

TENDER SPECIFICATION

No. PW/NGP/PUR/UKAI-CVL2/496

FOR

**CIVIL WORKS FOR 2 NOS ID FAN & 6 NOS OF ESP COLUMNS,
28 NOS OF DUCT SUPPORT FOUNDATION &
STRENGTHENING OF 6 NOS ESP COLUMN FOUNDATIONS,
CONSTRUCTION OF SWAS ROOM, SOX/ NOX ROOM, ID FAN
LUB OIL UNIT ROOM ETC**

AT

**GSECL, UKAI, SONGARH, UNIT-2 (120MW)
DIST- SURAT, GUJRAT**

PART I- TECHNICAL BID

(VOLUME-I)

SPECIAL & GENERAL CONDITION OF CONTRACT & NIT
BOOK NO.



BHARAT HEAVY ELECTRICALS LIMITED
(A GOVERNMENT OF INDIA UNDERTAKING)
POWER SECTOR - WESTERN REGION
SHREEMOHINI COMPLEX
345-KINGSWAY, NAGPUR - 440 001

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LEGEND:

§: PLACED BEFORE 'GENERAL CONDITIONS OF CONTRACT' IN BOTH HARD AND SOFT COPY DOCUMENTS.

#: ATTACHED AT THE END OF HARD COPY OF TENDER SPECS. PART-I (TECHNICAL BID) AND AS A SEPARATE FILE TITLED 'WEB_NIT_GCC' AS SOFT COPY HOSTED IN WEB PAGE.

@: ISSUED AS SEPARATE BOOKLET IN HARD COPY AS PART-II VOLUME-III (PRICE BID) AS SEPARATE FILE TITLED 'PRICE_BID' AND TECHNICAL SPECIFICATION AS PART-I VOLUME-II . SOFT COPY HOSTED IN WEB PAGE.

BHARAT HEAVY ELECTRICALS LIMITED

(A GOVERNMENT OF INDIA UNDERTAKING)
POWER SECTOR - WESTERN REGION
345, KINGS WAY - NAGPUR 440 001

TENDER SPECIFICATION NO. : BHE/PW/PUR/UKAI-CVL2/496

NAME OF THE WORK:

CIVIL WORKS FOR ID FAN FOUNDATION-2 NOS, ESP COLUMN – 6 NOS, DUCT SUPPORT FOUNDATION – 28 NOS , AND STRENGTHENING OF 6 NOS ESP COLUMN FOUNDATION ROOMS FOR SWAS, SOX/NOX AND ID FANS LUB OIL UNITS ETC AT 120 MW UNIT # 2 GSECL, UKAI, SONGARH, , DIST- SURAT, GUJRAT

EARNEST MONEY DEPOSIT: Please see Section-15 of Special Conditions of Contract.

LAST DATE AND TIME FOR

RECEIPT OF OFFERS: Please visit web page www.bhel.com -> “Tender Notification” and “View Corrigendum”

THESE TENDER DOCUMENTS CONTAINING PART-I TECHNICAL BID VOL –I & II AND PART- II (VOL-III) PRICE BID, ARE ISSUED TO:

M/s.

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PLEASE NOTE:

- 1) THESE TENDER DOCUMENTS ARE NOT TRANSFERABLE.
- 2) TENDERER SHALL NOTE THAT THEIR OFFER WILL BE CONSIDERED SUBJECT TO THE APPROVAL OF BHEL'S CUSTOMER M/s GESCL.

For Bharat Heavy Electricals Limited

SR MANAGER (PURCHASE)
PLACE: NAGPUR
DATE:

BHARAT HEAVY ELECTRICALS LIMITED
(A Government of India Undertaking)
POWER SECTOR - WESTERN REGION-SAS
345, KINGS WAY - NAGPUR 440 001

PROCEDURE FOR SUBMISSION OF SEALED TENDERS

THE TENDERER 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 AND ALSO INDICATING ON EACH OF THE COVERS THE TENDER SPECIFICATION NUMBER AND DUE DATE AND TIME AS MENTIONED IN THE TENDER NOTICE.

PART-I (TECHNICAL BID) COVER-I

EXCEPTING RATE SCHEDULE, ALL OTHER SCHEDULES, DATA SHEETS AND DETAILS CALLED FOR IN THE SPECIFICATION, DULY SIGNED & STAMPED COPY OF VOLUME-I & II OF TECHNICAL BID SHALL BE ENCLOSED IN PART-I "TECHNICAL BID" ONLY.

PART-II (PRICE BID) COVER-II

ALL INDICATIONS OF PRICE SHALL BE GIVEN IN THIS PART-II (VOL-III) "PRICE BID". **EMD SHALL NOT BE INCLUDED IN THIS COVER.**

THESE TWO SEPARATE COVERS-I AND II (PART-I AND PART-II) SHALL TOGETHER BE ENCLOSED IN A THIRD ENVELOPE (COVER-III) ALONGWITH REQUISITE EMD AS INDICATED EARLIER AND THIS SEALED COVER SHALL BE SUPERSCRIBED AND SUBMITTED TO ADDL. GEN MANAGER (PURCHASE) AT THE ABOVE MENTIONED ADDRESS ON OR BEFORE THE DUE DATE AS INDICATED.

THE QUALIFIED TENDERER WILL BE INTIMATED SEPARATELY ABOUT THE STATUS OF THEIR OFFER.

TENDERER ARE REQUESTED TO MAKE SPECIFIC NOTE OF THE FOLLOWING CONDITIONS:

CONTRACTOR SHOULD HAVE ADEQUATE RESOURCES INCLUDING MAJOR T&P AT HIS DISPOSAL FOR THIS JOB.

CONTRACTOR SHOULD HAVE SOUND FINANCIAL STABILITY.

TENDERER SHOULD MEET QUALITY REQUIREMENT REGARDING WORKMANSHIP, DEPLOYMENT OF PERSONNEL, ERECTION TOOLS AND NECESSARY INSPECTION, MEASUREMENT & TESTING INSTRUMENTS.

ALL INFORMATION AS CALLED FOR IN VARIOUS APPENDICES AND CLAUSES OF TENDER SPECIFICATION, SHOULD BE FURNISHED IN COMPLETENESS. PLEASE REFER THE CHECKLIST.

THE TENDERER, SHALL OBTAIN CLARIFICATION ON TENDER IF ANY, BEFORE SUBMITTING THEIR OFFER.

OFFERS MUST BE SUBMITTED WITHOUT ANY DEVIATION.

OFFERS RECEIVED WITH ANY DEVIATION OR WITHOUT RELEVANT INFORMATION AS DESCRIBED ABOVE ARE LIABLE TO BE REJECTED. PRICE BIDS RECEIVED IN THE FORM OTHER THAN SPECIFIED IN PART-II (PRICE BID) ARE LIABLE TO BE REJECTED.

PROJECT INFORMATION

INTRODUCTION

The Ukai TPS is about 90Km from Surat. The site is approachable by road. The nearest railway station is Ukai-Songarh.

LOCATION & APPROACH

- 1) Project: Thermal Power Station Unit # 2 (120MW),
UKAI
- 2) Project location: UKAI, DIST: SURAT, GUJARAT STATE
- 3) Transport facilities:
 - A) Nearest railway SONGARH on the broad gauge, connected from SURAT junction on Howrah Main line.
 - B) Name of railway:
 - a) Power Station is having broad gauge private railway siding served through Rly. Station at distance of about 10kms.
 - b) The site is also connected by all weather road from SURAT through State Highway at a distance of 100 kms from the power station.

4) Climate condition:

Maximum temp:	45 Deg.C
Minimum temp:	5 Deg C
Max daily average Temp	35 Deg C
Max yearly average Temp	30 Deg C
Max Humidity :	85%
Minimum humidity	15%
Annual average rain fall	1500 mm (During June –Sep)

CHECK LIST

(VIDE PARA 1.3 OF SECTION-I - GENERAL CONDITIONS OF CONTRACT)

1	Name of the Bidder with Postal Address for Correspondence	
2	Name of Contact Person with Telephone & Fax No.	Mr./Ms Tel No. Fax No.
3	Nature of the firm	PROPRIETARY / PARTNERSHIP / LIMITED CO.
4	Details of EMD Please Indicate whether 1) One Time EMD or, 2) Only for this Tender	DD No. DD Date..... Name of Bank..... Amount: Rs.....
5	Validity of Offer (BHEL's Requirement: 180 days from Last Date for tender submission)	
6	Mobilization Time (Please refer Section-11 of SCC)	
7	Whether Bidder has visited the project site and acquainted themselves with the local conditions and situations.	YES/NO
8	Whether "Certificate of No-Deviation" Furnished	YES/NO
9	Details of similar jobs executed during the last five years as in "Appendix-VII" enclosed	YES/NO
10	Whether copies of previous Work Orders (with detailed BOQ and total order value) and Completion Certificates in support of above furnished	YES/NO
11	Details of Concurrent Jobs Furnished in "Appendix-VI" furnished	YES/NO
12	Headquarter Organization Chart furnished	YES/NO
13	Names & Particulars of Directors/Partners/Proprietor Furnished	YES/NO

CHECK LIST		
(VIDE PARA 1.3 OF SECTION-I - GENERAL CONDITIONS OF CONTRACT)		
14	Proposed Site Organization Chart indicating executives and supervisors furnished	YES/NO
15	Financial Viability furnished as in Annexure-I of GCC	YES/NO
16	Profit & Loss account for the preceding three financial years furnished	YES/NO
17	Copy of Latest Solvency Certificate from Govt. Authority or Certification by Bidder's Banker on Overdraft & BG Limits is Furnished (Certificate shall not be older than six months from the Last Date for offer submission)	YES/NO
18	Latest Income Tax Clearance Certificate or copy of IT Return along with copy of PAN Card is Furnished	YES/NO
19	Monthly Manpower Deployment plan as in ' Appendix-IV ' enclosed	YES/NO
20	Deployment plan for major T&P and MMD enclosed as in ' Appendix-V '	YES/NO
21	Month-wise Erection & Commissioning plan enclosed	YES/NO
22	Analysis of Unit Rate Quoted as in ' Appendix-III ' furnished	YES/NO
23	List of other tools and plants/tackles/ instruments contractor proposes to deploy for the work and special tools and instruments in his possession.	ENCLOSED / NOT ENCLOSED
24	Whether the bidder has left any job unfinished? If so, give reasons.	YES/NO
25	Whether any client has terminated the contractor's work before completion? If so, furnish reasons for the same	YES/NO
26	Whether the bidder has understood all Quality Control & Quality Assurance requirements?	YES/NO
27	Whether the bidder is aware of all safety rules/codes? Whether the list of safety equipments proposed to be employed for this work is enclosed.	YES/NO
28	Whether Power of Attorney in favour of the person making this offer enclosed?	YES/NO
29	Whether all the pages are read, understood and signed and the signed copy of tender book submitted?	YES/NO

Note: strike off 'yes' or 'no' as applicable

Date:

Signature of Bidder

DECLARATION BY BIDDER'S AUTHORIZED REPRESENTATIVE

I, _____ HEREBY CERTIFY THAT ALL THE INFORMATION AND DATA FURNISHED BY ME WITH REGARD TO THE TENDER SPECIFICATION NO. **BHE/PW/PUR/UKAI-CVL2/496** ARE TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE. I HAVE GONE THROUGH THE SPECIFICATIONS, CONDITIONS AND STIPULATIONS IN DETAIL AND AGREE TO COMPLY WITH THE REQUIREMENTS AND INTENT OF THE SPECIFICATION. I FURTHER CERTIFY THAT I AM DULY AUTHORIZED REPRESENTATIVE OF THE UNDER-MENTIONED TENDERER AND A VALID POWER OF ATTORNEY TO THIS EFFECT IS ALSO ENCLOSED.

AUTHORISED REPRESENTATIVE'S SIGNATURE WITH
NAME AND ADDRESS

DATE:

TENDERER'S NAME AND ADDRESS

CERTIFICATE OF NO DEVIATION

TENDER SPECIFICATION NO.

BHE/PW/PUR/UKAI-CVL2/496

I/WE, M/s

HEREBY CERTIFY THAT NOTWITHSTANDING ANY CONTRARY INDICATIONS/ CONDITIONS ELSEWHERE IN OUR OFFER DOCUMENTS, I/WE HAVE NEITHER SET ANY TERMS AND CONDITIONS NOR THERE IS ANY DEVIATION TAKEN FROM THE CONDITIONS OF BHEL'S TENDER SPECIFICATIONS, EITHER TECHNICAL OR COMMERCIAL, AND I/WE AGREE TO ALL THE TERMS AND CONDITIONS MENTIONED IN BHEL'S TENDER SPECIFICATION WITH ASSOCIATED AMENDMENTS AND CLARIFICATIONS.

DATE:

SIGNATURE OF BIDDER

**SECTION-3
OFFER OF THE BIDDER**

To,
SR. MANAGER (PURCHASE)
BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR - WESTERN REGION
SHREEMOHINI COMPLEX
345, KINGS WAY
NAGPUR - 440 001

DEAR SIR,

I/WE HEREBY OFFER TO CARRY OUT THE WORK DETAILED IN TENDER SPECIFICATION NO. **BHE/PW/PUR/UKAI-CVL2/496** FOR 120 MW, UNIT # 2 **GESCL, UKAI THERMAL POWER PLANT**, SONGARH ISSUED BY BHARAT HEAVY ELECTRICALS LIMITED, POWER SECTOR-WESTERN REGION, NAGPUR, IN ACCORDANCE WITH THE TERMS AND CONDITIONS THEREOF.

I/WE HAVE CAREFULLY PERUSED THE FOLLOWING DOCUMENTS CONNECTED WITH THE ABOVE WORK AND AGREE TO ABIDE BY THE SAME.

1. INSTRUCTIONS TO TENDERERS
2. GENERAL CONDITIONS OF CONTRACT
3. SPECIAL CONDITIONS OF CONTRACT
4. OTHER SECTIONS, APPENDICES, SCHEDULES AND DRAWINGS.

I/WE HAVE DEPOSITED / FORWARDED HERewith THE EARNEST MONEY DEPOSIT AS SPECIFIED IN THE TENDER SPECIFICATION. DETAILS OF EMD PAYMENT ARE FURNISHED IN THE CHECK LIST.

EMD SHALL BE REFUNDED SHOULD OUR OFFER NOT BE ACCEPTED / EMD **NEED NOT BE REFUNDED AND THE AMOUNT MAY BE TREATED AS "ONE TIME EMD" FOR ERECTION AND COMMISSIONING TENDERS OF BHEL-PSWR, NAGPUR.** SHOULD OUR OFFER BE ACCEPTED, I/WE FURTHER AGREE TO DEPOSIT SECURITY DEPOSIT FOR THE WORK AS PROVIDED FOR IN THE TENDER SPECIFICATION WITHIN THE STIPULATED TIME AS MAY SBE INDICATED BY BHEL, POWER SECTOR-WESTERN REGION, NAGPUR.

OR,

WE HAVE ALREADY DEPOSITED ONE TIME EMD OF Rs.2, 00, 000/- (RUPEES TWO LACS ONLY), DETAILS OF WHICH ARE FURNISHED IN THE CHECK LIST.

I/WE FURTHER AGREE TO EXECUTE ALL THE WORKS REFERRED TO IN THE SAID DOCUMENTS UPON THE TERMS AND CONDITIONS CONTAINED OR REFERRED TO THEREIN AND AS DETAILED IN THE APPENDICES ANNEXED THERETO.

PLACE:
DATE:

SIGNATURE OF TENDERER:
ADDRESS:

WITNESSES WITH THEIR ADDRESS

SIGNATURE	NAME	ADDRESS
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1.

2.

SECTION-4

SPECIAL CONDITIONS OF CONTRACT

SCOPE OF WORK

4.0.1 DETAILED SCOPE

The indicative scope of work is furnished in the VOL – III- Rate Schedule enclosed along with this enquiry, which is for

- Construction 2 No. ID Fans
- 6 Nos of ESP columns
- 28 Nos of Duct foundation
- Strengthening of 6 Nos of Existing ESP Foundations
- Dismantling of 2nos existing ID Foundations
- Rooms for SWAS, SOX/NOX panels and ID Fan lube. oil unit for 120MW Unit # 2, Ukai TPS.

Work shall be carried out strictly as per BHEL supplied drawings (Approved for construction drawings which shall be supplied by BHEL at site during the execution), Technical Specification of Part-I, VOL-II (which issued along with this tender), Latest IS Code of practice & Quality norms of BHEL. Payment shall be made as per the actually executed quantity & accepted unit rates.

ALL MATERIAL INCLUDING CONSUMABLES REQUIRED TO EXECUTE THE WORK SPECIFIED IN THIS TENDER SUCH AS REINFORCEMENT STEEL, CEMENT, AGGREGATES, PAINT, SAND MORROM, ETC SHALL BE IN CONTRACTORS SCOPE. AS SUCH BHEL WILL NOT PROVIDE ANY MATERIAL.

ALL T&PS REQUIRED TO EXECUTE THE WORK SPECIFIED IN THIS TENDER IS IN CONTRACTORS SCOPE. AS SUCH BHEL WILL NOT PROVIDE ANY T&PS.

THE TECHNICAL SPECIFICATION, PART-I, VOL-II ISSUED WITH THIS TENDER SHALL BE PART OF TENDER SPECIFICATION.

WORK SHALL BE EXECUTED AS PER RATE SCHEDULE (BOQ), PART-II, VOLUME-III.

