T E N D E R S P E C I F I C A T I O N

No. BHE/PW/PUR/HAZIRA GSEG-CPS/588

FOR

PROVIDING CONSTRUCTION POWER SYSTEM ON "BOO BASIS (BUILD OWN OPERATE) / LEASE BASIS, OF 6.6/0.433 KV POWER DISTRIBUTION NETWORK, CONSISTING OF TRANSFORMERS , ASSOCIATED EQUIPMENT AND HT /LT CABLING ETC.FOR CONCTRUCTION WORKS OF 1x 350 MW (FIRST PHASE OF 1050 MW) COMBINED CYCLE POWER PLANT

AT

GUJARAT STATE ENERGY GENERATION LIMITED

NEAR HAZIRA, VILLAGE MORA

POST BHATHA, SURAT HAZIRA ROAD,
DISTT.-SURAT, PIN : 394510

GUJARAT

PART:I – TECHNICAL BID

BOOK NO.

BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)

POWER SECTOR - WESTERN REGION

345, KINGSWAY – NAGPUR 440 001

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LEGEND:

$: Included in Tender Specifications Part-I. Hosted in BHEL web page (www.bhel.com) as file titled **"NIT+GCC-588".**

@: Issued as separate hard copy booklet 'Tender Specifications Part-II (Price Bid-591)'. Hosted in BHEL web page (www.bhel.com) as file titled **"PRICE BID-588"**

& : Included in Tender Specifications Part-I. Shall be hosted in BHEL web page (www.bhel.com) as annexures to Corrigendum-01**.**

Note:

Rest of the tender documents are included in Tender Specifications Part-I. Hosted in BHEL web page (www.bhel.com) as file titled "**TECH BID-588"**

BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)
POWER SECTOR - WESTERN REGION
345, KINGS WAY - NAGPUR 440 001

BHE/PW/PUR/GSEG-HAZIRA-CPS/588

FOR

PROVIDING CONSTRUCTION POWER SYSTEM ON "BOO BASIS (BUILT OWN OPERATE) / LEASE BASIS, CONSISTING OF 6.6/0.433 KV , POWER TRANSFORMER , ASSOCIATED EQUIPMENT AND HT /LT CABLING ETC. FOR CONCTRUCTION WORKS OF 1x 350 MW (FIRST PHASE OF 1050 MW) COMBINED CYCLE POWER PLANT

AT

GUJART STATE ENERGY GENERATION LIMITED

NEAER HAZIRA, VILLAGE MORA

POST BHATHA, SURAT HAZIRA ROAD,

DISTT. –SURAT, PIN: 394510

GUJARAT,

EARNEST MONEY DEPOSIT: RS.2,00,000/- (RUPEES TWO LACS ONLY)

LAST DATE AND TIME FOR RECEIPT OF TENDER……

THESE TENDER DOCUMENTS CONTAINING PART-I TECHNICAL BID AND PART-

II PRICE BID, ARE ISSUED TO:

M/S……..

…….

…….

(THESE TENDER DOCUMENTS ARE NOT TRANSFERABLE)

FOR BHARAT HEAVY ELECTRICALS LIMITED

ADDL. GENERAL MANAGER (PURCHASE)

PLACE: NAGPUR

DATE :

