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## **TENDER SPECIFICATION**

**TENDER NO. BHEL/ NR/ SCT/ PARBATI/ STORE/ 528**

**FOR**

Development and construction of BHEL storage and store shed complex at site for PARBATI Stage III at Panasa, Distt Mandi, Himachal Pradesh

### **PART I – TECHNICAL BID**



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



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

**Bharat Heavy Electricals Limited**  
(A Govt. Of India Undertaking)  
**Power Sector – Northren Region,**  
Plot No. 25 , Sector - 16A ,  
Distt. Gautam Budh Nagar, NOIDA – 201 301.INDIA  
Phone: 0091-0120-2515476 / 2515464 / 2515479  
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**TENDER NO. BHEL/ NR/ SCT/ PARBATI/ STORE/ 528**

**IMPORTANT NOTE**

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

THIS TENDER SPECIFICATION ISSUED TO:

M/S-----

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#### **TENDER NOTICE**

Sealed tenders are invited from the contractors fulfilling qualifying requirements for the works of “Development and construction of BHEL storage and store shed complex at site for PARBATI Stage III at Panasa, Distt Mandi, Himachal Pradesh”.

#### **TENDER NO. BHEL/ NR/ SCT/ PARBATI/ STORE/ 528**

#### **QUALIFYING REQUIREMENT:**

Tenderers should have carried out single work of similar nature of around Rs. 80 Lacs or two works of similar nature of around Rs. 50 Lacs or higher contract value during the last five years in Power Plant or Industrial Units and also have an average annual financial turnover of minimum of Rs. 100 Lacs during preceding three years (2004-05, 2005-06 & 2006-07).

#### **NOTES:**

- i) The Tender Documents comprise of following:
  - a) General Conditions of Contract
  - b) Special Conditions of Contract, Tender Notice, Project Synopsis etc.
  - c) Closed shed layout
  - d) Rate schedule
- ii) Tender Documents with complete details are hosted on BHEL’s web page [www.bhel.com](http://www.bhel.com). Bidder(s) intending to participate may download the tender document from the web site. Bidder(s) downloading the tender documents from the web site, shall remit Rs.1000/- (Rupees One thousand only) in the form of crossed demand draft (non-refundable), in favour of BHEL, NOIDA along with their offer
- iii) Bidder(s) can also purchase hard copy of tender documents from this office. Tender documents (non transferable) will be issued on all working days between 09.30 Hrs. to 12.30 Hrs within the sale period i.e. **upto xx.xx.08** on payment of Rs.1,000/- (non-refundable) either in cash or by crossed demand draft in favour of BHEL, NOIDA. Request for issue of tender document should clearly indicate Tender No. and work.

- iv) Tenders must be submitted to the undersigned (Room No. 104) at the address given above **latest by xx.xx.08** before opening of technical bids commences. Technical bids shall **be opened at 15.30 Hrs. on xx.xx.08**. Tenders received after the due date & time shall be liable to be summarily rejected.
- v) Earnest Money Deposit (EMD): Refundable, Non-interest bearing **EMD of Rs 2,00,000/-** shall be deposited by Account Payee Pay Order 'OR' Demand Draft in favour of "Bharat Heavy Electricals Limited" payable at Delhi/ NOIDA. Those bidders who have already deposited 'One Time 'EMD' of Rs. 2,00,000/- with BHEL, PSNR, NOIDA need not submit EMD with the present tender.
- vi) Tenders not accompanied with Full Earnest Money Deposit, as indicated above, will not be considered.
- vii) 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.
- viii) BHEL reserves the right to accept or reject any or all tenders without assigning any reason whatsoever.
- ix) BHEL takes no responsibility for any delay/ loss of documents or correspondences sent by courier/ post.
- x) Unsolicited rebate/ discount shall not be accepted after bid opening.
- xi) Purchase Preference will be given to CPSUs as per Govt. Guidelines.

DGM



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and OHSAS 18001 certified  
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### DOMESTIC NOTICE INVITING TENDER

LAST DATE OF SALE : **05.08.08**  
DATE OF OPENING : **05.08.08**

NIT NO. / NAME OF WORK

**TENDER NO. BHEL/ NR/ SCT/ PARBATI/ STORE/ 528**

**Sealed tenders are invited from the contractors fulfilling qualifying requirements for the works of “Development and construction of BHEL storage and store shed complex at site for PARBATI Stage III at Panasa, Distt Mandi, Himachal Pradesh”.**

#### NOTES

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

**DGM**

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**PROCEDURE FOR SUBMISSION OF SEALED TENDERS:**

The tenderers must submit their tenders as required in **two parts** in separate sealed covers **prominently superscribed as Part-I Technical bid and Part-II, Price bid** also indicating on each of the cover tender specification no., date and time as mentioned in tender notice.

**TECHNICAL BID (COVER-I)**

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

**PRICE BID (COVER-II)**

Tenderers may please note that price bid is **to be submitted only in original copy** of Tender i.e. Price bid (Part-II) issued by BHEL and no duplicate copy of the 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

### 4X130 MW PARBATI ST III HYDRO ELECTRIC PROJECT

M/s NHPC Limited (NHPC) has awarded a contract on BHEL for supply, transportation, storage and material handling at site, erection and commissioning of 4 x 130 MW Francis turbines, generators, transformers along with all the auxiliaries and BOP on a lump sum basis.

**On the part of BHEL it has to create its own storage and office facility at site. BHEL has acquired the leased land at Panasa, about 10 Kms from project site and shall have to develop it for construction of closed and open storage yard complex.**

Parbati ST-III Hydro Electric Power Project, an underground Power House is essentially a run of river scheme utilizing outflow of Parbati ST-II, inflow of Sainj river and unutilized inflow of Jiwa Nallah for power generation

The project is situated in village Behali in Kullu district of HP is located about 3 Kms from Largi dam, about 250 kms from Chandigarh. The project can be reached by road by Kiratpursahib-Bilaspur-Mandi-Manali road. Nearest railhead is Kiratpursahib about 180 Kms. Nearest airport is Kullu airport at Bhunter about 25 Kms from project site.

## SPECIAL CONDITION OF CONTRACT

Clause No.	Title
34.0	Scope of Work
35.0	Instruction to Tenderers
36.0	Contractor's Supervision
37.0	Supervisory Staff & workmen
38.0	Tools & Plants/ IMTEs
39.0	Material
40.0	Execution of the work
41.0	Methods of measurement
42.0	Deviation
43.0	Valuation of deviation
44.0	Compliance to regulation & byelaws
45.0	Facilities to be provided by BHEL/ Contractor
46.0	Progress reporting
47.0	Drawing & documents
48.0	Delay & Extension of Time
49.0	Price Variation
50.0	Income tax & Sales Tax
51.0	Time Schedule
52.0	Terms of payment
53.0	Insurance
54.0	Rate schedule cum BOQ
55.0	Final Bill
56.0	Others
57.0	Instructions to tenderers

## **SPECIAL CONDITIONS OF CONTRACT**

### **34.0 SCOPE OF WORK**

- 34.1 The tender Specifications cover all works for development and construction of BHEL storage and store shed complex at site for PARBATI Stage III at Panasa Distt Mandi in HP state. The stores are to be developed on the land taken on lease within 10 kilometers from powerhouse site. This includes earth work i.e. Cutting and Leveling of land including rolling and compaction as per the specifications/drawings/instructions, plain & reinforced cement concrete, area fencing, area lighting, high mast lighting retaining walls (if required), drains, supply of all materials required such as reinforced steel, structural steel, cement, bitumen, sand, graded stones, gravel/binding earth, aggregates, pipes, Columns, purlins, trusses, colored roof sheets, side claddings, electrical items and any other materials to complete the work, Fabrication and Erection of structures at site stores, edge angles, steel / wooden doors , windows, reinforcement, scaffolding, form work, masonry work, WBM roads, plumbing, sanitation, sewage, electrical works etc. including supply of all materials labour, consumables, tools & plants, transportation, storage, sample testing, octroi, applicable taxes etc., and Plantation of new Trees & Plants at site and office site as instructed by Engineer-in-charge.
- 34.2 The scope of work shall generally include but not limited to the construction of the following. The contractor is required to carry out all the items indicated in the tender including the rate schedule.
- The location for the closed/ semi closed storage sheds, storage complex are on raised platform/ leveled and compacted area
  - Cutting, leveling & compaction of land as per instruction of Engineer-in-charge.
  - Disposal of extra debris at the nearby places, if required, not more than 2 - 3 Km
  - Culverts and necessary drains.
  - Fencing of storage yard complex.
  - Electrification and lighting of indoor and outdoor storage area.
  - Water bound Macadam roads.
  - Internal electrification work
  - Construction of security posts along with toilet, entry gates at the stores
  - Construction of closed storage sheds
  - Plumbing, sanitation and sewerage work
  - Septic Tank/ soak pit
  - Plantation and relocation of existing Trees & Plants
  - Safety at Site
  - Arrangement at own cost all manpower and materials required for completion of work.

- Records of consumables, man power report and work progress
- Quality, Inspections and testing
- Taxes and Duties, octroi etc.,
- The work over and above this tender specification are to be carried out as per the decision of BHEL Engineer- in- charge

Detailed specifications has been detailed in Annexure A enclosed.

## **PLANTATIONS**

In order to protect Environment and as per the statutory requirement of Forest and Horticulture departments of that area, close co-ordination with the assigned authorities shall be maintained and prior permission for any cutting of existing tree or plant shall be obtained by the contractor to avoid any stoppage or hurdle in the progress of work. The Contractor is required to cut/ relocate some of the existing plants/ trees and to implant and maintain at least 25 new plants/ trees of assorted type at BHEL stores, office within first month of the contract and maintain it till the tenure of the contract. No separate payment will be made for this work.