4.0.2 OTHER IMPORTANT POINTS:

(I) Approved manufacturers for procurement of cement and reinforcement & Structural steel are as under:-

- a. **Cement:** Ordinary Portland cement shall be used for all civil works from:
- (i) M/s ACC
 - M/s L & T

However, approval has to be taken in advance from BHEL / GSECL authority at site before procurement of cement. Contractor shall arrange certified report from manufacturers as confirmation of quality in accordance with IS Code 269.

b. Reinforcement & Structural Steel:

Reinforcement Steel shall be HYSD bars as per IS 1786 from:

- (i) SAIL
- (ii) TISCO
- (iii) JSPL

c. Other building materials shall be from reputed suppliers and need the quality norms as specified in technical specification.

- (II) Surplus excavated earth (not suitable for back filling) shall be disposed off to the area earmarked inside the project premises. In case of non-availability of space inside the plant, the same shall be disposed off outside the plant in GSECL acquired land. Payment shall be done as per the relevant items in rate schedule.

If the excavated earth is not found to be suitable for back filling, CNS soil/ Morrom shall be used for back filling. The selected earth shall be brought from outside from Contractors own sources duly approved by BHEL/GSECL. Measurement shall be done as per the pit measurement of foundation.

- (III) There may be shortage of space in side the existing plant near work site due to various other existing structures adjacent to the work site of Unit # 2. Accordingly, work has to be carried out in restricted area. It will be the contractor's responsibility to manage the work with available space & no claims shall be entertained on this account.
- (IV) It will be the resposibility of Contractor to create good and safe working atmosphere and controll the dust pollution during handling of building materials, mixing of concrete and earthwork excavation/filling. Suitable arrangement should be made for dust supression like sprinkling water in filling materials & aggregates specially during summer season without any extra cost.
- (V) In case soft/hard rock is found during the excavation, the same shall be removed by chiseling only. No Blasting shall be permitted.
- (VI) Contractor shall arrange for testing of building materials, Concrete, earth filling/back filling etc. as per the standard Civil engineering practice in line with relevant IS Code & as per the instruction of BHEL Engineer. Checking of work before pouring concrete shall be jointly done by BHEL & GSECL site Engineers. Preparation of Quality documents, Log sheets etc. shall be the Contractors responsibility & shall be done as per the instructions of BHEL Engineer. IMTEs (Inspection, measuring & testing equipments) to be used for the job should have valid calibration certificate from recognized laboratories. The quoted rates of various items shall be inclusive of all the above aspects & shall be firm till completion of the entire works.
- (VII) Contractor shall submit Concrete mix design calculation for different grade of concrete (for min. Qty.of cement & W/C ratio required for durability) as per specification for approval of BHEL/GSECL. Mix shall be finalised out of varous trail mixes made at site after verifying its strength & other parrameter.

(VIII) In case the ambient temperature goes very high during summer, the temperature of Concrete shall be controlled as per the guidelines given in relevant IS Code (IS-7861 Part-I & II), without any extra cost.

(IX) Contractor shall prepare & submit daily progress, Manpower & T&Ps deployment report on daily basis for review of BHEL.

4.1.0 Responsibility of the Contractor

The contractor shall engage all the unskilled, skilled and especially skilled labour including fabricators, welders and fitters etc. and supervisory staff. Only trained and competent personnel with previous experience in the job shall be employed. However, BHEL reserves the right to decide on the suitability of the workers and other personnel who will be employed by the contractor. BHEL reserves the right to insist on removal of any employee of the contractor at any time, if they found him unsuitable. The contractor shall be bound to follow the instruction of BHEL.

4.1.1

All the materials like steel, structural members, MS bars, G.I. Sheets, MS square bar, angles and necessary electric goods etc. shall be supplied by the contractor as per the specification mentioned in the tender/Indian standard specification. The contractor is required to quote their rates inclusive of cost of all materials, labour, etc. BHEL reserves the right to inspect and reject any material not found satisfactory.

Foundation Bolts shall be supplied by BHEL as per requirement

4.1.2 General

4.1.2.1

During execution of the job, it is very essential that proper and adequate inspection should be made constantly by the contractor to maintain quality of workmanship and to ensure that deviations from BHEL drawings not exceed the permissible limits, which shall be approved by BHEL. The contractor shall submit test reports of all materials being procured by them for the job and also offer for inspection by BHEL. All the testing charges shall be borne by the contractor. BHEL engineer shall carry out the inspection of quality of material being purchased/arranged, quality/composition of materials used during construction work and workmanship. Decision of BHEL engineer shall be binding on the contractor.

Contractor shall furnish the manufacturers test certificate for the steel & cement procured by them. Apart from this all the field test shall be arranged by contractor for cement, bricks, coarse & fine aggregates either at site or near by Field Quality Lab. approved by BHEL if so desired by BHEL's engineer. All the expenses in these regards shall be borne by contractor.

Contractor shall procure reinforced/ structural steel & cement from reputed manufacturer & approval for the same shall be obtained from BHEL well in advance before ordering for the materials.

4.1.2.2

The contractor shall visit the site and ascertain the local conditions, entry and traffic restrictions, all obstructions in the area and also ascertain all site conditions and particularly the sub-soil conditions etc. The contractor shall carry out the survey to study the properties of soil/sub soil like strength to withstand the weight of structure during all weather conditions without sinking of foundation. If any of such defects like cracks, sinking of foundation etc. occur after completion of work till the performance guarantee period, it will be rectified by contractor free of cost including the supply of materials required. No claim shall be entertained on this account under any circumstances from the contractor.

4.1.2.3

The contractor shall provide and maintain at his own cost pumps and other equipment to keep the work free from water and continue to do so until the handing over of the work. The contractor shall clear all trees, rubbish, vegetation, brickbats etc. And dispense them suitably in allotted areas at his own cost.

4.1.2.4

The contractor shall take adequate precautions to ensure complete safety and prevention of accidents at site. The safety precautions shall conform to IS codes wherever applicable.

4.1.2.5

The contractor shall level the site in accordance with the sequence of earth leveling to maintain the proper gradient as per the instruction of BHEL; as soon as construction activity is over. Payment towards this shall be released as per the relevant items available in B.O.Q.

4.1.2.6

The work though not specifically mentioned either in the drawings or in the tender specification but are needed to complete the work as per site requirement & instruction of Engineer are also in the scope of this contract & to be erected to the entire satisfaction, for which the payment shall be released as per the respective item rate of Rate Schedule. If the item is not available in the rate schedule the rate shall be derived as per CPWD rate schedule latest version.

4.1.2.7

The contractor shall provide and maintain at his own cost all T & P for carry out the work. The T & P shall be for fabrication of the structures and for the purpose of erection of columns, trusses, purlins bracings etc complete.

4.2

The detailed drawings and specifications will form part of the tender documents. BHEL reserves the right to modify /alter the tender drawings, if necessary during the actual execution at site.

4.3 Electrical Installations

4.3.1 General

4.3.1.1

The electrical installation shall generally be carried out in conformity with the requirements of the Indian electricity act, 1910 as amended upto date and the Indian electricity rules, 1956 framed there under and also the relevant regulations of the electric supply authority concerned as well as IS: 732-1963 (revised).

4.3.1.2

Good workmanship is an essential requirement for compliance with the rules in the code. The work shall be carried out under the direct supervision of a person holding a valid certificate of competency issued by the state government concerned for the type of work involved.

4.3.1.3

All out door/external lamps shall have weatherproof fittings of design approved by BHEL Engineer so as to effectively prevent the admission of moisture.

4.3.1.4

The distribution fuse boards shall be located as near as possible to the center of the load they are intended to control.

4.3.1.5

All main switches shall be of metal clad enclosed pattern, which shall be fixed at close proximity to the point of entry of supply.

4.3.1.6

Main and branch distribution boards shall be in accordance with Indian standard 732-1963 "code of practice for electrical wiring installation".

4.3.1.7

PVC conduit wiring system should be adopted through out and all conduit pipes/channel shall be conforming to latest IS. Wiring shall be concealed type for SWAS room, SOX/NOX rooms, ID fan lub oil unit rooms. No of power points to be made available as per drawing issued to contractor.

4.3.1.8

Approved and good quality copper wire with adequate current carrying capacity/voltage rating with proper insulation as per IS should be used for the entire electrical wiring/installation.

4.3.1.9

The service connection from outside mains to the switchboard inside the building shall also be carried out by the contractor

4.4.0 Earthing

4.4.1

All earthing system shall be in accordance with IS: 3043-1966 "code of practice for earthing".

4.4.2

The installation and earthing shall generally be carried out in accordance with the Indian electricity rules 1956 as amended from time to time and the relevant regulations of the electricity supply authority concerned.

4.4.3

All plugs and sockets shall be of three-pin type, one of the pins being connected to earth.

4.4.4

Bodies of all electrical appliances shall be earthed by the use of three pin plugs. The covers of the regulators if of metallic construction, shall be earthed by means of a separate earth wire. A separate earth wire shall be used for earthing these appliances.

4.4.5

All earth wires and earth continuity conductors shall be of copper/ galvanized iron. They shall be either stranded or solid bars of flat rectangular strips and may be bared, provided, due care is taken to avoid corrosion and mechanical damage to it. Inter connections of earth continuity conductors and main and branch earth wires shall be made in such a way that reliable and good electrical connections are permanently ensured.

4.4.6

The neutral conductor shall not be used as earth wire.

4.4.7

Welded, bolted and clamped joints only are permissible. For stranded conductor, sleeve connectors are permissible. Bolted connectors and their screws shall be protected against any possible corrosion.

4.4.8

The path of the earth wire shall, as far as possible, be out of reach of any person and shall be visible for inspection.

4.4.9

The galvanized iron pipe electrodes shall not be smaller than 38mm internal diameter and shall not be less than 3.5M. In length and shall, as far as possible, be embedded below permanent moisture level and shall be one piece only without any joints.

4.5

BIDDERS MUST SUBMIT ALL RELEVANT DOCUMENT AS PER THIS TENDER SPECIFICATION AND AS PER QUALIFYING REQUIREMENT (QR) OF NIT. BIDDER MUST VISIT OUR WEB SITE www.bhel.com FOR NIT, TECHNICAL SPECIFICATION, BOQ, AMENDMENTS ETC TO KEEP UPDATED FOR ANY CHANGES/ AMENDMENTS. INCOMPLETE DOCUMENT SUBMITTED BY BIDDER SHALL NOT BE CONSIDER FOR EVALUATION .

4.6

Exclusions :

Following works excluded from this contract

- Drilling of hole in Chimney
- Control Room Floor cutting to suit new panels.
- Foundation work of CEP, HP heater & Coal Feeder

SECTION-5 SPECIAL CONDITIONS OF CONTRACT

OBLIGATIONS OF THE CONTRACTOR (TOOLS, TACKLES, CONSUMABLE ETC.)

5.1 ACCOMMODATION, DRINKING WATER & LOCAL TRANSPORTATION FOR LABOUR / OTHER EMPLOYEES

BHEL/Client will **not** be providing only the space for labour colony. Contractor shall make his own arrangements for accommodation with necessary facilities such as drinking water, sanitation and lighting etc for his workmen and the staff. The electricity for labour accommodation shall be on chargeable basis on the prevailing rate basis. taxes, duties, levies over and above the rates etc shall also be born by the contractor. Also, the contractor has to make his own arrangement for transportation of his workmen and other employees. BHEL/client shall not provide any facility in this regard.

Contractor shall have to make own independent arrangement for accommodation of his Labours and Staff.

TOOLS AND TACKLES, MEASURING AND MONITORING DEVICES:

5.2.1

All tools and tackles required for the work have to be arranged by the contractor.

5.2.2

All tools and tackles to be procured and used for the work shall have the prior approval of BHEL engineer in regard to brand, quality and specification.

5.2.3

The contractor shall provide all the necessary scaffolding materials, temporary structures and necessary safety devices etc.

5.2.4

Contractor shall maintain and operate his tools and plants in such a way that major breakdowns are avoided. In the event of major breakdown, contractor shall make alternate arrangements expeditiously so that the progress of work is not hampered.

5.2.5

In the event of contractor failing to arrange the required tools, plants, machinery, equipment, material and non-availability of the same owing to breakdown, BHEL will resort to hiring out the same from outside agencies or may provide their equipment if available or may resort to buying of equipment/material at the cost of contractor. Full cost of equipment/hire charges/ rental charges along with departmental overheads will be charged to the contractor.

5.2.6

The T&P to be arranged by the contractor shall be in proper working condition. The operation shall not lead to unsafe conditions. The movements of derricks and other equipment should be such that no damage/breaking occur to foundation, equipment, material and men.

5.2.7

For full welding of structures, only welding generators shall be used. The use of welding transformers will be subject to the approval of BHEL engineer.

5.2.8

Contractor to arrange necessary dewatering pumps, concrete mixers, vibrators etc.

5.3 MEASURING AND MONITORING DEVICES (MMD)

BHEL, Power Sector- Western Region (PS-WR) has already been accredited with ISO 9000 certification and as such this work is subject to various audits to meet ISO 9000 requirements. One particular aspect, which needs special attention, is about calibration of MMD deployed by the contractor. Contractor shall ensure deployment of reliable and calibrated MMD. All the MMD shall have calibration certificates from accredited laboratories traceable to National/International standards. Retesting/ recalibration shall also be arranged at prescribed intervals during the period of use as advised by BHEL engineer within the contract price. The contractor will also have alternate arrangements for such MMD so that work does not suffer when the particular equipment/instrument is sent for calibration. Also if any items not found fit for use, BHEL shall have the right to stop the use of such item forthwith and instruct the contractor to deploy proper MMD. Repeat measurements shall have to be taken by a valid and proper MMD for those parameters measured with a non-acceptable MMD, failing which BHEL will deploy MMD and retake the readings at contractor's cost.

5.4 MATERIALS

All the materials necessary for the entire work like cement, all types of steel, tubular/structural trusses, coarse & fine aggregates, bricks, doors, windows, ventilators, rolling shutters, structural members, MS bars, sanitary fittings, painting materials, AC sheets, Plywood materials, Rails, Putty, necessary wood materials, electrical fittings and wiring material and all other material required for the entire job shall be supplied by the contractor as per the specification mentioned in the Tender Specifications/Indian Standards. The contractor is required to quote their rates inclusive of cost of all materials etc. All these materials shall be inspected by BHEL before these are used for the work. Materials not found satisfactory by BHEL shall be rejected and removed forthwith by the Contractor.

5.5 CONSUMABLES

5.5.1

The contractor shall provide all consumables required for carrying out the work covered under this scope of work & rate quoted shall be inclusive of all those things.

5.5.2

All consumables to be procured and used for the work shall have prior approval of BHEL engineer in regard to brand and quality specification.

5.5.3 ELECTRODES AND GASES

5.5.3.1

Contractor at his cost as approved by BHEL shall arrange all the required electrodes. It shall be the responsibility of the contractor to obtain prior approval of BHEL, before procurement regarding suppliers, type of electrodes etc. On receipt of the electrodes at site, it shall be subject to inspection and approval by BHEL details regarding type of electrodes, batch number and date of expiry etc.

BHEL reserves the right to reject the use of any electrodes at any state, if found defective because of bad quality, improper storage, quality date expiry, unapproved type of electrodes etc. It shall be the responsibility of the contractor to replace at his cost without loss of time.

5.5.3.2

All the required gases like Oxygen, Acetylene, etc. will be provided by the contractor at his cost.

5.5.3.3

If at any time during the execution of work, it is noticed that the work is suffering on account of non-availability of consumables from the contractor's side like electrodes, gases and other materials, then, BHEL will make alternate arrangements and the necessary costs with overheads at 30% will be recovered from the running bills of the contractor.

5.3 FIELD OFFICE

5.5.1

The contractor shall make his own arrangements for field office and stores for accommodating necessary equipments, tools room for execution of the work. Only open space will be provided by BHEL / customer, free of charges within the project premises as per the availability of space.

5.5.2

On completion of work, all the temporary buildings, structures, pipelines, 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, BHEL will arrange to remove and expenditure thereof including overhead expenses (presently @30%) will be recovered from the contractor. The decision of BHEL engineer in this regard shall be final. However, the scope of dismantling and leveling the area is limited only to the contractor's site office, yard and other spaces occupied by the contractor.

AREA LIGHTING

5.6.1

Contractor shall arrange adequate floodlights, hand lamps and area lighting. Contractor shall use his own materials like cables, fuses, switchboards etc. BHEL/client will not provide anything in this regard.

CONSTRUCTION POWER & WATER

5.7.1

Construction power (three phase, 415v / 440v, will be provided at single point on Chargeable basis as per the prevailing rate of M/s GESCL. All taxes, duties, levies, charges etc, as applicable, shall also be born by the contractor. Accordingly, required energy meter, all cables, fuses, distribution boards, switches, switchboards, bus bars, earthing arrangements, protection devices e.g. ELCB, if any, and any other installation as specified by Statutory Authority, Client in this regard, for drawl of construction power shall be arranged by the contractor. Obtaining approvals, payment of necessary fees, duties etc towards the clearance of such installations, if any, prior to these being put to use or as may be specified, shall be the responsibility of the contractor.

5.7.2

It shall be the responsibility of the contractor to provide, maintain the complete installation on the load side of the supply with due regard to the safety requirements at site. All cabling and installations shall comply in all respects with the appropriate statutory requirements. The installation and maintenance of this shall be done by licensed and experienced Electrician.

5.7.3

The Customer will provide **water for Construction purpose** at a single point free of charge. However, Taxes, Duties, Levies, charges if any shall be borne by the contractor. All arrangements for further distribution beyond this point have to be made by contractor.