PROJECT INFORMATION

Sl.No.	Description	Details
1	Owner	Gujarat State Energy Generation Limited (GSEG)
2	Project Title	1x350 MW Combined Cycle Power Plant
3	Location	Hazira, next to existing GSEG's 156.1 MW CCPP, Near Hazira, Village Mora, Post Bhatha, Surat-Hazira Road, Hazira, Dist.-Surat-394510, Gujarat State, India
4	Power Station site Graded Level Elevation Above Mean Sea Level (MSL)	5.65 Meters above MSL
5	Latitude/ Longitude	72° 38' E/ 21° 08' N
6	Nearest Railway Station	Surat (distance about 30 Km)
7	Nearest Town	Surat (about 20 Km)
8	Nearest Airport	Surat- 20 Km, Mumbai– 300Km, by road
9	Road Approach	From State Highway NH08 running between Ahmedabad and Mumbai. The village –Mora in on NH08 and where the distance of plant is about 5 Km.
10	Site Ambient Conditions	
10.1	Highest ever temp recorded (Dry Bulb)	45.6 Deg C
10.2	Lowest ever temp recorded (Dry Bulb)	4.4 Deg C
10.3	Maximum Daily Average (Dry Bulb)	33.0 Deg C
10.4	Average Mean Dry Bulb Temp	33.0 Deg C
10.5	Average Mean Wet Bulb Temp	28.5Deg C
10.6	Relative Humidity	Max – 89%, Min – 10%, Average-70%
11.7	Basic Wind speed	8.1 Meter / Hr.
11.8	Average Rain fall	1203 mm.
11.9	Seismic Zone	Zone III

The bidder is advised to visit and examine the site of WORKS and its surroundings and obtain for himself on his own responsibility all information that may be necessary for preparing the bid and entering into the contract. All costs for and associated with site visits shall be borne by the bidder.

BHARAT HEAVY ELECTRICALS LIMITED

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

PROCEDURE FOR SUBMISSION OF SEALED TENDERS

THE TENDERERS MUST SUBMIT THEIR TENDERS AS REQUIRED IN TWO PARTS IN SEPARATE SEALED COVERS PROMINENTLY SUPERSCRIBED AS PART-I TECHNICAL BID AND PART-II PRICE BID 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, DETAILS AND EMD AS CALLED FOR IN THE SPECIFICATION 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 "PRICE BID".

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. GERNERAL MANAGER (PURCHASE) AT THE ABOVE-MENTIONED ADDRESS BEFORE THE DUE DATE AS INDICATED.

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

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

01 TENDERER SHOULD HAVE A TRACK RECORD OF COMPLETING THE WORK TO MEET THE SCHEDULES, AS THIS PROJECT WILL BE IMPLEMENTED ON A FAST TRACK BASIS.

02 TENDERER SHOULD HAVE SOUND FINANCIAL STABILITY.

03 ALL INFORMATION AS CALLED FOR IN VARIOUS APPENDICES AND CLAUSES OF TENDER SPECIFICATION SHOULD BE FURNISHED. PLEASE REFER THE CHECKLIST. THE DETAILS SO FURNISHED BY TENDERER SHOULD BE COMPLETE IN ALL RESPECT AND AS PER FORMATS SPECIFIED IN TENDER SPECIFICATION.

04 THE TENDERER MAY OBTAIN CLARIFICATION ON TENDER, IF ANY, BEFORE THE DATE INDICATED.

05 OFFERS MUST BE SUBMITTED WITHOUT ANY DEVIATION, AFTER SEEKING CLARIFICATION, IF ANY.

06 OFFERS RECEIVED WITH ANY DEVIATION AND/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) SHALL BE LIABLE TO REJECTION.

07 TENDERER SHALL NOTE THAT THEIR OFFER WILL BE CONSIDERED SUBJECT TO APPROVAL OF BHEL'S CUSTOMER.

08 TENDERER SHOULD HAVE VISITED THE SITE TO MAKE THEMSELVES FULLY ACQUAINT WITH THE SITE CONDITIONS AND OTHER PARAMETERS AFFECTING EXECUTION OF THIS WORK.