- 34.3 The work under this contract shall be carried out as per specifications, special conditions of contract, technical specifications, rate schedule, drawings etc., in case specifications are found to be incomplete CPWD specifications shall be followed as per site BHEL engineers instructions and approval.
- 34.4 **If there is any extra work, involving items not covered in BOQ, the same shall be carried out as per the prevailing CPWD latest rate schedule with applicable prevailing cost index. For non scheduled items, market analysed rates + OH & Profits @15% shall be admissible.**
- 34.5 Furnishing all labour, materials, supervision, construction plans, equipment, supplies, transport, to and from the site, fuel, electricity, compressed air, water and all other incidental items and temporary works not shown on specified but reasonably implied or necessary for the proper completion, maintenance and handling over the works, except in accordance with the stipulations laid down in the contract documents and additional stipulations as may be provide by the engineer during the course of works.
- 34.6 Furnishing test reports for the products used or intended to be used, shall be submitted if so desired by the engineer.
- 34.7 Carrying out topographic survey of the entire area of the stores land and establish levels and coordinates at suitable intervals, setting out the locations and levels of proposed structures, constructions and marking of reference pillars and other identification works etc., The contractor shall provide the owner/BHEL such a assistance, instruments, machines, labour and materials as are normally required

for examining, measuring and testing any work and the quality, weight or quantity of any material used.

34.8 The nature and extent of work involved are as per the requirement mentioned. The successful tenderer shall submit detailed proposed working drawings of following for approval of BHEL during execution. (The general sketch of complex of 16,000 Sq m etc., showing BHEL requirements are enclosed.)

- a) Layout plan office, storage area and for closed/ semi closed storage sheds.
- b) Supporting Structure detail for PVC water tanks.
- c) Truss standard details.
- d) Details of poles and cable laying for area lighting.
- e) Details of Main Gates
- f) Electrical layout
- g) Fencing details

34.9 The contractor under this contract shall also provide free of cost services of skilled persons for a total period of 30 Man-months exclusively for use by BHEL. This manpower will be required for following services

- Computer operator ( 6 man-months)
- Skilled workers for working in store, office and colony. (12 man months)
- Unskilled workers for working in store, office and colony. (12 man months)

Persons so deployed shall have to work in extended hours whenever required. Workmen provided as per the above provisions shall be fully trained and experienced in the nature of work for which they are deployed.

*In case contractor fails to provide above mentioned manpower as desired by BHEL, the 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, recovery at the rate of the prevailing minimum wages at Parbati Site for the categories given plus 10% will be made from the final bill of the contractor.*

## **35.0 INSTRUCTIONS TO TENDERERS**

35.1 **The tenderers are advised to physically visit the site and fully acquaint themselves with site conditions, transportation routes, various distances and the fact that other contractors would be working in this area their structures are to be protected. The material brought and stacked for construction should not make hindrance to other contractors. Necessary precaution and arrangements including sprinkling of water during work as acceptable to BHEL for safety & security for the above have to be made by the contractor. No claim will be entertained by BHEL on ground of lack of knowledge and the contractor's rates shall be deemed to have taken this into account.**

- 35.2 The contractor, in the event of this work awarded to him, shall establish an office at site and keep posted a recognized, responsible officer with valid Power of Attorney for the purpose of the contract. Any order or instructions of the `Engineer` or his duly recognized representative, communicated to the contractor's representative at site office will be deemed to have been communicated to the contractor at his legal address.
- 35.3 The Tenderer should quote the prices keeping in view of any increase in cost for labour, material transportation, construction consumables, diesel / petrol and other lubricants etc. No revision in the quoted and accepted prices and rates shall be accepted by BHEL.

### **36.0 CONTRACTOR'S SUPERVISION**

- 36.1 The Contractor shall himself supervise the execution of the Contract and shall appoint a competent Engineer/ agent approved by BHEL Engineer to act in his place.
- 36.2 The Contractor shall employ an Engineer having at least a Degree of Bachelor in Civil Engineering' from a recognized university having experience for carrying out any work with a contract value exceeding Rupees Fifty Lacs, and minimum one supervisor having at least a `Diploma in Civil Engineering' from a recognized college, for work with a contract value exceeding Rs.Ten lacs and also one electrical supervisor having experience for carrying out similar any work
- 36.3 The employment of an Engineer as aforesaid shall not be necessary if the Contractor himself is in possession of a recognized technical qualification and is in the opinion of the Engineer capable of receiving instructions of the Engineer and of executing the work to the satisfaction of the Engineer.
- 36.4 If the Contractor fails to appoint a suitable Engineer as aforesaid, the Engineer shall have full powers to suspend the execution of work and stop payment of any money that may have become due until such date as a suitable Engineer is appointed and the Contractor shall be held responsible for the delay caused to the work and no extension of time on this account shall be given to him.
- 36.5 Orders given to the Contractor's Engineer shall be considered to have the same force as if they had been given to the Contractor himself.
- 36.6 The Contractor representative shall be in attendance at the site during all working hours and shall superintend the execution of work with such additional assistance in each grade, as the Engineer may consider necessary.

- 36.7 The Contractor or his accredited representative shall attend, when required and without making any claim for doing so, either the office of the Engineer or the work site to receive instructions.
- 36.8 The Engineer shall have full powers, and without assigning any reason, to require the Contractor immediately to cease to employ in connection with this contract any Agent, servant or employee whose continued employment is, in his opinion, undesirable.

### **37.0 SUPERVISORY STAFF AND WORKMEN**

- 37.1 The contractor shall deploy all the experienced skilled, semiskilled and unskilled workmen required for all the works under this specification. BHEL reserves the right to decide on the suitability of the workers and other personnel who will be deployed by the contractor. BHEL reserves the right to insist on removal of any employee of the contractor at any time, if they find him unsuitable and the contractor shall forth with removes him.
- 37.2 The supervisory staff including qualified Engineers deployed by the contractor shall ensure proper out-turn of work and discipline on the part of the labour put on the job by the contractor 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/ BHEL's Client/ other agency.
- 37.3 The work shall be executed under the usual conditions like rain, insufficient space, improper approach roads etc., and effecting major construction work 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.
- 37.4 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.
- 37.5 It is the responsibility of the contractor to engage his workmen in round the clock shifts or on overtime basis for achieving the targets set by BHEL. The contractor's finally accepted rates shall include all these contingencies. The contractor shall deploy the necessary number of qualified and approved fulltime electrician at his cost to maintain the temporary electrical installations and other related areas.
- 37.6 During the course of construction, if the progress is found unsatisfactory, or in the opinion of BHEL, if it is found that the skilled workmen like masons, carpenter, bar binder, welder, piling rig operators, fitters, 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 all charges incurred for engaging the additional workmen as per requirement with overheads shall be recovered from the contractor's running bills.

- 37.7 If the contractor or his workmen or employees shall break, deface, injure or destroy any part of a building, road kerb, fence, enclosure, water pipes, cables, drains, electric 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 will be final) from any money due to the contractor.
- 37.8 The monthwise manpower deployment plan to be submitted as per format (at Annexure-C to general conditions of contract) is only to assess the capability as well as understanding of the contractor to execute the work. It shall be the contractor's responsibility to deploy the required manpower, for timely and successful completion of the job, to any extent over and above those indicated in the above deployment plan (including those which are not covered in the plan submitted) without any compensation on this account. Separate persons shall be identified for quality and safety at site.

### **38.0 TOOLS AND PLANTS / IMTEs**

- 38.1 All the T&P/ IMTES, which are required for successful and timely completion of work covered under these specifications shall be arranged and provided by the contractor at his own cost in working condition. Contractor shall make his own arrangement for maintenance of all the tools and plants, having adequate stock of spares and consumables to minimize the down time.
- 38.2 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 including transportation cost of same from any of BHEL site/place 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.
- 38.3 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.
- 38.4 All supervision and labour required for maintenance and the contractor at his own cost shall arrange attending breakdowns.
- 38.5 Contractor shall ensure deployment of serviced and healthy T&Ps including cranes, lifting tackles, wire ropes, Manila ropes, winches and slings, road rollers, bull dozers/JCB etc. History card and maintenance records for major T&Ps will

- be maintained by the contractor and will be made available to BHEL Engineer for inspection as and when required. Identification for such T&Ps will be done as per BHEL Engineer's advice.
- 38.6 Contractor shall ensure deployment of reliable and calibrated IMTEs (Inspection measuring and Test equipment). The IMTEs shall have test/ calibration certificates from authorized/ 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.
- 38.7 Retesting/ re-calibration shall also be arranged at regular intervals during the period of use as advised by BHEL Engineer with in 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.
- 38.8 BHEL shall have lien on all T&P, IMTEs & other equipment of the Contractor brought to the site for the purpose of construction of stores. BHEL shall continue to hold the lien on all such items throughout the period of contract. The Contractor and/or his Sub-contractors shall remove no material brought to the Site from the Site without the prior written approval of the Engineer.
- 38.9 The month wise T&P deployment plan to be submitted as per format (at Annexure-D to general conditions of contract) is only to assess the capability as well as understanding of the contractor to execute the work. It shall be the contractor's responsibility to deploy the required T&P, for timely and successful completion of the job, to any extent over and above those indicated in the above deployment plan (including those which are not covered in the plan submitted) without any compensation on this account.

### **39.0 MATERIALS**

- 39.1 The contractor shall at his own expenses provide all stores and materials for all civil, mechanical, and electrical works including cement and steel required for the work.
- 39.2 All stores and materials to be provided by the Contractor shall be of the best kind in conformity with the specifications laid down in the contract or as per relevant Indian standard and the Contractor shall, if requested by the Engineer, furnish proof to the satisfaction of Engineer that the materials so comply.

- 39.3 The Contractor shall, at his own expense and without delay, supply to the Engineer samples of materials proposed to use in the works. The Engineer shall within seven days of supply of samples or within such further period as he may require will intimate to the Contractor in writing, whether samples are approved by him or not. If samples are not approved, the Contractor shall forthwith arrange to supply to the Engineer for his approval fresh samples complying with the specifications laid down in the Contract. Any delay in approval of samples (original or fresh ones) shall not make the contractor eligible for any compensation.
- 39.4 The Engineer shall have full powers to require removal of any or all of the materials brought to site by the Contractor which are not in accordance with the Contract specifications or do not conform in character or quality to samples approved by him. In case of default on the part of the Contractor in removing rejected materials, the Engineer shall be at liberty to have them removed by other means. The Engineer shall have full powers to procure other proper material to be substituted for rejected materials and in the event of the Contractor refusing to comply; he may cause the same to be supplied by other means. All costs, which may attend upon such removal and / or substitution, shall be borne by the Contractor.
- 39.5 The Contractor shall indemnify BHEL, its representatives or employees against any action, claim or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties or other charges which may be payable in respect of any article or material or part thereof included in the Contract. In the event of any claim being made or action being brought against BHEL or any agent, servant or employee of BHEL in respect of any such matters as aforesaid, the Contractor shall immediately be notified thereof, provided that such indemnity shall not apply when such infringement has taken place in complying with the specific directions issued by BHEL but the Contractor shall pay any royalties or other charges payable in respect of any such use, the amount so paid being reimbursed to the Contractor only if the use was the result of any drawings / specifications issued after submission of the tender.
- 39.6 The Engineer shall be entitled to have tests carried out as specified in the Contract for any materials supplied by the Contractor other than those for which, as stated above, satisfactory proof has already been furnished, at the cost of the Contractor and the Contractor shall provide at his expense all facilities which the Engineer may require for the purpose. If no tests are specified in the Contract, and the Engineer requires such tests, the Contractor shall provide all facilities required for the purpose and the charges for these tests shall be borne by the Contractor only. The cost of materials consumed in tests shall be borne by the Contractor in all cases except when otherwise provided.
- 39.7 In addition the Contractor shall perform / submit at his own cost such tests/ samples as may be required by the Engineer out of the materials used by the contractor except for the costs of materials used in such tests/ samples.

