are deployed.

Format for monitoring of attendance & record keeping methodology for manpower supply (both free of cost & chargeable) shall be provided by Site in charge of BHEL. However each RAB is to be accompanied by the Engineer in charge's certification for manpower utilized provided under clause 52.1 & 52.2

52.3 The scope of work also covers all tests necessary to ensure that workmanship confirms to relevant standards and that such tests are adequate to demonstrate that the installations complies with the requirements of this specification.

All arrangement for conducting tests are to be made by contractor within their quoted rates and tests may have to be repeated to satisfy BHEL / NTPC.

52.4 The brief description of major equipment/ items to be erected, tested and commissioning under the scope of subject work are described in BOQ/Rate

Schedule. However change in design/specification may occur as is usual in any such large work, for which no compensation will be payable. Contractor shall complete the entire work as detailed in tender specification within the contractual rates.

52.5 Contractor shall erect, test, commission all the field equipments, cabinets, panels, instruments etc. as per sequence prescribed by BHEL Engineer at site. The sequence of erection / commissioning methodology will be decided by the BHEL Engineer depending upon the availability of materials / work fronts etc. **No claim for extra payment from the contractor will be entertained on the grounds of deviation from the methods of erection / commissioning adopted in erection / commissioning of similar jobs elsewhere or for any reasons whatsoever.** For some of the equipment, Erection supervision or Commissioning expertise will be arranged by BHEL. The rate schedule indicates such details against each item. However all assistance with sufficient manpower, required tools and facilities (like temporary power supply, Lighting, Scaffolding etc) required shall be provided by the contractor.

52.6 The customer NTPC 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 Engineer. 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 if pointed out by the Engineer, without any cost implication to BHEL.

52.7 Contractor shall plan and transport equipment / components from storage yard sheds to erection site and erect them in such a manner and in a sequence that material accumulation at site should not lead to congestion. Contractor shall plan activities considering plying of his vehicles on ring road also. Materials shall be stacked neatly, preserved and stored in the contractor's shed and work areas in an orderly manner. If required, the contractor shall arrange shifting of surplus material expeditiously failing which the same will be arranged by BHEL at contractor's risk and cost.

53.0 ERECTION

53.1 All works such as cleaning, checking, leveling, aligning, assembling and temporary erection for alignment, dismantling of certain equipment for checking, cleaning, surface preparation, fabrication at site, cutting, grinding, straightening, chamfering, filing, chipping, drilling, machining, surface grinding, shaping, fitting up etc. as may be applicable in such erection works are to be treated as incidental to erection and necessary to complete the work satisfactorily and shall be carried out by the contractor as part of the work.

53.2 Any fixtures, scaffolding materials, concrete block supports, steel structures required for temporary supporting, for pre-assembly or checking, welding, lifting

and handling during pre-assembly and erection shall be arranged by contractor at his cost.

53.3 The following provisions cover the technical requirements for some of equipment installation. The brief idea about the work involved is indicated below however the work is to be carried out in accordance with the recommendations of the equipment manufacturer drawings, documents furnished to the contractor by BHEL or as directed by BHEL Engineer.

53.4 Some of the equipments like Local Instrument Racks / Enclosures are of different types and weight and are to be placed in different elevations of Boiler / TG bldg, starting from 00 M. To 76.00 M. Contractor to consider the Type of equipment, weight & Size of the equipment to be lifted and the location for placement and the T&Ps to be arranged for the erection work while quoting. Flue Gas analyzers are to be erected at elevation approx 80 meters inside Chimney as specified by BHEL. Contractor shall arrange required T&P and special optical device like Laser torch and Jig material for alignment of these equipments.

53.4.1 UPS / DC BATTERY CHARGERS

Erection of Panels after foundations checking / fabrication of base frames or stools (wherever applicable) and carrying out minor modification wherever required; Joining of panels, inter-panel wiring, bus bar & earth bar connections, mounting of loose supplied items, Testing of complete board & including testing / calibration of all instruments and schemes; Dummy load test of Chargers including arranging of dummy load and temporary power supply etc.

53.4.2 DC BATTERY

Erection of battery after assembly of battery stands, inter-connection of batteries and first charging; Capacity testing using dummy load and subsequent recharging (in case of failure of capacity test, the charging Discharging cycle is to be repeated) Dummy load test of chargers includes arrangement of dummy load and temporary connection in absence of regular power supply. Erection of Battery Isolator Boxes and interconnection is included in Battery erection. Replacement of defective cells during warranty is also in contractor's scope and price indicated is deemed to be inclusive of this work. **The number of cells indicated in rate schedule is for information. 2 or 3 cells may be added or deleted during detailed engineering.. The rate quoted shall be firm.**

53.4.3 **PANELS:** Items covered under panels are - DCS PANEL, UCP, ECP, Relay panel, Transducer panel ,UPS ,ACDB ,DCDB ,Hart panel, Master slave clock, Network panel ,Vibration panel ,Sox / Nox panel, SWAS panel, LVS panel etc.

Erection at site / control room including chipping of floor, fabrication and fixing of base channel frame, leveling & alignment with spirit level, welding the base channel to the embedded plates / channels, grouting (if required), fixing of anti-vibration pads, termination of inter panel connections, mounting / connections of loose instruments, inter panel bus bar connections, commissioning including loop checking, system checking, and putting necessary controls on automatics. Terminations of cables will be by conventional screwed connections and crimping connections. Checking of internal wiring, rectification, testing and calibration of equipment mounted inside is in the scope of contractor. The contractor may have to change / replace items found faulty without any extra cost, however materials for this shall be provided by BHEL. Mostly panels will be delivered fully wired. However wherever required termination of loose wires, bus wires is to be done. Canopy for panels if supplied loose, shall be installed by the contractor after erection of panels within the quoted rates indicated in rate schedule. The cleaning of panels have to be done with electrical vacuum cleaner, besides conventional cleaning with brush etc. The drilling of holes in the gland plates for cable entry shall be part of panel erection. All blank holes / gaps in the gland plates / boxes etc. shall be properly sealed. The base frames shall be painted suitably. The contractor shall carry out the plugging and sealing of left out holes in the gland plates and other openings at the bottom of panels at his own cost by using good quality sealing material as advised by BHEL. Any minor alterations required in the bus bar arrangement, wiring in the panels/ cubicles shall also form part of the work. During testing, commissioning, some equipment / modules may need replacement / repairs.

53.4.4 CABLE RACK AND TRAY

Cable trays shall be supplied either ladder, prefabricated, slotted or duct type. Contractor shall carry out cutting of tray only by Hacksaw for obtaining proper routing from standard lengths supplied. Materials for support fabrication like flats, channels, angles etc. shall be supplied by BHEL. The cutting points on trays will be painted by primer & Aluminum paint by the contractor including supply of paint within the quoted price and no extra cost to BHEL. These cable trays may also be required for laying copper tubing, plica type / GI flexible conduits, local cabling and metal temp. thermo couples. Rate quoted shall be for laying of trays only. **Tray covers wherever laid shall be paid separately as per the unit rates indicated in the rate schedule.**

Beside above, angles / channels of various sizes may have to be fabricated / erected, for use as cable trays, from structural steel to be supplied by BHEL. Payment for support fabrication / erection of shall be released as per applicable rates for structural fabrication work.

Wherever required as per the decision of NTPC / BHEL the tray covers are to be installed and properly secured on the bottom trays. It may be noted that separate rates will be paid for the tray cover work.

53.4.5 INSTRUMENTS (TRANSMITTERS / GAUGES / SWITCHES / TEMPERATURE SENSING ELEMENTS LIKE RTDs & THERMOCOUPLES)

For instruments supplied loose, the scope includes calibration, erection (including fabrication and fixing of frames / stands by welding to steel structure or by chipping & grouting with RCC columns / floor or by using anchor bolts of proper size including supply of anchor bolts upto M12) and charging / loop checking. The work includes installation of housing connecting manifold / valve on supports / racks to be suitably fabricated for the instruments being supplied loose.

For instruments supplied duly mounted on skids/racks, the scope includes dismantling from skids / racks, reinstallation after testing / calibration, restoring electrical connections, if any, pressure testing of connected piping and charging / loop checking. Servicing of manifolds PG valves shall also form part of erection job within the quoted prices.

Some instruments may need repeated calibration / replacement. The same will be carried out by the contractor at no extra cost to BHEL including calibration of instruments needed for replacement, which will be supplied by BHEL. Erection of thermoelements like RTDs & Thermocouples includes erection of thermo wells, wherever required, at no extra cost to BHEL. Tags on all the instruments will be provided by the contractor as directed by BHEL Engineer at no extra cost to BHEL.

Seal welding of thermo wells is deemed to be included in the installation of Thermowell. Contractor shall arrange to weld the thermo wells by following procedures as per NTPC / BHEL requirement. Further any cleaning / re-threading required for fixing thermowells is also part of contractors work.

53.4.6 DETECTORS / VIBRATION , SPEED & OTHER TURBOVISORY PICKUPS:

Blue matching with the assembly fixtures / main equipment surface, trial fixing, fixing by drilling / tapping, final doweling. Moreover some detectors may have piggy-backs signal detectors mounted on them as such these forms part of detectors assembly. The integral cables of the above shall be routed & dressed properly up to their JB / Proximeter. Erection of proximitors, proximator housings / JB required for respective pick up and calibration / commissioning of pick ups will be included in quoted / accepted item rate of respective pickup.

(G) PNEUMATIC TUBES (COPPER / SS TUBING) :

Fabrication and erection of single angle supports / tray supports for single / multi run tube. Laying tubes in the angles / trays from the panel to the equipment, instrument to instrument, air supply line to drive / instrument, air line connections, clamping properly as per standard ferruling and termination at both ends. This includes all fittings and needle valves, stop valves etc. also. Proper tagging of valves and pneumatic tubes on both ends shall be done for proper identification.

No extra charges will be claimed by contractor for any modification carried out after laying of pneumatic tubes / draft pipe lines due to site requirement in general.

53.4.7 IMPULSE LINE (AS / CS / SS)

The impulse line work comprises of Identifying the proper type (refer specification) of Impulse pipe , cleaning with wire brush and compressed air, edge preparation, cold bending, laying to the required slopes, clamping, installation of isolation / drain valves, condensate pots and other fittings by socket welding, connecting with the process end and to the instruments, carrying out NDT, Hydraulic testing the impulse lines, and painting the lines as per requirement of BHEL engineer. Proper tagging of valves and impulse lines on both ends shall be done for proper identification. Painting of impulse lines with primer and with final paint of color as per NTPC standards Including supply of paint is in contractors scope. Flow elements are provided with SS root valves. Welding of these SS root valves with AS /CS impulse pipes is to be carried out within the quoted rates for Impulse pipes. The rate quoted per meter shall include all the above work.

Pre heating, Post weld Heat Treatment and Non Destructive Tests are to be carried out for welding of impulse pipe with specification ASTM A 335 P91 SCH XXS.. Contractor to consider this aspect while quoting Form 101-401 (Two Pages)

53.5.0 CABLE LAYING

a) Laying, dressing & clamping (by Nylon / PVC ties or Aluminum strips or any other method specified by BHEL Engineer) of the cables in the cable trays / angles. The cables shall be terminated in the enclosure through cable glands of appropriate size. The final dressing of all cables laid by the contractor and in all cable trays erected by the contractor shall also be done with Nylon Cord / Aluminum strip. Cost of cable laying as per Bill of Quantities Cum Rate Schedule shall include the cost of Nylon / PVC ties & Aluminum strip required for dressing / clamping.

The cables shall be laid in the cable trays and the route as given in the cable schedule. The contractor shall intimate the engineer in charge whenever the cable tray is filled. Extra cables if laid by the contractor due to mistake ,the same shall be removed at no extra cost to BHEL.

b) The cable run number shall be provided by punching Aluminum Tag plates and tying suitably with nylon ties (at both ends and **at regular intervals of 5 meters or** as advised by BHEL Engineer) which shall be arranged by contractor at his cost.

c) While laying cables, existing cable tray covers and false flooring may required to be removed and re-fixed. The same has to be done within the quoted rates & at no extra cost to BHEL .

d) The screen of signal cables shall be run in insulated sleeve (of approved quality to be provided by the Contractor) and shall be terminated as per the instruction of the BHEL Engineer .

e) UTP Cabling : UTP cables are to be laid through separate trays or metallic conduits (Flexible / rigid as the case may be) with complete sealing against exposure to rat bite. 10 mm ferrule sleeve to be supplied by the contractor for Printed ferruling of both ends of the UTP. Metallic tags shall not be permitted for UTP cables inside the panels.

f) Laying of Optical Fibre Cables : Laying and dressing of OFC for interconnection of various systems within the power plant area shall be the scope of the contractor. Cable termination will be carried out by other agencies/ cable supplier. However man power assistance for termination, Fiber testing and cable jointing shall be provided by the contractor The cables shall be laid through cable trays, flexible / rigid conduits or directly buried in trenches as required by the locations/ Site conditions.

The civil works including excavation, covering with bricks, road cutting etc shall be carried out by the contractor. After cable laying the excavated area / roads shall be refilled and restored by the contractor. Supply of all materials for civil works like bricks,sand,cable route markers ,preparation of pits etc shall be carried out by the contractor including within the quoted rate.

The approval of customer's field quality department /engineer may be required .The same shall be carried out by the contractor at no extra cost to BHEL.

g) The Bidder shall carry out the civil works including supply of materials as detailed above for directly buried **Instrumentation cables** also.

h) MEASUREMENT OF INSTRUMENTATION CABLES

The methodology for measurement of instrumentation cables laid by the contractor shall be as under.

i)The lengths shall be measured from terminal to terminal plus height plus depth of the panels. Only one left over cut length of cable from each cable drum shall be acceptable.

ii) The contractor shall hand over cut length of cable from each cable drum and cut pieces / scraps to the employers stores or any place identified by the employer.

iii) The bidder shall keep a proper record drum wise and submit to engineer in charge periodically the details of cables laid. Separate records shall be kept for NTPC supplied cables and BHEL supplied cables.

The scope of work shall also include the following within the quoted item rates

Re-rolling of cables on drums as required by site engineer.

Return of cut pieces & scrap cables to the scrap yard / NTPC stores as directed by engineer in charge.

53.5.1 CABLE TERMINATION

- a) For Cables, the Cost Of Cable Laying as Per Bill of Quantities Cum Rate Schedule shall also include the cost of Termination with Suitable Crimping Type Lugs and Ferrules. Only cable glands shall be Issued by BHEL. Drilling of holes in gland plates of HT / LT switchgear, control panels, JB's etc as per the requirement shall also be part of cabling at no extra cost to BHEL.
- b) The contractor shall carryout insulation testing, simulation testing etc. as per the instructions of Engineer at site.
- c) Screen of signal cables shall run in insulated sleeve (to be arranged by contractor at no extra cost) and shall be terminated as per the instructions of the BHEL Engineer.

53.6 JUNCTION BOX AND POWER DISTRIBUTION BOARDS

Includes assembly / fabrication, welding of semi-prefabricated limbs of the racks / cable ducts / other related supporting structural parts, chipping of floor and grouting etc. drilling of bottom gland plates for cable entry and earthing with earth pads. For fabrication of steel items Hacksaw cutting or shearing by machine only is permitted.

53.7 RIGID PIPE/CONDUITS / Air line pipe

Cutting / threading of standard lengths of conduits, laying on fabricated supports or on floor, using screwed fittings, clamping, sealing of open ends. Approved Good quality sealant shall be supplied by the Contractor to make the joint water proof.

(M) METALIC FLEXIBLE CONDUIT / RIGID CONDUIT : Conduits shall be used for interconnecting cables from field instruments to local JBs and for UTP cables, as per the instruction of BHEL Engineer with suitable connectors / unions bends etc. . (which shall be supplied by BHEL).