CHECK LIST

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

1.	NAME OF THE TENDERER WITH ADDRESS		
2.	NATURE OF THE FIRM		
3.	EMD DETAILS (DD NO. DATE, AMOUNT, ISSUING BANK)		
4.	VALIDITY OF OFFER (AT LEAST 180 DAYS FOR ORDERING)		
5.	MOBILIZATION TIME (NOT EXCEEDING 10 DAYS FROM TELE LOI)		
6.	WHETHER ANY DEVIATIONS SOUGHT?	YES	NO
7.	TENDERER HAS VISITED THE PROJECT SITE AND ACQUAINTED WITH THE SITE CONDITIONS	YES	NO
8.	DETAILS OF CURRENT JOBS ARE FURNISHED (AS PER APPENDIX-VI)	YES	NO
9.	DETAILS OF PAST EXPERIENCE (APPENDIX-V)	YES	NO
10.	GENERAL AND TECHNICAL PARTICULARS OF AC DISTRIBUTION BOARDS FURNISHED	YES	NO
11.	SUMBISSION OF APROVAL FROM CLIENT / CONSULTANT FOR DESIGNED SLD SCHEME, LAYOUT ARRANGEMENTS AND DESIGNED EQUIPMENTS / ITEMS SPECIFICATIONS ARE CONFORMING TO SHORT CIRCUIT FAULT LEVEL OF 40KA WITH DESIRED PROTECTION & METERING ARRANGEMENTS	YES	NO
12.	COPY OF 'A' CLASS ELECTRICAL CONTRACTOR LICENSE ENCLOSED	YES	NO
13.	HEAD QUARTER'S ORGANISATION IS FURNISHED	YES	NO
14.	PROPOSED SITE ORGANISATION IS FURNISHED	YES	NO
15.	NAMES AND PARTICULARS OF DIRECTORS/PARTNERS ARE FURNISHED	YES	NO
16.	FINANCIAL STATUS OF THE COMPANY (ANNEXURE 'A' OF GCC) IS FURNISHED	YES	NO
17.	PROFIT & LOSS ACCOUNT FOR PRECEDING THREE YEARS IS FURNISHED	YES	NO
18.	SOLVENCY CERTIFICATE FROM THE BANKER IS FURNISHED	YES	NO
19.	LATEST INCOME TAX CLEARANCE CERTIFICATE IS FURNISHED	YES	NO
20.	WHETHER ALL THE PAGES OF THE TENDER DOCUMENTS ARE READ, UNDERSTOOD AND SIGNED	YES	NO

NOTE : STRIKE OFF WHICHEVER IN NOT APPLICABLE

DECLARATION BY AUTHORIZED SIGNATORY OF BIDDER

I, HEREBY CERTIFY THAT ALL THE INFORMATION AND DATA FURNISHED BY ME WITH REGARD TO THIS TENDER SPECIFICATION No. BHE/PW/PUR/GSEG-HAZIRA-CPS/588 ARE TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE. I HAVE GONE THROUGH THE SPECIFICATION, CONDITIONS AND STIPULATIONS IN DETAIL AND AGREE TO COMPLY WITH THE REQUIREMENTS AND INTENT OF THE SPECIFICATION. I FURTHER CERTIFY THAT I AM DULY AUTHORISED REPRESENTATIVE OF THE UNDERMENTIONED TENDERER AND A VALID **POWER OF ATTORNEY** TO THIS EFFECT IS ALSO ENCLOSED.

TENDERER'S NAME AND ADDRESS

AUTHORISED REPRESENTATIVE'S SIGNATURE WITH DATE:

NAME AND ADDRESS

CERTIFICATE OF NO DEVIATION

TENDER SPECIFICATION NO.- BHE/PW/PUR/GSEG-HAZIRA-CPS/588

I/WE, M/s .....

HEREBY CERTIFY THAT IN OUR OFFER I/WE HAVE NEITHER SET ANY TERMS AND CONDITIONS NOR THERE ANY DEVIATION TAKEN FROM THE TENDER CONDITIONS EITHER TECHNICAL OR COMMERCIAL AND I/WE AGREE TO ALL THE TERMS AND CONDITIONS MENTIONED IN THE TENDER SPECIFICATION.

SIGNATURE OF THE TENDERER

DATE:

SECTION-3

OFFER OF THE CONTRACTOR

AGM (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/GSEG-HAZIRA-CPS/588 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 FOR A SUM OF RS. 2,00,000/- (RUPEES TWO LAKH ONLY) 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 BE INDICATED BY BHEL, POWER SECTOR-WESTERN REGION, NAGPUR.

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: SIGNATURE OF TENDERER:
DATE : ADDRESS:

WITNESSES :

SIGNATURE	NAME	ADDRESS
1.		
2.		