- 39.8 After acceptance of the Contract, if Contractor desires BHEL to supply any other materials, such material may be supplied by BHEL, if available, at rates to be fixed by the Engineer along with prevailing departmental charges (current rate of 30%). BHEL reserve the right not to issue any material. The non-issue of such material will not entitle the Contractor for any compensation whatsoever either in time or in cost.
- 39.9 Material required for the works, whether brought by the Contractor or supplied by BHEL, shall be stored by the Contractor only at places approved by the Engineer. Storage and safe custody of material shall be the responsibility of the contractor.
- 39.10 BHEL's officials concerned with the Contract shall be entitled at any time to inspect and examine any materials intended to be used in or on the works, either on the Site or at factory or workshop or other place(s) where such materials are assembled, fabricated, manufactured or at any place (s) where these are lying or from which these are being obtained and the Contractor shall give such facilities as may be required for such inspection and examination.
- 39.11 All materials brought to the Site shall become and remain the property of BHEL and shall not be removed off the Site without the prior written approval of the Engineer. But whenever the Works are finally completed and advance, if any, in respect of any such material is fully recovered, the Contractor shall at his own expense forthwith remove from the Site all surplus material originally supplied by him and upon such removal, the same shall re-vest in and become the property of the Contractor.
- 39.12 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/ TIG wires. On receipt of electrodes at site these shall be subjected to inspection and approval by BHEL. The contractor shall inform BHEL details regarding type of electrodes, batch No., date of expiry etc. and produce test certificate for each lot/ batch with correlation of batch/ lot no. with respective test certificate. No electrode will be allowed to be used without valid test certificate.
- 39.13 All charges on account of Octroi, terminal or sales tax and other duties on material obtained for the works from any source shall be borne by the contractor.

#### **40.0 EXECUTION OF WORK**

- 40.1 The work shall be executed in a workman like manner and to the entire satisfaction of the Engineer and as per technical specification issued with tender, IS codes, CPWD specifications/ HP PWD specifications as applicable. In case of conflict, the decision of the Engineer shall be final & binding.
- 40.2 The Engineer will communicate or confirm his instructions to the Contractor in respect of the execution of the work in a "Work Site Order Book" maintained at his office and the Contractor shall visit this office daily and shall confirm receipt of

such instructions by signing the relevant entries in this book. Such entries will rank as order or notices in writing within the intent and meaning of these conditions.

40.3 Only BHEL approved make of electrodes will be used. All electrodes shall be heated and dried in the electric electrode-drying oven to the required temperature for the period specified by the Engineer before these are used in erection work. All welders shall have electrodes drying portable oven at the work spot. The electrodes brought to site will have valid manufacturing test certificate. The test certificate will have correlation with the lot no./ batch no. given on electrode packets. No electrodes will be allowed to use in the absence of above requirement. The thermostat and thermometer of electrode drying oven will be also calibrated and test certificate from Govt. approved/ accredited test house traceable to National / International standards will be submitted to BHEL before putting the oven in use. Periodical calibrations for the same shall also be arranged by the contractor within the finally accepted rates.

#### **40.4 SETTING OUT**

40.4.1 All the works shall be set out to the true lines, grades and elevation indicated on the drawing. The contractor shall be responsible to locate and set out the works. Only one grid reference line and benchmark all be made available for setting out the works under the contract. This reference lines shall be used, as datum for the works under the contract and the contractor has to establish for his work area at available points horizontal and vertical control points. The contractor shall inform BHEL well in advance of the times & places at which he wishes to do work in the area allotted to him so that suitable datum points established by him are checked by BHEL/ Customer to enable the contractor to proceed with the works. Any work done without being properly located may be removed and/ or dismantled by BHEL/ Customer at contractors expense.

40.4.2 The contractor shall at his own expense take all proper and responsible precautions to preserve and maintain these datum marks to its true position. In the event of these marks being disturbed or obliterated by accident or due to any other cause whatsoever, the same may be deemed necessary placed by BHEL/ Customer at contractor's expenses.

#### **40.5 SITE DRAINAGE**

40.5.1 All water including sub-soil water which may accumulate on the Site during the progress of the works or in trenches and excavations, including monsoon period shall be removed by the contractor from the Site to the satisfaction of the Engineer. It will also be responsibility of the contractor to de-water all the foundation pits, trenches with suitable de-watering methods like, pumping out, well point system etc. Considering the depth of water table at plant site. All such expenditure on de-watering shall be deemed to be included in quoted rates.

#### **40.6 INSPECTION AND STAGE APPROVAL OF THE WORK**

40.6.1 The owner or his duly authorised representative shall have at all reasonable times access to the contractor's premises or works and shall have the power to inspect drawings or any portion of the work, examine the materials and workmanship and shall have the authority to reject any work. This would be implemented through joint inspection by the representative of the owner and BHEL and in the form of joint protocols without any extra claims and loss of time and amount.

40.6.2 All work embracing more than one process shall be subject to examination and approval at each stage thereof and the Contractor shall give due notice in writing to the Engineer when each stage is ready. In default of such notice being received, the Engineer shall be entitled to approve the quality and extent thereof at any time he may choose and in the event of any dispute; the decision of BHEL Engineer there on shall be final and conclusive.

#### **40.7 UNCOVERING AND MAKING GOOD**

40.7.1 The Contractor shall uncover any part of the Works and/or make openings in or through the same as the Engineer may from time to time direct for his verification and shall reinstate and make good such part to the satisfaction of the Engineer. If any such part has been covered up or put out of view after being approved by the Engineer and is subsequently found on uncovering to be executed in accordance with the Contract, the expenses of uncovering and / or making opening in or through, reinstating and making good the same shall be borne by BHEL. In any other case all such expenses shall be borne by the Contractor.

#### **40.8 DISCREPANCIES AND ADJUSTMENT OF ERRORS**

40.8.1 The several documents forming the Contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small scale drawings and figures dimensions in preference to scale and special conditions in preference to general conditions.

40.8.2 In case of discrepancies between schedules of quantities, the specification and / or the drawings, the following order of preference shall be observed.

- (a) Description in schedule of quantities.
- (b) Special conditions
- (c) Drawings
- (d) Technical Specifications
- (e) General conditions of contract

If there are varying or conflicting provisions made in any one document forming part of the contract, the Engineer shall be the deciding authority with regard to the document.

- 40.8.3 Any error in description, quantity in schedule of quantities or any omission there from shall not vitiate the contract or release the contractor from the execution of the whole or any part of the works comprised there in according to the drawings and specifications or from any of his obligations under the contract.
- 40.8.4 If on check there are found to be differences between the rates given by the contractor in words and figures or in the amount worked out by him in the schedule of quantities and general summary, the same shall be adjusted in accordance with the following rules:
- (a) In the event of discrepancies between description in words and figures quoted by a tenderer, the lesser of the two will be treated as valid rate.
  - (b) In the event of an error occurring in the amount column of schedule of quantities as a result of wrong extension of the unit rate and quantity, the unit rate shall be regarded, as firm and extension shall be amended on the basis of the rate.
  - (c) All errors in totaling in the amount column and in carrying forward totals shall be corrected.
  - (d) The totals of various sections of bill of quantities amended shall be carried over to the general summary and the tendered sum amended accordingly. The tendered sum so altered shall, for the purpose of tender, be substituted for the sum originally tendered and considered for acceptance instead of the original sum quoted by the tenderer. Any rounding of quantities or in sections of bill of quantities or in general summary, by the tenderer, shall be ignored.
- 40.8.5 If neither drawing nor specification contain any mention of minor details of construction which in the opinion of the Engineer whose decision shall be final and conclusive, are reasonable and obviously and fairly intended for satisfactory completion of work, such details shall be provided by the contractor without any extra cost, as if they were specially mentioned and shall be deemed to be included in the contract.

#### **40.9 SAFETY CODE**

- 40.9.1 BHEL-Power Sector (NR) is ISO 9002-2000 certified company and has been recommended for ISO 14001-1996 and OHSAS 18001 and CII certification. Work quality to customer's satisfaction, system requirements, health, safety & environmental protection are the basic essence of this certification. The contractor in all respects will organize his work, systems, process control documentation, T&P, inspection, measuring and testing equipment etc. Meeting above requirements as per instructions of BHEL engineer. The contract shall also comply with applicable legislation and regulations with regards to Health, safety and environmental aspects for minimizing risk arising from occupational health, safety hazards, controlling pollution and wastage.

40.9.2 Besides provision with regard to SAFETY under Clause 27, Contractor shall note that Explosives shall not be used on the work by contractor except with permission in writing of the ENGINEER and in manner and to the extent to which he has prescribed. Where explosives are used, the same shall be stored in a special magazine to be provided by and at the cost of the contractor who shall be liable for all damages, losses and injury to any person or property and shall be responsible for complying with all statutory obligations in these respect. The contractor should have the valid license for carrying out the blasting work and also for storage of explosives.

#### **40.10 NUISANCE**

40.10.1 The Contractor shall not at any time do, cause or permit any nuisance on Site or do anything which shall cause unnecessary disturbance or inconvenience to owners, tenants or occupiers of other properties near the Site and to the public generally.