5.7.4

In case of non-availability of customer supplied power, it is the responsibility of the contractor to make alternative arrangements for back-up power supply arrangement like DG set and Diesel operated welding machine etc. to tackle the situations arising due to failure of customer supply power, so as to ensure continuity and completion of critical processes that are underway at the time of power failure or important activities planned in immediate future.

5.7.5

BHEL is not responsible for any loss or damage to the contractor's equipment as a result of variations in voltage or frequency or interruptions in power supply. Contractor shall take suitable insurance policy for such accidental loss/ damages.

RESPONSIBILITIES WITH REGARD TO LABOUR EMPLOYMENT ETC.

5.8.1

Refer clause 2.8 of General Conditions of Contract in this regard.

5.8.2

Contractor shall also comply with the requirements of local authorities/ project authorities calling for police verification of antecedents of the workmen, staff etc.

5.8.3

BHEL / customer may insist for witnessing the regular payment to the labour. They may also like to verify the relevant records for compliance with statutory requirements. Contractor shall enable such facilities to BHEL / customer.

5.8.4

It is the responsibility of the contractor to arrange gate pass for all his employees, T&P etc for entering the project premises. Necessary coordination with customer officials is the responsibility of the contractor. Contractor to follow all the procedures laid down by the customer for making gate passes. Where permitted, by customer / BHEL, to work beyond normal working hours, the contractor shall arrange necessary work permits for working beyond normal working hours.

5.8.5

Contractor shall provide at different elevation suitable arrangement for urinal and drinking water facility with necessary plumbing & disposal arrangements including construction of septic tank. These installations shall be maintained in hygienic condition at all times.

5.8.6

If at any time during the execution of work, it is noticed that the work is suffering on account of non-availability/shortfall in provision of resources from the contractor's side BHEL will make suitable alternate arrangements at the risk and cost of contractor. The expenditure incurred with overheads thereby shall be recovered from the contractor.

5.9.0 TAXES, DUTIES, LEVIES

5.9.1

Refer to Clause 2.8.4 of General Conditions of Contract. Notwithstanding anything contained therein, the following provisions shall be applicable for this contract.

5.9.1

The contractor shall pay all (save the specific exclusions as enumerated in this contract) taxes, fees, license charges, deposits, duties, tools, royalty, commissions or other charges which may be levied on the input goods & services consumed and output goods & services delivered in course of his operations in executing the contract. In case BHEL is forced to pay any of such taxes, BHEL shall have the right to recover the same from his bills or otherwise as deemed fit.

However, provisions regarding Service Tax and Value Added Tax (VAT) on output services and goods shall be as per following clauses.

5.9.2 Service Tax & Cess on Service Tax

Service Tax and Cess on Service Tax as applicable on output Services are excluded from contractor's scope; therefore contractor's price/rates shall be **exclusive** of Service Tax and Cess on Output Services. In case, it becomes mandatory for the contractor under provisions of relevant act/law to collect the Service Tax & Cess from BHEL and deposit the same with the concerned tax authorities, such applicable amount will be paid by BHEL. Contractor shall submit to BHEL documentary evidence of Service Tax registration and remittance record of such tax immediately after depositing the tax with concerned authorities. Contractor shall obtain prior written consent from BHEL before billing the amount towards such taxes.

With introduction of Cenvat Credit Rules 2004, which came into force w.e.f. 10.09.2004, Excise Duty paid on Input Goods including Capital Goods and Service Tax paid on Input Services that are used for providing the output services can be taken credit of against the Service Tax payable on output services. However BHEL may opt for availing the abatement provision in which case cenvat credit may not be available on input duty.

5.9.3 VAT (Sales Tax /WCT)

As regards Value Added Tax (VAT) on transfer of property in goods involved in Works Contract (previously known as Works Contract Tax) applicable as per local laws, the price quoted by the contractor shall be **exclusive** of the same. Where such taxes are required to be paid by the contractor, this will be reimbursed on production of proof of payment made to the authorities by the Contractor. In any case the Contractor shall register himself with the respective Sales Tax authorities of the state and submit proof of such registration to BHEL along with the first RA bill. The contractor has to take all necessary steps to **minimize tax on input goods** by purchasing the materials from any registered dealer of the concerned state only. In case contractor opts for composition, it will be with the prior express consent of BHEL. Deduction of tax at source shall be made as per the provisions of law unless otherwise found exempted. In case tax is deducted at source as per the provisions of law, this is to be construed as an advance tax paid by the contractor and no reimbursement thereof will be made unless specifically agreed to.

5.9.4 Modalities of Tax Incidence on BHEL

Wherever the relevant tax laws permit more than one option or methodology for discharging the liability of tax/levy/duty, BHEL will have the right to adopt the appropriate one considering the amount of tax liability on BHEL/Client as well as procedural simplicity with regard to assessment of the liability. The option chosen by

BHEL shall be binding on the Contractor for discharging the obligation of BHEL in respect of the tax liability to the Contractor.

5.9.5 New Taxes/Levies

In case the Government imposes any new levy/tax on the output service/ goods/work after award of the contract, the same shall be reimbursed by BHEL at actual.

In case any new tax/levy/duty etc. becomes applicable after the date of Bidder's offer, the Bidder/Contractor must convey its impact on his price duly substantiated by documentary evidence in support of the same **before opening of Price Bid**. Claim for any such impact after opening the Price Bid will not be considered by BHEL for reimbursement of tax or reassessment of offer.

No reimbursement/recovery on account of increase/reduction in the rate of taxes, levies, duties etc. on input goods/services/work shall be made. Such impact shall be taken care of by the Price Variation/Adjustment Clause (PVC) if any. In case PVC is not applicable for the contract, Bidder has to make his own assessment of the impact of future variation if any, in rates of taxes/duties/ levies etc. in his price bid.

SUBMISSION OF PERIODICAL REPORTS

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

- 1) Consumption of consumables like welding electrodes, gases and paints
- 2) Consumption of construction power
- 3) Availability and utilization of BHEL's Tools & Plants
- 4) Availability and utilization of contractor's Tools & Plants
- 5) Daily manpower reports
- 6) Daily progress reports of activities & incidents
- 7) Calibration reports
- 8) Records of wages payment
- 9) Any other report/record as may be specified by BHEL/client.

BHEL at site will suggest formats for these reports.

5.10

It is the responsibility of the contractor to arrange gate pass for all his employees, T&P etc. Necessary coordination with customer officials is the responsibility of the contractor. Contractor to follow all the procedures laid down by the customer for making gate passes. Where permitted, by customer/ BHEL, to work beyond normal working hours, the contractor shall arrange necessary work permit for working beyond normal working hours.

SECTION-6

SPECIAL CONDITIONS OF CONTRACT

CONTRACTOR'S OBLIGATION IN REGARD TO EMPLOYMENT OF SUPERVISORY STAFF AND WORKMEN

6.1

The contractor shall deploy all the skilled/semiskilled/ unskilled labour including highly skilled workmen etc. These workmen should have previous experience on similar job. They shall hold valid certificates wherever necessary. BHEL reserves the right to insist on removal of any employee of the contractor at any time if he is found to be unsuitable and the contractor shall forthwith remove him. Contractor should furnish a tentative deployment plan of his manpower as required vide relevant Appendix. Also the actual deployment will be so as to satisfy the erection and commissioning targets set by BHEL.

6.2

It is the responsibility of the contractor to engage his workmen in shifts and or on overtime basis for achieving the targets set by BHEL. This target may be set to suit BHEL's commitments to its customer or to advance date of completion of events or due to other reasons. The decision of BHEL in regard to setting the erection and commissioning targets will be final and binding on the contractor.

6.3

Contractor shall deploy only qualified and experienced engineers/ supervisors. They shall have professional approach in executing the work.

6.4

The contractor's supervisory staff shall execute the work in the most professional manner in the stipulated time. Accuracy of work and aesthetic finish are essential part of this contract. They shall be responsible to ensure that the assembly and workmanship conform to dimensions and tolerances given in the drawings/instructions given by BHEL engineer from time to time.

6.5

The supervisory staff employed by the contractor shall ensure proper outturn of work and discipline on the part of the labour put on the job by the contractor. Also, in general they should see that the works are carried out in a safe and proper manner and in coordination with other labour and staff employed directly by BHEL or other contractors of BHEL or BHEL's client.

6.6

If at any time, it is found that the contractor is not in a position to deploy the required engineers/supervisors/workmen due to any reason, BHEL shall have the option to make alternate arrangements at the contractor's risk and cost.

6.7 SITE ORGANISATION

The contractor shall provide adequate staffing in the following areas in addition to the staffing requirements of execution as instructed/informed by BHEL:

Overall Planning, Monitoring & Control

Materials Management

Quality Control and Quality Assurance

Safety, Fire & Security

Industrial Relations and fulfillment of Labour Laws and other statutory obligations.

SECTION-7
SPECIAL CONDITIONS OF CONTRACT
OBLIGATIONS OF BHEL

FACILITIES PROVIDED BY BHEL

7.1.1 SPACE FOR CONTRACTOR'S SITE OFFICE & STORES:

Refer Section- 5 in this regard

7.1.2 CONSTRUCTION POWER AND WATER

Refer Section - 5

Water for Construction: As specified in section –5.

7.2 TOOLS & PLANTS

BHEL will **NOT** provide any Tools & Plants for this work.

7.3 CONSUMABLES AND MATERIALS

BHEL will **NOT** provide any Consumables and Materials for this work except those, which are specifically mentioned in this tender specification.

SECTION-8

SPECIAL CONDITIONS OF CONTRACT

INSPECTION / QUALITY ASSURANCE / QUALITY CONTROL/ STATUTORY INSPECTION

8.1

Various inspection/quality control/quality assurance procedures /methods at various stages of erection and commissioning will be as per BHEL/customer quality control procedure/codes/IBR and other statutory provisions and as per BHEL Engineer's instructions.

8.2

Preparation of quality assurance log sheets and protocols with customer's engineers, welding logs and other quality control and quality assurance documentation as per BHEL Engineer's instructions, is within the scope of work/specification.

The protocols between contractor and customer/BHEL shall be made prior to installation for correctness of foundations, materials, procedures, at each stage of installation, generally as per the requirement of customer/BHEL. This is necessary to ensure elimination of errors or keeping them within tolerable limits and to avoid accumulation and multiplication of errors.

8.3

A daily log book should be maintained by every supervisor/engineer of contractor on the job in duplicate (one for BHEL and one for contractor) for detailing and incorporating alignment/clearance / centring / levelling readings and inspection details of various equipments etc.

8.4

Contractor shall provide all the measuring and monitoring devices (MMD) required for completion of work satisfactorily. These MMD shall conform to job requirement in respect of measurement range, accuracy level and any other standard specification.

8.5

The MMD deployed by the contractor shall, at all stages of works, have valid and current calibration certificate. The calibration of these MMD shall be got done from the agencies accredited/approved by BHEL/Client. Copy calibration certificate in respect of these MMD has to be submitted to BHEL. Periodical status report regarding validity of calibration has to be submitted to BHEL. Re-calibration/re-validation shall be done for the continuity of usage, as per BHEL specifications. Contractor shall conform to the specification of BHEL regarding storage of these MMD.

8.6

Re-work necessitated on account of usage of invalid MMD shall be entirely to the contractor's account. He shall be responsible to take all corrective actions, including resource augmentation if any, as specified by BHEL to make-up the loss of time.

8.7

In the course of erection, it may become necessary to carry repeated checks of the work with instruments recently calibrated, re-calibrated. Such instruments whenever necessary, will be provided by BHEL, on returnable basis, on specific authorisation by BHEL Engineer.

8.8

Vibration indicators/vibration recorders/vibration analysers will be provided by BHEL for checking and analysing vibration levels of rotating equipments with necessary operators. Contractor shall provide necessary labour for carrying out such tests.

8.9

Total quality is the watchword of the work and contractor shall strive to achieve the quality standards, procedures laid down by BHEL. He shall follow all the instructions as per BHEL drawings and quality standards. Contractor shall provide for the services of quality assurance engineer.

8.10 STAGE INSPECTION BY BHEL/GSECL QA ENGINEERS

8.10.1

Apart from day-to-day inspection by BHEL engineers stationed at site and also by customer's engineers, stage inspection of equipments under erection and commissioning at various stages of erection and commissioning by teams of engineers from field engineering services of BHEL's manufacturing units and quality assurance teams from field quality assurance unit/factory quality assurance and commissioning engineers from technical services of BHEL will also be conducted. Contractor shall arrange all labour, tools and tackles etc. for such stage inspections free of cost.

8.10.2

Any modifications suggested by BHEL QA Engineers team shall be carried out. Claims of contractor, if any, shall be dealt as per clause 13.1 to 13.8, provided such modifications have not arisen for reasons attributable to the contractor.

8.11 .STATUTORY INSPECTION.

8.11.1

The scope includes getting the approvals from the statutory authorities (like Electrical Inspector, P.F. Commissioner, Labour Commissioner and any other Authority connected to this project work). This includes arranging for inspection visits of Statutorily Authority periodically as per BHEL Engineer's instructions, arranging materials for ground inspection, submitting co-related inspection reports, documents, radiographs etc. and following up the matter with them. Contractor shall also make all arrangements for offering the products/systems for inspection at location, as applicable to the concerned Authority.

8.11.2

The contractor shall pay all fees connected with testing his welders / men / workers and testing, inspection, calibrating of his MMD instrument and T&P equipments.

8.11.3

It shall be contractor's responsibility to obtain approval of statutory authorities, wherever applicable, for the conducting of any work which comes under the purview of these authorities. Any cost arising from this shall be contractor's account.

8.11.4

Refer clause No.2.8.5 of SECTION-2 OF GENERAL CONDITIONS OF CONTRACT for BHEL's responsibility with regard to payment of Inspection fee of Boiler Inspectorate.

8.11.5

Contractor should be qualified to execute pressure parts & piping work coming under the purview of IBR, for which he should register himself with CIB of state concerned. Contractor

should be aware of the latest IBR regulations and Electricity act, including the amendments thereof.

8.11

The quality management system of BHEL, Power Sector – Western Region (PSWR) has already been certified and accredited with ISO 9001:2002 standards in this regard. The basic philosophy of the Quality Management System is to define the organisational responsibility, work as per documented procedures, verify the output with respect to acceptance norms, identify the non-conforming product/procedure and take corrective action for removal of non-conformance specifying the steps for avoiding recurrence of such non-conformities, and maintain the relative quality records. The non-conformities are to be identified through the conduct of periodical audit of implementation of Quality Systems at various locations/stages of work. Suppliers/vendors of various products/services contributing in the work are also considered as part of the Quality Management System. As such the contractor is expected not only to conform to the Quality Management System of BHEL but also it is desirable that they themselves are accredited under any Quality Management system Standard.

Section-9
Special Conditions of Contract
Safety, Occupational Health and Environmental Management

Introduction:-

BHEL PSWR has been certified for Environmental Management under ISO 14001:1996 standard and Occupational Health & Safety under OHSAS 18001 by DNV. In order to comply with the above standards, it shall be the endeavor of BHEL and all its subcontractors to meet and implement the requirements by following the guidelines issued under Environmental, Occupational Health and Safety Management (EHS) manual a copy of which will be available with the BHEL Site-in-charge.

Contractor shall also enter into a "Memorandum of Understanding" as given in clause 9.9 in case of award of contract.

Responsibility Of The Contractor In Respect Of Safety Of Men, Equipment, Material And Environment.

The Contractor Shall

Abide by the Safety Regulations applicable for the Site/Project and in particular as mentioned in the booklet "Safe Work Practices" issued by BHEL. Contractors are also to ensure that their employees and workmen use safety equipments as stipulated in the Factories Act (Latest Revision) during the execution of the work. Failure to use safety equipment as required by BHEL Engineer will be a sufficient reason for issuance of memo, which shall become part of Safety evaluation of the contractor at the end of the Project. Also all site work may be suspended if it is found that the workmen are employing unsafe working practice and all the costs/losses incurred due to suspension of work shall be borne by contractor. A comprehensive list of National Standards from which the contractor can draw references for complying with various requirements under this section is given under 9.10

Hold BHEL harmless and indemnified from and against all claims, cost and charges under Workmen's Compensation Act 1923 and 1933 and any amendment thereof and the contractor shall be solely responsible for the same.

Abide by the Procedure governing entry/exit of the contractor's personnel within the Customer/Client premises. All the contractors employees shall be permitted to enter only on displaying of authorized Photo passes or any other documents as authorised by the Customer/Client

Be fully responsible for the identity, conduct and integrity of the personnel/workers engaged by them for carrying out the contract work and ensure that none of them are ever engaged in any anti national activity

Prepare a sign board giving the following information and display it near the work site:

- i. Name of Contractor
- ii. Name of Contractor Site-in-charge & Telephone number
- iii. Job Description in short
- iv. Date of start of job
- v. Date of expected completion
- vi. Name of BHEL Site-in-charge.

Abide by the rules and regulations existing during the contract period as applicable for the contractors at the Project premises.

Observe the timings of work as advised by BHEL Engineer-in-charge for carrying out the contract work.

SPECIAL CONDITIONS

Safety

9.2.1.1 Safety Plan

Before commencing the work, contractor shall submit a "safety plan" to the authorised BHEL official. The safety plan shall indicate in detail the measures that would be taken by the contractor to ensure safety to men, equipment, material and environment during execution of the work. The plan shall take care to satisfy all requirements specified hereunder.