SPECIAL CONDITIONS OF CONTRACT

SECTION-4

4.1 SCOPE OF WORK

The intent of this specification is to provide the services of **"Construction Power Package"** on BOO basis (Built Operate and Own). The scope of work includes Engineering, Procurement, Installation, Erection, Commissioning, Operation & Maintenance. The brief scope of work shall be defined as under.

4.2 SCOPE OF WORK UNDER "BOO"

4.2.1 BHEL / BHEL's Client shall provide Construction Power Supply at 6.6 KV voltage from their existing 6.6 KV Switch Board .BHEL's client shall provide one spare feeder suitable for 2 MVA transformer and feeder shall have protection relay for power transformer and associated control circuit.

Bidder shall ensure suitability of protections available in the .6 KV feeder board of client and any further hock up required for Buchholtz relay, OTI / WTI protection bidder shall make necessary cabling arrangement between 1250KVA transformer and 6.6 KV switch board. Bidder shall carry out testing and commissioning of 6.6 KV Breaker including protection relays & metering circuit of client.

4.2.2 The scope of work covered under this tender specification to carry out detail engineering, procurement of equipment, installation, commissioning, operation and maintenance of construction power distribution net work on BOO basis. (Built, Operate and Own).

The scope work includes engineering, procurement, supply of Materials & Equipments, installation/erection, Civil Construction of foundation for transformer and ACDB, Control Room and all other associated civil works, commissioning, operation, maintenance etc. shall be as per terminal point as given in the enclosed single line diagram (refer Sketch No.-1) and the arrangements/ systems provided shall be as per requirements of Customer/Client.

4.2.3 Bidder shall visit site and prepare lay out plan in consultation of BHEL/ BHEL's client / Consultant.

4.2.4 Design/ detail engineering of equipment / devices which includes 6.6 /0.433 KV step down power transformer /sizing of HT /LT cables, 415 volt AC Distribution boards, civil foundation for transformer / ACDB and other associated civil work .

4.2.5 It is proposed to install the required equipment in the area of extension project. Bidder shall prepare of lay out drawing of 6.6 /0.433 KV transformer and associated equipment as per proposed by bidder to meet the requirement as specified.

.

4.2.6 Bidder shall obtain approval from BHEL's client / their consultant for technical data sheet of equipments such as transformer , AC DB and cables and lay out of the of power distribution network which includes 6.6/0.433 KV transformer and further LT distribution.

4.2.7 Providing of materials, equipments, devices, protection & metering arrangements etc as per requirement.

4.2.8 Erection & Commissioning, Operation Maintenance of the entire system including providing necessary consumables & spare parts and associated works as per scope of work defined in the Sketch No.1

4.2.9 All the Equipments / Items/ Materials provided shall be New & Fresh purchase from approved & the reputed Brand / Make & source.

4.2.10 Obtaining Approval of entire installation and clearance for operation of system from appropriate statutory authority.

5.1.2 At the end of the contract period including extended period if any, bidder shall dismantle the total installation, clear the premises of all debris, scrap etc. and take back the equipments.

4.3 TECHNICAL FEATURES OF THE CONSTRUCTION POWER DISTRIBUTION NETWORK

4.3.1 BHEL intends to avail of the services of complete power distribution network on lease basis which includes comprising of 6.6 KV XLPE Cabling from customer source to transformer, step-down transformer of rating 1250 KVA, 6.6/0.433 KV , 415 Volt ACDB with metering & protection arrangements. The LT connection between the Construction Power Transformer, Incomer Feeders, AC Distribution Boards shall be Cables / Bus-bars connections as per recommendations of client / consultant of client.

HT & LT Cabling work shall include the laying the under ground cable, routing of cable through cable trays and overhead cable routing as per actual site cable routing layout requirement. Vendor shall arrange all required arrangements / materials and works for under ground cabling, routing through cable trays and overhead cable routing as scope of work for offering the systems on lease,

4.3.2 Bidder shall provide complete 6.6/0.433 KV, Dyn11, 1250 KVA, ONAN cooled step down transformer substation along with associated LT distribution boards with their respective civil foundations, Control Room, Metering & Protection equipments / systems, earthing and HT/LT power cabling with supporting arrangements etc. on monthly hire charges basis including operation and maintenance. All the equipments and components required for entire systems, installation, erection, commissioning and operation & maintenance shall be in bidder's scope.