#### **40.11 MATERIAL OBTAINED FROM EXCAVATION**

40.11.1 Materials of any kind obtained from excavation on the Site shall remain the property of BHEL / its client and shall be disposed of as the Engineer may direct, at no extra cost.

#### **40.12 TREASURE, TROVE, FOSSILS etc.**

40.12.1 All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the site shall be the absolute property of BHEL/ BHEL's client and the Contractor shall take reasonable precautions to prevent his workmen or any other person from removing or damaging any such article or thing, shall immediately upon discovery thereof and before removal acquaint the Engineer with such discovery and carryout the Engineer's directions as to the disposal of the same.

#### **40.13 PROTECTION OF WORKS**

40.13.1 Trees designated by the Engineer shall be protected from damage during the course of the Works and earth level within 1 meter of each such tree shall not be charged. Where necessary, such trees shall be protected by providing temporary fencing.

40.13.2 The contractor shall provide and maintain at his own expense all lights, guards, fencing and watching when and where necessary or required by the Engineer for the protection of the Works or for the safety and convenience of those employed on the Works or the public.

40.13.3 The contractor shall have total responsibility for protecting his works till it is finally taken over by the Engineer. No claim will be entertained by the Engineer for any damage or loss to the contractor's works and the contractor shall be responsible for the complete restoration of the damaged works to its original condition to comply with the specifications and drawings. Should any such damage to the contractor's works occur because of other party not under his supervision or control, the contractor shall make his claim directly with the party concerned. The contractor shall not cause any delay in the repair of such damaged works because of any delay in the resolution of such disputes. The contractor shall proceed to repair the work immediately and no cause thereof will be assigned pending resolution of such disputes.

#### **40.14 RECORD FOR MATERIALS CONSUMED**

40.14.1 The contractor shall maintain and furnish to the Engineer the record of materials consumed in the works for each activity. The statement showing the theoretical vis-à-vis actual consumption of specified materials, such as structural /reinforcement steel, cement, bitumen, lead, paint etc., shall be enclosed along with the running bills submitted by the contractor. Contractor has to also furnish the test results of the concrete cubes, bricks, stone aggregates and other materials used in the work as per IS specifications.

#### **40.15 PROTECTION OF EMBEDMENTS, BOLTS ETC**

40.15.1 The contractor shall ensure proper protection to the satisfaction of the Engineer, of all bolts, inserts, embedment etc. From weather etc/ by greasing, rapping them with gunny bags or canvas or by any other means as directed by Engineer. Cost of such protections shall be deemed to be included in the rates quoted for the item.

#### **40.16 CLEARANCE OF SITE AND REPAIRS.**

40.16.1 Contractor has to clear the site/ area where mechanical and electrical erection work is to be commenced/ or in progress. The contractor shall remove construction materials and equipment lying in the vicinity and causing obstruction in the erection work within 24 hrs' notice. In case, he fails to clear the site, this will be done at his risk & cost by BHEL.

#### **40.17 QUALITY ASSURANCE**

40.17.1 The contractor has to establish/ arrange at site the field testing facilities for testing of civil construction materials and concrete cubes for ensuring the proper quality, grade and strength of the materials used in the construction in line with approved field quality check list of BHEL/ its client. Contractor has to submit

detailed report for testing of all material used etc. All testing shall be done as per IS code specifications/ BHEL's quality plan. If further test is required by the engineer to be carried from outside laboratory, the cost of the same shall be borne by the contractor.

#### **40.18 COMPLETION OF WORK**

40.18.1 The works shall be completed to the entire satisfaction of the Engineer and in accordance with the completion schedule as specified in the Contract, and all unused stores and materials, tools, plant, equipment, temporary buildings, site office, labour hutments and other things shall be removed and the site and work cleared of rubbish and all waste materials and delivered up clean and tidy to the satisfaction of the Engineer at the Contractor's expenses.

40.18.2 BHEL shall have power to take over from the Contractor from time to time such sections of the work as have been completed to the satisfaction of the Engineer. Such work however shall not be treated as have been completed until the extra works are executed to the satisfaction of Engineer. The Guarantee period shall commence only after handing over of the entire works.

40.18.3 The Engineer shall certify to the contractor the date on which the work is completed and the date thereof.

#### **40.19 RECORDS AND MEASUREMENTS**

40.19.1 All items having a financial value shall be entered in BHEL measurement Book so that a complete record is obtained of all works performed under the Contract.

40.19.2 Measurement shall be restricted to that required to ascertain the financial liability of BHEL under the contract.

40.19.3 The measurements shall be taken jointly by any person duly authorised on the part of BHEL and by the Contractor.

40.19.4 The Engineer shall give reasonable notice in writing to the Contractor of appointment for measurement.

40.19.5 The Contractor shall, without extra charge, provide assistance with appliances and other things necessary for measurement and shall bear all the cost of measurement of his work.

40.19.6 Measurement shall be entered in BHEL Measurement Book and signed and dated by both parties each day at the site on completion of measurement. If the Contractor objects to any of the measurements recorded on the behalf of BHEL, a note to that effect will be made in BHEL Measurement Book or against the item or items objected to and such note shall be signed and dated by both the parties engaged in taking the measurement.

40.19.7 If, as a result of such objection, it becomes necessary to re-measure the work wholly or in part the expense of such re-measurement shall be borne by the contractor.

40.19.8 If the Contractor's representative fails to attend when required, the Engineer shall have power to proceed by himself to take measurements and in that case these measurements shall be accepted by the Contractor as final.

40.19.9 The Contractor shall, once in every month, submit to the Engineer details of his claims for the work done by him upto and including the previous month which are not covered by this Contract Agreement in any of the following respects:

- (a) Deviation from the items and Specifications provided in the tender.
- (b) Extra items/new items of work.
- (c) Quantities in excess of those provided in the Contract Schedule.
- (d) Items in respect of which rates have not been settled.

#### **41.0 METHOD OF MEASUREMENT**

41.1 Method of measurements if not specified in the tender, shall be as per relevant IS Codes/ PWD codes/ UP PWD codes.

#### **42.0 DEVIATION**

42.1 The Contractor shall not make any alteration in addition to or omission from the work as described in the tender documents except in pursuance of the written instructions of the Engineer. No such deviation from the work described in the tender documents shall be valid unless the same has been specifically confirmed and accepted by the Engineer in writing and incorporated in the Contract.

42.2 The Engineer may deviate, either by way of addition or deduction, from the work so described, provided that the Contract sum be not thereby varied on the whole by more than the percentage set out in the tender documents. The value of all additions and deductions shall be added to or deducted from the Contract sum. (Whenever the Engineer intends to exercise such a right his intentions shall specify the deviations which are to be made, the lumpsum assessment or the proposed basis of payment, the extra time allowed, if any, and the date for completion of the (entire contract). Any objection by the contractor to any matter concerning the order shall be notified by him in writing to the Engineer within seven days from the date of such order, but under no circumstances shall the work be stopped (unless so ordered by the Engineer) owing to differences or controversy that may arise from such an objection. In the absence of such a notification of objection by the Contractor, he will be deemed to have accepted the order and the conditions stated therein.

#### **43.0 VALUATION OF DEVIATIONS**

Rates for deviated items or new items of work shall be as follows:

- 43.1 If the rates for the additional, altered or substituted work are specified in the Contract for the work, the Contractor is bound to carry out the additional, altered or substituted work at the same rates as are specified in the Contract for the work.
- 43.2 If the rates for the additional, altered or substituted work are not specifically provided in the Contract for the work, the rates will be derived from the rates for a similar class of work as are specified in the Contract for the work or it shall be carried out as per the prevailing CPWD latest rate schedule with applicable prevailing cost index.
- 43.3 If the rates for the altered, additional or substituted work cannot be determined in the manner specified in above clauses the rate for such part or parts will be determined by the Engineer on the basis of prevailing market rates when the work was done and the decision given in this behalf shall be final and binding on the Contractor. Rate analysis will be worked on CPWD manual of rate analysis as guidance.
- 43.4 If the rates for the altered, additional or substituted work cannot be determined in the manner specified in above clauses, then the contractor shall within 7 days of the date of receipt of order to carry out the work inform the Engineer of the rate at which it is his intention or charge for such class of work, supported by analysis of the rate or rates claimed, and the Engineer shall determine the rate or rates on the basis of prevailing market rates and pay the Contractor accordingly. However, the Engineer, by notice in writing, will be at liberty to cancel his order to carryout such class of work and arrange to carry it out in such manner, as he may consider advisable. But under no circumstance the Contractor shall suspend the work on the plea of non-settlement of rates falling under the clause or claim any compensation on that account. Elements of profit, overheads, supervision and establishment charges will be taken as 15% over direct cost.

#### **44.0 COMPLIANCE TO REGULATIONS AND BYELAWS**

- 44.1 The Contractor shall conform to the provisions of any statute relating to the work and regulations and bylaws of any local authority and of any water and lighting Companies or Undertaking with whose system the work is proposed to be connected. He shall, before making any variation from the drawings or the specifications that may be necessitated for such connections give the Engineer, notice specifying the variation proposed to be made and the reasons therefore and shall not carryout any such variation until he has received instructions from the Engineer in respect thereof. The Contractor shall be bound to give all notices required by statute, regulations or bye-laws as aforesaid and to pay all fees and taxes payable to any authority in respect thereof.

#### **45.0 FACILITIES TO BE PROVIDED BY BHEL/ CONTRACTOR**

- 45.1 BHEL shall provide free of charge limited open space for office and store inside the stores area at site. It is the responsibility of the contractor to construct sheds for his purposes, provide all utilities as a part of his scope of work.
- 45.2 Contractor shall be responsible for providing all necessary facilities like residential accommodation transport, electricity, water, medical facilities etc. as required under various labour laws and statutory rules and regulations framed there under to the personnel employed by him.
- 45.3 Construction power for the purpose shall be arranged by the contractor from local electricity authorities. Contractor may also have his own DG set for the construction purpose. Contractor at his own cost also shall do further distribution of power for the purpose of construction. All wiring must comply with local regulations and will be subject to Engineer's inspection and approval before connecting supply. The contractor shall have no claims for the power interruptions and it shall not be the excuse for delay of works. The contractor may have his own arrangements for back up power supply.
- 45.4 Provision of distribution lines of power from the central points to the required place with proper distribution boards observing the safety rules laid down by the 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 shift/ hours accordingly and deploy additional manpower if necessary so as to achieve the targets.
- 45.5 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.
- 45.6 Adequate lighting facilities such as flood lamps, hand lamps and area lighting shall be arranged by the contractor at the site of construction, contractor's material storage area etc. within finally accepted rates.
- 45.7 **Water for Constructio/Drinking purposes** shall be arranged by the contractor at his own cost. It will be the responsibility of the Contractor to satisfy himself that the water drawn by him is fit for construction/ consumption and adequately treat such water at his cost when it is not found fit for the said purposes. The Contractor should make arrangements for storage of sufficient quantity of water required for work.
- 45.8 No claim for damages will be entertained by the Company on account of interruptions of water supply or limitation of quantity of water as aforesaid or on account of the water so taken being not fit for construction purposes or on any other account in connection with such water supply.