The contractor shall submit "safety plan" before start of work. During negotiations, before placing of work order and during execution of the contract, BHEL shall have right to review and suggest modifications in the safety plan. Contractor shall abide by BHEL's decision in this respect.

9.2.1.2

The contractor shall take all necessary safety precautions and arrange for appropriate appliances and/or as per direction of BHEL or it's authorised person to prevent loss of human lives, injuries to men engaged and damage to property and environment.

9.2.1.3

The contractor shall provide to his work force and also ensure the use of Personnel Protection Equipment (PPE) as found necessary and/or as directed and advised by BHEL officials without which permission is liable to be denied.

Safety helmets conforming to IS 2925/1984 (1990)

Safety belts conforming to IS 3521/1989

Safety shoes conforming to IS 1989 part-II /1986(1992)

Eye and face protection devices conforming to IS 2573/1986(1991), IS 6994 (1973), part-I (1991), IS 8807/1978 (1991), IS 8519/1977(1991).

Other job specific PPEs of standard ISI make as may be prescribed

9.2.1.4

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

9.2.1.5

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

9.2.1.6

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

9.2.1.7

The contractor shall adopt all fire safety measures as per relevant Indian Standards

9.2.1.8

Where it becomes necessary to provide and/or store petroleum products, explosives, chemicals and liquid or gaseous fuel or any other substance that may cause fire or explosion, the contractor shall be responsible for carrying out such provisions and/or storage in accordance with the rules and regulations laid down by the relevant government acts, such as petroleum act, explosives act, petroleum and carbides of calcium manual of the chief controller of explosives, Government of India etc. The contractor in all such matters shall also take prior approval of the authorised BHEL official at the site.

9.2.1.9

Proper means of access must be used e.g. ladders, scaffolds, platforms etc. No makeshift access such as oil drums or pallets shall be used. Design of these will be in accordance with relevant standards and certified by competent persons before use.

9.2.1.10 Temporary arrangements made at Site for lifting , platforms, approach, access etc should be properly designed and approved before being put to use.

9.2.1.11 All excavations and openings must be securely and adequately fenced/barricaded and warning signs erected when considered necessary as per relevant code of practice.

9.2.1.12 No persons shall remove guard rails, covers or protective devices unless authorised by a responsible supervisor and alternative precautions have been taken

9.2.1.13 Access ways, means of escape and fire exits shall be clearly marked, kept clear and unobstructed at all times

9.2.1.14 Only authorised persons holding relevant license will drive and operate site plant and equipments eg cranes, dumpers, excavators, transport vehicles etc

9.2.1.15 Only authorised personnel are allowed to repair, commission electrical equipments.

9.2.1.16 Gas cylinders shall be handled and stored as per Gas Cylinder Rules and relevant safe working practices

9.2.1.17 All wastes generated at Site shall be segregated and collected in a designated place so as to prevent spillage/ contamination/ scattering at Site, until the waste is lifted for disposal to designated disposal area as advised by BHEL official.

9.2.1.18 The contractor shall arrange at his cost (wherever not specified) appropriate illumination at all work spots for safe working when natural day light is not adequate for clear visibility.

9.2.1.19 The contractor shall train adequate number of workers/supervisors for administering "FIRST AID". List of competent first aid administrators should be prominently displayed.

9.2.1.20 The contractor shall display at strategic places and in adequate numbers the following in fluorescent markings

Emergency telephone numbers

Exit, Walkways

Safe working load charts for wire ropes, slings, D shackles etc

Warning signs

9.2.1.21 The contractor shall be held responsible for any violation of statutory regulations (local, state or central) and BHEL instructions that may endanger safety of men, equipment, material and environment in his scope of work or other contractors or agencies. Cost of damage, if any, to life and property arising out of such violation of statutory regulations and BHEL instructions shall be borne by the contractor.

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

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

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

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

9.2.1.26 **Emergency Response**

BHEL will have an Emergency Response Plan for each Project Site in consultation with the Owner as the case may be, detailing the procedure for mobilisation of personnel and equipment, and defining the responsibilities of the personnel indicated, in order to prepare for any emergency that may arise in order to ensure the priorities of

Safeguard of life

Protect assets under construction or neighbouring

Protect environment

Resumption of normal operations as soon as the emergency condition is called off

All Contractors shall also be part of the Emergency response Plan and the personnel so nominated shall be aware of their duties and responsibilities in an emergency response situation.

At least 5% Contractors supervisors and workmen shall undergo training in administering 'First Aid'. The trained persons should represent for all categories of work and for all areas of work. Adequate number of trained persons should be available for each shift. These first aiders shall be included in the emergency response team. Contractor employees and workmen are encouraged to participate in first aid training programmes whenever organised by BHEL.

9.2.2 OCCUPATIONAL HEALTH

Specific occupational health hazards will be identified through the hazard evaluation processes in consultation with BHEL engineers and the necessary prevention/reduction/elimination methods implemented.

All personnel working in an activity with a potential risk to health shall be made aware of all those risks and the actions they must take to reduce/control/eliminate the risk

Safety coordinator shall conduct periodic checks to ensure that every group of workers engaged in similar activities are aware of potential risks to health and the actions required to be taken to mitigate the risk

In order to protect personnel from associated health hazards, the following main areas will be focussed

- Issue of approved Personnel Protective Equipment

- Verification that the PPEs are adequate/maintained and worn by all staff involved in operations that are potentially hazardous to their health

- Ensure that the personnel deployed are physically fit for the operation/work concerned

- Provide hygienic and sanitary working conditions

Contractor workers employees engaged in noise risk areas shall be issued with hearing protection aids and the use of the same will be enforced. Further, these workers will be educated on the hazards of noise

Contractor workers engaged in dust environment shall be issued with necessary dust protection aids and the use of the same shall be enforced

Workers engaged in exposure to bright light/rays as in welding or radiation shall be issued with eye protection devices and the use of the same shall be enforced

Adequate arrangements shall be made to provide safe drinking water

Health monitoring records on at least sample basis for contractor employees & workmen shall be maintained for persons engaged in specified categories of work. These shall include

- Noise induced hearing loss

- Lung Function test

- Ergonomic Test

- Eye Test for Welders, Grinders, Drivers etc

HYGIENE and HOUSEKEEPING

Good house keeping and proper hygiene is one of the key requirements of Occupational Health Safety and Environment management. Towards this the contractor shall encourage his workers and supervisors to maintain cleanliness in their area of work.

The Contractor shall arrange to place waste bins/chutes at convenient locations for the collection of scrap and other wastes. The bins shall be clearly marked and segregated for metal, non-metal, hazardous and non hazardous wastes.

BHEL may take up appropriate remedial measures at the cost of the contractors if the contractors fail good house keeping and if there is an imminent risk of pollution

ENVIRONMENT MANAGEMENT

BHEL has a sound environmental management system, which is to be maintained and implemented by all the contractors. The system allows for project specific objectives to be set and developed sensitive to client requirements, applicable environmental legislation and BHEL's own objectives and policy. BHEL engineers will assess and monitor the environmental impact of their work and lay out objectives for their minimisation. The contractors shall implement the objectives for continual improvement of environmental performance. BHEL shall regularly audit environmental impacts and their improvements.

WASTE MANAGEMENT

The objective of waste management is to ensure the safe and responsible disposal of waste, ensuring that it is correctly disposed of and being able to audit the process to ensure compliance.

Chemical wastes if any shall be collected separately and disposed of to BHEL designated refuse yard as per BHEL advise

No dangerous chemicals, noxious waste products or materials will be disposed off on or off site without approval obtained through BHEL.

All disposal of wastes generated during construction shall be in accordance with all relevant legislation.

Acid and alkali cleaning wastes shall be neutralised to acceptable norms before disposal to the designated area.

All necessary measures shall be taken to ensure safe collection and disposal of waste oils. In particular to ensure the prevention of their discharge into surface waters, ground waters, coastal waters or drainages

9.3 SUPERVISION

Contractor must provide at least one full time on site safety coordinator when the manpower engaged is in excess of 50 for the contract activities in the premises. If the manpower is less than 50, the on site safety coordination responsibilities shall be assumed by any one of the contractor's other supervisory staff; however in both the cases, the contractor must specify in writing the name of such persons to the BHEL Engineer in Charge.

Contractor's safety coordinator or his supervisor responsible for safety as the case may be shall conduct at his work site, and document formal safety inspection and audits at least once in a week. Such documents are to be submitted to BHEL Engineer in Charge for his review and record. Contractor, supervisor must attend all schedule safety meetings as would be intimated to him by the BHEL Engineer in Charge.

Before starting work under any contract, the contractor must ensure that a job specific safety procedures/field practices as required over and above the safety permit conditions are prepared and followed .He should also ensure that all supervisors and workers involved understand and follow this procedures /field practices.

9.3.4

Contractor must ensure that in his work site appropriate display boards are put displaying signs for site safety , potential hazards and precautions required

TRAINING & AWARENESS

Contractor shall deploy experienced supervisors and other manpower who are well conversant with the safety and environment regulations of the Project. The electricians to be deployed on the job should have wireman license.

All Supervisors & Workmen of the Contractor shall undergo Fire safety training/demonstration whenever arranged by BHEL with the help of either Customer's Fire and Safety department or outside faculty so as to acquire knowledge of fire prevention and also to be able to make use of appropriate fire extinguishers.

Contractor must familiarize himself from BHEL Engineer in Charge about all known potential fire, explosion or toxic release hazards related to the contract. He in turn will ensure that same information has been passed to the supervisors and workmen

Contractor must ensure that all his supervisors are properly trained and each employee has received and understood from his supervisor necessary training and briefing about the safety requirement. Necessary document as a means to verify that employees have understood the training is to be maintained.

The contractor supervisors shall also give a small safety briefing to all the workmen under his charge before undertaking any new work and specially understand the safety requirements that are mandatory

REPORTING

The contractor shall submit report of all accidents, fires and property damage, dangerous occurrences to the authorised BHEL official immediately after such occurrence but in any case not later than twelve hours of the occurrence. Such report shall be furnished in the manner prescribed by BHEL and also to meet statutory requirement.

Any injury sustained by any of the contractor's employees within the Project premises must be reported to BHEL supervisor and FIRST AID should be immediately administered. The

Contractor shall be responsible for keeping and maintaining proper records of Accidents to his personnel.

Contractor must arrange to immediately investigate, properly document and report any injury, accident or near miss involving any of his employees and take appropriate follow up action. He must furnish within 12 hours of the incident a written report to BHEL Engineer in charge and the Safety Section.

According to the Factory Act and the Employees state Insurance Act & regulation, any person sustaining any injury within the project premises and absenting himself from work for more than 46 hours, his accident report has to be sent to the respective Government Authorities. Therefore contractor shall inform the owner's representative such matter immediately for their needful action.

In addition, contractor shall submit periodic reports on safety to the authorised BHEL official from time to time as prescribed.

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

AUDIT REVIEW AND INSPECTION

BHEL shall conduct audit on the contractor performance and compliance with the project specific requirements of the Environment and Occupational Health & Safety Management systems. The programme of audit shall cover all activities under the contract but will focus particularly on high-risk activities. The Construction Manager shall decide the schedule of audit. The audit findings shall be communicated to the contractors and necessary remedial action as advised by BHEL Engineers shall be under taken within the stipulated time.

BHEL Engineers shall carry out inspections regularly by the contractors and on activities, facilities, equipment and documentation, to cover the following aspects.

- Compliance with procedures and systems
- Availability, condition and use of PPEs
- Condition of maintenance tools, equipments, facilities
- Availability of fire fighting equipments and its condition
- Use of fire fighting equipments and first aid kit
- Awareness of occupational health hazard
- Awareness of safe working practices
- Presence of quality supervision
- Housekeeping

The Safety Co-ordinator shall visit and inspect work sites daily. All unsafe acts, unsafe conditions that have imminent potential for causing harm/injury/damage will be immediately corrected. He shall maintain a daily logbook giving details of unsafe acts or conditions observed and the corrective action taken and recommendations for preventing recurrence. Adequacy of corrective actions will be verified

The contractor shall take remedial measures as per the findings of each inspection

Besides the above, the contractor shall be required to carry out the following inspections

Sl no	Equipment	Scope of inspection	Inspection by	Schedule
1	Hand tools	To identify unsafe/defective tool	User	Daily
2	Power tools	To identify unsafe/defective tool	User	Daily
3	Fire Extinguisher	To check pressure and any defect	User / Safety Coordinator	Daily Every month
4	Lifting equipment/tacles	To check for defects and efficacy of brakes	User Third party	Daily Every Year
5	PPE	To check for defects	User	Daily

9.7 NON COMPLIANCE: -

NONCONFORMITY OF SAFETY RULES AND SAFETY APPLIANCES WILL BE VIEWED SERIOUSLY AND THE BHEL HAS RIGHT TO IMPOSE FINES ON THE CONTRACTOR AS UNDER for every instance of violation noticed:

SNo.	Violation of Safety Norm	Fine (Rs.)
01	Not Wearing Safety Helmet	50/-
02.	Not wearing Safety Belt	100/-
03.	Grinding Without Goggles	50/-
04.	Not using 24 V Supply For Internal Work	500/-
05.	Electrical Plugs Not used for hand Machine	100/-
06.	Not Slings property	200/-
07.	Using Damaged Sling	200/-
08.	Lifting Cylinders Without Cage	500/-
09.	Not Using Proper Welding Cable With Lot of Joints And Not Insulated Property.	200/-
10.	Not Removing Small Scrap From Platforms	200/-
11.	Gas Cutting Without Taking Proper Precaution or Not Using Sheet Below Gas Cutting	200/-
12.	Not Maintaining Electric Winches Which are Operated Dangerously	500/-
13.	Improper Earthing Of Electrical T&P	500/-
14.	Accident Resulting in Partial Loss in Earning Capacity	25,000/- per victim
15.	Fatal Accident/Accidents Resulting in total loss in Earning Capacity	1,00,000/- per victim

Any other non-conformity noticed not listed above will also be fined as deemed fit by BHEL. The decision of BHEL engineer is final on the above. The amount will be deducted from running bills of the contractor. The amount collected above will be utilised for giving award to the employees who could avoid accident by following safety rules. Also the amount will be spent for purchasing the safety appliances and supporting the safety activity at site.

CITATION:-If safety record of the contractor in execution of the awarded job is to the satisfaction of safety department of BHEL, issue of an appropriate certificate to recognise the safety performance of the contractor may be considered by BHEL after completion of the job.

Memorandum of Understanding

After Award Of Work, Contractors Are Required To Enter Into A Memorandum Of Understanding As Given Below:

Memorandum of Understanding

BHEL, PSWR is committed to Health, Safety and Environment Policy (EHS Policy) as given in the booklet titled “ Safe Working Practices” issued to all contractors.

M/s _____ do hereby also commit to the same EHS Policy while executing the Contract Number _____

M/s _____ shall ensure that safe work practices not limited to the above booklet are followed by all construction workers and supervisors. Spirit and content therein shall be reached to all workers and supervisors for compliance.

BHEL will be carrying out EHS audits twice a year and M/s _____ shall ensure to close any non-conformity observed/reported within fifteen days.