4.3.3 Bidder shall source the required equipments and accessories of reputed make and the equipments/components shall conform to BIS specification. Bidder shall ensure technical requirement of power transformer and 415 Volt AC Distribution Boards as per detail given in the tender specification vide clause no. 4.7. Bidder shall also ensure trouble-free operation and specified availability of equipment/system for use at site, failing which LD/Penalty as stipulated elsewhere in this Tender Specification shall be levied.

4.3.4 The contract period, duration of leasing period, grace period, price variation, extension of hiring period etc shall be as indicated in Section-11. Terms of payment shall be as indicated in section-12.

4.3.5 The installation shall be conforming to the statutory requirement and as per as applicable Indian Standard Specifications. The services shall also include Operation & Maintenance of the equipments / arrangements provided by bidder with all consumables, spares and upkeep and break down maintenance of the Substations.

4.4 OTHER TECHNICAL REQUIREMENTFOR LEASING OF 6.6/0.433 KV TRASFORMER SUB STATION, DISTRIBUTION BOARDS & ASSOCIATED EQUIPMENTS

4.4.1 All the Civil works including providing the required materials for civil works, as required for substations and associated equipments given on lease shall be arrangement/made by the contractor under this scope of work.

4.4.2 The substation area shall be fenced as per Indian electricity rules & regulation and shall have provision of lockable door. Fencing shall be of chain link wire mesh on mild steel angle iron posts to a height of not less than 2500 mm. The 6.6 kV & LT sub-station area shall be graded and sloped to prevent any water stagnation of rainwater. Surface shall be covered with ballast of 15 to 20 mm size.

4.4.3 Earthing of all the sub-station equipments shall be carried out as per is: 3043. Earthing system shall consist of number of earth electrodes of 40 mm dia. galvanised steel pipe, buried in earth pit.

4.4.4 Transformer sub-station shall have minimum two-earth electrodes/ pit for natural earthing, two electrodes for body earthing and two electrodes for lighting arrestor earthing.

4.4.5 All non-current carrying metal parts shall be connected to earth system at two points, each of 100 % rating. Metallic supports, fencing, etc. shall be connected to earth system.

4.4.6 Bidder shall submit the substation layout drg and install the substation in accordance with IE Rule and other statutory requirements. It is the responsibility of contractor to get the installation certified by appropriate statutory authority. All the expenses towards the statutory approval shall be borne by bidder.

4.4.7 Bidder shall have to visit site as pre requirements, discuss with client & client's consultant and BHEL site In-charge and finalise the scheme, arrangements & layout for Construction Power at site.

4.4.8 Bidder shall maintain adequate inventory of spares and consumables at site for regular, preventive and break down maintenance and day-to-day upkeep of the substations.

4.4.9 Bidder shall have to provide adequate fire protection arrangements such as Fire extinguishers & Sand Buckets as per relevant standard specification and Industrial/factory Safety rules & regulations and requirement of customer.

4.4.10 In case of non-availability of construction power equipment for use due to breakdown/failure attributable to the contractor, he shall restore it within the shortest possible time. BHEL will allow a maximum of 24 hours time in one calendar month per substation for preventive cum breakdown maintenance. Preventive maintenance shall be scheduled with prior consent of BHEL site in charge. No recoveries will be made from the agreed monthly hire charges for such purpose up to the duration of 24 hours per month per substation.

4.4.11 In case the breakdown/non-availability duration extends beyond 24 hours in a calendar month, recoveries shall be made at the rate of 1½ times the pro-rata hourly rate. Pro-rata hourly rate will be calculated as under.

PRO-RATA HOURLY RATE = AGREED MONTHLY HIRE CHARGES PER SUBSTATION DIVIDED BY 720

4.4.12 However recoveries shall not made in case reason is not attributable to contractor for non availability of power in the event of power failure from source.