45.9 The Contractor shall during the progress of the work, provide, erect and maintain at his own expenses all necessary temporary workshops, stores, consumables, offices, etc. Required for the proper and efficient execution of the work. The planning, setting and erection of these buildings shall have the approval of the Engineer and the Contractor shall at all times keep them tidy and in a clean and sanitary condition to the entire satisfaction of the Engineer.

45.10 On completion of work or as and when required by BHEL, all the temporary buildings, structures, pipe lines, cables etc. Shall be dismantled and leveled and debris shall be removed as per 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 charge in this regard shall be final.

#### **46.0 PROGRESS REPORTING**

46.1 Contractor is required to draw mutually agreed monthly programme in consultation with BHEL well in advance. Contractor shall ensure achievement of agreed programme and shall also timely arrange additional resources considered necessary at no extra cost to BHEL.

46.2 Weekly progress review meetings will be held at site during which actual progress during the week vis-a-vis scheduled programme shall be discussed for actions to be taken for achieving targets. The programme for subsequent week shall also be presented by contractor for discussions. The contractor shall constantly update/revise his work programme to meet the overall requirement. All quality problems shall 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.

46.3 The contractor shall submit weekly and monthly progress reports, materials reports, consumables (gases/ electrodes) report and other reports as per Performa considered necessary by the Engineer.

46.4 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 programme and the slippage do not accumulate and effect the overall programme.

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

#### **47.0 DRAWING AND DOCUMENTS**

- 47.1 The contractor shall visit the site and get acquainted himself with the topography of the land to be leveled for the purpose of construction of closed and open stores area. and see for himself the basic layout of the stores at that place. Based on that layout, contractor shall submit the drawing for the closed storage shed with all the structural details along with the foundation details and associated civil works. The basic layout drawing is enclosed with the tender. The detailed drawing plan is to be submitted by the contractor along with the tender submission.
- 47.2 The data furnished in various annexures enclosed with this tender specification are only approximate and for guidance. However, during the execution the change in the design and in the quantity may occur as is usual in any such large scale of work.
- 47.3 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.
- 47.4 Deviation from design dimensions should not exceed permissible limit. The contractor shall not correct or alter any dimension / details, without specific approval of BHEL.

#### **48.0 DELAY AND EXTENSION OF TIME**

- 48.1 If, in the opinion of the Engineer, the work is delayed
- (a) By reason of abnormally bad weather, OR
  - (b) By reason of serious loss or damage by fire, OR
  - (c) By reason of civil commotion, local combination of workmen, strike or lockout, affecting any of the trades employed on the work, OR
  - (d) By delay on the part of the agency or tradesmen engaged by the BHEL in executing work not forming part of the Contract, OR
  - (e) By reason of any other cause which in the absolute discretion of the Engineer is beyond the Contractor's control,

Then in any such case, the Engineer (or higher authority) may make fair and reasonable extension in the completion dates of the individual items of work or the Contract as a whole. Such extension which will be communicated to the Contractor by the Engineer in writing shall be final and binding on the Contractor. No other claim in this respect for compensation or otherwise howsoever is admissible. Upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the Engineer but shall nevertheless use

constantly his best endeavor to prevent or make good the delay and shall do all that may reasonably be required to the satisfaction of the Engineer to proceed with the work.

#### **49.0 PRICE VARIATION**

49.1 Prices shall remain firm

#### **50.0 INCOME TAX, SERVICE TAX, WORKS TAX AND SALES TAX**

50.1 **INCOME TAX** at the prevailing rate on gross value of work done and applicable surcharge shall be deducted from the running bills unless exempted by the Income Tax Authorities.

50.2 **Price quoted shall be inclusive of all taxes except Service Tax.** This being works contract service, the service tax along-with education cess, if any, will be paid against contractor's proper cenvatable invoice considering the latest applicable Service Tax notification wherein option of composition is available. 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 their Service Tax registration with Central Excise Division covering the services covered under this contract. Registration should also bear endorsement for the premises from where the billing shall be done by the contractor on BHEL for this project. The contractor shall obtain prior approval of BHEL before billing the Service Tax amount and should submit proper CENVETABLE INVOICE as per Service Tax rules.

50.3 Contractor shall get his organization registered with concerned sales tax 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 registration for this contract shall be forwarded to BHEL within 30 days from the date of LOI. In case the contractor is already registered for sales tax with Govt. Authorities he must quote his registration no. while submitting their tender

50.4 Contractor has to make his own arrangement at his cost for completing the formalities, if required, with Sales Tax Authorities, for bringing their materials, plants, and equipment at site for the execution of the work under this contract.

#### **51.0 TIME SCHEDULE**

51.1 The contractor is required to commence the work within 10 days from the date of issue of letter of intent unless BHEL decides to fix any other later date. However, BHEL Engineer will certify the actual date of start of work after adequate mobilisation of materials, manpower and T&P by the contractor.

51.2 Entire work under this contract is required to be completed, in all respect including handing over, within 6 MONTHS from the schedule date of start of work as per the programme/ milestones indicated by BHEL. In case of delay of

work due to reasons not attributable to the contractor, time extension will be granted by BHEL but in no case over run compensation will be payable. Contractor has to mobilize adequate resources to meet BHEL commitments as indicated from time to time. The contractor has to meet the following milestone dates of the project, which are as per current commitments to customer:

MILE STONES	COMPLETION
Land cutting & development	within 1 month
Construction of open storage area with Electrification	within 3 months
Building of closed storage sheds	1 shed within 4 months 1 shed within 5 months
Completion all miscellaneous works and handing over	within 6 months
Fencing of storage shed	within 1 month

51.3 The work under the scope of this contract is deemed to be completed in all respects, only when all the works are carried out as per satisfaction of BHEL. The decision of BHEL on completion date shall be final and binding on the contractor.

## **52.0 TERMS OF PAYMENT**

52.1 The Contractor shall be paid monthly running bill to a maximum of 95% of the value of the work actually executed on site as per rate schedule, provided the work has been executed to the satisfaction of the Engineer. The Engineer may after a measured bill allow & certify payment to the contractor on the basis of abstract measurement bill submitted by the contractor. From these amount recoveries such as advances, security deposit taxes etc. would be made. The certificate of the Engineer regarding such approval and passing of sums so payable shall be final and conclusive against the contractor.

52.2 The 2.5% of Contract Value shall be payable on completion of all pending work, rework wherever required, site clearing and reconciliation of materials.

52.3 The balance 2.5% of contract value will be payable on submission and passing of Final bill. The certificate of Engineer regarding such approval and passing of sums shall be final and conclusive against the contractor.

**NOTE:** Above payment shall be released after working out the contract value based on actual work carried out.

52.4 Any certificate relating to the work done may be modified by any subsequent interim certificates or by the final certificates and no certificate of the Engineer

supporting an advance payment shall of itself be conclusive evidence that any work or materials to which it relates are in accordance with the contract.

### **53.0 INSURANCE**

Besides provisions under clause no. 29.0 of GCC regarding insurance, the following shall also be applicable. The contractor shall also take care of the same while submitting their offer.

- 53.1 The contractor shall arrange the insurance for any liability arising out of storage and installation of the items under installation. The insurance cover should also include for the damage to the surrounding property in the vicinity of the work area. All statutory insurance covers for workmen, employers liability etc are to be arranged by contractor.

### **54.0 RATE SCHEDULE CUM BOQ/VARIATION**

- 54.1 Contractor shall fully understand description and scope of work before quoting. The scope of work and responsibility of the contractor as mentioned under these specification shall be covered within the quoted/ finally accepted rates.

- 54.2 The Tenderer shall quote the prices/ rates for entire scope of work 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.

- 54.3.1 Quantities mentioned in the rate schedules are approximate only and liable for variation due to change of scope of work/variation in schedule of quantities, changes in design etc. However in case the finally executed total contract value reduces beyond minus 30% only as compared to awarded contract value, the contractor will be eligible for compensation as per following provisions.

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

- 54.4 Contractor's total quoted price as per rate schedule will be taken as tentative only. The contractor undertakes to erect /commission actual quantities against each item as per project requirement and accordingly the final contract price shall be adjusted on the basis of quantities actually erected at site and payments will also be regulated for the same. The contractor confirms that unit rates quoted above take care of such variation during execution stage.

### **55.0 FINAL BILL**

55.1 As soon as possible after the completion of the work to the satisfaction of the Engineer, the Contractor shall prepare a certified final accounts on BHEL forms, in duplicate. It shall be accompanied by the all abstracts, vouchers, etc. in support thereof and shall be prepared in the manner prescribed by the Engineer.

## **56.0 OTHERS**

56.1 The LD shall be applicable at the rates as mentioned under Clause no 25.5 of the GCC of the Tender (under rights of BHEL)

56.2 The contractor shall submit security deposit within 15 days from the date of LOI as per clause no 16.2 of the General Conditions of Contract (GCC). In case the contractor opts to furnish bank guarantee as part of Security Deposit, the BG should be issued as per the Performa enclosed as per Annexure H of GCC. The BG should be issued through;

- a) Any of the Member Banks listed on page no 34 (a) of GCC.
- b) Any nationalised Bank for which discretion of its acceptance shall lie solely with BHEL

## **57.0 INSTRUCTIONS TO TENDERER**

57.1 Offers received without data/ information required to be submitted under tender clauses-11.1 to 11.11 are liable to be rejected. Documentary evidences should duly support all these data/ information.