Signed by authorised representative of M/s-----

Name :

Place & Date:

Comprehensive list of National Standards for reference and use wherever applicable in the execution of Civil, Erection and Commissioning Contracts

IS No	YEAR	Amd upto	DESCRIPTION
IS 10204	1982		PORTABLE FIRE EXTINGUISHERS MECHANICAL FOAM TYPE
IS 10245	1994		SPECIFICATION FOR BREATHING APPARATUS
IS 10291	1982		SAFETY CODE FOR DRESS DRIVERS IN CIVIL ENGINEERING WORKS
IS 10658	1983		HIGHER CAPACITY DRY POWDER FIRE EXTINGUISHERS (TROLLEY MOUNTED)
IS 10662	1992		COLOUR TELEVISION
IS 10667	1983		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR PROTECTION OF FOOT AND LEG
IS 11037	1984		ELECTRONIC FAN REGULATORS
IS 11057	1984		INDUSTRIAL SAFETY NETS
IS 11451	1998		RECOMMENDATION FOR SAFETY AND HEALTH REQUIREMENT RELATING TO OCCUPATION EXPOSURE TO ASBESTOS
IS 1169	1967		PEDESTAL FANS
IS 1179	1967		SPECIFICATION FOR EQUIPMENT FOR EYE AND FACE PROTECTION DURING WELDING
IS 11833	1986		DRY POWDER FIRE EXTINGUISHERS FOR METAL FIRES

IS No	YEAR	Amd upto	DESCRIPTION
IS 11972	1987		CODE OF PRACTICE FOR SAFETY PRECAUTION TO BE TAKEN WHEN ENTERING A SEWAGE SYSTEM
IS 1287	1986		ELECTRIC TOASTER
IS 13063	1991		STRUCTURAL SAFETY OF BUILDINGS ON SHALLOW FOUNDATIONS ON ROCKS
IS 13385	1992		SPECIFICATIONS FOR FIRE EXTINGUISHERS 50 LITRE WHEEL MOUNTED WATER TYPE (GAS CARTRIDGES)
IS 13386	1992		SPECIFICATIONS FOR FIRE EXTINGUISHERS 50 LITRE MECHANICAL FOAM TYPE
IS 13415	1992		CODE OF SAFETY FOR PROTECTIVE BARRIERS IN AND AROUND BUILDINGS
IS 13416	1992		RECOMMENDATIONS FOR PREVENTIVE MEASURES AGAINST HAZARDS AT WORKING PLACE PART 1 TO PART 5
IS 13430	1992		CODE OF PRACTICE FOR SAFETY DURING ADDITIONAL CONSTRUCTION AND ALTERATION TO EXISTING BUILDINGS
IS 13849	1993		PORTABLE FIRE EXTINGUISHERS DRY POWDER TYPE (CONSTANT PRESSURE)
IS 1446	1985		CLASSIFICATION OF DANGEROUS GOODS (FIRST REVISION)
IS 1476	1979		REFRIGERATORS
IS 1641	1988		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): GENERAL PRINCIPLES OF FIRE GRADING AND CLASSIFICATION
IS 1642	1989		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS- DETAILS OF CONSTRUCTION
IS 1643	1988		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): EXPOSURE HAZARD
IS 1646	1997		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): ELECTRICAL INSTALLATIONS
IS 1904	1986		CODE OF PRACTICE FOR DESIGN AND CONSTRUCTION OF FOUNDATIONS IN SOIL
IS 1905	1987		STRUCTURAL SAFETY OF BUILDINGS MASONARY WALLS
IS 2082	1985		ELECTRICAL GEYSERS
IS 2171	1985		PORTABLE FIRE EXTINGUISHERS DRY POWDER TYPE (CARTRIDGE)
IS 2309	1989		PRACTICE FOR THE PROTECTION OF BUILDINGS AND ALLIED BUILDINGS AGAINST LIGHTENING
IS 2312	1967		EXHAUST FANS
IS 2361	1994		SPECIFICATION FOR BUILDING GRIPS – FIRST REVISION
IS 2418	1977		TUBULAR FLUORSCENT LAMPS IS 2418 (FT-1)
IS 2750	1964		STEEL SCAFFOLDINGS
IS 2762	1964		SAFE WORKING LOADS IN KGS FOR WIRE ROPE SLINGS
IS 2878	1986		FIRE EXTINGUISHERS CARBON DIOXIDE

IS No	YEAR	Amd upto	DESCRIPTION
			TYPE (PORTABLE AND TROLLEY MOUNTED)
IS 2925	1984		SPECIFICATION FOR INDUSTRIAL SAFETY HELMETS
IS 3016	1982		CODE OF PRACTICE FOR FIRE PRECAUTIONS IN WELDING AND CUTTING OPERATIONS- FIRST REVISION
IS 3315	1974		DESERT COOLERS
IS 3521	1989		INDUSTRIAL SAFETY BELTS AND HARNESS
IS 368	1983		IMMERSION WATER HEATERS
IS 3696	1991		SAFETY CODE OF SCAFFOLDS AND LADDERS PART 1 TO 2
IS 3737	1996		LEATHER SAFETY BOOTS FOR WORKERS IN HEAVY METAL INDUSTRIES
IS 374	1979		CEILING FANS INCLUDING REGULATORS
IS 3764	1992		EXCAVATION WORK – CODE OF SAFETY
IS 3786	1983		METHOD FOR COMPUTATION OF FREQUENCY AND SEVERITY RATES FOR INDUSTRIAL INJURIES AND CLASSIFICATION OF INDUSTRIAL ACCIDENTS
IS 3935	1966		CODE OF PRACTICE FOR COMPOSITE CONSTRUCTION
IS 4014	1967		CODE OF PRACTICE FOR STEEL TUBULAR SCAFFOLDING
IS 4081	1986		SAFETY CODE FOR BLASTING AND RELATED DRILLING OPERATIONS
IS 4082	1977	1996	STACKING AND STORAGE OF CONSTRUCTION MATERIALS AND COMPONENTS AT SITE
IS 4130	1991		DEMOLITION OF BUILDINGS – CODE OF SAFETY PART 1 TO 2
IS 4138	1977		SAFETY CODE FOR WORKING IN COMPRESSED AIR (FIRST REVISION)
IS 4155	1966		GLOSSARY OF TERMS RELATING TO CHEMICAL AND RADIATION HAZARDS AND HAZARDOUS CHEMICALS
IS 4209	1967		CODE OF SAFETY FOR CHEMICAL LABORATORY
IS 4250	1980		FOOD MIXERS
IS 4262	1967		CODE OF SAFETY FOR SULFURIC ACID
IS 4756	1978		SAFETY CODE FOR TUNNELING WORK
IS 4912	1978		SAFETY REQUIREMENTS FOR FLOOR AND WALL OPENINGS, RAILINGS AND TOE BOARDS
IS 5121	1969		SAFETY CODE FOR PILING AND OTHER DEEP FOUNDATIONS
IS 5182	1969	1982	METHODS FOR MEASUREMENT OF AIR POLLUTION
IS 5184	1969		CODE OF SAFETY FOR HYDROFLUORIC ACID
IS 5216	1982	2000	RECOMMENDATIONS ON SAFETY PROCEDURES AND PRACTICE IN ELECTRICAL WORK PART I AND II

IS No	YEAR	Amd upto	DESCRIPTION
IS 555	1979		TABLE FANS
IS 5557	1995		INDUSTRIAL AND SAFETY LINED RUBBER BOOTS (SECOND REVISION)
IS 5916	1970		SAFETY CODE FOR CONSTRUCTION INVOLVING USE OF HOR BITUMINOUS MATERIALS
IS 5983	1980		SPECIFICATION FOR EYE PROTECTORS - FIRST REVISION
IS 6234	1986		PORTABLE FIRE EXTINGUISHERS WATER TYPE (STORED PRESSURE)
IS 692	1994		CRITERIA FOR SAFETY AND DESIGN OF STRUCTURES SUBJECTED TO UNDERGROUND BLASTS
IS 6994	1973		SPECIFICATION FOR SAFETY GLOVES
IS 7155	1986		CODE OF RECOMMENDED PRACTICE FOR CONVEYOR SAFETY (PART 1 TO 8)
IS 7205	1974		SAFETY CODE FOR ERECTION OF STRUCTURAL STEEL WORK
IS 7293	1974		SAFETY CODE FOR WORKING WITH CONSTRUCTION MACHINERY
IS 7323	1994		GUIDELINES FOR OPERATIONS OF RESERVOIRS
IS 7812	1975		CODE OF SAFETY FOR MERCURY
IS 7969	1975		SAFETY CODE FOR HANDLING AND STORAGE OF BUILDING MATERIALS
IS 8089	1976		CODE OF SAFE PRACTICE FOR LAYOUT OF OUTSIDE FACILITIES IN AN INDUSTRIAL PLANT
IS 8091	1976		CODE OF PRACTICE FOR INDUSTRIAL PLANT LAYOUT
IS 8095	1976		ACCIDENTS PREVENTION TAGS
IS 818	1968	1997	CODE OF PRACTICE FOR SAFETY AND HEALTH REQUIREMENTS IN ELECTRIC AND GAS WELDING, AND CUTTING OPERATIONS
IS 8448	1989		AUTOMATIC LINE VOLTAGE CORRECTOR (STABILISER)
IS 8519	1977		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR BODY PROTECTION
IS 8520	1977		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR EYE, FACE AND EAR PROTECTION
IS 875	1987		STRUCTURAL SAFETY OF BUILDING: LOADING STANDARD PART 1 TO 5
IS 8807	1978		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR PROTECTION OF ARMS AND HANDS
IS 8978	1985		INSTANTANEOUS WATER HEATERS
IS 8989	1978		SAFETY CODE FOR ERECTION OF CONCRETE FRAMED STRUCTURES
IS 940	1989		PORTABLE FIRE EXTINGUISHERS WATER TYPE (GAS CARTRIDGE)
IS 9457	1980		SAFETY COLOURS AND SIGNS
IS 9679	1980		CODE OF SAFETY FOR WORK ENVIRONMENTAL MONITORING

IS No	YEAR	Amd upto	DESCRIPTION
IS 9706	1997		CODE OF PRACTICE FOR THE CONSTRUCTION OF AERIAL RPEWAYS FOR THE TRANSPORTATION OF MATERIAL
IS 9759	1981		GUIDELINES FOR DEWATERING DURING CONSTRUCTION
IS 9815	1989		SERVO MOTOR OPERATED LINE VOLTAGE CORRECTOR (SERVO STABILISER)
IS 9944	1992		RECOMMENDATIONS ON SAFE WORKING LOAD FOR NATURAL AND MAN-MADE FIBRE ROPE SLINGS
IS 996	1979		SINGLE PHASE ELECTRIC MOTORS
ISO 3873	1977		SAFETY HELMET

SECTION-10

SPECIAL CONDITIONS OF CONTRACT

10.0 Drawings and Documents

10.1

The detailed drawings, specifications available with BHEL engineers will also form part of this tender specification. Revision of drawings/documents may take place due to various considerations as is normal in such large project. Work will have to be carried out as per revised drawings/ documents. These documents will be made available to the contractor during execution of work at site.

10.2

One set of necessary drawings/documents to carry out the erection work will be furnished to the contractor by BHEL on loan that shall be returned to BHEL after completion of the work. Contractor's personnel shall take care of these documents given to them.

10.3

The data furnished in various sections and appendices and the drawings enclosed with this tender specification describe the equipment to be installed, tested and commissioned under this specification, briefly. However, the changes in the design and in the quantity may be expected to occur as is usual in any such large scale of works.

10.4

If any error or ambiguity is discovered in the specification/information contained in the documents/ drawings and tender, the contractor shall forthwith bring the same to the notice of BHEL before submission of offer.

10.5

In case an ambiguity is detected after award of work, the same must be brought to the notice of bhel before commencement of the work/activity. BHEL's interpretation in such cases will be final and binding on the contractor.

10.6

In case of any conflict between general instructions to tenderers, general conditions of contract contained in sections 1 & 2 respectively and special conditions of contract contained in sections 4 to 15 and appendices, provisions contained in special conditions of contract in sections 4 to 15 and appendices shall prevail.

10.7

In case of discrepancy between quoted item rate and corresponding amount in the Rate Schedule, the **quoted item rates shall be reckoned as correct and amount recalculated**. Quoted item rates shall also prevail for arriving at the total price. Evaluation of offer will be done by BHEL on Total Price of the Rate Schedule.

10.8

Bank Guarantees to be furnished by the Contractor towards Security Deposit and Performance Guarantee (Last 5% payment against Workmanship Warranty/Defect Liability) shall have a claim period of six months over and above the validity period required for the case.

SECTION-11
SPECIAL CONDITIONS OF CONTRACT

TIME SCHEDULE, MOBILIZATION, PROGRESS MONITORING, OVER RUN, VARIATION ETC.

TIME SCHEDULE & MOBILIZATION

11.1.1 INITIAL MOBILIZATION AND TENTATIVE SCHEDULE

Contractor shall reach site, make his site establishment and be ready to commence the work within **two week** from the date of fax Letter of Intent or as per directions of construction manager of BHEL. In case of forced shutdown of unit, BHEL will ask contractor to mobilize the site within one week of intimation of shutdown.

11.1.2

Contractor shall specifically note that there is likely to be some delay in supplies of materials / release of work fronts / other reasons. Contractor shall have to work round the clock on such critical activities as a part of catch up program to meet the project requirement to the extent possible and shall also provide required resources as part of scope of work.

11.1.3 Start of Contract Period and Duration.

The total contract period for completion of entire work shall be **THREE MONTHS** from the date of reporting at site. The date of start of work at site shall be reckoned as the date of start of excavation at site. However the contractor shall have to mobilize his resources earlier than the start of contract period for preparatory work like taking over and chipping of foundations etc,

The contractor shall complete all the work in the scope of this contract within the contract period.

11.1.4 Grace Period

Grace period of **ONE MONTH** beyond the contract period of three month is provided for this contract. However, all milestone events as per actual requirement of project schedule shall have to be achieved by the contractor without taking recourse to the Grace Period.

11.2.0 PROGRESS AND MONITORING OF WORK, CONTRACT EXTENSION AND OVER RUN

11.2.1 CONSTRUCTION SCHEDULE: - THE CONTRACTOR SHALL FURNISH THE L2/L3 CONSTRUCTION SCHEDULE AREA WISE BASED ON THE ABOVE MILESTONES WITHIN 10 DAYS OF ISSUE OF LOI. CONTRACTOR SHALL DRAW MONTHLY COMPLETION PROGRAMME ALONGWITH THE BHEL ENGINEER FOR VARIOUS ACTIVITIES. CONTRACTOR TO ARRANGE ALL THE INPUTS LIKE CEMENT AND ALL OTHER MATERIALS IN THEIR SCOPE FOR COMPLETION OF THE PROJECT UNDER THIS CONTRCAT IN TOTALITY. PREPARATION OF DETAILED FABRICATION DRAWING (IF ANY) FOR ASSOCIATED STRUCTURAL WORKS BASED ON ENGG. DRAWING ISSUED FROM BHEL. ARRANGEMENT OF CONSTRUCTION WATER, AND CONSTRUCTION POWER ETC. SHALL ALSO BE ARRANGED BY CONTRACTOR IMMEDIATELY SO AS TO COMPLETE THE ENTIRE WORK **IN 3 MONTHS PERIOD.**

11.2.2

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL THE RELEVANT INFORMATION ON A REGULAR BASIS REGARDING PROGRESS ACHIEVED.

11.2.3

CONTRACTOR SHALL DRAW MONTHLY COMPLETION PROGRAMME IN CONSULTATION WITH BHEL FOR VARIOUS ACTIVITIES. THE CONTRACTOR SHALL SUBMIT DAILY, WEEKLY AND

MONTHLY PROGRESS REPORTS, MANPOWER REPORTS, MATERIAL CONSUMPTION AND STOCK REPORTS, STEEL MATERIALS REQUIREMENT (UNDER BHEL SCOPE OF SUPPLY) EQUIPMENT STATUS REPORTS ETC. THE PROGRESS REPORTS SHALL INDICATE THE PROGRESS ACHIEVED AGAINST PLANNED WITH REASONS INDICATING THE DELAYS, IF ANY. THE REPORT SHALL ALSO GIVE THE REMEDIAL ACTIONS WHICH THE CONTRACTOR INTENDS TO MAKE GOOD THE SLIPPAGE OR LOST TIME SO THAT FURTHER WORK PROCEED AGAIN AS PER THE ORIGINAL PROGRAMME AND THE SLIPPAGE DO NOT ACCUMULATE AND AFFECT THE OVERALL PROGRAMME.

11.2.4

ANY OTHER INFORMATION THAT IS REQUIRED FOR DECISION MAKING, PLANNING AND ACTION TAKING, THE CONTRACTOR SHOULD FURNISH THE SAME. THE TENTATIVE FORMAT FOR VARIOUS REPORTS WILL BE PRESCRIBED AT SITE BY BHEL.

11.2.5

THE WORK UNDER THE SCOPE OF CONTRACTOR WILL BE DEEMED TO BE COMPLETE IN ALL RESPECTS ONLY WHEN SO CERTIFIED BY BHEL ENGINEER. THE DECISION OF BHEL IN THIS REGARD SHALL BE FINAL AND BINDING ON THE CONTRACTOR.

11.3 ASCERTAINING AND ESTABLISHING THE REASONS FOR SHORTFALL

IN ORDER TO ESTABLISH THE REASONS LEADING TO EXTENSION OF THE CONTRACT PERIOD A REGULAR REVIEW OF THE PERFORMANCE AS STATED VIDE CL. 11.2 ABOVE WILL BE MADE CONSIDERING THE AVAILABILITY OF COMPONENTS FOR CIVIL WORK COMPLETION AND OTHER INPUTS / CONSTRAINTS OVER WHICH THE CONTRACTOR HAS NO CONTROL. THE PROGRAMME WILL BE REVIEWED AREA-WISE AND THE FOLLOWING FACTS WILL BE RECORDED IN CASE OF SHORTFALL AT THE END OF EVERY MONTH IN THE PRESCRIBED **FORMAT PUR - F06:**

- A) CIVIL WORK COMPLETION SCHEDULE NOT ACHIEVED OWING TO NON-AVAILABILITY OF FRONTS.
- B) CIVIL WORK COMPLETION SCHEDULE NOT ACHIEVED OWING TO NON-AVAILABILITY OF MATERIALS BY CONTRACTOR.
- C) CIVIL WORK COMPLETION SCHEDULE NOT ACHIEVED OWING TO NON-AVAILABILITY OF TOOLS AND PLANTS, MANPOWER AND CONSUMABLES BY THE CONTRACTOR OR ANY OTHER REASON ATTRIBUTABLE TO THE CONTRACTOR.
- D) CIVIL WORK COMPLETION SCHEDULE NOT ACHIEVED DUE TO ANY OTHER REASONS NOT ATTRIBUTABLE TO THE CONTRACTOR.

11.4 CONTRACT EXTENSION

11.4.1

IF THE COMPLETION OF WORK AS DETAILED IN THESE SPECIFICATION GETS DELAYED BEYOND THE END OF CONTRACT PERIOD AND GRACE PERIOD THEN DEPENDING ON THE BALANCE WORK LEFT OUT, BHEL AT ITS DISCRETION MAY EXTEND THE CONTRACT.

11.4.2

A JOINT PROGRAMME SHALL BE DRAWN FOR THE WORK TO BE COMPLETED DURING THE EXTENDED CONTRACT PERIOD. REVIEW OF THE PROGRAM AND RECORD OF SHORTFALL AS DESCRIBE VIDE CLAUSE 11.3 SHALL BE DONE DURING THE EXTENDED PERIOD. THE OVERRUN CHARGES WILL BE PAID IN PROPORTION TO THE ACHIEVEMENT OF THE RESPECTIVE MONTH VIS-À-VIS THE PLAN FOR THE MONTH (FOR ASSESSING THE PERFORMANCE, THE AGREED PLAN SHALL BE REDUCED BY SHORTFALL ATTRIBUTABLE TO THE BHEL). BHEL MAY DISALLOW CONTRACTOR'S CLAIM FOR OVER RUN CHARGES, IF THE MONTHLY PROGRAMME AS MENTIONED HERE NOT MADE BY HIM.