4.4.13 During the contract period including the extended period if any, the ownership of entire system shall lie with the bidder.

4.4.14 Contractor shall dismantle and take back the equipment at the end of contract period at his own cost. Bidder shall also dismantle the civil works done by him for the substations and leave the area level and absolutely clear of any kind of garbage/debris/scrap.

4.4.15 Bidder shall arrange entry permits as per prevailing sale tax law in the state of Gujarat and tax liability shall be borne by the Bidder.

4.4.16 Bidder shall arrange at insurance cover at own cost for his materials, substation installation, manpower deputed for operation & maintenance.

4.4.17 The monthly hiring charges shall be inclusive of the detail scope of work as above, entry tax, service tax and all other applicable taxes.

4.4.18 The contractor shall operate and maintain the substations in three-shift operation as per the instruction of BHEL Engineer In-charge. Contractor shall deploy adequate electricians and helpers in each shift for uninterrupted operation & Construction Supply. Electrician should have valid license for handling 6.6 kV HT installation. In addition to shift operation, the contractor shall deploy a supervisor for over all co-ordination purpose.

4.4.19 Various parameters of the system e.g. Recording of loads on individual substations, transformers oil temperature and oil level in transformers, healthiness of the system on day to day basis.

4.4.20 During this period, various reports have to be generated and records maintained as per the requirements of BHEL. The engineer will specify the formats for these at site.

4.4.21 Sub–contractors of customer and BHEL will draw power from LT distribution boards at various locations. Contractor shall co-ordinate and assists them in terminating the cables, issue of permit for work and other work related to drawl of construction power by these agencies.

4.4.22 Contractor shall intimate BHEL engineer immediately on notice any thing adverse and critical in the system, which requires immediate attention.

4.4.23 All work, including in preventive and breakdown maintenance period, in the system shall be taken up only after obtaining necessary permit/ clearance from BHEL engineer.

4.4.24 Bidder shall procure and arrange the inspection themselves for other items from BIS approved source / make .

4.4.25 If Bidder is failed to provide the services as per tender specification, BHEL will take suitable action at contractor's risk and cost.

4.4.26 The terminal points as decided by BHEL shall be final and binding on the contractor.

4.4.27 OPERATION AND MAINTENANCE OF CONSTRUCTION POWER DISTRIBUTION SYSTEM

Contractor shall operate and maintain the installations regularly. Contractor shall attend the break down and replace the defective items, equipments, components including cables etc. promptly. Failing which BHEL will get the same done at the risk and cost of the contractor.

Contractor shall take special care for selection, laying/installation of cables to provide satisfactory & un-interrupted Construction Power supply. For any failure of Cables, contractor shall promptly replace / rectify the such faulty / defective cables.

Operation, Maintenance and Upkeep of the entire system including requisite manpower, T&Ps, consumables, spares from the day of installation & commissioning of system till completion of contract period including extended period shall form part of scope of work.

The hiring period of complete system in integrated operational condition shall commence from date of successful commissioning & charging of system for regular operation. The decision of BHEL Engineer In-charge at site to accept the date of successful commissioning shall be final and binding on Contractor.

4.4.28 **TIME SCHEDULE**

Bidder shall plan his activities such that the installation & commissioning of 6.6/0.433 KV Transformer substation, and associated equipments shall be completed as per schedule given in section-11

4.4.29 **DEMOBILIZATION OF INSTALLATION**

Bidder shall dismantle entire installation and remove all materials, scrap and debris from the project premises. The land shall be levelled and consolidated as a part of the work while handing over back to BHEL/Client. Bidder shall take back all the material at his cost.

BHEL will serve one month's advance notice for withdrawal of the construction power distribution system.

4.5 TECHNICAL REQUIREMENT OF 6.6/0.433 KV DISTRIBUTION NET WORK & TRANSFORMER SUB-STATION

4.5.1 The information herein is not intended to list the complete technical requirement. It is only for general information. However, contractors have to visit the site, discuss with client & consultant of client and BHEL site in-charge, make their own study/ assessment of work & requirement prior to submission of offer. Omissions from mention of any/all equipment, material, services etc; herein shall not relieve the contractor from providing all such equipment, materials, services etc within the quoted rates.