Suitable thread sealing compound shall be used to make the conduit system water proof. Aluminum painting, clamping and tagging in tray / angle forms part of erection job.

53.8 COMPUTER BASED EQUIPMENTS

All computer related items / equipment like Operator work station, Engineering station LVS controller, TSI ,Hart, Vibration system ,PADO etc comprising of CRT/ LCD/TFT monitors, printers, key boards, pre-fabricated connecting leads ,Mouse , UPS etc shall be installed in control room, control desk and off site locations as per direction of BHEL Engineer. Some of the individual UPS for PCs shall be supplied with external batteries and stands which are to be assembled erected at site within the quoted rates.

The Software installation and commissioning of Personal computers are not included in the scope of this contract. However, any assistance required for testing / commissioning have to be provided by the contractor within the quoted price. Hardware found defective during testing / commissioning and till handing over to Customer, have to be removed for repair / replacement and reinstalled within the quoted rates.

LVS Erection shall be carried out by the contractor under the supervision of the supplier's engineer. All care shall be taken while handling LVS packages as these items are fragile.

For all the computer furniture like PC racks, Control desks ,Computer tables and chairs etc the contractor shall assemble and place at the installation location. The supervision for assembly shall be carried out by the furniture supplier.

53.9 Conductivity type level switch :

Work includes fixing of stand pipe, installation of electrodes, local and remote indicator display units and interconnection shall be included in the quoted rate per the system.

53.10 MAINTENANCE AND CALIBRATION EQUIPMENTS :

Some of the laboratory equipments like Test benches, Dead weight tester, Test furnaces Jewelers' lathe, Precision radial drilling machines etc are to be assembled , positioned and erected at the Laboratory building or a place within the NTPC Dadri power plant campus. Making the necessary arrangements for Power supply and Instrument Air supply is in the contractors scope of work. Commissioning

assistance to be provided by the contractor for these items. Some of the laboratory items are to be handed over to the customer after demonstration. Bidder shall provide manpower assistance for the vendor's engineers during commissioning. Bidder to study the list of laboratory equipments carefully before quoting.

54.0 GENERAL

54.1 Any cutting of masonry work, which is necessary shall be done by the contractor at his own cost and shall be restored to match the original work. The Contractor shall obtain prior approval before cutting any masonry / concrete work.

54.2 Pipes sent in standard length shall be cut to suit the site conditions and the layouts. Tubes or pipes wherever deemed to be convenient will be sent in running lengths with sufficient bends.

54.3 Contractor shall fabricate and erect stands / supports for Junction boxes, push button stations, fixing of push button and plugging of holes in Junction boxes. All such fabrication work shall be paid under structural steel fabrication rates.

54.4 Calibration log-sheets / history cards of all the instruments, panels, drives, relay testing etc. under the scope shall be recorded and submitted on BHEL approved formats. Proper logging will form part of calibration / erection activity. Contractor shall provide assistance to BHEL for obtaining protocols / attestation by NTPC engineers.

54.5 DRIP SHIELDS shall be fabricated for all field mounted panels / instruments / instrument racks / JB Racks / control cabinets etc. The hardware / material shall be supplied by BHEL. The fabrication forms part of erection work under structural steel work.

54.6 The contractor shall use only SHEARING machine or HACKSAW for cutting angles, flats, channels and trays. No gas cutting is permitted. Drill machine shall be used for drilling holes.

54.7 The contractor should note that after execution of work they will hand over marked up cable Inter connection schedule, signal flow diagram and calibration data sheet, "as erected" drawings to BHEL Engineer at site for preparation of firm "as built" drawings. "As erected" drawings will bear the signature of BHEL Engineer and contractor.

54.8 The contractor shall paint the name / put tag numbers on all the equipment /instruments / cables etc. erected by him. Materials for tagging shall be supplied by contractor at his cost. The adhesive etc. shall be arranged by contractor at his cost.

54.9 The Motors, power cylinders, control valve actuators, motorized valves actuators and solenoid valves will be erected by other agency. However their electrical and C&I commissioning is to be carried out by the agency within the subject scope of work. The staff earmarked for commissioning will carry out the work in association and guidance of BHEL Engineer as a part of system commissioning for which no extra cost will be paid by BHEL.

54.10 Certain instrumentation like gauges, transmitters, switches and indicators are received in assembled condition and will be erected along with main equipment by other agency. Contractor for subject work will get these equipment dismantled for calibration and will reinstall them in original location as and when directed by BHEL. Payment for above work shall be released as per respective items indicated in the price bid

55.0 TESTING PRE-COMMISSIONING, COMMISSIONING AND POST-COMMISSIONING.

55.1 Site testing shall be required for all equipment installed by the contractor to ensure proper installation, setting, connection and functioning in accordance with drawings, specifications and manufacturer's recommendations.

55.2 Commissioning protocols are to be prepared as advised by BHEL Engineer .

55.3 Testing, and pre-commissioning checks shall be as per relevant codes / practices and BHEL drawings / specifications/ approved commissioning Protocols and same shall include, but not be limited to the following :

55.4. BATTERY AND BATTERY CHARGER

- (a) Checking of battery charger panel.
- (b) Calibration of all indicating and measuring instruments.
- (c) Dummy load test of battery charger.
- (d) Charging of battery and recharging after carrying out battery discharge test/ capability test of battery using dummy load.
- (e) In the absence of regular power supply to battery chargers arrangements are to made for battery charging from temporary construction power supply points.

55.5 Contractor shall carry out air leak test, pressure drop test for pneumatic tubes, impulse and air lines to the satisfaction of BHEL's Engineer as per test procedures of manufacturing units or advised by BHEL Engineer. All impulse pipes of water and steam circuits shall be hydraulically tested for 1.5 times of working pressure.

55.6 In case any defect is noticed during tests, trial runs and commissioning such as loose components, undue noise or vibration, strain on connected equipment etc. the contractor shall immediately attend to these defects and take necessary corrective measures. If any readjustment and realignment are necessary, the same shall be done as per Engineer's instructions including repair, rectification and replacement work by the contractor at his cost. The parts to be replaced shall be provided by BHEL.

55.7 During this period, though the BHEL's / Client's staff will also be associated in the work, the contractor's responsibility will be to arrange for the complete requirement of supervision, labour, consumable, T&P and IMTEs required till such time the commissioned units are taken over by the BHEL's customer.

55.8 During the mile stone activities certain gauges, manometers and Temp elements have to be temporarily erected and commissioned. Contractor has to carry out this work. After completion of activities the temporary systems have to be removed and system restored. If this work is carried out as per the instruction of Engineer in charge, the manpower charges as applicable for extra work will be considered.

55.9 During erection of various equipment, prior to commissioning and after commissioning, protocols have to be made as per the instruction of engineer in charge.

The pre-commissioning activities will start with various trials, commissioning operations shall continue till units are handed over to customer. Simultaneous commissioning activities will be progress in various areas, checking of equipment erected, making ready for trial runs, alkali flushing, chemical cleaning, mass flushing etc., all these works need specialized gangs including electricians / instrument technicians in each area to render assistance to BHEL commissioning staff. (refer clause 52.0) Contractor shall earmark separate manpower for various commissioning activities. The manpower shall not be disturbed or diverted.

55.10 In case, any rework is required because of contractor's faulty erection which is noticed during commissioning, the same has to be rectified by the contractor at his own cost. If any equipment / part is required to be inspected during commissioning, the contractor will dismantle / open up the equipment / part and reassemble/redo the work without any extra claim.

55.11 During commissioning, opening and closing of valves, attending to leakage, changing of gaskets, modifications in wiring, realigning of equipment, recalibration of instrument, attending to leakage, minor adjustments of erected equipment may arise. The accepted rates shall include all such works.

56.0 PAINTING

56.1 All structural fabrication work ,impulse lines are to be painted with primer & finish paint. For panels, touch up painting by spraying is to be arranged by contractor at his cost.

56.2 All surfaces are to be thoroughly cleaned and to be touch up painted with suitable approved primer and finish paint matching with approved final color. Besides above two coats of approved primer paint , two coats of approved finish painting is to be done by the contractor to get the desired dry film thickness. **All paints, tools and other consumables including scaffolding materials required for painting shall be arranged and provided by contractor within the quoted rates.** Paint and other materials so purchased shall be ISI marked and painting should be as per colour scheme and quality approved / specified by Engineer in charge. The contractor shall provide legend on equipment in size specified by Engineer. Letter writing shall be done in Hindi / English or in both language. The painters have to under go test and only qualified painters will be allowed to work. Paint thickness shall be as per NTPC requirement i.e 100 microns minimum.

57.0 SITE OFFICE CUM STORES OF CONTRACTOR

BHEL/NTPC shall provide limited open space for contractor's site office & Contractor's Stores It is the responsibility of the contractor to construct sheds, provide all utilities like electricity, drinking water etc. He is to dismantle and clear the site after completion of work or as and when required.

For labour colony, open space **if available** will be provided.

57.1 **Quarters / residential accommodation will not be provided.** 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.

57.2 The contractor shall submit to the Engineer his electrical power requirements. Construction power shall be provided free of charge at one point. Contractor at his cost shall do further distribution. The approx distance from main power DB to erection point is approx 500 M .(Please refer clause 37.3) Electricity for labour colony(if provided) will be supplied at one single point on chargeable basis at the rate as fixed by BHEL's Customer. (For this the energy meter has to be arranged by the Contractor as per the approved makes) Contractor at his cost shall do further distribution.

All wiring must comply with local regulations and will be subject to Engineer's inspection and approval before connecting supply.

57.3 Water for construction purposes shall be provided free of charge at a one point. Contractor shall arrange further distribution of water for construction purposes.

NOTE:

Though BHEL is getting the construction power and water on free of charge basis from the customer. the contractor shall ensure that there is no wastage. The contractor may have to install a meter for this purpose . Periodical audits will be held to ensure that these resources are being optimally used.

In case any wastage is observed BHEL reserves the right to recover any charges / penalty as deemed fit to be decided by BHEL engineer

Contractor will have to provide insulated cables for power distribution and jointing (if any) will have to be done with proper jointing kits .

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

57.5 Following points should be strictly adhered to by the contractor while drawing construction power supply from Distribution Board.

- (a) All electrical installations should be as per Indian Electricity rules.
- (b) All distribution Boards installed by the contractor should be constructed with fire proof materials viz. steel frames, bakelite sheets etc.
- (c) Connection for single phase should be taken from phase and neutral. No where the connection should be taken with earth as neutral.
- (d) 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.
- (e) Contractor have to make their own earthing arrangement for their equipment / DB earthing. Earthing connection have to be done with copper conductor and copper / brass clamps with BHEL's prior permission.

- (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.
- (i) For permission of supply connections contractor has to submit a test report of their installations with a single line diagram of connected / proposed loads. Contractor will submit a report on all electrical connected load by the 7th every month.
- (j) ELCB will be tested once in a week or as deemed fit by BHEL Engineer by actually simulating the earth leakage for all installations and the same shall be recorded by BHEL Engineer in the log book to be maintained by the contractor.
- (k) 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.
- (l) Adequate lighting facilities such as flood lights, hand lamps and area lighting shall be arranged by the contractor at the site of construction, especially in cable gallery and offsite locations, contractor’s material storage area etc.

57.6 On completion of work or as and when required by BHEL, all the temporary buildings, structures, pipe lines, cables, cable sleeves etc. shall be dismantled and levelled and debris shall be removed as per instruction of BHEL by the contractor at his cost.

In the event of his failure to do so, same will be got done by the Engineer and expenses incurred shall be recovered from the contractor along with prevailing overhead. The decision of BHEL Engineer in this regard shall be final.

58.0 TIME SCHEDULE

58.1 The contractor is required to commence the work within 15 days from the date of issue of letter of intent unless BHEL decides to fix any other later date. However, the actual date of start of work , to fix up zero date of the contract , will be certified by BHEL Engineer after adequate mobilisation of manpower and T&Ps by the contractor.

58.2 Entire work as detailed in the tender specifications shall be completed within 18 months from the date of start of erection (Zero date) to achieve various milestones as under:

MILESTONES MONTHS

Months

- Note:**

Contractor has to mobilize additional resources including manpower to achieve above schedule for which no compensation will be payable. 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.

59.0 OVER RUN CHARGES (ORC)

59.1 In case due to reasons not attributable to the contractor, the work gets delayed and scheduled completion gets extended, the contractor shall not be entitled for any over run compensation for a period of first 2 (TWO) months after the contractual completion date. In case the scheduled completion time gets extended beyond 2 (TWO) months as stated above, the contractor shall be considered for payment of **fixed Over Run Charges from the third month onwards @ Rs 60000/= (Rupees Sixty thousand only) per month** on receipt of advance notice intending to claim over run & 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 of Section - I General Terms and Conditions.
- b) The targets fixed during the over run period are achieved by contractor.

59.2 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.

59.3 The contractor shall maintain sufficient workforce and other resources required for completion of the job expeditiously for the entire contractual period including total extended period.

60.0 TERMS OF PAYMENT

60.1 The **Engineer in charge** will certify the actual work executed in the measurement books and bills, which shall be accepted by the contractor in measurement book.

60.2 Contractor shall submit bills for the work completed under the specification, once in a month (for the period 25th to 24th of calendar month) preferably in the last week, detailing work done during the previous month. The format for billing shall be approved by BHEL SITE ENGINEER before raising invoices.

All payments shall be released from BHEL Bangalore. The process of certification at site and forwarding the bill to Bangalore and dispatch of payment to contractor is expected to take 4 to 6 weeks. Contractor is advised to take note of this and ensure labour payments in time (by 10th of every month) without fail. Non - receipt of payment / delay in getting payment from BHEL can not be the reason for contractor to delay in making payment of wages to workers.

The contractor has to submit his running bills in printed format with serial numbers and mentioning the registration numbers for service tax, TIN, sales tax etc .

60.3 Subject to any deduction which BHEL may be authorized to make under the contract, the contractor on the certificate of the **Engineer in charge** at site be entitled for payment as explained hereunder:

For Equipment erection and commissioning :

(A) For Equipment Erection 70 % of item rate shall be payable on pro rata basis on erection of equipment as certified by **Engineer in charge**. The following shall be furnished along with the bill.

- Protocols for erection completion and calibration records duly signed by BHEL Engineer is to be furnished along with the monthly Bill.
- Material receipt details with RIV copy
- Wage sheet of the previous month along with Provident fund deposit challan

(B) 10 % of the item rate value shall be payable on pro rata basis on completion of pre commissioning checks of equipment as certified by **Engineer in charge**.

(C) 10 % of the item rate value shall be payable on pro rata basis on commissioning of equipment as certified by **Engineer in charge**.

(D) 5 % of the item rate value of work on completion of TRIAL OPERATION of the unit as certified by Engineer in charge

(E) Last 5 % of the item rate value of work on completion of all pending works, reworks, material reconciliation, area cleaning and fulfillment of contractual obligations and on submission and passing of Final bill certified by **Engineer in charge**

The bills with all enclosures shall be submitted in quadruplicate and made separately for Unit 5 & Unit 6. The checklist is to be submitted as per Annexure VII. Attendance certification by BHEL Site in charge is to be furnished for manpower provided under free of cost basis along with each RAB.

The payment for the First running bill will be released only after production of copies of following certificates

- PF Registration /membership certificate
- Labour Licence (Form V till licence is obtained)
- Workmen COMPENSATION Insurance policy

For the manpower supply to BHEL (Sr.No.213 to 215 of rate schedule) the payment shall be as follows.

90% against monthly bills (as A above) along with attendance certification of Engineer in charge.

Balance 10% along with final bill as indicated in E above.

Annexure-I

LIST OF T&Ps AND IMTES REQUIRED FOR WORK

SL No.	EQUIPMENT	QTY	Remarks
A:	T & Ps		
1.	Crane- 8/10 T	1 No.	Can be arranged locally as per requirement
2.	EOT crane (125 T) in TG hall	1 No	See Note 2 below

NOTES: 1. In addition to above any winch / special crane , is to be arranged by the contractor for erection work at his cost

2. EOT crane in TG Hall belongs to NTPC and will be issued on **chargeable basis** Contractor has to make arrangement of these equipment at his own cost.