11.4.3

THE PART OF EXTENSION ATTRIBUTABLE TO THE CONTRACTOR, IF ANY, IN TOTAL CONTRACT EXTENSION SHALL BE EXHAUSTED FIRST I.E. IMMEDIATELY AFTER END OF GRACE PERIOD. THIS SHALL BE FOLLOWED BY THE EXTENSION ON ACCOUNT OF FORCE MAJEURE CONDITIONS, IF ANY, AND LASTLY ON ACCOUNT OF BHEL.

11.5

OVERRUN COMPENSATION

If the contract is extended beyond the contract (including grace) period for any reason other than those attributable to the contractor or force majeure conditions, the contractor will be compensated by payment of overrun charges at the rate of Rs. 30,000/- per month (Rupees thirty thousand only). Overrun compensation will be paid for the extension attributable to BHEL only. No overrun compensation will be payable for the extension on account of reasons attributable to contractor and/or force majeure conditions. Overrun compensation for eligible period shall be in proportion to the progress achieved against the plan for respective period.

11.6 COMPENSATION FOR DELAY: -

11.6.1 IF THE CONTRACTOR FAILS TO COMPLETE THE WORK UNDER THE SCOPE OF WORK IN THIS CONTRACT/AS PER TENDER SCHEDULES, WITHIN THE TIME SPECIFIED IN THE SPECIFICATION OR WITHIN ANY EXTENSION (FOR REASONS NOT ATTRIBUTABLE TO BHEL), HE SHALL, WITHOUT PREJUDICE TO ANY OTHER RIGHT OR REMEDY OF BHEL ON ACCOUNT OF SUCH BREACH, **PAY COMPENSATION (PENALTY) TO BHEL**. THE ABOVE AGREED COMPENSATION SHALL BE A PENALTY EQUIVALENT TO 1/2 % (Half PERCENT) OF THE TOTAL CONTRACT PRICE, EXCLUDING ELEMENTS OF TAXES, DUTIES ETC. IF ANY, PER WEEK OR PART THEREOF OF THE DELAY SUBJECT TO A MAXIMUM OF 10% (TEN PERCENTAGE) OF THE TOTAL EXECUTED PRICE EXCLUDING ELEMENTS OF TAXES, DUTIES ETC.(Also pl refer cl no 2.7.5 of G C C)

11.6.2 BHEL SHALL DEDUCT THE AMOUNT OF SUCH COMPENSATION FROM ANY MONEY DUE OR WHICH MAY BECOME DUE TO THE CONTRACTOR AND/OR RECOVER SUCH COMPENSATION FROM THE BANK GUARANTEES / SECURITY DEPOSIT OF THE CONTRACTOR. TO BE ENTITLED TO IMPOSE SUCH COMPENSATION, BHEL WILL NOT BE REQUIRED TO PROVE THAT BHEL HAS INCURRED SUCH AMOUNT AS ACTUAL DAMAGE.

11.6.3 BHEL RESERVES THE RIGHT TO PURCHASE FROM ELSEWHERE ON ACCOUNT OF AND AT THE RISK & COST OF THE CONTRACTOR WITHOUT NOTICE TO THE CONTRACTOR OF THE EQUIPMENT/MATERIALS NOT SO DELIVERED, WITHOUT CANCELLING THE ORDER/CONTRACT IN RESPECT OF THE EQUIPMENT/MATERIALS NOT YET DUE FOR DELIVERY.

11.6.4 BHEL RESERVES THE RIGHT TO CANCEL THE ORDER/CONTRACT OR A PORTION THEREOF FOR THE STORES NOT SO DELIVERED AT THE RISK & COST OF THE CONTRACTOR AND THE CONTRACTOR SHALL BE LIABLE TO BHEL FOR ANY EXCESS COSTS THEREOF.

11.6.5 THE CONTRACTOR SHALL CONTINUE THE PERFORMANCE OF THE ORDER/CONTRACT UNDER ALL CIRCUMSTANCES, TO THE EXTENT NOT CANCELLED.

11.6.6 WHERE ACTION IS TAKEN AS PER ABOVE, THE CONTRACTOR SHALL BE LIABLE FOR ANY LOSS, WHICH BHEL MAY SUSTAIN ON THAT ACCOUNT. THE CONTRACTOR SHALL NOT BE ENTITLED TO ANY GAIN ON SUCH PURCHASE AND THE MANNER AND THE METHOD OF SUCH PURCHASE SHALL BE AT THE DISCRETION OF BHEL. IT SHALL NOT BE OBLIGATORY ON ANY PART OF BHEL TO SERVE A NOTICE OF SUCH PURCHASE ON CONTRACTOR

11.7 PRICE VARIATION: THE PRICES SHALL REMAIN FIRM THROUGH OUT THE CONTRACT PERIOD AND ALSO EXTENSION THEREOF, IF ANY. ACCORDINGLY THE PRICE VARIATION CLAUSE 2.16 OF GENERAL CONDITIONS OF CONTRACT IS, THEREFORE, NOT APPLICABLE.

11.7.1 REVISION OF ACCEPTED RATES

NO. REVISION OF RATES SHALL BE APPLICABLE IN THE EVENT, THE COMPLETION PERIOD IS EXTENDED FOR ANY REASON WHATSOEVER..

11.8 VARIATION IN QUANTITIES

The quantities against all the items of the Rate Schedule are approximate and may vary up to any extent or may be deleted altogether. The agreed rate of each item shall remain firm for any variation on individual quantity or total quantity/ value. Payment shall be made as per agreed items rates for the quantities actually executed and measurements accepted by BHEL. The contractor has to take note of this and quote his rates accordingly.

11.09 TAXES, DUTIES & LEVIES

REFER SECTION 5 AND CONDITION OF CONTRACT CL. 5.29 IN THIS REGARD

11.10 INTEREST BEARING RECOVERABLE ADVANCE.

Interest bearing (@ 13.5% per annum interest on monthly reducing balance basis) recoverable advance limited to 5% of the contract value may be paid by BHEL at its discretion depending on the merit of the case against receipt & acceptance of bank guarantee from the contractor for the amount sought. This Bank Guarantee (BG) shall be valid at least for one year or the recovery duration. In case recovery of dues does not get completed within the aforesaid BG validity period, the Contractor must renew the validity of BG or submit fresh BG for the outstanding amount and remaining recovery period. BHEL is entitled to make recovery of the entire outstanding amount in case the Contractor fails to comply with the BG requirement as above.

Recovery of dues will be made minimum @ 10% of the admitted gross running bill amount from the first applicable running bill onwards till entire due (principal plus interest) is recovered. In the event sufficient time duration is not left for recovery @10%, the rate of recovery shall be suitably enhanced so that entire due is recovered within the contract period (including extensions granted or foreclosure if any).

11.11 Foreclosing of Contract

11.11.1

BHEL, at its discretion may foreclose the contract at any time after the completion of contract period from the date of starting the work at site.

11.11.2

In case it is decided to withdraw any portion of work or foreclose the contract, the percentage value of the work withdrawn / left over shall be determined mutually.

BHEL engineer's decision in regard to status of an item shall be final and binding on the contractor.

11.11.3

The date of completion of work for the purpose of guarantee vide clause 2.13 of general conditions will be the date on which the contract is foreclosed.

11.11.4

Clause 2.12 of GCC regarding force majeure shall, inter-alia, include stoppage of work due to 'local bandhs' arising out of external factors.

11.12 DEFINITION OF WORK COMPLETION

The contractor's scope of work under these specifications will be deemed to have been completed in all respect, only when all the activities are completed satisfactorily and so certified by BHEL site in charge. The decision of BHEL in this regard shall be final and binding on the contractor.

11.14 SECURED ADVANCE

No Secured advance is payable under this contract.

11.15 SPLITTING OF WORK

BHEL reserves the right to split up the work and award to more than one agency in case contractor fails to provide adequate resources, manpower etc. to achieve the desired progress of work

11.16 Liquidated damages (L D)

L D shall be applicable as per General Terms & Conditions (GCC) of contract.

11.17 EXTRA WORK

Rate for Extra work if any required to be executed at site shall be worked out on the following basis.

- Rate shall be derived from the similar nature of item from existing Schedule of Item rates.
- If no similar items are available in existing Schedule, the same shall be worked out as per Analysis of rates of CPWD- 1997 Edition by applying current rate of materials & labour obtained from authentic sources or Finished rate of CPWD (Delhi Schedule of Rate) – 1997 edition plus applicable PVC.

**SECTION-12
SPECIAL CONDITIONS**

12.0 TERMS OF PAYMENT

12.0.1

The contractor shall submit his monthly on account bills with all the details required by BHEL on specified date every month covering progress of work in all respects and areas from the 25th of previous calendar month to 24th of the current month.

12.0.2

Clause 2.6 of general conditions of contract shall be referred to as regards mode of payment, and measurement of the work completed.

12.0.3

Release of payment in each running bill will be restricted to 95% of the value of work admitted, as per the percentage break-up for the stage of work completion stipulated vide clauses hereinafter.

The 5% thus remaining shall be on account of workmanship guarantee of work executed. The same will be released after completion of the guarantee period of **12 months** from the date of completion of entire work as certified by BHEL.

However, this amount may be released earlier (including before completion of work) subject to receipt and acceptance of bank guarantee of equal amount in BHEL's prescribed format and the BG shall be kept valid till completion of such guarantee period and an additional six months claim period. This is also subject to the condition that the contractor has started the work and also furnished/remitted the initial Security Deposit as per contract.

12.0.4

The payment for running bills will normally be released within around 30 days of submission of running bill with measurement sheets. Contractor shall make his own arrangement for making payment of impending labour wages and other dues in the meanwhile.

12.0.5

BHEL will release payment through Electronic Fund Transfer (EFT)/RTGS. In order to implement this system, the following details are to be furnished by the Contractor pertaining to his Bank Accounts where proceeds will be transferred through BHEL's banker:

1. Name of the Company
2. Name of Bank
3. Name of Bank Branch
4. City/Place
5. Account Number
6. Account type
7. IFSC code of the Bank Branch
8. MICR Code of the Bank Branch

BHEL may also choose to release payment by other alternative modes as suitable.

STAGES OF PROGRESSIVE PRO-RATA PAYMENTS

12.2 Stages of Progressive Payments

Subject to any deductions, which BHEL may be authorized to make under the contract, the contractor shall on the certificate of the engineer at site be entitled for payment as under.

12.2.1

The percentage of payment for progressive completion of work in various categories of work shall be as under:

- A) 100% of agreed item rate will be released for the completed work against monthly R.A. bills.

PAYMENT FOR WORK COMPLETED

12.2.1

The contractor should submit his on account bills with all the details required by BHEL on 26th of every month covering progress of work in all respects and areas up to 24th day of the same month.

12.2.2

The payment for running bills will normally be released within around 30 days of submission of running bill with measurement sheets. Contractor shall make his own arrangement for making payment of impending labour wages and other dues in the meanwhile.

12.2.3

On receipt of the bill, joint measurement and checking of the work done will be carried out by the concerned BHEL engineer as per clause 2.6 of General Conditions of the Contract and break-up given vide clause 12.0. It shall be final and binding on the contractor.

12.2.4

The payment for running bills will normally be released in around 30 days of submission of running bill with measurement sheets. Contractor shall make his own arrangement for making payment of impending labour wages and other dues in the meanwhile.

SECTION-13

SPECIAL CONDITIONS OF CONTRACT

13.0 DETAILS TO BE FURNISHED BY THE BIDDERS

Apart from other details called for in the tender document under the various other provisions, the following details shall be submitted by the tenderers along with their offers (Technical Bid). Please also refer the checklist furnished in the beginning of the Tender Specification.

13.1

Contractor shall submit his HQ and Site organization charts.

13.2

Contractor shall submit tentative month-wise plan to match the Completion Schedule as in Section-11 of Special Conditions of Contract.

13.3

Contractor shall furnish the list of major tools and plants owned by them as well as T&P deployment plan for this work.

13.4

Contractor shall furnish month-wise deployment plan of manpower.

SECTION-14

SPECIAL CONDITIONS OF CONTRACT

14.0 Insurance

14.1 Marine, Storage cum Erection (MCE) Insurance and Repairing Damages

14.1.1

BHEL/client has an MCE insurance cover, inter-alia, for all the permanent project equipments/components supplied by BHEL under scope of this work by way of a transit and storage cum erection policy covering liability against damages/ losses etc.

14.2 Reporting Damages and Carrying out Repairs

14.2.1

Checking all components/equipments at siding/site and reporting to transporter and /or insurance authorities of any damages/losses will be done by BHEL.

14.2.2

Contractor shall render all help to BHEL in inspection including handling, re-stacking etc, assessing and preparing estimates for repairs of components damaged during transit, storage and erection, commissioning and preparing estimates for fabrication of materials lost/damaged during transit, storage and erection. Contractor shall help BHEL to furnish all the data required by railways, insurance company or their surveyors.

14.2.3

Contractor shall report to BHEL in writing any damages to equipments/ components on receipt, storing, and during drawl of the materials from stores, in transit to site and unloading at place of work and during erection and commissioning. The above report shall be as prescribed by BHEL site management. Any consequential loss arising out of non-compliance of this stipulation will be borne by contractor.

14.2.4

Contractor shall carry out fabrication of any material lost/damaged as per instructions from BHEL engineer.

14.2.5

BHEL, however, retains the right to award or not to award to the contractor any of the rectification/rework/repairs of damages and also fabrication of components.

14.2.6

All the repairs/rectification/rework of damages and fabrication of materials lost, if any, shall be carried out by a separately identifiable gang for certification of man-hours. Daily log sheets should be maintained for each work separately and should be signed by contractor's representative and BHEL engineer. Signing of log sheets does not necessarily mean the acceptance of these as extra works.

14.2.7

All rectification, repairs, rework and fabrication of components lost, which are minor and incidental to erection work (consuming not more than 100 man-hours on each occasion) shall be treated as part of work without any extra cost.

14.2.8

Insurance cover under this policy will generally be as per clauses 2.10.1 to 2.10.4 of General Conditions of Contract unless and otherwise specified differently in the Special Conditions.

14.2.9

In case the loss/damage is not attributable to the contractor, Payments of all extra works on account of repair / rectification / reworks of damages and fabrication of materials lost will be as per provisions of Section-13 of SCC.

14.2.10

In case the repairs/rectification/rework and fabrication of materials lost, the work has been done by more than one agency including the contractor, the payment towards extra charges will be on pro-rata basis and the decision of BHEL in this regard is final and binding on the contractor.

14.2.11

In case of theft / damage / loss of materials due to **repeated/continued instances of negligence/failure** attributable to the contractor, the expenses incurred on account of repair/ replacement of such components including BHEL's overhead expenses as applicable (presently @ 30%) in excess of the amount realized from the underwriters, if any, shall be recovered from the contractor. Recovery will be limited to Normal Deductible Franchise (DF)/Excess as per applicable Insurance (TAC) tariff guidelines for every incidence of loss/damage.

14.2.12

In case any insurance claim does not become tenable due to **willful** negligence/damage/loss attributable to the contractor, the total cost of repair/replacement including BHEL overhead expenses shall be recovered from the contractor.

14.3 Insurance by the Contractor and Indemnification of BHEL

14.3.1

BHEL has taken third party liability insurance, indicating in the proposal for such insurance that sub-contractors will be taking part in the erection work detailed in this tender specification. However, the bidder has to bear any expenses/consequences over and above the amount that may be reimbursed to BHEL by such coverage of third party liability insurance taken by BHEL.

Such additional liability will be to cover and indemnify BHEL and its customer of all liabilities which may come up and cause harm/damage to other contractors/customer/BHEL properties/ personnel or all or anybody rendering service to BHEL/ customer or is connected with BHEL/ customer's work in any manner whatsoever. The bidders' specific attention is also invited to clause 2.10 of General Conditions of Contract.

14.3.2

Contractor shall obtain suitable statutory as well as non-statutory insurance policies for all the properties belonging to him and also for his personnel deployed at project for execution of the contract work.

SECTION-15

SPECIAL CONDITION OF CONTRACT

15.0 EARNEST MONEY DEPOSIT & SECURITY DEPOSIT

15.1 EARNEST MONEY DEPOSIT:

EMD for this tender is Rs. 1,50,000/- (Rupees One lakh fifty thousand only). Bidders who have already deposited One Time EMD of Rs. 2.00 lakh will be exempted from submission of any EMD now for this tender.

EMD is to be paid in **cash** (as permissible under Income Tax Act), Pay order or **Demand Draft** only in favour of Bharat Heavy Electricals Limited and payable at Nagpur. **No other form of EMD is acceptable.**

15.1.1 EMD by the Tendered will be forfeited as per Tender Documents if

- i) After opening the tender, the tendered revokes his tender within the validity period or increases his earlier quoted rates.
- ii) The tendered does not commence the work within the period as per LOI / Contract. In case the LOI / contract is silent in this regard then within 15 days after award of contract.

15.1.2 EMD shall not carry any interest.

15.2 SECURITY DEPOSIT

15.2.1 The successful bidder shall furnish security Deposit. The rate of Security Deposit shall be as below:

SN	Contract Value	Security Deposit Amount
1	Up to Rs. 10 lakhs	10% of Contract Value
2	Above Rs. 10 lakhs upto Rs.50 lakhs	1 lakh + 7.5% of the Contract Value exceeding Rs. 10 lakhs.
3	Above Rs. 50 lakhs	Rs 4 lakhs + 5% of the Contract Value exceeding Rs. 50 lakhs.