4.5.2 Bidder shall make necessary arrangement for receipt, handling at stores and work site, transport to work site, erection, fabrication, civil work, testing and commission of entire system.

4.5.3 APPLICABLE STANDARDS FOR INSTALLATION:

The installation shall be done conforming to Indian Electricity Rule/Act with all the safety provision. Experienced persons shall be deployed for installation, commissioning and maintenance purpose. Contractor shall deploy only licensed electrician for the installation and commissioning WORK.

4.5.4 Bidder shall design and carry out preparation of layout, sub-station drawing etc. taking into account the statutory requirements and clearances etc as per latest Indian Electricity Acts and Rules including amendments thereof.

4.5.5 All incidental civil works e.g. grouting of poles/stays/ posts, foundations, civil foundation work, Canopy/covering, including necessary earthwork like excavation and backfilling, provision of all requisite materials like cement, sand & grit, reinforcement steel, T&P, shuttering etc. are in scope of contractor.

4.5.6 Contractor shall obtain approval from appropriate statutory authority for the installations, at all stages including the renewal etc as per requirement. Contractor shall bear all the statutory fees/levies/ charges in connection with the approval of installations.

4.5.7 The work covered under this specification is of high voltage 6.6/0.433 kV system, requiring the best quality of workmanship, engineering and construction management. The contractor shall execute the entire work according to most modern and proven techniques and codes. The omission of specific reference to any method and/or equipment or materials necessary for the proper and efficient services in connection with this work shall not relieve the contractor of the responsibility of providing such services, facilities etc.

4.5.8 The contractor should ensure timely completion of work. Parallel and simultaneous working in multiple fronts will be required to meet the schedule. The contractor must deploy adequate quantity of tools, & testing instruments along with manpower. He must also have on his rolls adequate trained, qualified and experienced engineers, supervisory staff and skilled personnel. Contractor shall deploy the manpower as instructed to match the work requirement.

4.5.9 The work shall be executed under the usual conditions affecting major power plant construction and in conjunction with numerous other operations at site including the space constraints. The contractor and his personnel shall co-operate with the personnel of other agencies, co-ordinate his work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.

4.5.10 All the work shall be carried out as per the instructions of BHEL engineer. BHEL engineer's decision regarding the correctness of the work and method of working shall be final and binding on the contractor.

4.5.11 Contractor shall be holding valid (at least up to Due Date of Tender Submission) 'A' class license as electrical contractor, copy of which should be furnished along with the offer. If the license is of state other than Gujarat, then he will have to obtain electrical license/permission from appropriate authority as may be applicable.

4.5.12 If any portion of the work is found to be defective in workmanship or not conforming to drawings or other specifications, the contractor shall dismantle and re-do the work duly replacing the defective materials at his cost.

4.5.13 Bidder shall maintain adequate inventory of spares and consumables at site for regular, preventive and break down maintenance and day-to-day upkeep of the substations.

4.5.14 In case of non-availability of any substation due to breakdown/failure attributable to the contractor, it shall be restored by him within the shortest possible time.

4.5.15 During the contract period including the extended period if any, the ownership of substations shall lie with the bidder.

4.5.16 Contractor shall dismantle and take back the equipment at the end of contract period at his own cost. Bidder shall also dismantle the civil works done by him for the substations and leave the area level and absolutely clear of any kind of garbage/debris/scrap.

4.5.17 Bidder shall arrange entry permits as per prevailing sale tax law in the state of Gujarat and tax liability shall be borne by the Bidder.

4.5.18 Bidder shall arrange at insurance cover at own cost for his material, substation installation, manpower deputed for operation & maintenance including the third party liabilities.

4.5.19 The contractor shall operate and maintain the substations in three-shift operation as per the instruction of BHEL Engineer In-charge. Contractor shall deploy adequate electricians and helpers in each shift for uninterrupted operation. Electrician should have valid license for handling 6.6 kV HT installation. In addition to shift operation, the contractor shall deploy a supervisor for over all co-ordination purpose.