BHEL EDN will coordinate for contractor in obtaining above equipment at site for C&I construction purpose.

Annexure-II

INDICATIVE LIST OF T & P TO BE ARRANGED BY THE CONTRACTOR

1.	Pull Lifts & Ratchet hoist	Adequate Nos.
2	5 / 10 T Chain Pulley blocks	2 nos each
3	Welding Transformers	8 nos.
4	Welding generators	4 Nos.
5	Gas cutting set	Adequate Nos.
6	Grinders	Adequate Nos.
7	Hydraulic Pipe Bending machine	4 No.
8	Pedestal mounted Drill Machine (up to 36 mm)	2 no.s
9	Hammer / Pistol Drill Machine	Adequate no .
10	Portable Compressor.	1 No
11	Hydraulic Test Pump (1 no. up to 600kg/cm2)	3 No.
12	Hand crimping tools	Adequate Nos.
13	Blower	1 No
14	Vacuum Cleaner	1 No
15	Electrician's standard tool kit	12 sets
16	Fitter's standard tool kit	10 sets
17	Hand pulling trailer	1 no.
18	Torches	5 no.s
19	Hot air blowers	1 no.
20	Tap set including M 33	1 set
21	Personal Computer with Printer	1 set
22	Ferrule Letter Printing Machine with cable schedule down loading facility from PC preferably LETATWIN make	2 nos
23	Fire extinguishers	4 no.s
24	Power hack saw / Angle cutting machine	1 no.
25	Electrode oven	1 No.
26	Electrode flask	3 no.s

NOTE:

1.The above list specifies only major T&Ps (may not be complete to be deployed by the contractor). All additional / other tools and plants in good and safe working conditions which are required for satisfactory & timely completion of work shall also be deployed by the contractor within finally accepted rates.

2. Other terms and conditions regarding above items please also refer clause 37 (T&Ps/IMTEs).

Annexure-III

Indicative list of IMTE to be arranged by the CONTRACTOR for C&I Calibration Laboratory to be set up by contractor at site.

S.N O	DESCRIPTION	RANGE	ACCURACY	QTY
1.0	Dead Weight Tester	600Kg/cm ²	LC- 0.5Kg/cm ²	1 Set
2.0	Comparator test set with sub standard pressure gauges	0-1 kg/cm ² 0-4 kg/cm ² 0-6 kg/cm ² 0 –10 kg/cm ² 0-25 kg/cm ² 0 –60 kg/cm ² 0-250 kg/cm ² 0-400 kg/cm ²	+/- 0.25%LC –0.2 kg/cm ² -----do----- -----do----- -----do----- +/- 0.25% LC –0.2 kg/cm ² +/- 0.25% LC –0.2 kg/cm ² +/- 0.25% LC –0.2 kg/cm ² +/- 0.25% LC –0.2 kg/cm ²	1 Set
3.0	Variable DC regulated supply	0 – 30 V DC	+/- 0.2%	1 No.
4.0	Oil bath with thermostat ,stirrer and sub standard glass Thermometers in multiple ranges	0- 300 deg C		1 Set
5.0	Glass U tube mercury manometer with standard steel scale having leveling arrangement	0-760 mm		1 no.
6.0	Glass U tube mercury manometer with standard steel scale having leveling arrangement	0-1000mm		1 no.
7.0	Inclined tube manometer	0-1000 mm		1 no.
8.0	mA /mV Source	0-200mA/ 0-200mV		2 no.s
9.0	Rheostat	100 ohm ,10A		3 no.s
10.0	Precision Digital mutimeters	4 1/2 Digits	0.2 % accuracy	2 no.s
11.0	Precision Digital mutimeters	3 1/2 Digits	1.0 % accuracy	2 no.s

Notes:

1. The above list of testing instruments/equipment required for testing / commissioning is only for guidance to contractor and not complete. Any other / additional testing instruments / equipment required for timely and satisfactory completion of job will also be arranged by contractor at his own cost.
2. Contractor must re-ascertain /recheck range and accuracy of each IMTE from BHEL Engineer well in advance before arranging calibration / deployment of IMTE's.
3. Other terms and conditions regarding above items shall be as per clause no. 37 (tools & plants / testing & measuring instruments)

Annexure-III A

Indicative list of IMTEs to be arranged by the CONTRACTOR for ELECTRICAL RELATED WORK

Sl. No.	EQUIPMENT	QTY
1.	500 V / 1000V, (Hand operated) Megger	2 No.
2.	Earth resistance measuring meter	1 no.
3.	3 1/2 Digital Multi meters	12 Nos
4.	4 1/2 Digital Multi meters	3 No.s
5	Analog multi meter	1 No
6	Inter com Sets for cable Checking	Adequate Nos
7	Decade resistance Box	1 no
8	Mobile set for communication	4 no.s
9	Continuity tester	6 no.s

Notes:

1. The above list of testing instruments / equipment required for testing / commissioning is only for guidance to contractor and not complete. Any other / additional testing instruments / equipment required for timely and satisfactory completion of job will also be arranged by contractor at his own cost.
2. Contractor must re-ascertain / recheck range and accuracy of each IMTE from BHEL Engineer well in advance before arranging calibration / deployment of IMTE's
3. Other terms and conditions regarding above items shall be as per clause no. 37 (Tools & plants / IMTEs).

ANNEXURE-IV

(To be submitted in Bidder's letter head)

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 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.

Bidder's Name and Address.

Place: (Signature of the Bidder With stamp)

Date:

ANNEXURE-V

NON DISCLOSURE AGREEMENT

(On Bidders letter head)

Memorandum of Understanding

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

M/s....., providing.....service to BHEL EDN Bangalore hereby undertake to comply with the following in line with Information Security Policy of BHEL EDN Bangalore

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 EDN Bangalore .

M/s. BHEL

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

ANNEXURE VI

NO DEVIATION CERTIFICATE

FORMAT OF UNDERTAKING

REF:

Date:

To
Bharat Heavy Electricals Limited
Electronics Division
26,Mysore Road
Bangalore 560 026

Sub: Receipt, Unloading, stacking at BHEL Stores/Open yard, shifting to place of installation, Erection, testing, and commissioning assistance of Station C&I equipment for 2x490 MW Unit-5 & 6 (Stage-II), National Capital Thermal Power Project (NCTPP) at Dadri ,Distt. Gautam Budh Nagar U.P of National Thermal Power Corporation Ltd.

TENDER No. CE:ES:DADRI:063:MSU

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 and 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 & 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 confirm 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 our offer in accordance with tender instructions.

Thanking you

Yours Faithfully

(Signature, date & seal of authorized

TENDER NO. CE:ES:DADRI:063:MSU

representative of the bidder)

ANNEXURE VII**CHECK LIST TO BE SUBMITTED ALONG WITH EVERY RA BILL**

NAME OF THE CONTRACTOR

RAB NO:

LOI NO & DATE

RAB DATE:

DESCRIPTION OF WORK

SL. NO.	PARTICULARS	YES	NO	REMARKS
1	ALL T&PS AND OTHER INSTRUMENTS REQUIRED AS PER CONTRACT HAVE BEEN DEPLOYED AT SITE AND ARE AVAILABLE IN GOOD WORKING CONDITION & UTILISATION REPORT HAS BEEN SUBMITTED.			
2	LABOUR LICENSE FOR THE WORKMEN ENGAGED AND IS VALID UPTO			
3	WCP POLICY FOR THE WORKMEN ENGAGED ARE AVAILABLE & VALID UPTO			
4	COPIES OF THE ABOVE HAVE BEEN SUBMITTED TO BHEL			
5	WORKERS WAGES FOR THE PREVIOUS MONTH HAVE BEEN DISBURSED AND PAID ACQUITTANCE ROLL SUBMITTED TO BHEL			
6	PF HAS BEEN DEDUCTED AS PER RULES AND PAID CHALLAN SUBMITTED TO BHEL			
7	PLEASE QUOTE YOUR PAN NO.			
8	PLEASE QUOTE YOUR SERVICE TAX REGN. NO.			
9	SERVICE TAX FOR THE PREVIOUS MONTH HAS BEEN REMITTED AND PROOF OF PAYMENT HAS BEEN ATTACHED WITH THE CURRENT BILL			
10	BANK GUARANTEE FOR SECURITY DEPOSIT/ADVANCE PAID ARE VALID UPTO			
11	PROOF OF SALES TAX REGISTRATION AND EXEMPTION ,IF ANY ,FOR NON DEDUCTION / SHORT DEDUCTION OF WCT HAS BEEN SUBMITTED TO BHEL			
12	PERIODICAL REPORTS AS PER CONTRACT HAS BEEN SUBMITTED			
13	"QUALITY ASSURANCE LOG SHEETS, PROTOCOLS & OTHER DOCUMENTS AS REQUIRED UNDER SECTION 8 OF THE CONTRACT HAS BEEN SUBMITTED AND NECESSARY APPROVAL OBTAINED.			
14	LOG SHEETS FOR EXTRA / ADDITIONAL WORK CARRIED OUT AS PER CONTRACT HAS BEEN SUBMITTED TO BHEL			

CONTRACTOR
DATE:
PLACE:

BHEL
DATE:

ANNEXURE VIII**Benefits to be considered for contract labour.**

The following components are to be taken into account in the estimate in addition to the minimum wages notified by the U P government from time to time.

SN	Components	Loading	Remarks
A	Labour License and other administrative charges	1%	
B	WC Insurance	2.14%	
C	EL	5%	Continuous service of 240 days
D	Retrenchment	4.67%	Continuous service of 240 days
E	National Holiday (NH)	3 Nos	26 th Jan, 15 th Aug & 2 nd Oct.
F	PF & Administrative charges	13.61%	
G	Bonus	8.33%	
H	Medical/Safety	2%	
I	T&P	2%	

Further, **payment through cheque to ensure disbursement of proper minimum wages to the contract labour.**

NTPC Limited
National Capital Power Station, Dadri
(Human Resources – Employee Relations group)

REF:08/HR-ER/2007

Date: October 15, 2007

CIRCULAR NO:02/2007

The D.A. Rates of workers employed in all registered factories have been revised by U.P. Government vide Notification No. 401/36-3-06-7(MW)/04 dated: February 24, 2006.

Accordingly, the minimum rates of wages under section 4 of Minimum wages Act, 1948 payable to adult workers in Uttar Pradesh for different classes of work on 593.5 points of All India Consumer Price index Number (1982=1900) vide letter No. 1730-50/ dated: 27.09.2007 shall be as detailed below:-

SN.	CATEGORY	MONTHLY WAGES (in Rs.)	PER DAY WAGE RATE (in Rs.)
1	UNSKILLED	2956.13	113.70
2	SEMI-SKILLED	3396.98	129.61
3	SKILLD	3740.64	143.87

The above rates shall be applicable w.e.f 01.10.2007 to 31.03.2008 for all above category of workers. However, minimum wages payable to Clerical Gr. I @ Rs. 3748096 per month and Rs. 144.19 per day shall continue till the wages or Clerical Grade I equates with the skilled category.

(A.K VERMA)
DY. MANAGER (HR-ER)

Distribution :

1. All HODS
2. All Engineers Incharge
3. ES to GM
4. Subject file
5. Circular file
6. All notice boards.

FORM XIX

[See Rule 78 (2) (b)]

WAGE SLIP

Name and address of contractor	Name & Father,s/Husband,s Name of the workman
Name and location of work	For the week/Fortnight/ Month ending

1.	No. of days worked	
2.	No. of units in case of piece-rate workers	
3.	Rate of daily wages/piece-rate	
4.	Amount of overtime wages	
5.	Gross wages payable	
6.	Deduction, if any (PF 12%)	
7.	Net amount of wages paid	

(Initials of the contractor or his representative)

FORM XIV**(See Rule 76)****EMPLOYMENT CARD**

Name and address of contractor	Name & Address of establishment in/under which contract is carried on
Name of work and location of work	Name & Address of Principal Employer

1.	Name of workman	
2.	Serial No. in the register of workman employed	
3.	Nature of employment / Designation	
4.	Wage rate with particulars of unit, in case of piece work	
5.	Wage period	
6.	Tenure of employment	
7.	Remarks	

(Signature of contractor)

ANNEXURE-IX

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 bidder 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. Bidders have to fax the Compliance form in the prescribed format (provided by Service provider) before start of Reverse Auction. Without this, the Bidder 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 “the total contract value (Tentative)based on rate schedule /BOQ.”It may be noted that sealed price bid of L1 bidder will be opened by BHEL after reverse auction so as to apportion the difference between initial price & final price proportionately on all the items of the rate schedule.**
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 Bidder 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 bidder 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.

ANNEXURE-IX A**Authorisation of representative who will participate in the on line Reverse Auction Process:**

1	NAME & 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, WHERE FROM SHE / HE WILL PARTICIPATE IN THE REVERSE AUCTION	

SECTION- I

GENERAL INSTRUCTIONS TO TENDERERS

1 This tender specification as a whole, furnishing all the details and other documents as required in the following pages, shall be duly signed and sent in a sealed cover (IN DUPLICATE) super-scribing the name of work, tender enquiry number as given in the tender notice.

2 The tender shall be addressed to : OFFICER INVITING TENDER AS INDICATED IN THE TENDER NOTICE.

3. Tenders submitted by post shall be sent as "**REGISTERED/ SPEED/ COURIER POST**" and shall be posted with due allowance for any postal delay. The tenders received after the due date and time of opening are liable to be rejected. Offers received by Telegram/telex/ Fax/ E-mail/ Internet may be considered as per terms of NIT.

4 Tenders shall be opened at the time and date as specified in the tender notice in the presence of such of those tenderers or their authorised representatives who may be present.

5 The tenderers shall closely peruse all the clauses, specifications and drawings indicated in the Tender Documents before quoting. Should the tenderer have any doubt about the meaning of any portion of the Tender Specifications or find discrepancies / omission in the Drawings or the tender documents issued are incomplete or shall require clarification on any of the technical aspect, scope of work etc., he shall at once contact the authority inviting the tender for clarification before the submission of the tender.

6 Before tendering, the tenderers are advised to inspect the site of work and the environments and be acquainted with the actual working and other prevalent conditions, facilities available, position of material and labour. No claim will be entertained later on grounds of lack of knowledge.

7 Tenderer must fill up all the schedules and furnish all the required information as per the instructions given in various sections of the tender specification. Each and every page of the Tender Specification must be SIGNED, STAMPED AND SUBMITTED ALONG WITH THE OFFER by the Tenderer in token of complete acceptance thereof. The information furnished shall be complete by itself.

8 The tenderer shall quote the rates in English Language and international numerals. These rates shall be entered in figures as well as in words. In case of difference in rates between words and figures THE LESSER OF THE TWO will be treated as valid rate. For the purpose of tender, the metric system of units shall be used.

9 All entries in the tender shall either be typed or be written in ink. Erasure and over writings

are not permitted and may render such tenders liable to summary rejection. All cancellations and insertions shall be duly attested by the tenderer.

10 QUALIFICATIONS OF TENDERERS : Only tenderers who have previous experience in the work of this nature and description detailed in this tender specification are expected to quote for this work. Offers from tenderers who do not have proven and established experience in the field are not likely to be considered.

11 DATA TO BE ENCLOSED : Full information shall be given by the tenderer in respect of the following. Non submission of these information may lead to rejection of the offer.

11.1 FINANCIAL STATUS : Financial viability as per proforma enclosed at ANNEXURE-`A'

11.2 INCOME TAX CLEARANCE CERTIFICATE: A certificate of Income tax clearance from the appropriate authority in the forms prescribed thereof duly indicating annual turnover. These certificates shall be valid for one year from the date of issue or for the period prescribed therein for all tenders submitted during the period. This is to be submitted on demand from BHEL.