The Security Deposit based on award value shall be furnished before start of the work by the Contractor. Amount of Security Deposit shall be aligned with the actual executed value at appropriate stages of the contract period if there is variation from the award value.

15.2.2 Security Deposit may be furnished in any one of the following forms

- i) Cash (as permissible under the Income Tax Act)
- ii) Pay Order, Demand Draft in favour of BHEL.
- iii) Local cheques of scheduled banks, subject to realization.

- iv) Securities available from Post Offices such as National Savings Certificates, Kisan Vikas Patras etc. (Certificates should be held in the name of Contractor furnishing the security and duly pledged in favour of BHEL and discharged on the back).
- v) Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the Companies Act subject to a **maximum of 50%** of the total security deposit value. The balance 50% has to be remitted either by cash or in the other form of security. The Bank Guarantee format should have the approval of BHEL.
- vi) Fixed Deposit Receipt issued by Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The FDR should be in the name of the contractor, A/c BHEL, duly discharged on the back.
- vii) Security deposit can also be recovered at the rate of 10% from the running bills. However in such cases at least 50% of the Security Deposit should be furnished in the form of BG/DD/Securities from Post Office/FDR by the Contractor before start of the work and the balance 50% may be recovered from the running bills.
- viii) EMD of the successful tendered shall be converted as Security Deposit, excepting those bidders who have remitted One Time EMD.
- ix) The Security Deposit shall not carry any interest.

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

15.2.2

Security Deposit shall not be refunded to the Contractor except in accordance with the terms of the contract.

APPENDIX-I

LIST OF T&P TO BE PROVIDED BY BHEL FREE OF HIRE CHARGES ON SHARING BASIS

NO T&P WILL BE PROVIDED BY BHEL TO THE CONTRACTOR FOR THIS PROJECT EXCEPT SOME SPECIAL TOOLS BEING SUPPLIED BY THE MANUFACTURING UNIT AS PART OF REGULAR SUPPLY AND SPECIFIC MATERIAL IF ANY AS MENTIONED IN THIS TENDER.

ANNEXURE -II

LIST OF TOOLS AND PLANTS TO BE ARRANGED BY CONTRACTOR

- 1) **Concrete Mixture with Batchers- For mass concrete during ID Fan minimum 4 nos mixtures are required**
- 2) **Vibrators- 4 nos**
- 3) Leveling instrument with calibration certificate as required
- 4) Theodolite with calibration certificate as required
- 5) Shuttering materials as per requirement
- 6) Cube moulds required No's and testing arrangement
- 7) Slump testing cone as required
- 8) pump with motor required for curing
- 9) Concrete dismantling Equipment (Vacuum jack Hammer- Heavy Duty type _

Any other T and P as per requirement and as per our General and special conditions of contracts.

NOTE

The above list is only indicative and not exhaustive. Arrangement for any other T and P required for completion of the job shall be the responsibility of the contractor and shall be arranged by him.

APPENDIX- III

ANALYSIS OF UNIT RATE QUOTED

SL.NO.	DESCRIPTION	% OF QUOTED RATE	REMARKS
01	SITE FACILITIES VIZ., ELECTRICITY, WATER OTHER INFRASTRUCTURE.		
02	SALARY AND WAGES + RETRENCHMENT BENEFITS		
03	CONSUMABLES		
04	T&P DEPRECIATION & MAINTENANCE		
05	ESTABLISHMENT & ADMINISTRATIVE EXPENSES		
06	OVERHEADS		
07	PROFIT		

SIGNATURE OF THE TENDERER

DATE:

APPENDIX-IV

FORMAT FOR MONTH-WISE MANPOWER DEPLOYMENT PLAN
(CATEGORY-WISE NUMBERS TO BE INDICATED FOR EACH MONTH)

SL. NO.	CATEGORY	MONTHS										
		1	2	3	4	5	6	7	8	9	10	SO ON
01	RESIDENT ENGINEER											
02	ENGINEERS											
03	SUPERVISORS											
04	MATERIALS MANAGEMENT SUPERVISORS											
05	SAFETY ENGINEER											
06	WELDER											
07	PLUMBERS											
08	CARPENTERS											
09	BAR BENDERS											
10	TRUCK/TRAILER DRIVERS, CONCRETE MIXTURE OPERATORS											
11	SAFETY ENGINEER											
12	STORE KEEPERS											
13	ELECTRICIANS											
14	SEMISKILLED/ UNSKILLED WORKERS											
15	MASONS											
SO ON												
	MONTH WISE TOTAL											

SIGNATURE OF TENDERER

DATE:

APPENDIX-V

FORMAT FOR DEPLOYMENT PLAN FOR MAJOR TOOLS AND PLANTS

SL. NO.	DESCRIPTION & CAPACITY OF T&P	MONTHS										
		1	2	3	4	5	6	7	8	9	10	SO ON
01												
02												
03												
04												
05												
06												
07												
08												
09												
10												
SO ON												

SIGNATURE OF THE TENDERER

DATE:

**APPENDIX-VI
CONCURRENT COMMITMENTS**

SN	FULL POSTAL ADDRESS OF CLIENT AND NAME OF OFFICER IN-CHARGE	DESCRIPTION OF THE WORK	VALUE OF THE CONTRACT	COMMENC-EMENT DATE	SCHEDU-LED COMPLE-TION	% COMPL-TD. AS ON DATE	ANTICIPA-TED COMPLN. DATE	REMARKS

DATE

SIGNATURE OF THE TENDERER

APPENDIX-VII

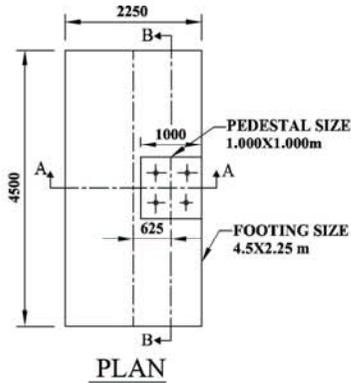
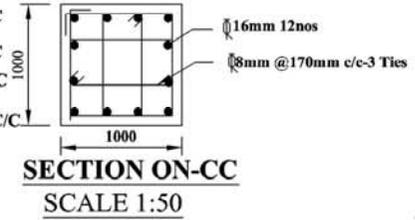
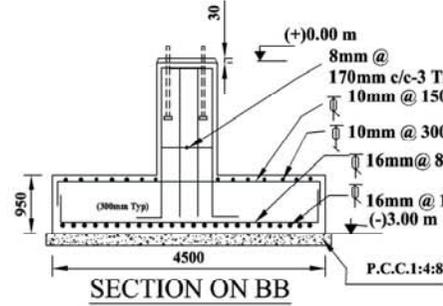
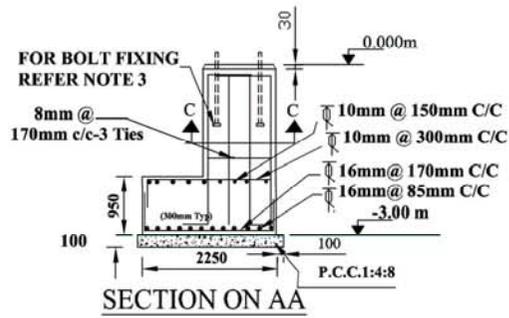
DETAILS OF SIMILAR WORK DONE DURING THE LAST SEVEN YEARS

SL. NO.	FULL POSTAL ADDRESS OF CLIENT & NAME OF OFFICER IN CHARGE	DESCRIPTION OF WORK	VALUE OF CONTRACT	DATE OF AWARD OF WORK	DATE OF COMMENCEMENT OF WORK	ACTUAL COMPLETION TIME (MONTHS)	DATE OF ACTUAL COMPLETION OF WORK	REMARKS
1								
2								
3								
4								
5								
6								

BIDDERS SHALL ENCLOSE COPIES OF DETAILED WORK ORDER (GIVING BILL OF QUANTITIES AND SCOPE OF WORK) AND COMPLETION CERTIFICATE IN SUPPORT OF THIS STATEMENT.

DATE

SIGNATURE OF TENDERER WITH SEAL



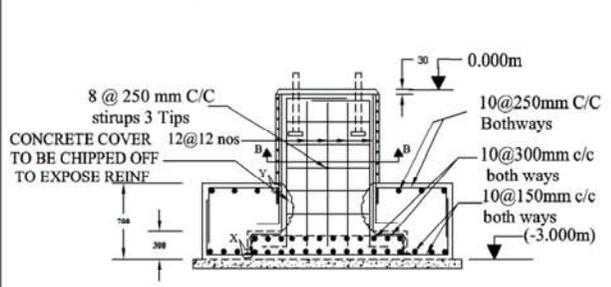
NOTES:-

1. ALL DIMENSIONS ARE IN MM AND ALL LEVELS ARE IN M
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED
3. FOR BOLT FIXING DETAILS REFER DRG. NO. 2-00-112-28540
4. SAFE BEARING CAPACITY ASSUMED FOR DESIGN PURPOSE IS 30.00T/m²
5. THIS FOUNDATION DRAWING IS APPLICABLE ONLY FOR UNIT-1
6. THERE ARE TWO NUMBERS OF ESP PER BOILER
7. -0.000 CORRESPONDING TO EXISTING ESP COLUMN BASE PLATE BOTTOM LEVEL.

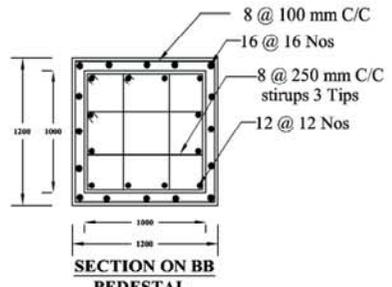


REV 02 DATE 08.11.05 ALTERED CHECKED 01. TITLE HAS BEEN CHANGED		REV 01 DATE 29.09.05 ALTERED CHECKED 01. FTG SIZES ALTERED IN PLAN AND SECTION		GRADE OF CONCRETE:- M25 SBC OF SOIL:- 30ton/m ² 0-3m CLEAR COVER TO FOUNDATIONS:- 50mm NOT MORE THEN HALF THE BARS SHALL BE SPLICED AT A SECTION:- LEAN CONCRETE TO BE USED:- P.C.C.1:4:8	GRADE OF STEEL:- Fe415 LAP LENGTH:- 50- ϕ CLEAR COVER TO PEDSTAL:- 50mm	GUJARAT STATE ELECTRICITY CORPORATION LTD. RAJ AND LE WORKS OF UKAI TPS UNIT 1&2 (2x120MW) SUBSTATIONS LAHMEYAR INTERNATIONAL (INDIA) PVT. LTD. BHARAT HEAVY ELECTRICALS LTD. UNIT: BOILER AUXILIARIES PLANT. RAJAPET - 832 406.	NAME: S. DIVAGAR DESIGNED BY: A.K. VERMA CHECKED BY: C.C. DURAI	DATE: 09.09.05 REF. TO ASST/OLD DRG.	NO. OF SHEETS: 02 SHEET NO: 02
TITLE: ESP FOUNDATION G2 COLUMN FOUNDATION OF PASS A FOR UNIT - 1				SCALE: 1:100 WEIGHT (KG): 0.000	CARD CODE: U 01	DRAWING NO.: BHE-BAP-C-30-746			

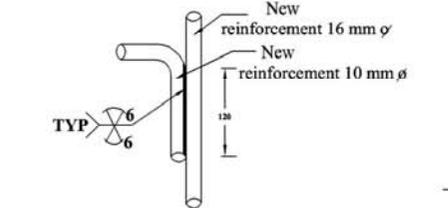
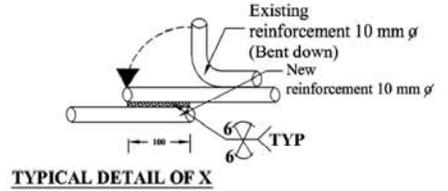
BHE-BAP-C-30-747
ON DRAWING



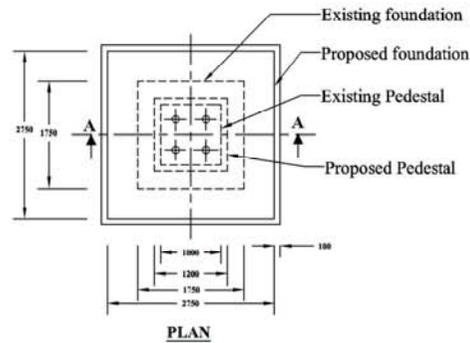
SECTION ON AA



SECTION ON BB
PEDESTAL
SCALE 1:50



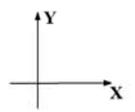
TYPICAL DETAIL OF Y
TYPICAL DETAIL OF WELDED FOR REINFORCEMENT



PLAN

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS & ALL LEVELS ARE IN METERS.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. THE LENGTH OF BARS TO BE WELDED SHOULD BE FREE FROM SCALE, DIRT, GREASE, PAINT, RUST AND CONTAMINANTS
4. SAFE BEARING CAPACITY ASSUMED FOR DESIGN PURPOSE IS 30.00 T/m².
5. THIS FOUNDATION DRAWING IS APPLICABLE ONLY FOR UNIT-I.
6. THERE ARE TWO NUMBERS OF ESP PER BOILER.
7. ± 0.000 CORRESPONDS TO EXISTING ESP COLUMN BASE PLATE BOTTOM LEVEL.
8. SUITABLE BONDING AGENT BY M/s FOSROC OR EQUIVALENT TO BE APPLIED ON OLD CONCRETE SURFACE WHICH IS DRY, CLEAN, ROUGH WITH OUT ANY FLAKY MATERIAL
9. WELDING WORK SHOULD BE CARRIED OUT AS PER IS:2751 (RECOMMENDED PRACTICE FOR WELDING OF MILD STEEL PLAIN & DEFORMED BARS FOR REINFORCED CONCRETE CONSTRUCTION)
10. NO. OF BARS, SIZE OF BARS & SPACING OF BARS IN EXISTING FOUNDATIONS ARE BASED ON CONSTRUCTION DRG. NO. BHE:BA.P:C-10-1026. HOWEVER IT SHOULD BE VERIFIED & CONFIRMED AFTER CHIPPING AT EXISTING FOUNDATION DURING CONSTRUCTION.
11. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO. 2-00-112-28540.

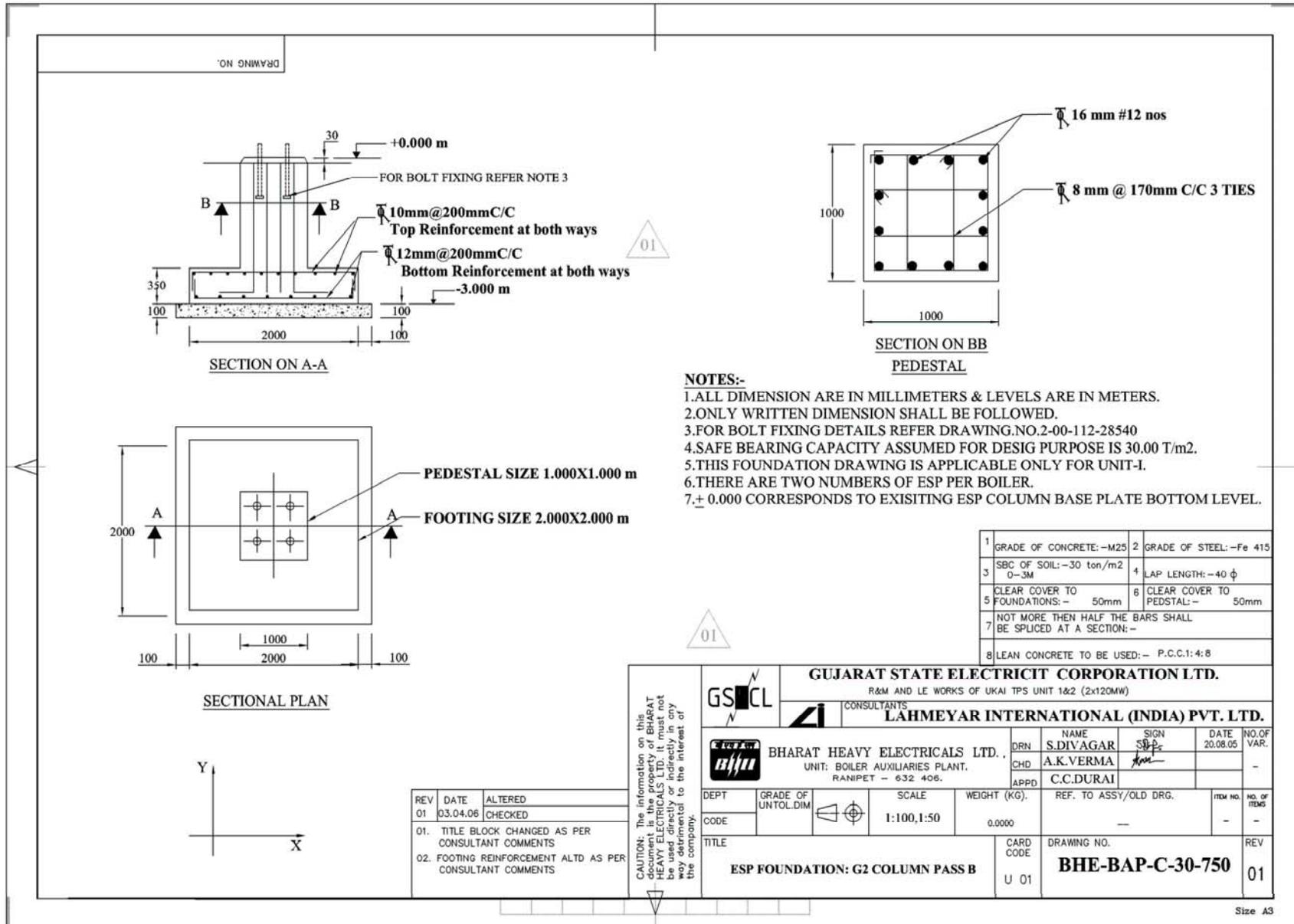


REV	DATE	ALTERED	BY	CHECKED	DATE	ALTERED	BY	CHECKED	DATE	ALTERED	BY	CHECKED
03	03.04.06	CHECKED	S. D.		08.11.05	CHECKED	S. D.		29.09.05	CHECKED	S. D.	
01. NOTE NO. 9 DELETED & NOTE NO. 8 ALTD			01. CUSTOMER COMMENTS INCORPORATED			01. FTG SIZES ALTERED IN PLAN AND SECTION						