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

**57.3 The tenderers are advised to actually visit the site and fully acquaint themselves with site conditions, location of stores, transportation routes, Local taxes, toll charges and levies, local labour minimum wages & prevailing wage agreements at site, quantum of work etc. before quoting their rates for this work. BHEL shall not be responsible in any way for non-familiarisation 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.**

57.4 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 or 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.

57.5 All statutory requirements for HSE, Social Obligations have to be ensured and followed by the contractor.

57.6 Insurance of personnel and T&P of contractor shall be arranged by contractor. Contractor shall comply with all statutory requirements regarding manpower, insurance. Taxes, duties, HSE requirements etc.

**Annexure-I**

**INDICATIVE LIST OF T & P TO BE ARRANGED BY THE CONTRACTOR  
AT HIS OWN COST**

<b>Sl. No.</b>	<b>EQUIPMENT</b>	<b>QTY</b>
1	CONCRETE MIXTURE M/C of SUITABLE CAPACITY	1 NO ( minimum)
2	CONCRETE VIBRATORS	AS PER Work REQUIREMENT
3	LOADERS, BACKHOE, EXCAVATOR, EARTH COMPACTOR, PLOUGHING TRACTOR UNIT, DOZER , OTHER EARTH MOVING EQUIPMENTS FOR GRADING/LEVELLING	AS PER Work REQUIREMENT
4	TRUCKS/LORRIES	AS PER Work REQUIREMENT
5	HYDRA CRANE 8T	1 NO Minimum
6	WATER TANKER	1 NO Minimum
7	DEWATERING PUMP	AS PER Work REQUIREMENT
8	WINCHES	AS PER Work REQUIREMENT
9	WELDING MACHINES	AS PER Work REQUIREMENT – MINIMUM- 2 SETS
10	PORTABLE OVENS	AS PER Work REQUIREMENT
11	ROAD ROLLERS	AS PER Work REQUIREMENT
12	TOOLS AND METERS FOR ELECTRICAL WORK	AS PER Work REQUIREMENT

Notes:

1. The above list specifies only major T&P (may not be complete to be deployed by the contractor). All additional/ other tools and plants including lorries/ trucks, tools & tackles, devices, machines, measuring instruments etc. in good and safe working conditions which are required for satisfactory & timely completion of work at site shall also be deployed by the contractor within finally accepted rate/ price.
2. Other terms and conditions regarding above items please also refer clause 38 T&P/IMTEs).

Annexure-II

**INDICATIVE LIST OF IMTEs TO BE ARRANGED BY THE CONTRACTOR AT HIS OWN COST**

SL NO	EQUIPMENT	QTY
1	THEODOLITE	1 NO
2	DUMPY LEVEL	1 NO
3	MEASURING TAPE	AS PER REQUIREMENT
4	COMPRESSION STRENGTH TESTING EQUIPMENT	AS PER REQUIREMENT
5	CONSTRUCTION MATERIAL TEST EQUIPMENT	AS PER REQUIREMENT
6	CONCRETE CUBE MOULD (150 X 150 X 150 ) mm	AS PER REQUIREMENT
7	CONCRETE slump cone	AS PER REQUIREMENT
8	COARSE AGGREGATE SIEVES & SAND SIEVER	AS PER REQUIREMENT
9	SIEVE SHAKER	AS PER REQUIREMENT
10	AGGREGATE IMPACT TEST MACHINE	AS PER REQUIREMENT
11	HEATING OVEN	AS PER REQUIREMENT
12	PHYSICAL BALANCE FOR LAB WORK	AS PER REQUIREMENT

NOTES:

1. The above list specifies only major IMTEs (may not be complete to be deployed by the contractor). Contractor has to have arrangements for material & concrete testing. All additional/ other IMTEs/ measuring instruments etc. 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 rate / price.
2. Other terms and conditions regarding above items please also refer clause 38 T&P/ IMTEs).

**CERTIFICATE OF DECLARATION FOR CONFIRMING THE KNOWLEDGE OF SITE CONDITIONS (Please refer Clause 57.0)**

We, -----  
Hereby declare and confirm that we have visited the project site under the subject namely, ----- and acquired full knowledge and information about the site conditions and 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 conditions.

Tenderers Name and Address

Place:

(Signature of the Tenderers with stamp)

Date:

GENERAL SCOPE OF WORK- OPEN YARD STORAGE AREA

A. SCOPE OF WORK

1. The Scope for construction of PARVATI III open yard site development includes:
  - Site clearance
  - Earth work including excavation, filling, compaction, leveling and grading
  - Stone Soling
  - Drainage(open and covered)
  - MS gates for Entrance/Exit
  - Road work
  - High Mast Lighting

The scope includes supply of all materials labour, consumables, tools & plants, transportation, storage, sample testing, etc., and any other materials to complete the work.

2. The scope of work will also include such other related works although they may not be specifically mentioned in the above paragraph and all such incidental items not specified but reasonably implied and necessary for completion of the job as a whole all as desired and as directed by the engineer. The detail scope of work covered above is not a comprehensive list of items of work involved. The detail scope of work may vary considerably depending on the actual construction requirements.

3. Unless otherwise specified, the work to be provided by the contractor for the items mentioned in the “Bill of Quantities”, shall include but not be limited to the following:

- a) Furnishing all labour, materials, supervision, construction plans, equipment supplies, transport, to and from the site, fuel, electricity, compressed air, water, transit and storage insurance and all other incidental items and temporary works not shown on specified but reasonably implied or necessary for the proper completion, maintenance and handling over the works, except in accordance with the stipulations laid down in the contract documents and additional stipulations as may be provided by the engineer during the course of works
- b) Furnishing samples of all materials required by the engineers for testing/ inspection and approval for use in the works. The samples may be retained by the engineer for final incorporation in the works.
- c) Furnishing test reports for the products used or intended to be used, if called for the specifications or if so desired by the engineer.
- d) Giving all notices, paying all fees, taxes etc. in accordance with the general conditions of contract, that are required for all works including temporary works.

- e) Arranging manufacturer's supervision for items of work done as per manufacturer's specifications when so specified.
- f) Providing all incidental items not shown or specified but reasonably implied or necessary for the successful completion of the work in accordance with contract.

4. The contractor shall be fully responsible for the proper and accuracy layout, alignment, orientation of all elements of the construction work which shall be carried out by him accurately in accordance with drawings and obtaining clarifications from BHEL/Architects if required by him, including for any discrepancy if any, before the work is executed by him. The setting out and the construction work shall be carried out by suitable precision instruments and checked from time to time and got approved. The contractor shall provide all equipment and instruments as required at the site at his own cost.

5. BHEL-Power Sector (NR) is ISO 9001-2000, ISO 14001-1996 and OHSAS 18001-1999 certified company. Quality of work, to customer's satisfaction and system requirements 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 with regards to Health, Safety and environmental aspects for minimizing risk arising from occupational health, safety hazards, controlling pollution and wastage

## B. STORAGE YARD AND ROADS

The Storage yards and roads shall be developed on land given by BHEL having the built up area of Approx. 16,000 Sqm. Storage Yard shall be of Grid structure intercepted by the road network and drains. **THE LAYOUT PLAN OF THE STORAGE YARD IS ATTACHED FOR REFERENCE.**

There shall be 2 no. 5.0 mtr wide 1.5 mtr high entrance/ exit gates of MS built up welded tubular and box sections as required and. Near the entrance/ exit gate there will be 3.0x3.0 mtr security sheds. An office Entry gate 3.0x1.2 mtr shall also be provided duly painted with approved make and shade of Enamel paint. The Gates shall be complete with bottom rails, locking arrangement, etc. as per instructions of the Engineer I/C.

The entire storage yard is to be leveled first by making good the undulations, watered, compacted and rolled with road rollers to receive 100 mm thick stone aggregate and moorum soling which is to be compacted to required slope (1:300) towards the drains so that no water-logging is present. The road area, sub-grade shall be prepared after dressing to camber and consolidation with 8-12 T Road rollers, over which 150 mm water bound macadam is to be laid with stone aggregate 63 mm to 45 mm, stone screenings, moorum, red bajri, binding earth etc and is to be compacted and rolled with road roller. The road surface shall be at least 100 mm above the compacted yard area and appropriate approaches shall be to made to

Closed and open storage areas from the roads. The prepared surface should be hard enough to receive the heavier materials to be stacked over it. Cement concrete pavements shall be made as specified and instructed. The internal road of storage yard is to be connected with existing approach road. This is in the contractor's scope. The roads and storage yard as per sketch will have proper slope for proper drainage. Open and covered PCC/ Brick drains as specified shall be provided and terminated at Existing drains as per the attached sketch for proper and sufficient rainwater drainage. Storage area shall be fenced with 1.8 metre high GI barbed wire fencing, as specified. Contractor to note that no machinery, tools & plants, material, manpower shall be provided by BHEL.

C. MAST LIGHTING

16 mtr high mast lighting of approved make shall be provided at specified locations for electrification of open yard area. Annexure for Mast lighting specifications is attached. Power cable of at least 3.5x50 sq mm shall be laid from the power source to the mast lights as specified.

D. FENCING AND LIGHTING: Fencing and lighting of all covered and open area, including earthing as per requirement and statutory provisions.

E. APPROVED MAKE OF MATERIALS

- |    |                                 |   |   |
|----|---------------------------------|---|---|
| 1. | ENAMEL PAINTS                   | : | BERGER<br>ICI<br>ASIAN PAINT<br>NEROLAC |
| 2. | CEMENT                          | : | ACC<br>JAYPEE<br>ULTRATECH<br>J K BIRLA |
| 3. | REINFORCEMENT/STRUCTURAL STEEL: |   | SAIL<br>TATA<br>JINDAL                  |

## GENERAL SCOPE OF WORK

### A. SCOPE OF WORK

1. The Scope for construction of BHEL Closed stores at PARBATI III covers all works for development structural steel shed (with AC sheet roofing) for BHEL Stores complex at site. This includes

- Earth work including excavation, filling, compaction, leveling and grading
- Plain & Reinforced cement concrete and Masonry(Full and half brick work)
- Structural & reinforcement steel work, AC sheet roofing/side cladding & partition work
- Scaffolding & Formwork
- Finishing work including plastering, flooring, false ceiling, painting etc.
- Water supply and Sanitary work.
- Electrification of Building by providing Incoming cable, Main Distribution Board, Wiring for all installation Light fixtures, power sockets, Exhaust fans, Energy meter Etc

The scope includes supply of all materials labour, consumables, tools & plants, transportation, storage, sample testing, etc., and any other materials to complete the work.