11.3 PREVIOUS EXPERIENCE: A certificate giving details particulars (giving documentary evidence) of the various service rendered in progress for each similar works by the tenderer indicating the particulars and value of each work, the site location, the duration, date of completion etc., strictly as per pro forma enclosed at ANNEXURE-B.

11.4 :ORGANISATION CHART :The organization pattern that are totally available with him and that will be employed by the tenderer for this work in the form of month wise and category wise deployment plan duly indicating the number of Engineers, Supervisors, skilled and unskilled workers etc., as per proforma enclosed at ANNEXURE-`C'.

11.5 In case of an Individual : His Full name experience ,address and nature of business
OR

IN CASE OF PARTNERSHIP FIRMS : The names of all the partners with addresses and their experience. A copy of the partnership deed/ instrument of Partnership duly certified by a Notary Public shall be enclosed.

OR

IN CASE OF COMPANIES : Date and place of registration including date of commencement certificate in case of public companies and the nature of business carried or by the Company. Certified copies of memorandum and Articles of Association are also to be furnished. Also indicate names, addresses and experience of the Directors.

11.7 A list of tools and tackles (including cranes, tractor-trailers, winches, Derricks, welding sets etc., wherever applicable) that the tenderer is having and those that will be deployed on this job as per proforma enclosed at ANNEXURE-`D'.

11.8 Analysis of unit rate quoted as per proforma enclosed at ANNEXURE-`E'.

11.9 Declaration sheet as per Proforma enclosed at ANNEXURE-`F'.

11.10 In addition to the above, the particulars required elsewhere in tender documents.

11.11 Checklist and schedule of general particulars duly filled in, signed and stamped as per ANNEXURE-`G'.

NOTE : In terms of clauses 11.1 to 11.11 above, all the data required to be enclosed with the tender need to be furnished neatly typed, signed and stamped in the given formats only (in the form of separate sheets) failing which the tender may be considered as incomplete and is liable for rejection. Documentary proofs wherever necessary also need to be enclosed.

12 EARNEST MONEY DEPOSIT : Every tender must be accompanied by the prescribed amount of Earnest Money Deposit in any one of the following forms.

NOTE : Bank Guarantee, Cheques, Currency Notes, Money Orders or Postal Orders will not be accepted.

12.1 Cash(As permissible under Income Tax Act) : The amount should be remitted by the party to the Cashier of Bharat Heavy Electricals Limited and cash receipt issued by him shall be enclosed along with the tender.

12.2 Pay Order or Demand Draft in favour of Bharat Heavy Electricals Limited, Bangalore .

12.3 Tenders received without Earnest Money in full in the manner prescribed above will not be considered.

12.4 The Earnest Money Deposit of the successful tenderer will be retained towards part of Security Deposit.

12.5 In the case of unsuccessful tenderers, the Earnest Money will be refunded normally within fifteen days of acceptance of award of work by the successful tenderer.

12.6 BHEL reserves the right of forfeiture of Earnest Money deposit in case the successful tenderer,

(a). After opening of Tender, revokes his tender within the validity period or increases his earlier quoted rates.

(b) Does not commence the work within the period as per LOI/Contract. In case the LOI/Contract is silent in this regard then within 15 days after award of contract.

12.7 EMD shall not carry any interest.

12.8 Tenderers, who so ever desires, may deposit one time Earnest Money Deposit of Rs. 2,00,000/- in cash(As permissible under Income Tax Act) /DD/pay order only with the cashier of BHEL. Tenderers who furnish one time EMD as above, will not be required to furnish EMD time and again alongwith their tenders submitted to BHEL/ Bangalore .

However they will be required to indicate the cash receipt No. and date of one time EMD in all their tenders.

13AUTHORISATION AND ATTESTATION : Tenders shall be signed by persons duly authorised / empowered to do so. Certified copies of such authority and relevant documents shall be submitted alongwith the tenders.

14 VALIDITY OF OFFER : THE OFFER SHALL BE KEPT OPEN FOR ACCEPTANCE FOR A MINIMUM PERIOD OF THREE MONTHS FROM THE DATE OF OPENING OF TENDERS. In case Bharat Heavy Electricals Limited calls for negotiations, such negotiations shall not amount to cancellation or withdrawal of the original offer which shall be binding on the tenderers.

15 EXECUTION OF CONTRACT :The successful tenderer's responsibility under this contract commences from the date of issue of the Letter of Intent by Bharat Heavy Electricals Limited. The successful tenderer shall be required to execute an agreement in the prescribed form as per ANNEXURE-'I' with the BHEL within a reasonable time after the acceptance of his tender and in any case before submitting the first bill for payment.

16 SECURITY DEPOSIT : Upon acceptance of tender, the successful tenderer must deposit the required amount of security deposit within the time specified in the Letter of Intent for satisfactory completion of work.

16.1 The total amount of Security Deposit shall be as follows :

a) In case of work costing upto 10 lakhs : 10% of the contract value.

(b). In case of work costing above Rs 10 lakhs and upto Rs 50 lakhs : 1 Lakh +7.5 % of the amount exceeding Rs. 10 Lakhs

(c) In case of work costing more than Rs 50 lakhs : 4 Lakhs + 5 % of the amount exceeding Rs. 50 Lakhs.

16.2 The Security Deposit will be deposited within 15 days from the date of issue of Letter of Intent but before start of work in any one of the following forms :-

(a) The total Security Deposit as indicated in the Letter of Intent in cash (As permissible under Income Tax Act).

(b) Pay Order, Demand Draft in favour of BHEL.

(c) Local cheques of scheduled banks, subject to realization.

d) Securities available from Post Offices such as National Savings Certificates, Kisan Vikas Patras etc. (Certificates should be held in the name of Contractor furnishing the security and duly pledged in favour of BHEL and discharged on the back).

e) Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the Companies Act subject to a maximum of 50% of the total security deposit value. The balance

50% has to be remitted either by cash or in the other form of security. The Bank Guarantee format should have the approval of BHEL.

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

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

h) EMD of the successful tenderer shall be converted and adjusted against the security deposit.

16.3 The security deposit shall not carry any interest.

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

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

16.5 The validity of the Bank Guarantee furnished towards Security Deposit under (e) above shall be upto the period of completion of work as stipulated in the Letter of Intent + 1 month and the same will be kept valid by proper renewal till the satisfactory completion of the Guarantee Period.

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

16.7 Failure to deposit the Security Deposit within the stipulated time, may lead to forfeiture of Earnest Money Deposit and Cancellation of the award of work.

16.8 If any part of Security Deposit of the Contractor is held in the form of approved securities, it shall be kept transferred in the name of Bharat Heavy Electricals Limited, in such a manner that the same can be realised fully without referring to the Contractor. BHEL shall not be responsible for any depreciation in the value of the Security while in BHEL's custody or for any loss of interest thereon.

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

16.10 RETURN OF SECURITY DEPOSIT : If the contractor fully performs and completes the work in all respects to the entire satisfaction of BHEL and presents an absolute "No Demand Certificate" in the prescribed form and returns properties belonging to BHEL taken, borrowed or hired by him for carrying out the said works, half the amount of Security Deposit will be released to the contractor after deducting all costs, expenses and other amounts that are to be paid to BHEL under this or other contracts entered into with the Contractor.

It may be noted that in no case the Security Deposit shall be refunded / released prior to passing of final bill. Balance half of the amount of Security Deposit will be released only after the guarantee period is over.

NOTE : All the BGs are to be submitted as per BHEL proforma.

17 No interest shall be payable by BHEL on Earnest Money Deposit, Security Deposit or on any moneys due to the contractor.

18 REJECTION OF TENDER AND OTHER CONDITIONS :

18.1 The acceptance of Tender will rest with BHEL which does not bind itself to accept the lowest tender or any tender and reserves to itself full rights for the following without assigning any reasons whatsoever.

- (a) To reject any or all of the tenders.
- (b) To split up the work amongst two or more Tenderers.
- (c) To award the work in part.
- (d) In either of the contingencies stated in (b) and (c) above to modify the time for completion Suitably.

18.2 Conditional and un-witnessed tenders, tenders containing absurd or unworkable rates and amounts, tenders which are incomplete or otherwise considered defective and tenders not in accordance with the tender conditions, specifications, etc., are liable to be rejected.

18.3 If a tenderer expires after the submission of his tender or after the acceptance of his tender, BHEL may at its discretion, cancel such tender. If a partner of a firm expires after the submission of the tender or after the acceptance of the tender, BHEL may cancel such tender at its discretion unless the firm retains its character.

18.4 BHEL will not be bound by any Power of Attorney granted by the tenderer or by changes in the composition of the firm made subsequent to the execution of the contract. BHEL may, however, recognise such Power of Attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the contractor concerned.

18.5 If the tenderer deliberately gives wrong information in his tender, BHEL reserves the

right to reject such tender at any stage or to cancel the contract, if awarded and forfeit the Earnest Money/ Security Deposit/ any other moneys due.

18.6 Canvassing in any form in connection with the tender is strictly prohibited and the tenders submitted by the contractor who resorts to canvassing are liable to be rejected.

18.7 Should a tenderer or contractor or in the case of a firm or Company of contractors/ one or more of its Partners/ share holders / Directors have a relation or relations employed in BHEL, the authority inviting tender shall be informed to the fact alongwith the offer, failing this BHEL may, at its sole discretion reject the tender or cancel the contract and forfeit the Earnest Money/ Security Deposit

18.8 The **successful tenderer should not sub-contract** the part or complete work detailed in the tender specification without written permission from BHEL. The tenderer is solely responsible to BHEL for the work awarded to him.

18.9 **NO DEVIATIONS** to the tender conditions will normally be accepted. However, if the tenderer insists for certain deviations to the conditions, financial implication thereof shall be loaded to the quoted price for evaluating the tenderer's offer.

XXXXXXXX

SECTION - II GENERAL TERMS AND CONDITIONS

19.0 The following terms and expressions shall have the meaning hereby assigned to them except where the context otherwise requires.

19.1 BHEL (or B.H.E.Ltd.) shall mean Bharat Heavy Electricals Limited, a Company registered under the Indian Companies Act, 1956, with its Registered Office at BHEL HOUSE, SIRI FORT, NEW DELHI-110049 or its authorised officers or its Engineer or other employees authorised to deal with any matters with which these persons are concerned, on its behalf.

19.2 'GENERAL MANAGER' shall mean the Officer in Administrative charge of the contracting Unit of BHEL.

19.3 'ENGINEER' or 'ENGINEER-IN-CHARGE' shall mean Engineer deputed by BHEL. The terms includes Deputy General Manager, Construction Manager, Resident Manager, Site Engineer, Resident Engineer and Assistant Site Engineer of BHEL at the site as well as the officers in charge at BHEL Bangalore.

19.4 'SITE' shall mean the place or places at which the plants/ equipment are to be erected and services are to be performed as per the specifications of this Tender.

19.5 'CLIENTS OF BHEL' or 'CUSTOMER' shall mean the project authorities to whom BHEL is supplying the equipment.

19.6 'CONTRACTOR' shall mean the individual, firm or company who enters into contract with BHEL and shall include their executors, administrators, successors and permitted assigns.

19.7 'CONTRACT' or 'CONTRACT DOCUMENT' shall mean and include the agreement, the work order, the accepted appendices of rates, Schedules 8 of Quantities, if any, General Conditions of Contract, Special Conditions of Contract, Instructions to Tenderers, the drawings, the technical specifications, the special specifications, if any, the tender documents and the Letter of Intent/

Acceptance letter issued by BHEL. Any conditions or terms stipulated by the tenderer in the tender documents or subsequent letters shall not form part of the Contract unless specifically accepted in writing by BHEL in the Letter of Intent and incorporated in the Agreement.

19.8 **`GENERAL CONDITIONS OF CONTRACT'** shall mean the `Instructions to Tenderers' and `General Conditions of Contract' pertaining to the work detailed.

19.9 **`TENDER SPECIFICATIONS'** shall mean the Special Conditions, Technical Specifications, appendices, Site information and drawings pertaining to the work for which the tenderers are required to submit their offer. Individual Specifications Number will be assigned to each tender specifications.

19.10 **`TENDER DOCUMENTS'** shall mean the General Conditions of Contract (19.8) and Tender Specifications (19.9).

19.11 **`LETTER OF INTENT'** shall mean the intimation by a letter / telegram / telex / fax to the tenderer that the tender has been accepted in accordance with provisions contained in the letter. The responsibility of the contractor commences from the date of issue of this letter and all the terms and conditions of contract are applicable from this date.

19.12 **`COMPLETION TIME'** shall mean the period by date specified in the Letter of Intent or date mutually agreed upon for handing over the erected equipment/ plant which are found acceptable by the Engineer being of required standard and conforming to the specifications of the Contract.

19.13 **`PLANT'** shall mean and connote the entire assembly of the plant and equipment covered by the Contract.

19.14 **`EQUIPMENT'** shall mean all equipment, machineries, materials, structurals, electricals and other components of the plant covered by the Contract.

19.15 **`TESTS'** shall mean and include such test or tests to be carried out by the contractor as are prescribed in the Contract or considered necessary by BHEL in order to ascertain the quality, workmanship, performance and efficiency of the contracted work or part there of.

19.16 **`APPROVED', `DIRECTED' or `INSTRUCTED'** shall mean approved, directed or instructed by BHEL.

19.17 **`WORK' or `CONTRACT WORK'** shall mean and include supply of all categories of labour, specified consumables, tools and tackles required for 9 complete and satisfactory site transportation, handling, stacking, storing, erecting, testing and commissioning of the equipment to the entire satisfaction of BHEL.

19.18 **`SINGULAR' and `PLURAL' etc.** Words carrying singular number shall also include plural and vice versa where the context so requires. Words importing masculine gender shall be taken to include the feminine gender and words importing persons shall include any Company or association or Body of Individuals, whether incorporated or not.

19.19 **`HEADINGS'** The headings in these General Conditions are solely for the purpose of facilitating reference and shall not be deemed to be part thereof or be taken into consideration in the interpretation or construction thereof or the contract.

19.20 'MONTH' shall mean calendar month.

19.21 'WRITING' shall include any manuscript, type written or printed statement under the signature or seal as the case may be.

20 LAW GOVERNING THE CONTRACT AND COURT JURISDICTION:

The Contract shall be governed by the Law for the time being in force in the Republic of India. The Civil Court at Bangalore , having ordinary Original Civil Jurisdiction shall alone have exclusive jurisdiction in regard to all claims in respect of this Contract.

21 ISSUE OF NOTICE : The Contractor shall furnish to the Engineer, the name, designation and address of his authorised agent and all complaints, notices, communications and references shall be deemed to have been duly given to the Contractor, if delivered to the Contractor or his authorised agent or left at or posted to the address either of the contractor or his authorised agent and shall be deemed to have been so given in the case of posting on the day on which they would have reached such address in the ordinary course of post or at which they were so delivered or left.

22 USE OF LAND : No land belonging to BHEL or its customer under temporary possession of BHEL shall be occupied by the Contractor without the written permission of BHEL.

23 COMMENCEMENT AND COMPLETION OF WORK :

23.1 The contractor shall commence the work within the time indicated in the Letter of Intent and shall proceed with the same with due expedition without delay.

23.2 If the successful tenderer fails to commence the work within the stipulated time, BHEL, at its sole discretion, will have the right to cancel the contract. His Earnest Money and/ or Security Deposit will stand forfeited without any further reference to him without prejudice to any and all of BHEL's other rights and remedies in this regard.

23.3 All the works shall be carried out under the direction and to the satisfaction of BHEL.

23.4 The transported equipment, erected /constructed plant or work performed under the Contract, as the case may be, shall be taken over when it has been completed in all respects and/or satisfactorily put into operation at site.