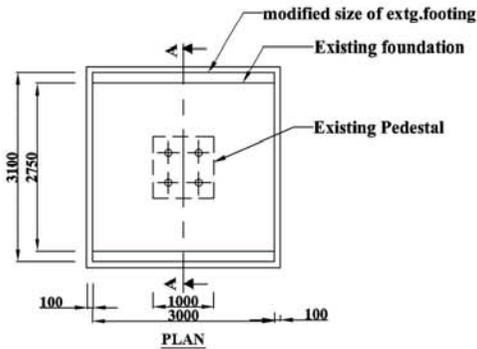
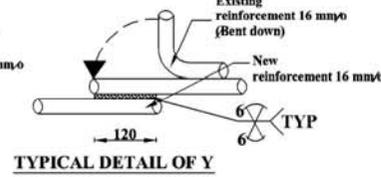
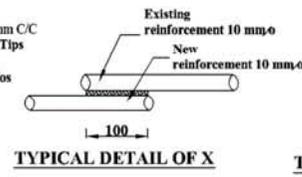
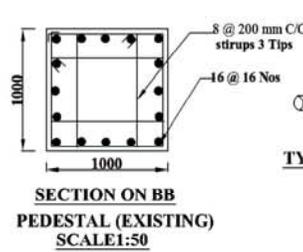
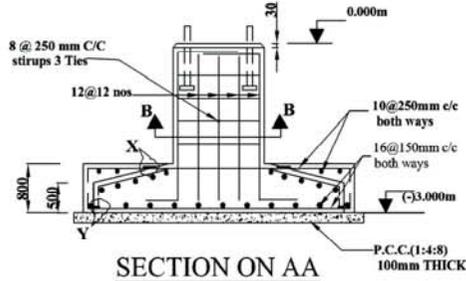
GRADE OF CONCRETE:- M25	GRADE OF STEEL:- Fe415
SBC OF SOIL:- 30ton/m ² 0-3m	LAP LENGTH:- 50 Ø
CLEAR COVER TO FOUNDATIONS:- 50mm	CLEAR COVER TO PEDISTAL:- 50mm
NOT MORE THEN HALF THE BARS SHALL BE SPLICED AT A SECTION:- LEAN CONCRETE TO BE USED:-	P.C.C.1:4:8 P.C.C.1:4:8

		GUJARAT STATE ELECTRICITY CORPORATION LTD. RAJ AND LE WORKS OF UKAI TPS UNIT 1&2 (2x120MW)	
		LAHMEYER INTERNATIONAL (INDIA) PVT. LTD.	
	BHARAT HEAVY ELECTRICALS LTD. UNIT: BOILER AUXILIARIES PLANT, RAMNAPET - 382 406.	DESIGNED BY S. DIVAGAR	CHECKED BY A.K. VERMA
DRAWING NO. BHE-BAP-C-30-747	DATE 08.09.05	PROJECT NO. ASST/OLD DRG.	REV 03

SIZE A3



DRAWING NO. BHE-BAP-C-30-751



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS & ALL LEVELS ARE IN METERS.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. FOR LOCATION OF THIS FOUNDATION REFER DWG NO BHE-BAP-C-10-1024/REV03
4. SAFE BEARING CAPACITY ASSUMED FOR DESIGN PURPOSE IS 30.00 T/m².
5. THIS FOUNDATION DRAWING IS APPLICABLE ONLY FOR UNIT-1.
6. THERE ARE TWO NUMBERS OF ESP PER BOILER.
7. ∇ 0.000 CORRESPONDS TO EXISTING ESP COLUMN BASE PLATE BOTTOM LEVEL.
8. SUITABLE BONDING AGENT BY M/s FOSROC OR EQUIVALENT TO BE APPLIED ON OLD CONCRETE SURFACE WHICH IS DRY, CLEAN, ROUGH WITH OUT ANY FLAKY MATERIAL.
9. THE LENGTH OF BARS TO BE WELDED SHOULD BE FREE FROM SCALE, DIRT, GREASE, PAINT, RUST AND CONTAMINANTS
10. WELDING WORK SHOULD BE CARRIED OUT AS PER IS 2751 (RECOMMENDED PRACTICE FOR WELDING OF MILD STEEL PLAIN & DEFORMED BARS FOR REINFORCED CONCRETE CONSTRUCTION).
11. NO. OF BARS, SIZE OF BARS & SPACING OF BARS IN EXISTING FOUNDATIONS ARE BASED ON CONSTRUCTION DRG. NO. BHE-BAP-C-10-1026. HOWEVER IT SHOULD BE VERIFIED & CONFIRMED AFTER CHIPPING AT EXISTING FOUNDATIONS DURING CONSTRUCTION.
12. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO. 2-00-112-28540.

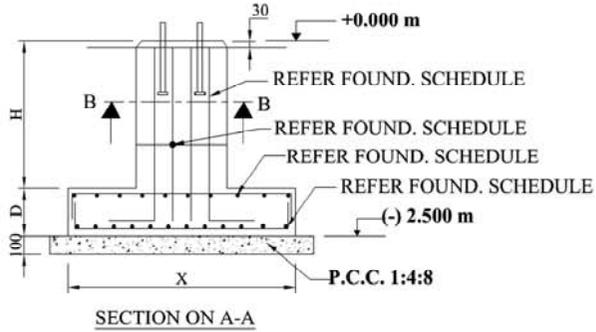
REV	DATE	ALTERED	BY	CHKD	DATE	ALTERED	BY	CHKD
02	03.04.06	CHECKED	S. D. J.		08.11.05	CHECKED	S. D. J.	
01. NOTE NO. 9 DELETED & NOTE NO. 8 ALTD		01. CUSTOMER COMMENTS INCORPORATED						

GRADE OF CONCRETE: - M25	GRADE OF STEEL: - Fe415
SBC OF SOIL: - 30ton/m ² 0-3m	LAP LENGTH: - 50- ϕ
CLEAR COVER TO FOUNDATIONS: - 50mm	CLEAR COVER TO PEDSTAL: - 50mm
NOT MORE THAN HALF THE BARS SHALL BE SPLUCED AT A SECTION: -	
LEAN CONCRETE TO BE USED: - P.C.C.1:4:8	

GUJARAT STATE ELECTRICITY CORPORATION LTD. RAM AND LE WORKS OF UKAI TPS UNIT 1&2 (2x120MW)			
CONSULTANTS LAHMEYER INTERNATIONAL (INDIA) PVT. LTD.			
BHARAT HEAVY ELECTRICALS LTD. UNIT: BOILER AUXILIARIES PLANT, RAHAPET - 833 406		DRN S. DIVAGAR	SRN S. D. J.
DEPT GRADE OF UNITS/DM		SCALE 1:100	DATE 09.09.05
TITLE ESP FOUNDATION MODIFICATION OF FL/F3 COLUMNS OF PASS A AND B FOR UNIT - 1		HEIGHT (MM) 0.000	REF. TO ASST/OLD DRG. -
CARD CODE U 01	DRAWING NO. BHE-BAP-C-30-751	REV 02	VAR.

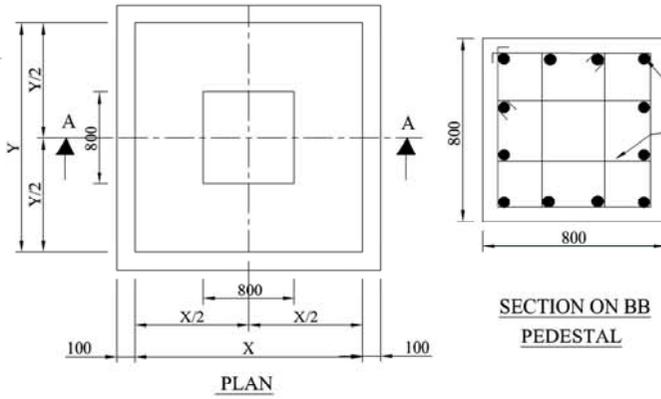
SIZE A3

BHE-BAP-C-20-1018
DRAWING NO.



FOUNDATION SCHEDULE

COLUMN MARK	SIZE			BOTTOM REINFORCEMENT	TOP REINFORCEMENT	PEDESTAL SIZE	HEIGHT H	LONGITUDINAL BAR	STIRRUP
	X	Y	D						
DC1,DC2, DC3,DC4	2500	2500	500	Φ16@300mmC/C BOTHWAYS	Φ10@250mmC/C BOTHWAYS	800x800	2000	Φ16mm @16NOS	8Ø @170 mm C/C 3 TIES
DC5,DC6	2000	2000	400	Φ12@300mmC/C BOTHWAYS	Φ10@300mmC/C BOTHWAYS	800x800	2100	Φ16mm @12NOS	8Ø @170 mm C/C 3 TIES
DC7,DC8	2500	2500	400	Φ BOTHWAYS 16@300mmC/C	Φ10@250mmC/C BOTHWAYS	800x800	2100	Φ16mm @12NOS	8Ø @170 mm C/C 3 TIES
DC9,DC10	2500	2500	450	Φ16@300mmC/C BOTHWAYS	Φ10@250mmC/C BOTHWAYS	800x800	2050	Φ16mm @12NOS	8Ø @170 mm C/C 3 TIES
DC11,DC14	2500	2000	400	Φ12@160mmC/C BOTHWAYS	Φ10@250mmC/C BOTHWAYS	800x800	2100	Φ16mm @12NOS	8Ø @170 mm C/C 3 TIES
DC12,DC15	2500	2000	425	Φ12@140mmC/C BOTHWAYS	Φ10@250mmC/C BOTHWAYS	800x800	2075	Φ12mm @16NOS	8Ø @170 mm C/C 3 TIES
DC13,DC16	2500	2000	400	Φ12@180mmC/C BOTHWAYS	Φ10@250mmC/C BOTHWAYS	800x800	2100	Φ16mm @12NOS	8Ø @170 mm C/C 3 TIES

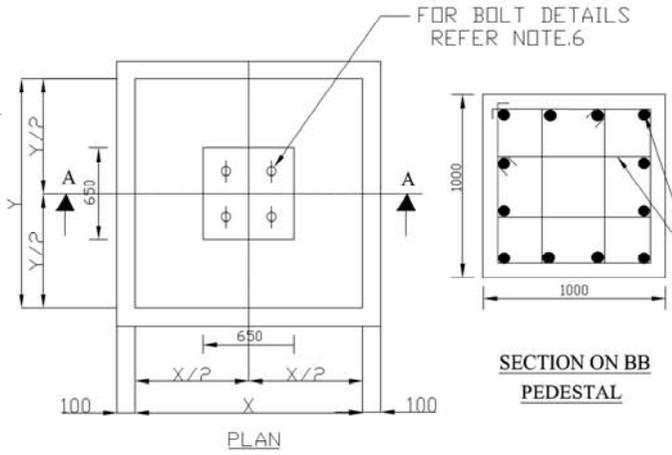
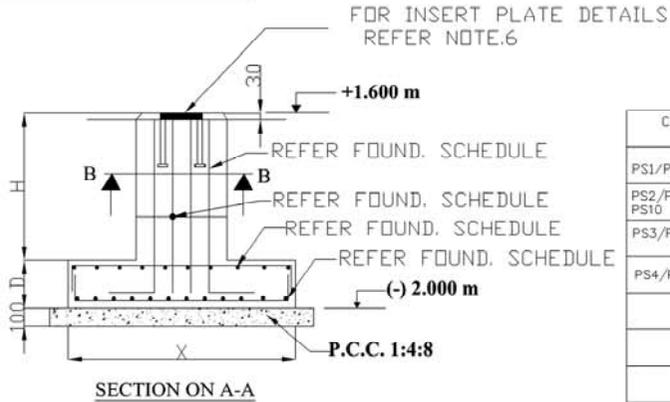


1	GRADE OF CONCRETE: -M25	2	GRADE OF STEEL: -Fe 415
3	SBC OF SOIL: -30 ton/m ² 0-2.5M	4	LAP LENGTH: -40 φ
5	CLEAR COVER TO FOUNDATIONS: - 50mm	6	CLEAR COVER TO PEDESTAL: - 50mm
7	NOT MORE THEN HALF THE BARS SHALL BE SPLICED AT A SECTION: -		
8	LEAN CONCRETE TO BE USED: - P.C.C.1: 4: 8		

		GUJARAT STATE ELECTRICITY CORPORATION LTD. R&M AND LE WORKS OF UKAI TPS UNIT 1&2 (2x120MW)					
		CONSULTANTS LAHMEYAR INTERNATIONAL (INDIA) PVT. LTD.					
	DRN	NAME	SIGN	DATE	NO. OF		
	CHD	S.DIVAGAR	S.D.	06.02.06	VAR.		
	APPD	A.K.VERMA	A.K.V.	10.02.06	-		
DEPT	GRADE OF UNTOLODIM	SCALE	WEIGHT (KG).	REF. TO ASSY/OLD DRG.		ITEM NO.	
CODE		1:100,1:50	0.0000	-		NO. OF ITEMS	
TITLE			CARD CODE	DRAWING NO.		REV	
UKAI TPS UNIT #1 RCC DETAILS OF DUCT FOUNDATION			U 01	BHE-BAP-C-20-1018		00	

Size A2

DRAWING NO. BHE-BAP-C-20-1018



FOUNDATION SCHEDULE

COLUMN MARK	SIZE			BOTTOM REIN FORCEMENT	TOP REIN FORCEMENT	PEDESTAL SIZE	HEIGHT H	LONGITUDINAL BAR	STIRRUP
	X	Y	D						
PS1/PS5/PS7	1750	1500	425	10 ϕ 230C/C BOTH WAYS	10 ϕ 300C/C BOTH WAYS	650X650	3175	12 NDS 20 ϕ	8 ϕ 200C/C 3TIES
PS2/PS6/PS8/PS10	1500	1500	300	12 ϕ 230C/C BOTH WAYS	12 ϕ 230C/C BOTH WAYS	650X650	3300	12 NDS 20 ϕ	8 ϕ 200C/C 3TIES
PS3/PS9/PS11	2750	2750	800	16 ϕ 230C/C BOTH WAYS	10 ϕ 180C/C BOTH WAYS	650X650	2800	12 NDS 25 ϕ	8 ϕ 200C/C 3TIES
PS4/PS12	1500	1500	300	10 ϕ 200C/C BOTH WAYS	10 ϕ 300C/C BOTH WAYS	650X650	3300	12 NDS 20 ϕ	8 ϕ 200C/C 3TIES

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO. 1-00-112-27975 R01
4. SAFE BEARING CAPACITY ASSUMED FOR DESIGN PURPOSE IS 20.00 T/m² @ -2.00 M ELEV.
5. + 0.000 CORRESPONDS TO EXISTING ESP COLUMN BASE PLATE BOTTOM LEVEL.
6. FOR LOCATION AND DETAILS OF INSERT PLATE REFER DRAWING NO. 1-00-112-27975

REFER FOUND. SCHEDULE



1	GRADE OF CONCRETE: -M25	2	GRADE OF STEEL: -Fe 415
3	SBC OF SOIL: -20 ton/m ² 0-2.0M	4	LAP LENGTH: - ϕ 40 x dia of larger bar
5	CLEAR COVER TO reinf. for FOUNDATIONS: - 50mm	6	CLEAR COVER TO reinf for PEDSTAL: - 50mm
7	NOT MORE THEN HALF THE BARS SHALL BE SPLICED AT A SECTION: -		
8	LEAN CONCRETE TO BE USED: - P.C.C.1: 4: 8		

		GUJARAT STATE ELECTRICITY CORPORATION LTD. R&M AND LE WORKS OF UKAI TPS UNIT 1&2 (2x120MW)					
		CONSULTANTS LAHMEYAR INTERNATIONAL (INDIA) PVT. LTD.					
DEPT CODE TITLE	DRN CHD APPD	NAME S.DIVAGAR A.K.VERMA C.C.DURAI	SIGN 	DATE 06.02.06 10.02.06	NO. OF VAR. -		
	GRADE OF UNTO. DIM 	SCALE 1:100, 1:50	WEIGHT (KG) 0.0000	REF. TO ASSY/OLD DRG. -		ITEM NO. -	NO. OF ITEMS -
	UKAI TPS UNIT #1 RCC DETAILS OF DUCT FOUNDATION S PS 1 to PS 12			CARD CODE U 01	DRAWING NO. BHE-BAP-C-20-1019		REV 00