2. The scope of work will also include such other related works although they may not be specifically mentioned in the above paragraph and all such incidental items not specified but reasonably implied and necessary for completion of the job as a whole all as desired and as directed by the engineer. The detail scope of work covered above is not a comprehensive list of items of work involved. The detail scope of work may vary considerably depending on the actual construction requirements.

3. Unless otherwise specified, the work to be provided by the contractor for the items mentioned in the “Bill of Quantities”, shall include but not be limited to the following:

- a) Furnishing all labour, materials, supervision, construction plans, equipment supplies, transport, to and from the site, fuel, electricity, compressed air, water, transit and storage insurance and all other incidental items and temporary works not shown on specified but reasonably implied or necessary for the proper completion, maintenance and handling over the works, except in accordance with the stipulations laid down in the contract documents and additional stipulations as may be provided by the engineer during the course of works
- b) Furnishing samples of all materials required by the engineers for testing / inspection and approval for use in the works. The samples may be retained by the engineer for final incorporation in the works.

- c) Furnishing test reports for the products used or intended to be used, if called for the specifications or if so desired by the engineer.
- d) Giving all notices, paying all fees, taxes etc. in accordance with the general conditions of contract, that are required for all works including temporary works.
- e) Arranging manufacturer's supervision for items of work done as per manufacturer's specifications when so specified.
- f) Providing all incidental items not shown or specified but reasonably implied or necessary for the successful completion of the work in accordance with contract.

4. The contractor shall be fully responsible for the proper and accuracy layout, alignment, orientation of all elements of the construction work which shall be carried out by him accurately in accordance with drawings and obtaining clarifications from BHEL/Architects if required by him, including for any discrepancy if any, before the work is executed by him. The setting out and the construction work shall be carried out by suitable precision instruments and checked from time to time and got approved. The contractor shall provide all equipment and instruments as required at the site at his own cost.

5. BHEL-Power Sector (NR) is ISO 9001-2000, ISO 14001-1996 and OHSAS 18001-1999 certified company. Quality of work, to customer's satisfaction and system requirements 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 with regards to Health, Safety and environmental aspects for minimizing risk arising from occupational health, safety hazards, controlling pollution and wastage

#### B. CLOSED STORE

The store sheds shall be developed on land given by BHEL having the built up area of Approx. 500 Sqm each.

**Closed Shed (50x10 mtr)(with 10 MT MOT Crane) - 1 no.**

**Closed Shed (50x10 mtr)(w/o MOT Crane) - 1 no.**

The Store area shall be cleared of all vegetation, scrap and debris. The stores shall be made of ISMB columns, tubular truss, purlins, side ties, bottom ties, wind ties of minimum 25mm x 5mm over the roof sheets along the purlins, as specified (drawings attached for reference). The working/shop drgs for Steel structures, trusses, etc shall be got approved before start of work.

**Closed Shed (50x10 mtr) (w/o MOT)**

The columns are erected with holding down foundation bolts in the RCC 1:1.5:3 (using 20 mm size coarse aggregate) foundation of pedestal size 1200mm high 500x400 mm minimum and raft size 1500x1500x300 mm. The raft is to be provided with a reinforcement of 10mm bars @ 125mm C/C both ways and the pedestal is to be provided with 4 no.16mm & 4 no. 12 mm bar vertically with a minimum 'L' of 200mm and with 8mm stirrups @ 150 C/C. The foundation is to rest over 100 mm PCC on firm rock / ground as instructed / approved by Engineer-in-charge. Corrugated AC sheets shall be provided with polymer coated J or L hooks, 8mm nut bolts for roofing and side cladding with appropriate anchoring, fixing and drainage arrangements. Approved quality Enamel paint shall be used for painting work to MS. The wall above Finished floor level is of brick masonry of 23cm width course, to a height of 600 mm minimum, in cement mortar 1:6 and plastered with CM 1:5. Below the Finished floor level brick masonry of 23 cm width course, to a depth of 700 mm minimum, in cement mortar 1:6 is to be laid which shall rest on top of 230 x 300 mm plinth beam (5-12 mm dia bars and stirrups 8 mm @ 200 mm c/c). The base course under plinth beam shall be PCC 100 mm thick and 400 mm wide. The top of the plinth beam shall be 300 mm below the existing ground level. The finished floor level of the stores shall be atleast 400 mm above existing ground level. The Store flooring consists of raising the Ground level by filling good earth and 100 mm PCC over which approved CC flooring is to be laid. The extended outside portion is of 750 mm wide plinth protection as specified. Extended roofing shall also be provided as per the instructions of the Engr. I/C. Sliding door shutters (5.0x4.5 mtrs) complete with all guides, rollers, anchors, etc The inside and outside plastered surface is to be white washed with two coats minimum over a priming coat. Contractor to note no fixtures, specials or any material will be given for any work which are required for the completion of works. Average 300 mm deep and 300 mm wide drains shall be constructed along the plinth protection as per directions of the Engr I/C.

#### **Closed Shed (50x10 mtr) (with 10 MT MOT)**

The columns are erected with holding down foundation bolts in the RCC 1:1.5:3 (using 20 mm size coarse aggregate) foundation of pedestal size 2450 mm high 750x450 mm minimum and raft size 2500x1800x200-400 mm. The raft is to be provided with a reinforcement of 10mm bars @ 200mm C/C both ways as top layer and 12mm bars @ 150mm C/C both ways as bottom layer. The pedestal is to be provided with 4 no.20mm & 8 no. 16 mm bar vertically with a minimum 'L' of 300mm and with 8mm stirrups 6 legged as specified @ 200 C/C. The foundation is to rest over 100 mm PCC on firm rock / ground as instructed / approved by Engineer-in-charge. Corrugated AC sheets shall be provided with polymer coated J or L hooks, 8mm nut bolts for roofing and side cladding with appropriate anchoring, fixing and drainage arrangements. Approved quality Enamel paint shall be used for painting work to MS. The wall above Finished floor level is of brick masonry of 23cm width course, to a height of 600 mm minimum, in cement mortar 1:6 and plastered with CM 1:5. Below the Finished floor level brick masonry of 23 cm width course, to a depth of 700 mm minimum, in cement mortar 1:6 is to be laid which shall rest on top of 300 x 450 mm plinth beam ( atleast 6- 16 mm dia bars and stirrups 8 mm @ 200/100 mm c/c). The base course under plinth beam shall be PCC 100 mm thick and 400 mm wide. The top of the plinth beam shall be 300 mm below the existing ground level. The finished floor level of the stores shall be atleast 400 mm above existing ground level. The Store flooring consists of raising the Ground level by filling good earth and 100 mm PCC over which approved CC

flooring is to be laid. The extended outside portion is of 750 mm wide plinth protection as specified. The extended outside portion is of 750 mm wide plinth protection as specified. Extended roofing shall also be provided as per the instructions of the Engr. I/C. Sliding door shutters (5.0x4.5 mtrs) complete with all guides, rollers, anchors, etc. Crane girders as specified shall be provided at 4.6 mtr above FFL and Truss bottom level shall be 6.1 mtrs above FFL. The inside and outside plastered surface is to be white washed with two coats minimum over a priming coat. Contractor to note no fixtures, specials or any material will be given for any works which are required for the completion of works. Average 300 mm deep and 300 mm wide drains shall be constructed along the plinth protection as per directions of the Engr I/C.

One store shed shall have one office room of 10.0 x 2.5 m size with 12mm thick Gypsum board false ceiling as per the office shed specifications along with two toilets of 2.0m x 1.25m size provided with ceramic water closet, wash basin, mirror of size 600mm x 450mm size, towel rail, soap dish etc. The 20mm size water supply line is to be laid from the nearby drinking water line source, which is feeding surrounding place, up to the PVC overhead tank of 500Lts. Capacity, which is to be erected on 3.6m high MS angle structure. The distribution line from the overhead tank to the office and toilet, necessary sewer lines of minimum 100mm dia, septic tank and the soak pit of minimum 1.2m dia is also in the contractor's scope. The office room is to be constructed with 230mm thick brick work with steel doors and windows as per relevant IS, plastered with CM 1:5, 12mm thick minimum both side, finished with 2 coats of distemper over a primer coat as instructed by Engineer in charge.

The steel door and windows are to be painted with two coats of approved synthetic enamel paint over a red oxide primer coat. There will be steel windows of size 1.20m x 1.20m, 4Nos. in the office room and windows and doors will have RCC 1:2:4 lintel of 150mm thick.

It is proposed to electrify the closed shed as follows:

4 Nos HPSV flood light fittings with lamps of 250 W with Choke & accessories etc. each to be provided on top of each store shed with 2 mtrs. height rigid GI pole provided with adequate brackets for mounting the flood lights and tie rods duly grouted or welded to permanent structure. Two lights should be provided with independent MCB switch.

The connection to all HPSV fittings is to be provided by 2.5 Sq. mm PVC insulated copper conductor in PVC conduit for fittings mounted on store shed.

Providing 15/5Amps Single phase socket and 20Ampts – 3 phase socket as per instructions.

Providing pedestal fan & air circulator & heavy duty exhaust fan as per instructions.

Complete electrification alongwith cabling, electrical fixtures like fan, HPSV lamps of 250W, 4Nos. alongwith fixture at top of storage shed, energy efficient tube light fitting with tubes, MCB, ELCB, switch board switches, covering of MCB, 3 phase energy meters, earthing etc. is in contractor scope.

Providing common main panel to cater requirement of all total layout, laying incoming cable for the above panel from the outside nearest source, providing feeder panel, lights & sockets

requirement etc., laying interconnecting panel between common main panel and feeder main panel, providing MCB distribution board to cater lights, sockets & fans requirement.

Providing earth electrode and earth conductors as per requirement.

The scope of work has to be completed in all the manner to meet the functional requirement by covering all the left out allied work in BOQ thereby to commission the system as a whole.

Complete Electrification alongwith necessary lighting-fixtures, fans, necessary cables, MCB, ELCB, Main switch, Energy meter, Junction box, switches, switch boards, Plug points etc. are in the contractor's scope so that installation is fully safe & meets local authorities statutory requirement. The necessary covers required for the MCB, energymeter etc., are to be provided by the contractor. Necessary earthing alongwith earth pit required as per the standards are to be provided by the contractor.