24 MEASUREMENT OF WORK AND MODE OF PAYMENT

24.1 All payments due to the contractor shall be made by 'Account Payee' Cheques. / Demand draft (DD commissioin to contractors Account)/ EFT.

24.2 For progress/ running bill payments, the contractor shall present detailed measurement

sheets in Quaduplicate duly indicating all relevant details based on technical documents and connected drawings for the work done during the month/ period under different categories in line with terms of payment as per Letter of Intent. The basis of arriving at the quantities/ weights shall be the relevant documents and drawings released by BHEL. These measurement sheets shall be prepared jointly with Engineer and signed by both the parties.

24.3 These measurement sheets will be checked by the Engineer and quantities and percentages eligible for payment under different groups shall be decided by him. The abstract of quantities and percentages so arrived at based on the terms of payment shall be entered in the **Measurement Book and signed by both the parties.**

24.4 Based on the above quantities, contractor shall prepare the bills in the prescribed proforma and work out the financial value. These will be entered in the Measurement Book and signed by both the parties. Payment shall be made by BHEL after effecting the recoveries due from the contractor.

24.5 All recoveries due from the contractor for the month / period shall be effected in full from corresponding running bills unless specific approval from Competent authority is obtained to the contrary.

24.6 Measurement shall be restricted to that quantity for which it is required to ascertain the financial liability of BHEL under this contract.

24.7 Measurement shall be taken jointly by persons duly authorised by BHEL and the Contractor.

24.8 The Contractor shall bear the expenditure involved, if any, in making the measurements and testing of materials to be used/ used in the work. The Contractor shall, without extra cost to BHEL, provide all the assistance with appliances and other things necessary for measurement.

24.9 If, at any time due to any reason whatsoever, it becomes necessary to remeasure the work done, in full or in part, the expenses towards such remeasurement shall be borne by the Contractor.

24.10 Passing of bills covered by such measurements does not amount to acceptance by BHEL of the completion of the work measured. Any left out work has to be completed by the Contractor, as directed.

24.11 Final measurement bill shall be prepared in the proforma prescribed for the purpose, based on the certificate issued by the Engineer that the entire work as stipulated in the tender specifications has been completed in all respects to the entire satisfaction of BHEL. The Contractor shall give unqualified 'No Claim' and 'No Demand' certificates. All the tools and tackles loaned to him should be returned in condition satisfactory to BHEL. The abstract of final quantities and financial values shall also be entered in the Measurement Book and signed

by both the parties. The final bill shall be paid within a reasonable time after completion of the work.

25 RIGHTS OF BHEL

BHEL reserves to itself the following rights in respect of this contract without entitling the Contractor to any compensation.

25.1 To get the work done through another agency at the risk and cost of the contractor, in the event of poor progress or the contractor's inability to progress the work for completion as stipulated in the contract, poor quality of work, persistent disregard of instructions of BHEL, assignment, transfer, subletting of the contracted work without written permission of BHEL, non-fulfillment of any contractual obligations etc. and to claim / recover compensation for such losses from the contractor including BHEL's supervision charges and overheads from Security Deposit/ other dues.

25.2 To withdraw any portion of work and / or to restrict / alter quantum of work as indicated in the contract during the progress of work and get it done through another agency and/ or by the departmental labour to suit BHEL's commitments to its customer or in case BHEL decides to advance the completion due to other emergent reasons / BHEL's obligation to its customer.

25.3 To terminate the contract after due notice and forfeit the Security Deposit and recover the loss sustained in getting the balance work done through other agencies in addition to liquidated damages in the event of :

- (a) Contractor's continued poor progress.
- (b) Withdrawal from or abandonment of the work before completion of the work.
- (c) Corrupt act of the contractor.
- (d) Insolvency of the contractor.
- (e) Persistent disregard of the instructions of BHEL.
- (f) Assignment, transfer, subletting of the contract work without BHEL's written permission.
- (g) Non-fulfillment of any contractual obligations.

25.4 To recover any moneys due from the Contractor from out of any moneys due to the Contractor under this or any other Contract or from the Security Deposit.

25.5 To claim compensation for losses sustained including BHEL's supervision charges and overheads in case of termination of contract and to levy liquidated damages for delay in completion of work, at the rate of 1/2% of the contract value per week of delay or part thereof subject to a ceiling of 10% of the contract value.

25.6 To determine the Contract or to restrict the quantum of work and pay for the portion of work done in case BHEL's contract with its customer is terminated for any reason.

25.7 To effect recoveries from any amounts due to the contractor under this or any other contract or in any other form the moneys which BHEL is forced to pay to anybody due to contractor's failure to fulfil any of his obligations.

25.8 To restrict or increase the quantity and nature of work to suit site requirements, since the tender specification is based on preliminary documents and quantities furnished therein are indicative and approximate and the rates quoted shall not be subject to revision.

25.9 To deploy BHEL's skilled and semiskilled workmen in case of emergency / poor progress/ deficiency in skill on the part of the employees of the contractor and to recover the expenditure on account of the same from the moneys due to the contractor.

25.10 While every endeavor will be made by BHEL to this end, BHEL can not guarantee uninterrupted work due to conditions beyond its control. The Contractor will not be entitled to any compensation/ extra payment on this account.

25.11 In the event of any dispute of technical nature, the decision of BHEL shall be final and binding on the Contractor.

26 RESPONSIBILITIES OF CONTRACTOR IN RESPECT OF LOCAL LAWS, EMPLOYMENT OF WORKERS, ETC.

The following are the responsibilities of the Contractor in respect of observance of local laws, employment of personnel, payment of taxes etc.:

26.1 As far as possible, unskilled workers shall be engaged from the local areas in which the work is being executed.

26.2 The contractor at all times during the continuance of this contract, shall in all his dealings with the local labour for the time being employed on or in connection with the work, have due regard to all local festivals, religious and other customs. **The minimum wages ,Bonus payment ,Leave payment as per local procedures to be adopted strictly by the bidder.The P.F even for temporary labours to be paid strictly and document like payment voucher to be produced every month.**

26.3 The Contractor shall comply with all State and Central Laws, Statutory Rules, Regulations, etc., such as The payment of wages Act, The Minimum Wages Act, The workmen's Compensation Act, The Employer's Liability Act, The industrial Disputes Act, The Employees' Provident Fund Act, Employees' State Insurance Scheme, the Contract Labour (Regulations and Abolition Act, 1970)and other Acts, Rules and Regulations for labour as may be enacted by the Government during the tenure of the Contract and having force or jurisdiction at site. The contractor shall give to the local Governing Body, Police and other concerned Authorities all such notice as may be required under law.

26.4 The Contractor, in the event of his engaging 20 or more workmen, will obtain independent license under the Contract Labour (Regulations and Abolition Act, 1970) from

the concerned authorities based on the certificate (Form-V) issued by the principal employer/customer. The **labour licence is to be obtained from Labour Office Dehradun. i.e from Central government.**

26.5 The contractor shall pay all taxes, fees, license charges, deposits, duties, tolls, royalty, commissions or other charges which may be leviable on account of any of his operations connected with this contract. In case BHEL is forced to make any such payment, BHEL shall recover the same from the contractor either from moneys due to him or otherwise as deemed fit.

26.6. The contractor will also meet all expenses in connection with his welder's qualification/requalification tests etc.

26.7 The contractor shall be responsible for the provision of health and sanitary arrangements more particularly described in the Contract Labour (Regulations and Abolition Act, 1970) and safety precautions as may be required for safe and satisfactory execution of the contract.

26.8 The contractor shall be responsible for proper accommodation including adequate medical facilities for the personnel employed by him.

26.9 The contractor shall be responsible for the proper behavior and observance of all regulations by the staff employed by him.

26.10 The contractor shall ensure that no damage is caused to any person / property of other parties working at site. If any such damage is caused, it shall be the responsibility of the contractor to make good the losses and compensate them.

26.11 All the properties/ equipment/ components of BHEL/ its customer loaned with or without deposit, to the contractor shall remain the properties of BHEL/ its customer. The contractor shall use such properties for the purpose of execution of this contract. All such properties/ equipment/ components shall be taken to be in good condition unless notified to the contrary by the contractor within 48 hours. The contractor shall return them in good condition as and when required by BHEL/ its customer. In case of non-return, loss, damage, repairs etc., the cost thereof, as may be fixed by the Engineer, will be recovered from the contractor.

26.12 It shall not be obligatory on the part of BHEL to supply any tools and tackles or materials other than those specifically agreed to be given by BHEL. However, depending upon availability / possibility, BHEL/ its customer's equipment and other materials may be made available to the contractor on payment of hire charges as fixed by them , subject to the conditions laid down
by BHEL/ its customer from time to time. Unless paid in advance, such hire and other charges shall be recovered from out of dues to the contractor or security deposit in one installment.

26.13 The contractor shall fully indemnify and keep indemnified BHEL/ its customer against all claims of whatever nature arising during the course of execution of this contract.

26.14 In case the contractor is required to undertake any work outside the scope of this contract, the amount payable shall be as may be mutually agreed upon.

26.15 Any delay in completion of works or non-achievement of periodical targets, due to reasons attributable to the contractor, will have to be compensated by the contractor either by increased manpower and resources or by working extra hours or more than one shift at no extra cost to BHEL.

26.16 The contractor shall execute the work under the conditions usual to such power plant construction and in conjunction with numerous other operations at site. The contractor and his personnel shall cooperate and coordinate with other agencies at project site and proceed in a manner that shall help in the progress of work at site as a whole.

26.17 The contractor will be directly responsible for payment of wages to his workmen. A pay-roll sheet giving details of all payments made to the workmen duly signed by the contractor's representative should be furnished to BHEL.

26.18 In case of any class of work for which there is no specification laid down in the contract, such work shall be carried out in accordance with the instructions and requirements of the Engineer.

26.19 No levy, payment or charges made or imposed shall be impeached by reason of any clerical error or by reason of any mistake in the amount levied, demanded or charged.

26.20 No idle labour charges will be admissible in the event of any stoppage of work resulting in the contractor's workmen being rendered idle due to any reason at any time.

26.21 The contractor shall take all reasonable care to protect the materials and the work till such time the plant / equipment has been taken over by BHEL / its customer.

26.22 Contractor shall not stop work or abandon the site for whatsoever reason or dispute, excepting for force majeure conditions. All problems / disputes shall be separately discussed and settled without effecting the progress of work.

Stoppage or abandonment of work, other than under force majeure conditions, shall be treated as breach of work of contract and dealt with accordingly.

26.23 The contractor shall keep the area of work clean and shall remove the debris etc. while executing day-to-day work. Upon completion of work, the contractor shall remove from the vicinity of work, all scrap, packing materials, rubbish, unused and other materials and deposit them in places specified by the Engineer. The contractor will also demolish all the hutments, sheds, offices, etc. constructed and used by him and shall clean the debris. In the event of his failure to do so, the same will be arranged to be done by the Engineer and the expenses recovered from the contractor.

26.24 The contractor shall execute the work in the most substantial and workman like manner in the stipulated time. Accuracy of work and timely execution shall be the essence of this contract. The contractor shall be responsible to ensure that the quality, assembly and workmanship conform to the dimensions and clearance given in the drawings and/ or as per the instructions of the Engineer.

26.25 The contractor shall furnish **daily labour deployment report** indicating the classification and number of workmen engaged, date wise and category wise. Besides, the contractor shall also furnish daily progress reports on work as required by the Engineer.

27 RESPONSIBILITIES OF CONTRACTOR IN RESPECT OF SAFETY OF MEN, EQUIPMENT, MATERIAL AND ENVIRONMENT.

27.1 All safety rules and codes applied by BHEL and its customer at site shall be observed by the contractor and his workmen without exception. The contractor shall be responsible for the safety of the equipment / material and work to be performed by him and shall maintain all lights, fencing

guards, signs etc. or other protections necessary for the purpose. Contractor shall also take such additional precautions as may be indicated from time to time by the Engineer, with a view to prevent pilferage, accidents, fire hazards etc. Suitable number of clerical staff, watch and ward, store keepers to take care of equipment, materials, construction tools and tackles shall be posted at

site by the contractor till the completion of the work under this contract.

The contractor shall arrange for such safety devices as are necessary for this type of work and carry out the requisite site tests of handling equipment, lifting tools, tackles etc. as per usual standards and practices.

27.2 The contractor shall provide to its work force and ensure the use of the following personal protective equipment as found necessary and as directed by the authorized BHEL officials.

- (a) Safety Helmets conforming to IS-2925
- (b) Safety Belts conforming to IS-3521
- (c) Safety shoes conforming to IS-1989
- (d) Eye & Face Protection devices conforming to IS-8520 and IS-8940
- (e) Hand & body protection devices conforming to IS-2573, IS-6994, IS-8807 & IS-8519.

27.3 All tools, tackles, lifting appliances, material handling equipment, scaffolds, cradles, safety nets, ladders, equipment etc. used by the contractor shall be of safe design and construction. These shall be tested and certificate of fitness 17 obtained before putting them to use and from time to time as instructed by authorized BHEL official who shall have the right to ban the use of any item.

27.4 All electrical equipment, connections and wiring for construction power, its distribution and use shall conform to the requirements of Indian Electricity Act and Rules. Only electricians licensed by the appropriate statutory authority shall be employed by the contractor to carry out all types of electrical works. All electrical appliances including portable electric tools used by contractor shall have safe plugging system to source of power and be appropriately earthed.

27.5 The contractor shall not use any hand lamp energised by electric power with supply voltage of more than 24 volts. For work in confined spaces, lighting shall be arranged with power source of not more than 24 volts.

27.6 Where it becomes necessary to provide and / or store petroleum products, explosives, chemicals and liquid or gaseous fuel or any other substance that may cause fire or explosion, the contractor shall be responsible for carrying out such provision and/or storage in accordance with the rules and regulations laid down in the relevant Government Acts, such as Petroleum Act, Explosives Act, petroleum and Carbides of Calcium Manual of the Chief Controller of

Explosives, Government of India etc. The contractor in all such matters shall also take prior approval of the authorised BHEL official at the site.

27.7 The contractor shall arrange at his cost (wherever not specified) appropriate illumination at all work spots for safe working, when natural daylight may not be adequate for clear visibility.

27.8 In case of a fatal or disabling injury / accident to any person at construction sites due to lapses by the contractor, the victim and / or his / her dependents shall be compensated by the contractor as per statutory requirements. However, if considered necessary, BHEL shall have the right to impose appropriate financial penalty on the contractor and recover the same from payments due to the contractor for suitably compensating the victim and / or his / her dependents. Before imposing any such penalty, appropriate enquiry shall be held by BHEL giving opportunity to the contractor to present his case.

27.9 In case of any damage to property due to lapses by the contractor, BHEL shall have the right to recover the cost of such damages from the payments due to the contractor after holding an appropriate enquiry.

27.10 In case of any delay in the completion of a job due to mishaps attributable to lapses by the contractor, BHEL shall have the right to recover cost of such delay from the payments due to the contractor, after notifying the contractor suitably and giving him opportunity to present his case.

27.11 If the contractor fails to improve the standards of safety in its operation to the satisfaction of BHEL after being given reasonable opportunity to do so and / or if the contractor fails to take appropriate safety precautions or to provide necessary safety devices and equipment or to carry out instructions regarding safety issued by the authorized BHEL official, BHEL shall have the right to take the corrective steps at the risk and cost of the contractor after giving a notice of not less than seven days indicating the steps that would be taken by BHEL.

27.12 The contractor shall submit report of all accidents, fires, property damage and dangerous occurrences to the authorized BHEL official immediately after such occurrence,

but in any case not later than 12 hours of the occurrence. Such reports shall be furnished in the manner prescribed by BHEL. In addition, periodic reports on safety shall also be submitted by contractor to the authorized BHEL official from time to time as prescribed.