All the material used to be approved by Engineer-in-charge and in case of non-availability of approved make of material, BHEL Engineer-in-charge is authorized to substitute the same.

#### C. APPROVED MAKE OF MATERIALS

- |    |                              |   |  |
|----|------------------------------|---|--|
| 1. | STRUCTURAL/REINF. STEEL      | : | SAIL<br>TATA<br>RATHI  |
| 2. | CEMENT                       | : | ACC<br>BIRLA<br>JAYPEE   |
| 3. | ENAMEL PAINTS                | : | JOHNSON & NICHOLSON<br>BERGER<br>ICI<br>ASIAN PAINT<br>NEROLAC |
| 4. | GI & MS PIPES                | : | SURYA,<br>PRAKASH<br>JINDAL-HISSAR<br>TATA                     |
| 5. | LT CABLES:                   |   |  |
|    | SINGLE CORE COPPER CONDUCTOR |   |  |
|    | 1100 V GRADE PVC/FRLS        |   |  |
|    | CABLES (STANDARD/FLEXIBLE):  |   |  |
| a) | PVC INSULATED WIRES          | : | FINOLEX/ BATRA HENLAY/<br>RALLISON/POLYCAB                     |

- b) FRLS INSULATED WIRES : FINOLEX BATRA HENLAY/  
RALLISON/POLYCAB
- c) ARMOURED LT CABLES : NICCO/ BATRA HENLAY/ RALLISON/  
PVCAA-IS-1554 (PART-I) POLYCAB  
XLPE-IS-7098 (PART-I)
6. ELECTRICAL ACCESSORIES
- a) SWITCHES AND SOCKETS: ANCHOR, MK, LK  
(MODULAR TYPE SWITCHES)
7. ELECTRICAL EQUIPMENT:
- a) EXHAUST FANS : ALSTOM / CROMPTON/ GC/ Nutech
- b) LIGHT FITTINGS : CROMPTON/PHILIPS /WIPRO.
- c) WALL MOUNTING FANS : ORIENT/ CROMPTON/ GC/USHA
- d) CFL & FL LAMPS : PHILIPS/ OSRAM/WIPRO/BAJAJ
- e) KWH METERS ETC : BHEL/ GE/ L&T /HAVELS
- f) MCBs & MCB DBs (10 KA) : MDS/ L&T-HAGGER/ HPL/ HAVELS EURO
- g) EARTH LEAKAGE CIRCUIT: MDS/ L&T-HAGGER/ HPL/  
BREAKER HAVELS EURO

Note: Approval of BHEL engineer is to be obtained before procurement of materials specifies above. The make of material mention if not available in the market or is not suiting the site condition & the make of material not mentioned in the above list, equivalent make may be used after the approval from BHEL engineer.

ANNEXURE III PART III  
FOR 16M HIGH MAST LIGHTING SYSTEM

1.0 **SUPPLY PART**

- |     |  |     |    |
|-----|--|-----|----|
| 1.1 | Supply of Raising & Lowering type 16 M high mast system:<br>Mast shaft shall be in <b>two sections</b> , hot dip galvanized, inside and outside in single dip, suitable for wind velocity as per IS 875 part 3. <b>There shall be only one longitudinal seam weld per section and no circumferential weld.</b> It shall also include accessories for high mast including head frame, 2-point suspension system with steel wire rope 6mm dia (7/19 construction) double drum winch, Galvanised Lantern carriage arrangement suitable for 12 luminaires symmetrically & its CG boxes & lighting final. The mast shall have integral type power tool at the base compartment for its operation. | NO  | 01 |
| 1.2 | Supply of foundation bolts manufactured from special steel along with nuts, washers, anchor plates & templates.  | SET | 01 |
| 1.3 | Supply of Non-integral floodlight luminaire type Bajaj Make BGENF 22R or reputed equivalent make with two nos. 400W SON T lamps and its control gear boxes.  | NO  | 10 |
| 1.4 | Supply of twin dome aviation obstruction lights of type with 100W GLS lamp.  | NO  | 01 |
| 1.5 | Supply of control panel housing suitable control circuit for automatic switching On and OFF of the mast. The control panel shall also have necessary controls for Power Tool.  | SET | 01 |

2.0 **ERECTION PART**

- |     |  |    |    |
|-----|--|----|----|
| 2.1 | Construction of suitable shallow foundation with 'M20' grade concrete for the high mast considering the safe soil bearing capacity at site as 10T/sqmtr at 2 mt depth with all materials & labour.   | NO | 01 |
| 2.2 | Erection of the high mast with the help of suitable equipments and wiring of luminaries with all wiring material & labour.   | NO | 01 |
| 2.3 | Provision of GI pipe earthing for High Mast with 2.5M long 40mm dia G.I. Pipe including connection of High mast earth terminal with 25 x 3mm GI flats with all materials & labour.                   | NO | 02 |
| 2.4 | Installation of control panel on suitable foundation including all material & labour.  | NO | 01 |
| 2.5 | Supply & Laying of power supply/control cables from (i) control panel to the base compartment of mast.<br>(providing power cabling from main power supply source to control panel is in BHEL scope). | NO | 01 |

3.0 **TESTING & COMMISSIONING**

- |     |   |    |    |
|-----|---|----|----|
| 3.1 | Testing & Commissioning of above High Mast system | NO | 01 |
|-----|---|----|----|

TECHNICAL DATA SHEET FOR 16 MTR HIGH MAST AND COMPONENTS

1. HIGHMAST STRUCTURE		
a)	Height of mast (Mtr) Make	16 Mtr Bajaj
b)	Material of construction	<b>Grade S355 as per BS EN 10 025</b> shaft and gusset <b>Grade Fe 410W as per IS 2062</b> flange & door stiffeners
c)	Number of sections	Two (2)
d)	Thickness of sheet (in mm)	Top : 3mm, Bottom : 4mm
e)	Cross section of Mast in Polygon (number sides)	20 sides
f)	No. of longitudinal welds / section	One
g)	No. of circumferential welds / section	None
h)	Length of individual sections (approx)	Top                5520mm Bottom            10980mm
i)	Base dia and top diameter	Top diameter     150mm Bottom diameter  460mm
j)	Type of joints	Stress fit side joints
k)	Length of overlap	0.50 Mt
l)	Metal protection treatment for Mast section	Hot Dip Galvanised through sing process as per BS EN ISO 1461
m)	Thickness of galvanization (min)	65 Micron : Top 85 Micron : Bottom
n)	Size of opening and doot at base	1200 x 250 mm
o)	Type of locking arrangement	Vandal Resistant
p)	Details of slack board inside the base comp	Resin bonded plywood 600 mm x 600 mm x 8 mm
q)	Provision for cable termination	TPN MCB Isolator
r)	Thickness & diameter of base plate	25mm thk., 670mm OD
s)	Size of anchor plate and thickness	8mm thk. With uniform PCD of 590
t)	Details of template	Uniform PCD of 590 mm
u)	Weight in kgs. Of 16 mtr. Mast	750 kgs. Approx
v)	Lightning protection finial	Provided
2. DYNAMIC LOADING AS PREVAILING AT SITE.		
a)	Max. wind speed	As per IS 875 part 3
b)	Max. gust speed time	3 seconds
c)	Height above ground level these two factor measured	10 Mt.
d)	Factor of safety for wind load	1.25
e)	Factor of safety for other load	1.15

<b>3. FOUNDATION DETAILS</b>		
a)	Type of foundation	Open raft shallow footing
b)	Size of foundation	As per Design
c)	Designed load bearing capacity	10T per sq M at 2M depth
d)	Design safety factor	>2.0
e)	Considered wind pressure (Kg/Mt2)	As per IS-875-1987
f)	Considered wind speed Km/hr)	As per IS-875-1987
g)	Depth of foundation	Max. 1.5 Mtr. Below G.L.
h)	Average soil bearing capacity	As confirmed
i)	Number of foundation bolts	8 Nos.
j)	PCD of foundation bolts	590 mm
k)	Type of foundation bolts	High yield tensile cold rolled pitch threads (680 N/sq mm)
l)	Bolt diameter	27 mm
<b>4. LANTERN CARRIAGE</b>		
a)	Material construction	Class B – M.S. Tubes
b)	Diameter of carriage ring (mm)	535 mm / 2200mm approx.
c)	Construction	To suit requirement
d)	Number of joints	2
e)	Buffer arrangement between Carriage and	PVC sleeve on carriage
f)	Load carrying capacity	750 Kgs.
g)	Total weight of assembly with fittings	As per number of Luminaires
h)	Number of fittings	Suitable for up to 12 nos. symmet
i)	Type of fittings / fixture	Bajaj Make BGENF 22R (2x400V) reputed equivalent make
<b>5 WINCH</b>		
a)	Make of winch Number of drums / winch	Bajaj Double drum type or equivalent
b)	Gear Ratio	53 : 1
c)	Operating speed	180 RPM
d)	Method of operation	Manual / Electrical
e)	Lubrication arrangement	Permanent oil bath
<b>6 STAINLESS STEEL WIRE ROPE</b>		
a)	Make	B.W. LTD / Eqvt.
b)	Grade	AISI 316
c)	Number of ropes	2-point suspension system
d)	Construction	7 / 19
e)	Centre core material	Stainless steel core
f)	Diameter (mm)	6 mm
g)	Thimbles & Talurit	SS Thimble, Copper Talurit
h)	Braking load capacity	2350 kgs.
i)	Factor safety	>5 for system full load
<b>7 CABLE</b>		
a)	Type	5 core, Cu conductor, flexible PC
b)	Material	EPR insulated PCP Sheathed

c)	Make	ISI marked
d)	Current carrying capacity	21 Amp.
e)	Conductor size	4 sq.mm
f)	No. of cores	5Nos
g)	No. of circuits	One
8	<b>POWER TOOL</b>	
a)	Model	Integral
b)	Input supply	415V, 3 Ph, 50 Hz
c)	Wattage	1100 Watt
d)	Number of speeds	Single speed
e)	Operating speed	1440 rpm
f)	Control	Push button
9	<b>TORQUE LIMITER</b>	
a)	Lifting capacity	750 kgs.
b)	Adjustable / Non-adjustable	Adjustable
c)	Tripping device	Mechanical