27.13 During the course of construction, alteration or repairs scrap lumbars with protruding nails, sharp edges etc., and all other debris including combustible scrap shall be kept cleared from working areas, passage ways and stairs in and around site.

27.14 Cylinders shall be moved by tilting and rolling them on their bottom edges. They shall not be intentionally dropped, struck or permitted to strike each other violently. When cylinders are transported by powered vehicles, they shall be secured in a vertical position.

27.15 The contractor shall be responsible for the safe storage of his radioactive sources.

27.16 All the contractor's supervisory personnel and sufficient number of workers shall be trained for fire fighting and shall be assigned specific fire protection duties. Enough number of such trained personnel must be available during the tenure of the contract.

27.17 Contractor shall provide enough fire protecting equipment of the types and numbers at his office, stores, erection site, other temporary structures, labour colony area etc. Access to such fire protection equipment shall be easy and kept open at all times. Compliance of the above requirement under fire protection shall in no way relieve the contractor of any of his responsibility and liabilities to fire accident occurring. In the event fire safety measures are not to BHEL's satisfaction, BHEL shall have option to provide the same and recover the cost plus incidentals from contractor's bills and / or impose penalty as deemed fit by the Engineer.

27.18 Before commencing the work, the contractor shall appoint /nominate a responsible officer to supervise implementation of all safety measures and liaison with his counterpart of BHEL.

27.19 If safety record of the contractor in execution of the awarded job is to the satisfaction of Safety Department of BHEL, issue of an appropriate certificate to recognize the safety performance of the contractor may be considered by BHEL after completion of the job.

28.0 CONSEQUENCES OF CANCELLATION

28.1 Whenever BHEL exercises its authority to terminate the contract / withdraw a portion of work under clause 25, the work may be got completed by any other means at the contractor's risk and cost provided that in the event of the cost of completion (as certified by the Engineer which shall be final and binding on the contractor) being less than the contract value, the advantage shall accrue to BHEL. If the cost of completion exceeds the moneys due to the contractor under the contract, the contractor shall either pay the excess amount demanded by BHEL or the same shall be recovered from the contractor. This will be in addition to the forfeiture of Security Deposit and recovery of liquidated damages as per relevant clauses.

28.2 In case BHEL completes the work under the provisions of this clause, the cost of such completion to be taken into account for determining the excess cost to be charged to the

contractor shall consist of cost of materials purchased and / or labour provided by BHEL with an addition of such percentage to cover supervision and establishment charges as may be decided by BHEL.

29.0 INSURANCE

29.1 BHEL / its customer shall arrange for insuring the materials / property of BHEL / its customer covering the risks during transit, storage, erection and commissioning.

29.2 It shall be the sole responsibility of the contractor to insure his workmen against risks of accidents and injury while at work as required by the relevant Rules and to pay compensation, if any, to them as per Workmen's Compensation Act. The contractor shall also insure his staff against accidents.

The work will be carried out in a protected area and all the Rules and Regulations of BHEL / its client in the Project Area which are in force from time to time will be followed by the contractor.

29.3 If due to negligence and/or non-observance of safety and other precautions, any accident / injury occurs to any other persons/ public, the contractor shall pay necessary compensation and other expenses, if so decided by the appropriate authority.

29.4 The contractor will take necessary precautions and due care to protect the material, while in his custody from any damage/ loss till the same is taken over by BHEL or customer. For lodging / processing of insurance claim the tractor will submit necessary documents. BHEL will reserve the right to recover the loss from the contractor, in case the damage / loss is due to carelessness / negligence on the part of the contractor. In case of any theft of material under contractor's custody , matter shall be reported to police by the contractor immediately and copy of FIR and subsequently police investigation report shall be submitted to BHEL for taking up with insurance.

29.5 If due to negligence/ carelessness on the part of the contractor, any material/ equipment gets damaged, the contractor shall submit necessary documents for lodging insurance claims as required by BHEL Engineer. BHEL shall however reserves the right to recover deductible franchise and also unsettled portion of insurance claim amount from the contractor.

29.6 If due to negligence/ carelessness on the part of the contractor, any surrounding properties also gets damaged, the contractor shall submit necessary documents for lodging insurance claims as required by BHEL Engineer. BHEL shall however reserves the right to recover deductible franchise and to unsettled portion of insurance claim amount from the contractor.

29.7 The contractor may note that BHEL T&Ps / IMTEs are not insured. The Contractor will take necessary precautions and due care to protect the same while in his custody from any damage/ loss till the same is handed over back to BHEL.

In case the damage / loss is due to carelessness/ negligence on the part of the contractor, the Contractor is liable to get them repair/ replaced immediately and in case of his failure to do so within a reasonable time , BHEL will reserve the right to recover the loss from the contractor.

30.0 STRIKES AND LOCKOUTS

30.1 The contractor will be solely responsible for all disputes and other issues connected with his workmen. In the event of contractor's workmen resorting to strike or the contractor resorting to lockout and if the strike or lockout so declared is not settled within a period of one month, BHEL shall have the right to get the erection work executed by employing its own men or through other agencies or both. The cost incurred by BHEL in this regard shall be recovered from the contractor.

30.2 For any purpose whatsoever, the employees of the contractor shall not be deemed to be in the employment of BHEL

31.0 FORCE MAJEURE

31.1 The following shall amount to force majeure conditions. Acts of God, Act of any Government, War, Sabotage, Riots, Civil Commotion, Police Action, Revolution, Flood, Fire, Cyclone, Earthquake and Epidemic and other similar causes over which the contractor has no control.

31.2 If the contractor suffers delay in the due execution of the contract, due to delays caused by force majeure conditions, as defined above, the agreed time for completion of the work covered by this contract shall be extended by a period of time equal to the period of delay, provided that on the occurrence of any such contingency, the contractor immediately reports to BHEL in writing

the causes for the delay but the Contractor shall not be eligible for any compensation on this account.

32.0 GUARANTEE Even though the work will be carried out under the supervision of the Engineer, the contractor will be responsible for the quality of the workmanship and shall guarantee the work done for a period of twelve months from the date of completion of work as certified by the Engineer, and shall rectify, free of cost to BHEL, all defects arising out of faulty erection during the guarantee period starting from the date of completion of rectification. In the event of the contractor failing to repair the defective works within the time specified by the Engineer, BHEL may proceed to undertake the repairs of such defective works at the contractor's risk and cost, without prejudice to any other rights and recover the same from out of any moneys payable to the contractor or by other legal means.

33.0 ARBITRATION : All disputes between the parties to the contract arising out of or in relation to the contract, other than those for which the decision of the Engineer or any other person is by the contract expressed to be final and conclusive, shall after written notice by either party to the contract to the other party, be referred to sole arbitration of the General Manager or his nominee. The arbitration shall be conducted in accordance with the provisions

of the Arbitration and Reconciliation Act, 1996. The parties to the contract understand and agree that it will be no objection that the General Manager or the person nominated as Arbitrator had earlier in his official capacity to deal directly or indirectly with the matters to which the contract relates or that in the course of his official duties had expressed views on all or any of the matters in dispute or difference. The award of the Arbitrator shall be final and binding on the parties to this contract. In the event of the Arbitrator dying, neglecting or refusing to act or resigning or being unable to act for any reason or his award being set aside by the Court for any reason, it shall be lawful for the General Manager or his successor, as the case may be, either to act himself as the Arbitrator or to appoint another Arbitrator in place of the outgoing Arbitrator in the manner aforesaid. The Arbitrator may, from time to time, with the consent of both the parties to the contract, enlarge the time for making the award. Work under the contract shall be continued during the arbitration proceedings. The venue of the arbitration shall be the place from which the contract is issued or such other place as the Arbitrator at his discretion may determine.

ANNEXURE - I

AGREEMENT

Agreement No. and Date _____

Name of the Work _____

Name of the Contractor with

_____ full _____ address

Value of work awarded

_____ Letter of Intent No. and Date

_____ Scheduled Commencement Date

_____ Scheduled Completion Date

THIS AGREEMENT MADE THIS _____ DAY OF _____ 2000 between BHARAT HEAVY ELECTRICALS LIMITED (A Government of India Enterprise) a Company incorporated under the Companies Act, 1956, having its Registered Office at BHEL House, Siri Fort New Delhi- 110049 (herein after called BHEL) of the ONE PART.

AND

M/S _____

_____ (hereinafter called the 'Contractor') of the
SECOND PART.

WHEREAS M/s -----state
that they have acquired and possess extensive experience in the field of -----

And Whereas in response to an Invitation to Tender No. ----- issued by BHEL
for execution of ----- the contractor submitted
their offer No.-----dated -----And whereas BHEL
has accepted the offer of the Contractor on terms and conditions specified in the Letter of
Intent No.-----dated -----read with the references cited therein.

THIS AGREEMENT WITNESSES AND it is hereby agreed by and between the parties
as follows:

1. That the contractor shall execute the work of -----and more
particularly described in Tender Specification No -----including Drawings
and Specifications (hereinafter called the said works) in accordance with and subject to
terms and conditions contained in these presents, instructions to Tenderers, General
Conditions of Contract, Special Conditions, Annexures, Letter of Intent dated -----
and such other instructions, Drawings, Specifications given to him from time to time by
BHEL.
2. The Contractor is required to furnish to BHEL Security deposit in the form of cash/
approved securities/ Bank Guarantee valid upto ----- for a sum of Rs.-----
towards satisfactory performance and completion of the Contract.
3. The Contractor has furnished a Bank Guarantee bearing no.-----dated -----
-----for a sum of Rs.-----executed by -----
- in favour of BHEL towards Security Deposit valid upto -----

OR

The Contractor has furnished to BHEL an initial Security Deposit of Rs.-----
in the form of cash / approved Securities/ B.G No.----- dated ----- - for Rs.-----
-----executed by ----- in favour of BHEL valid upto ----- and
has agreed for recovery of the balance security deposit by BHEL @ 10% of the value of work
done from each running bill till the entire Security Deposit is recovered.

OR

The contractor has furnished to BHEL an initial Security Deposit of Rs.----- (Rs.-----
vide Bank draft No.-----dated -----and by adjusting EMD of Rs.-----

submitted vide Bank draft No.----- dt.-----) and has agreed for recovery of balance Security Deposit by BHEL @ 10% of the value of work done from each running bill till the entire security deposit is recovered.

4. The Contractor hereby agrees to extend the validity of the Bank Guarantee for such further period or periods as may be required by BHEL and if the Contractor fails to obtain such extension(s) from the Bank, the Contractor, shall pay forthwith or accept recovery of Rs.----- from the bills in one installment and the contractor further agrees that failure to extend the validity of the Bank Guarantee or failure to pay the aforesaid amount in the manner specified above shall constitute breach of contract. In addition to above, BHEL shall be entitled to take such action as deemed fit and proper for recovering the said sum of Rs.-----

OR

In case the contractor furnishes the bank guarantee at a later date the contractor hereby agrees to extend the validity of bank guarantee for such further period or periods as may be required by BHEL and if the contractor fails to obtain such extension(s) from the bank, the contractor shall pay forthwith or accept recovery of the amount of bank guarantee given in lieu of security deposit from the bills in one installment and the contractor further agrees that failure to extend the validity of bank guarantee or failure to pay the aforesaid amount in the manner specified above shall constitute breach of contract. In addition to above, BHEL shall be entitled to take such action as deemed fit and proper for recovering the said sum.

5. That in consideration of the payments to be made to the Contractor by BHEL in accordance with this Agreement the Contractor hereby covenants and undertakes with BHEL that they shall execute, construct, complete the works in conformity, in all respects, with the terms and conditions specified in this Agreement and the documents governing the same.

6. That the Contractor shall be deemed to have carefully examined this Agreement and the documents governing the same and also to have satisfied himself as to the nature and character of the Works to be executed by him.

7. That the Contractor shall carry out and complete the execution of the said works to the entire satisfaction of the Engineer or such other officer authorised by BHEL, within the agreed time schedule, the time of completion being the essence of the Contract.

8. That BHEL shall, after proper scrutiny of the bills submitted by the Contractor, pay to him during the progress of the said works such sum as determined by BHEL in accordance with this Agreement.

9. That this Agreement shall be deemed to have come into force from ----- the date on which the letter of intent has been issued to the Contractor.

10. That whenever under this contract or otherwise, any sum of money shall be recoverable from or payable by the Contractor, the same may be deducted in the manner as set out in the General Conditions of Contract or other conditions governing this Agreement.

11. That all charges on account of Octroi, Terminal and other taxes including sales tax or other duties on material obtained for execution of the said works shall be borne and paid by the Contractor.

12. That BHEL shall be entitled to deduct from the Contractor's running bills or otherwise Income Tax under Section 194 (C) of the Income Tax Act, 1961.

13. That BHEL shall be further entitled to recover from the running bills of the Contractor or otherwise such sum as may be determined by BHEL from time to time in respect of consumables supplied by BHEL, hire charges for tools and plants issued (Where applicable) and any other dues owed by the Contractor.

14. That it is hereby agreed by and between the parties that non-exercise, forbearance or omission of any of the powers conferred on BHEL and /or any of its authorities will not in any manner constitute waiver of the conditions hereto contained in these presents and the liability of the Contractor with respect to compensation payable to BHEL or Contractor's obligations shall remain unaffected.

15. It is clearly understood by and between the parties that in the event of any conflict between the Letter of Intent and other documents governing this Agreement, the provisions in the Letter of Intent shall prevail.

16. The following documents

1. Invitation to Tender No-----
and the documents specified therein.

2. Contractor's Offer No-----
dated-----.

3. _____

4. _____

5. _____

6. Letter of Intent No _____
dated _____.

7. _____

shall also form part of and govern this Agreement

IN WITNESS HEREOF, the parties hereto have respectively set their signatures in the

presence of

WITNESS

(to be signed by a person holding
a valid Power of Attorney)
(CONTRACTOR)

1.

2.

WITNESS

1.

2.

(For and on behalf of BHEL)

SECTION – I (a)

SPECIFICATION FOR HEALTH, SAFETY AND ENVIRONMENT (HSE)**1.0 SCOPE**

This specification establishes the Health, Safety and Environment (HSE) management requirement to be complied with by the Contractors during construction. Requirements stipulated in this specification shall supplement the requirements of HSE Management given in relevant Act (s) /legislations, General Condition Contract (GCC). Special Conditions of Contract (SCC) and job specification where different documents stipulates different requirements, the most stringent be adopted.

1.0 REFERENCES

This document should be read in conjunction with following :

- General Conditions of Contract (GCC)
- Special Conditions of Contract (SCC)
- Scope of work
- Relevant IS Codes (refer Annexure-I)
- Reporting Formats (refer Annexure-II)

3.0 REQUIREMENTS OF HEALTH, SAFETY & ENVIRONMENT (HSE) MANAGEMENT SYSTEM TO BE COMPLIED BY CONTRACTORS.**3.1 MANAGEMENT RESPONSIBILITY**

3.1.1 The Contractor to comply with HSE requirement at Construction sites as enclosed to cover commitment of their organization to ensure health, safety and environment aspects in their line of operations.

3.1.2 The HSE management system shall cover the HSE requirements including but not limited to what is specified under Para 1.0 and para 2.0 above.

3.1.3 Contractor shall be fully responsible for planning and implementing HSE requirements. Contractor as a minimum requirement shall designate/deploy the following to co-ordinate the above

No. of workers deployed upto 250

- Designate one safety Supervisor

Above 250 & upto 500
Officer

- Deploy one qualified and Experienced safety Engineer/

Above 500
for every 500 or less

- One additional safety engineer /
officer, as above.

Contractor shall indemnify & hold harmless Owner/BHEL & their representatives free from any and all liabilities arising out of non-fulfillment of HSE requirement.

3.1.4 The Contractor shall ensure that the Health, Safety and Environment (HSE) requirements are clearly understood & faithfully implemented at all levels at site.

3.1.5 BHEL shall promote and develop consciousness for Health, Safety and Environment among all personnel working for the Contractor. Regular awareness programs and work site meetings shall be arranged on HSE activities to cover hazards involved in various operations during struction.

3.1.6 The Contractor shall arrange suitable first aid measures such as First Aid Box, trained personnel to give First Aid and install fire protection measures such as adequate number of steel buckets with sand and water to the satisfaction of BHEL/Owner.

3.1.7 Non-Conformance on HSE by Contractor (including his Sub-contractors) as brought out during review / audit by BHEL/Owner representative shall be resolved forthwith by Contractor. Compliance report shall be provided to BHEL.

3.1.8 The Contractor shall ensure participation of his Resident Engineer / Site-In- Charge in the Safety Committee / HSE Committees meetings arranged by BHEL / Owner. The compliance of any observations shall be arranged urgently. He shall assist BHEL / Owner to achieve the targets set by them on HSE during the project implementation.

3.1.9 The Contractor shall adhere consistently to all provisions of HSE requirements. In case of non-compliance or continuous failure in implementation of any of HSE provisions, BHEL / Owner may impose stoppage of work without any Cost & Time implication to BHEL / Owner and / or impose a suitable penalty for noncompliance with a notice of suitable period, up to a cumulative limit of 1.0% (one percent) of Contract value. This penalty shall be in addition to all other penalties specified else where in the contract. The decision of imposing stoppage of work, its extent & minority penalty shall rest with BHEL / Owner & binding on the Contractor.

3.1.10 All fatal accidents and other personnel accidents shall be investigated by a team of Contractor's senior personnel for root cause & recommended corrective and preventive actions. Findings shall be documented and suitable actions taken to avoid recurrences shall be communicated to BHEL / Owner. BHEL / Owner shall have the liberty to independently investigate such occurrences and Contractor shall extend all necessary help and co-operation in this regard.

3.2 HOUSE KEEPING

3.2.1 Contractor shall ensure that a high degree of house keeping is maintained and shall ensure interalia; the following :

- a) All surplus earth and debris are removed / disposed off from the working areas to identified locations (s).
- b) Unused/Surplus Cables, Steel items and steel scrap lying scattered at different places within the working areas are removed to identified location (s).
- c) All wooden scrap, empty wooden cable drums and other combustible packing materials, shall be removed from work place to identified location(s).
- d) Roads shall be kept clear and materials like : pipes, steel, sand boulders, concrete, chips and brick etc., shall not be allowed on the roads to obstruct free movement of men & machineries.
- e) Fabricated steel structurals, pipes & piping materials shall be stacked properly for erection.
- f) Water logging on roads shall not be allowed.
- g) No parking of trucks/trolleys, cranes and trailers etc., shall be allowed on roads which may obstruct the traffic movement.
- h) Utmost care shall be taken to ensure over all cleanliness and proper upkeep of the working areas.
- i) Trucks carrying sand, earth and pulverized materials etc., shall be covered while moving within the plant area.

In case of non-compliance of any of above, BHEL shall have the liberty to get it done from some other agency at this risk and cost.

3.3 HEALTH, SAFETY AND ENVIRONMENT

3.3.1 The Contractor shall provide safe means of access to any working place including provisions of suitable and sufficient scaffolding at various stages during all operations of the work for the safety of his workmen, and BHEL / Owner.

Contractor shall ensure deployment of appropriate equipment and appliances for adequate safety and health of the workmen and protection of surrounding areas.

3.3.2 The contractor shall ensure that all their staff and workers wear Safety Helmet and Safety shoes. Contractor shall also ensure use of safety belt, protective goggles, gloves etc., by the personnel as per job requirements. All these gadgets shall conform to relevant IS specifications or equivalent.

3.3.3 The Contractor shall assign to his workmen, tasks commensurate with their qualification, experience and state of health for driving of vehicles, handling and erection of material and equipments. All lifting equipments shall be tested certified for its capacity before use. Adequate and suitable lighting at every work place and approach there to, shall be provided by the Contractor before starting the actual operations at night. It is mandatory for contractor to get his workmen medically examined / checked for fitness of work assigned once a year and furnish the certificate to that effect from RMP / Govt. Hospital.

3.3.4 Hazardous and / or toxic materials such as solvent, coating or thinners shall be stored in appropriate containers.

3.3.5 All hazardous materials shall be labeled with the name of the materials, the hazards associated with its use and necessary precautions to be taken.

3.3.6 Contractor shall ensure that during the performance of the work, all hazards of the health of personnel, have been identified, assessed and eliminated.

3.3.7 Chemical spills shall be contained and cleaned up immediately to prevent further contamination.

3.3.8 All personnel exposed to physical agents such as ionizing or non-ionizing radiation, ultraviolet rays or similar other physical agents shall be provided with adequate shielding or protection commensurate with the type of exposure involved.

3.3.9 Where contact or exposure of hazardous materials could exceed limits or could otherwise have harmful effects, appropriate personnel protective equipment such as gloves, goggles, aprons, chemicals resistant clothing and respirator shall be used.

3.3.10 All persons deployed at site shall be knowledgeable of and comply with the environmental laws, rules & regulations relating to the hazardous materials substances and wastes. Contractor shall not dump, release or otherwise discharge or dispose off any such materials without the express authorization of BHEL / Owner.

4.0 DURING JOB EXECUTION

4.1 Implement Health, Safety and Environment requirements including but not limited to as brought out under para 3.0. Contractor shall ensure to :

- arrange workmen compensation insurance, registration under ESI Act, third party liability insurance etc., as applicable.

- Arrange all HSE permits before start of activities (as applicable) like hot work, confined space, work at heights, storage of chemical / explosive materials and its use and implement all precautions mentioned therein.
- Submit timely the completed checklist on HSE activities, Monthly HSE report, accident reports, investigation reports etc., as per BHEL / Owner requirements. Compliance of instructions on HSE shall be done by Contractor and informed urgently to BHEL / Owner.
- Ensure the Resident Engineer / Site-Incharge of the Contractor shall attend all the Safety Committee / HSE meetings arranged by BHEL/Owner. In case of his absence from site that a second senior most person shall be nominated by him in advance and communicated to BHEL/Owner.
- Display at site office and work locations caution boards, list of hospitals, emergency services available.
- Display posters, banners made available by BHEL for safe working to promote safety consciousness.
- Assist in HSE audits by BHEL / Owner and submit compliance report.
- Generate and submit HSE records / report as per HSE plan.
- Appraise BHEL / Owner on HSE activities at site.

ANNEXURE - I

RELEVANT IS – CODES FOR PERSONAL PROTECTION

IS: 2925-1984	Industrial Safety Helmets
IS: 4770-1968	Rubber gloves for electrical purposes
IS: 6994, 1973 (Part-I) Gloves)	Industrial Safety Gloves (Leather & Cotton
IS: 1989-1986 (Part I & III)	Leather safety boots and shoes
IS: 3738-1975	Rubber knee boots
IS: 5557-1969	Industrial and Safety rubber knee boots
IS: 6519-1971	Code of practice for selections, care and repair of Safety footwear
IS: 11226-1985	Leather Safety footwear having direct moulding sole
IS: 5983-1978	Eye protectors
IS: 9167-1979	Ear protectors
IS: 3521-1983	Industrial Safety belts and harness

ANNEXURE – II

1.0 HEALTH, SAFETY & ENVIRONMENT (HSE) PLAN

PROJECT: ----- CONTRACTOR :-----

DATE :----- OWNER :-----

(To be prepared by each construction Agency)

ACTIVITY DESCRIPTION	PROCEDURE W.I/ GUIDELIES	CODE OF CONFORMANC E	PERFORMANCE FUNCTIONS		
			PERFORMER	CHECKER	APPROVER

PREPARED BY

REVIEWED BY

APPROVED BY
(RESIDENT ENGINEER)

1.0 MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (1/6)

PROJECT:----- CONTRACTOR:-----

DATE :----- OWNER:-----

INSPECTION BY:-----

Note: Write 'NA' wherever the item is not applicable.

ITEM	YES NO	REMARKS	ACTION
HOUSING KEETING			
Waste containers provided and used			
Sanitary facilities adequate and clean			
Passageways and Walkways Clear			
General neatness of working areas			
Others			
PERSONNEL PROTECTIVE EQUIPMENT			
Goggles: Shelds			
Face protection			
Hearing protection			
Safety Shoes provided			
Hand protection			
Safety Belts			
Others			
EXCAVATIONS / OPENINGS			

Openings properly covered or barricaded			
Excavations shored			
Excavations barricaded			
Overnight lighting provided			
Other			
48 SCAFFOLDING			
Fully decked platforms			
Guard and intermediate rails in place			
Toe boards in place			
Adequate shoring			
Adequate access			
Other			
LADDERS			
Extension side rails 1 m above			
Top of landing			
Properly secured			
Angle + 70 from horizontal			
Other			

MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd.. 2/6)

MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd.3/6)

ITEM	YES NO	REMARKS	ACTION
<p>WELDING, CUTTING</p> <p>Gas cylinders chained upright</p> <p>Cables and hoses not obstructing</p> <p>Screens or shields used</p> <p>Flammable materials protected</p> <p>Fire extinguisher (s) accessible</p> <p>Other</p>			
<p>Condition of cables and sheaves OK</p> <p>Condition of slings, chains, hooks & eyes O.K.</p> <p>Inspection and maintenance logs maintained</p> <p>Outriggers used</p> <p>Signs/barricades provided</p> <p>Signals observed and understood</p> <p>Qualified operators</p> <p>Other</p>			

MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd.4/6)

ITEM	YES NO	REMARKS	ACTION
HOIST. CRANES AND DERRICKS MACHINERY, TOOLS AND EQUIPMENT Proper instruction Safety devices Proper cords Inspection and maintenance Other VECHICLE AND TRAFFIC Rules and regulations observed Inspection and maintenance Licensed drivers Other TEMPORARY FACILITIES Emergency instructions posted Fire extinguishers provided Fire-aid equipment available Secured against storm damage General neatness In accordance with electrical requi FIRE PREVENTION Personnel instructed Fire extinguishers checked No smoking in Prohibited areas Hydrants Clear Other ELECTRICAL Proper wiring ELCB's provided Ground fault circuit interrupters Protection against damage Prevention of tripping hazards Other			

MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd.5/6)

ITEM	YES NO	REMARKS	ACTION
<p>HANDLING AND STORAGE OF MATERIALS</p> <p>Properly stored or stacked Passageways clear Other</p> <p>FLAMMABLE GASES AND LIQUIDS WORKING AT HEIGHT</p> <p>Containers clearly identified</p> <p>Proper storage</p> <p>Fire extinguishers nearby</p> <p>Other</p> <p>Erection plan</p> <p>Safety belts and lanyards; chute lines</p> <p>Other</p> <p>ENVIRONMENT</p> <p>Chemical and other Effluents properly disposed</p> <p>Cleaning liquid of pipes disposed off properly</p> <p>Water used for hydrotesting disposed off as Per agreed procedure</p> <p>Lubricant Waste/Engine Oil properly disposed</p> <p>Waste from Canteen, offices, sanitation etc., Disposed properly</p> <p>Disposal of surplus earth, stripping materials, Oily rags and combustible materials done Properly</p>			

MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd.6/6)

ITEM	YES NO	REMARKS	ACTION
Green belt protection Hygienic conditions at labour camps O.K? Availability of First Aid facilities Proper sanitation at site, office and Labour camps Arrangement of medical facilities Measures for dealing with illness Availability of Potable drinking water For workmen & staff			

**Signature of Resident
Engineer with Seal**

1.0 ACCIDENT CUM FIRE REPORT

(To be submitted by contractor after every accident within 24 hours of accident)

Report : _____

Date: _____

Name of Site: _____

CONTRACTOR _____

NAME OF THE INJURED _____

FATHER'S NAME _____

SUB-CONTRACTOR M/S _____

DATE & TIME OF ACCIDENT _____

LOCATION _____

BRIEF DESCRIPTION OF ACCIDENT

CAUSE OF ACCIDENT

NATURE OF INJURY/DAMAGE

MEDICAL AID PROVIDED/ACTIONS TAKEN

INTIMATION TO LOCAL AUTHORITIES

DATE:

SIGNATURE OF CONTRACTOR
WITH SEAL

TO: SITE-IN-CHARGE/BHEL 1 COPY

TENDER NO. CE:ES:DADRI:063:MSU

2.0 SUPPLEMENTARY ACCIDENT & INVESTIGATION REPORT

Project:_____ Supplementary to Report No._____
(Copy enclosed)

Site:_____ Date:_____

CONTRACTOR_____

NAME OF THE INJURED_____

FATHER'S NAME_____

SUB-CONTRACTOR M/S_____

DATE & TIME OF ACCIDENT_____

LOCATION_____

BRIEF DESCRIPTION & CAUSE OF ACCIDENT

NATURE OF INJURY/DAMAGE

COMMENTS FROM MEDICAL PRCTICETIONER, WHO ATTENDED THE
VICTIM / INJURED

SUGGESTED IMPROVEMENT IN THE WORKING CONDITION, IF ANY

LOSS OF MANHOURS AND IMPACT ON SITE WORKS

ANY OTHER COMMENT BY SAFETY OFFICER

DATE:

SIGNATURE OF CONTRACTOR
WITH SEAL

TO: SITE-IN-CHARGE/BHEL 1 COPY

3.0 MONTHLY HEALTH, SAFETY & ENVIRONMENT (HSE) REPORT

(To be submitted by each Contractor)

Actual work start Date:_____ For the month of _____
 Project:_____ Report No. _____
 Name of the Contractor:_____ Status as on: _____
 Name of Work:_____ Name of safety officer _____

ITEM	THIS MONTH	CUMMULATIVE
Total Strength (Staff + Workmen)		
Number of HSE meetings organized at site		
Number of HSE awareness programmes		
Attended at site		
Whether workmen compensation policy taken	Y/N	
Whether workmen compensation policy is valid	Y/N	
Whether workmen registered under ESI Act	Y/N	
Number of Fatal Accidents		
Number of Loss Time Accidents (Other than Fatal		
Other accidents (Non Loss Time)		
Total No. of Accidents		
Total man-hours worked		
Man-hour loss due to fire and accidents		
Compensation cases raised with Insurance		
Compensation cases resolved and paid to workmen		
Remarks		

Date

 Safety Officer/Resident Engineer
 (Signature & Name)

1 COPY To: SITE-IN-CHARGE,BHEL

TENDER NO. CE:ES:DADRI:063:MSU

ANNEXURE-A

FINANCIAL VIABILITY

1. Owner's capital in the business (incase of Partnership, please mention percentage shares and amounts).
2. Quantum of business done during last three financial years
 - i) Rs..
 - ii) Rs.
 - iii) Rs.
3. Value of fixed Assets of the business in last three YEARS
 - i) Rs.
 - ii) Rs.
 - iii) Rs.
4. Guarantee limits (if any) enjoyed by the firm.
5. Over draft limits (if any enjoyed by the firm.
6. Please enclose audited profit and loss account and balance sheet for last 3 years (indicate no. of sheets).
7. Certificate from Scheduled Bank to prove Contractor's financial capacity to undertake the work duly indicating the financial limits the tenderer enjoys.

NOTE:

All the above documents should be duly certified by auditors/ Bank as may be applicable.

ANNEXURE – B

ANALYSIS OF SIMILAR JOBS EXECUTED / IN PROGRESS

S.No.	Agency By whom Awarded	Location of project	Capacity & unit nos.	Scope of work	Date of award	Contract value
--1	2	3	4	5	6	7
--						

--						
%age work completed and due date for completion	Date of completion if job is already over	No. of skilled / unskilled workers deployed at peak	No. of Engrs.& Super-visors deployed at peak	Details of major T&P like welding M/c s supplied		Consumables by whom
				By Con- Tractor	By other Agency	

--						
6	9	10	11	12	13	14

--						

(SIGNATURE OF TENDERER)

ANNEXURE – C

MONTHWISE MANPOWER DEPLOYMENT PLAN

S.No.	Catetory	No. of Person	Month													
		Available on	(Indicate No. of Persons to be in each month)													
		Roll of the	1 st	2 nd	3 rd	4 th	5 th	6 th	and							
so on		Organisation														

1.																
2.																
3.																

Total																

ANNEXURE – D

(A) STATUS OF TOOLS & PLANTS

S.No. proposed	Name of Equipment	Quantity owned	Registration no. wherever Applicable	Documents enclosed for proof of Ownership	Present Location	Quantity to be deployed for this job
-------------------	----------------------	-------------------	--	--	---------------------	--

(B) MONTHWISE T&P DEPLOYMENT PLAN

S.No.	Description of T & P	Month (indicate No. to be deployed in each month)							
		1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th and
so on									

(SIGNATURE OF TENDERER)
WITH STAMP

ANNEXURE -E

ANALYSIS OF UNIT RATE QUOTED

S.NO.	DESCRIPTION	PERCENTAGE OF THE UNIT RATE QUOTED	REMARKS

1.	Salary & wages for staff & workers		
2.	Consumables		
(a)	Gases		
(b)	Welding Electrodes		
(c)	P.O.L.		
(d)	Others		
3.	Depreciation & maintenance for T&P		
4.	Depreciation & Maintenance for other		
5.	Establishment and Administration expenses of site		
7	Over Heads		
8	Profit		

(SIGNATURE OF TENDERER)
WITH STAMP

ANNEXURE - F

DECLARATION SHEET

I, -----hereby certify that, all the information and data furnished by me with regard to this Tender Specification No.----- are true and complete to the best of my knowledge. I have gone through the specification, conditions and stipulations in detail and agree to comply with the requirements and intent of specification.

I, further certify that I am the duly authorised representative of the under mentioned tenderer and a valid power of attorney to this effect is also enclosed.

Tenderer's Name & Address

Authorised representative's signature with name and address.

CHECKLIST AND SCHEDULE OF GENERAL PARTICULARS

NOTE : Tenderers are requested to fill in the following details and no column should be left blank

1. Name and address of the tenderer

2. Telegraphic/ telex address

3. Phone No. (Office)/ Fax No.

4. Name & designation of the official of the tenderer to whom all the references shall be made.

4. Tenderer's proposal No. & date

5. Whether EMD submitted (By cash/Pay order / bank draft) Yes/No

6. Validity of offer/ rates quoted for THREE months from the date of opening of tender Yes/No

7. Financial Status as per Clause 11.1 (in the format as per Annexure-A) Yes /No

8. Income tax Clearance certificate as per Clause 11.2 Yes/No

9. Details of experience as per clause 11.3 (in the format as per Annexure-B) Yes /No

11. Monthwise & Categorywise manpower deployment plan as per Clause 11.4 (in the format as per Annexure-C) Yes/No

12. Attested copy of power of attorney as per clause 11.5 Yes/No

13. Details about type of the firm as per clause 11.6 Yes / NO

- | | |
|--|----------|
| 14. Status of T&P and monthwise deployment plan
as per clause11.7 (in the format as per Annexure-D) | Yes /No |
| 15. Analysis of unit rate quoted as per Clause 11.8
(in the format as per Annexure-E) | Yes / No |
| 16. Declaration sheet as per clause 11. 09
(in the format as per Annexure-F) | Yes /No |

Date _____

(SIGNATURE OF TENDERER WITH

STAMP)

WITNESS

(SIGNATURES WITH FULL PARTICULARS)

1.

2.

ANNEXURE - H

BANK GUARANTEE FOR SECURITY DEPOSIT
B.G. NO.

Date

This deed of Guarantee made this ----- day of -----two thousand by -----
----- (Bank) hereinafter called the "The Guarantor" (which expression shall unless
repugnant to the context or meaning thereof be deemed to include its successors and assigns)
in favour of M/s Bharat Heavy Electrical Limited (A Govt. of India Undertaking) a company
incorporated under the Companies Act, 1956, having its registered office at BHEL House, Siri
Fort, Asiad, New Delhi – 110049 through its unit at Electronics Division , P.B No. 2606
Mysore Road ,Bangalore 560 026 hereinafter called "The Company" (which expression shall
unless repugnant to the context or
meaning thereof by deemed to include its successors and assigns) WHEREAS -----
------(hereinafter referred to as the Contractor) have entered into a
contract arising out of Letter of Intent no.----- dt.------(hereinafter referred to
as "the contract") for the construction of ----- with the company.

AND WHEREAS the contract inter-alia provides that the contractor shall furnish to the
company a sum of Rs.----- (Rupees-----) towards
security deposit for due and faithful performance of the contract in the form and manner
specified therein.

AND WHEREAS the contractor has approached the Guarantor and in consideration of the
arrangement arrived at between the contractor and the Guarantor, the Guarantor has agreed to
give the Guarantee as hereinafter mentioned in favour of the company.

The Guarantor do hereby guarantee to the company the due and faithful performance,
observance or discharge of the Contract by the contractor and further unconditionally and
irrevocably undertake to pay to the Company without demur and merely on a demand, to the
extent of Rs.------(Rupees-----) against any claim by the
company on them for any loss, damage, costs, charges and expenses caused to or suffered by
the company by reasons of the contractor making any default in the performance, observance
or discharge of the terms, conditions, stipulations or undertakings or any of them as contained
in the contract.

The decision of the company whether any default has occurred or has been committed by the
contractor in the performance, observance or discharge of any of the terms, conditions,
stipulations or undertakings or any one of them as contained in the contract and / or as to the
extent of loss, damage, costs, charges and expenses caused to or suffered by the company by
reason of the contractor making any default in the performance, observance or discharge of
any of the terms, conditions, stipulations or undertakings or any one of them shall be
conclusive and binding on the Guarantor irrespective of the fact whether the contractor admits
or denies the default or questions

the correctness of any demand made by the company in any Court, Tribunal or Arbitration proceedings or before any other Authority.

The company shall have the fullest liberty without affecting in any way the liability of the Guarantor under this Guarantee, from time to time to vary any of the terms and conditions of the contract or extend time of performance by the contractor or to postpone for any time and from time to time any of the powers exercisable by it against the contractor and either enforce or forbear from enforcing any of the terms and conditions governing the contract or securities available to the company and the Guarantor shall not be released from its liability under these presents by any exercise by the company of the liberty with reference to the matters aforesaid or by reasons of time

being given to the contractor or any other forbearance, act or commission on the part of the company or any indulgence by the company to the contractor or any other matter or thing whatsoever which under the law relating to sureties would, but for this provision have the effect of so releasing the Guarantor from its liability under this guarantee.

The Guarantor further agrees that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the contract and its claim satisfied or discharged and till the company certifies that the terms and conditions of the contract have been fully and properly carried out by the contractor and accordingly discharges this Guarantee, subject however, that the company shall have no claim under this Guarantee after ----- i.e. (the present date of validity of Bank Guarantee unless the date of validity of this Bank Guarantee is further extended from time to time, as the case may be) unless a notice of the claim under this Guarantee has been served on the Guarantor before the expiry of the said period in which case the same shall be enforceable against the Guarantor not withstanding the fact that the same is enforced after the expiry of the said period.

The Guarantor undertakes not to revoke this Guarantee during the period it is in force except with the previous consent of the Company in writing and agrees that any liquidation or winding up or insolvency or dissolution or any change in the constitution of the contractor or the Guarantor shall not discharge the Guarantor's liability hereunder.

It shall not be necessary for the company to proceed against the contractor before proceeding against the Guarantor and the Guarantee herein contained shall be enforceable against them notwithstanding any security which the Company may have obtained or obtain from the Contractor shall at the time when proceedings are taken against the Guarantor hereunder be outstanding or unrealized.

Notwithstanding anything contained herein before, our liability under the Guarantee is restricted to Rs.----- (Rupees-----) Our guarantee shall remain inforce until -----, i.e. (the present date of validity of Bank Guarantee unless the date of validity of this Bank Guarantee is further extended from time to time) unless a claim or demand under this guarantee is made against us on or before ----- we shall be discharged from our liabilities under this Guarantee thereafter.

Any claim or dispute arising under the terms of this documents shall only be enforced or settled in the courts of Bangalore only.

The Guarantor hereby declares that it has power to execute this guarantee and the executant has full powers to do so on behalf of the Guarantor.

IN WITNESS whereof the ----- (Bank) has hereunto set and subscribed its hand the day, month and year first, above written.

Signed for and on behalf of the
Bank

Signatory No.-----
)

WITNESSES

2. Name & Address

3. Name & Address

Notes :

2. The above BG shall be executed on the non-judicial stamp papers of adequate value procured in the name of the bank in the state where the bank is located.

The above BG is required to be sent by the executing bank directly to BHEL at the address where tender is submitted / accepted under seal cover.

LIST OF MEMBER BANKS

1. State Bank of India CAG Branch, 10th Floor, Vijaya Building, Barakhamba Road, New Delhi – 110001	8. Deutsche Bank, Tolstoy Marg, New Delhi – 110001
2. Canara Bank 74, Janpath, New Delhi – 110001	9. Citi Bank N A Jeevan Vihar Building, Sansad Marg, New Delhi – 110001.
3. Punjab National Bank, 74, Janpath, New Delhi – 110001.	10. Standard Chartered Bank, H2 Block, Connaught Place, New Delhi – 110001.
4 State Bank of Hyderabad, Surya Kiran Building, K.G. Marg, New Delhi – 110001.	11. ICICI Bank Ltd., ICICI Tower, Bisham Pitamah Marg, Pragati Vihar, New Delhi – 110003.
5. State Bank of Mysore, Antriksh Bhawan, K.G. Marg, New Delhi – 110001.	12. IDBI Bank Ltd., 19, K.G. Marg, Surya Kiran Building, New Delhi.
6. State Bank of Mysore, Industrial Finance Branch, 18, Ramanashree Arcade, M.G. Road, Bangaloe – 560001.	13. HSBC Ltd., ECE House, 28 KG Marg, New Delhi – 110001.
7. State Bank of Travancore, Travancore House, IF Branch, K.G. Marg, New Delhi – 110001.	14. Bank of Baroda, Corporate Banking Branch, 11th Floor, BOB Building, Sansad Marg, New Delhi – 110001.
BGs from any other branches of above mentioned banks are acceptable.	

Form No. 101 - 401			
BIHARAT HEAVY ELECTRICALS LIMITED TIRUCHIRAPPALLI-620014 WELDING TECHNOLOGY CENTRE			
WELDING PROCEDURE SPECIFICATION			Page 1 of 2
WPS. No. : 1038	Date : 31/07/2003	Supporting	904 &
Rev. No : 03	Date : 22/09/2007	PQR. No	1099
Welding Process : GTAW + SMAW		Type : Manual (Auto/Semi-Auto/Manual/Machine)	
Application : Groove welding of 2 1/4Cr.1Mo. steel (P22/T22/F22/Gr22) to 9Cr.1Mo. 1/4V steel (P91 / T91 / F91 / Gr.91) for site fabrication with preheat & with PWHT. (For t < 20mm only)			
JOINTS (QW - 402)			
Joint Design		: Groove as per drawing	
Backing (Yes / No)		: GTAW : No ; SMAW : Yes.	
Backing Material Type		: GTAW : Nil ; SMAW : Metal	
(Metal/Non fusing metal/Non metallic/Others)			
BASE METAL (QW - 403)			
P. No. : 5A	Group No. : 1	to	P. No. : 5B Group No. : 2
Spec. Type & Grade		: N.A.	
Chem. Analysis & Mech. Prop.		: N.A.	
Thickness Range		: Groove : 1.5 to 20.0mm	
Pipe Diameter Range		: Groove : Unlimited	
Others		: Nil	
FILLER METALS (QW - 404)			
	GTAW	SMAW	
AWS No. (class)	: ER90S - B3	E9018 - B3	Size of Filler metal : Refer Table
Spec. No. (SFA)	: 5.28	5.5	Flux trade name : N.A.
F. No.	: 6	4	Electrode-Flux (Class) : N.A.
A. No.	: 2	4	Consumable insert : N.A.
Deposited weld metal thickness range (t)			
Groove	: 20.0mm Max.	GTAW : 4.0mm Max. (Max. 2 mm / pass)	
		SMAW : Balance (Max. 5 mm / pass)	
Fillet	: N.A.		
Others	: Nil		
POSITION (QW - 405)		PRE HEAT (QW - 406)	
Position(s) of Groove	: All	Preheat Temp.(min) : 220 °C	
Position(s) of Fillet	: N.A.	Interpass Temp. (Max) : 350 °C	
Weld Progression.(Up/Down)	: Vertical up	Preheat Maintenance : Nil	
Others	: Nil	Others : After welding cool the joint to 80 - 100 °C & hold it for 1 hour minimum, before PWHT.	

BHEL Trichirappalli - 14		WPS. No.: I038		Page 2 of 2 Revision : 03																	
PWHT (QW - 407) Temp. Range : 745 ± 15 °C Time Range : 2.5minutes/mm (Min.60minutes) Others : Induction heating ROH (Above 350 °C) : 120 °C / hr max. ROC (Upto 350 °C) : 120 °C / hr max.			GAS (QW - 408) <table border="1"> <thead> <tr> <th></th> <th>Gases</th> <th>Mix/Purity %</th> <th>Flow R1.(lpm)</th> </tr> </thead> <tbody> <tr> <td>Shielding :</td> <td>Argon</td> <td>99.99</td> <td>8 - 14</td> </tr> <tr> <td>Trailing :</td> <td>N.A</td> <td>---</td> <td>---</td> </tr> <tr> <td>Backing :</td> <td>Argon</td> <td>99.99</td> <td>8 - 14</td> </tr> </tbody> </table> (For Root welding)				Gases	Mix/Purity %	Flow R1.(lpm)	Shielding :	Argon	99.99	8 - 14	Trailing :	N.A	---	---	Backing :	Argon	99.99	8 - 14
	Gases	Mix/Purity %	Flow R1.(lpm)																		
Shielding :	Argon	99.99	8 - 14																		
Trailing :	N.A	---	---																		
Backing :	Argon	99.99	8 - 14																		
ELECTRICAL CHARACTERISTICS (QW - 409) Current (AC / DC) : Refer Table Polarity : Refer Table Amps (Range) : Refer Table Volts : Refer Table Tungsten Electrode type & size : EW Th-2 / EW Ce-2 Ø 2.4mm Mode of Metal transfer for GMAW : N.A. Electrode wire feed speed range : N.A. Pulsing current (GTAW) : N.A.																					
TECHNIQUES (QW - 409) String or weave bead : Root : String; Others : String /weave bead (Max. 3 Dia.) Orifice or Gas cup size : 6 / 9 Initial and Interpass cleaning : Chipping / Brushing / Grinding Method of Back Gouging : Nil Oscillation : Nil Contact tube to work distance : N.A. Multiple or Single pass per side : Single or Multiple Multiple or Single Electrode : Single Electrode Spacing : N.A. Peening : N.A. Others : Nil																					
Weld Layer	Process	Filler metal		Current		Voltage range	Travel speed Range	Others(Hot wire, Torch angle, ROL)													
		Class	Dia	Type	Amps																
Root	GTAW	ER90S-B3	2.4	DCEN	70 - 100	N.A.	N.A	Nil													
Further	SMAW	E9018-B3	2.5	DCEP	70 - 100	N.A.	N.A	Nil													
--do--	SMAW	E9018-B3	3.15	DCEP	90 - 120	N.A	N.A	Nil													
--do--	SMAW	E9018-B3	4.0	DCEP	140 - 180	N.A	N.A	Nil													
Approved by (Dr.K.P.Dhandapani) DGM / WTC																					
Prepared by (S.Singaravelu) Manager / WTC																					