4.5.20 Various parameters of the system e.g. Recording of loads on individual substations, transformers oil temperature and oil level in transformers, healthiness of the system on day to day basis.

4.5.21 During this period, various reports have to be generated and records maintained as per the requirements of BHEL. The engineer will specify the formats for these at site.

4.5.23 Contractor shall intimate BHEL engineer immediately on notice any thing adverse and critical in the system, which requires immediate attention.

4.5.24 All work, including in preventive and breakdown maintenance period, in the system shall be taken up only after obtaining necessary permit/ clearance from BHEL engineer.

4.5.25 Miscellaneous items and works not specifically described herein but required for transmission line and substations shall be provided as per relevant IS and REC Specifications & Construction Standards and shall constitute part of contract.

4.5.26 On completion of the works, the contractor shall clear away and remove from the site all his equipments, surplus materials, rubble/debris and temporary works of every kind and leave the whole of the site and works clean to the satisfaction of BHEL.

4.6 GERNAL GUIDE LINE FOR ECECUTION OF WORK

4.6.1 6.6 kV HT & 415 VOLTS LT CABLING REQUIREMENT

The cable installation including necessary joints shall be carried out in accordance with the specification IS 1255-1967

Cable route shall be decided prior to cable laying work is under taken. While shortest possible route should be referred, cable runs shall generally follow fixed development such as road, foot paths etc; with proper off set so that future maintenance, identification etc. are rendered easy.

While selecting cable route, corrosive soils, surrounding sewage effluent etc. shall be avoided, where this not feasible, special precaution as decided by Engineer-In-Charge, particularly for HV cable, shall be taken.

Power and communication cable shall be as far as possible cross at right angles. Where power cables are laid in proximity to communication cables to horizontal and vertical clearance shall not normally less than 60 cm.

During the preliminary stages of cable laying, consideration should be given to proper location of the joint position so that when cable is laid the joints are made in most suitable places. As far as possible water logged location, carriageways, pavements, proximity to telephone cables, gas to water mains, inaccessible places, ducts, pipe racks etc, shall be avoided for joint position.

4.6.2 **CABLE LAYING DIRECT IN GROUND**

The method shall be adopted where the cable route is through open country, along road / lanes etc, and where no frequent excavations are encountered and re-excavation is possible without affecting the other work.

Width of Trenches: -The minimum width of trench for laying single cable shall be 35 cms. Where more than one cable are to be laid in the same trench in horizontal formation, width of trench shall be increased such that the inter axial spacing between the cables, for 415 volts shall be 20 cms, and for 6.6 KV shall be 35 cms; to be maintained.

Depth of Trenches: - Where cables are laid in single formation, the total depth of trench shall not be less than 75 cms for cable up to 1.1 KV grade and shall not less than 120 cms for cable above 1.1 KV grade. When ever more than one tires formation of cable is unavoidable and vertical formation is adopted, the depth of trench shall be increased by 30 cms for each additional tire to be formed.

Excavation of Trenches: - The trenches shall be excavated in reasonably straight lines. Wherever there is change in direction, the minimum safe bending radius for all type of PVC cables shall be 12 times the overall diameter of the cable. A larger radius shall be adopted at joints and termination; it shall not be less than 15 times of its overall diameter.

Adequate precaution shall be taken while excavation of trenches to avoid damages to existing cables, pipes or such installation in the proposed route during excavation. Where-ever bricks, tiles or protective covers or bare cables are encountered, further excavation shall not be carried out without the approval of Engineer –In-Charge.

Where there is any danger of trench collapsing /endangering adjacent structures, the side should be well shored up with timbering and or sheeting as excavation process. This should be followed back filling wherever necessary.

The bottom of the trench shall be level and free from stone, brickbats etc. The trench shall be provided with a layer of clean and dry sand cushion of not less than 8 cms in depth.

4.6.3 **Laying of cables in Trenches:-**

Continuity and insulation measurement test shall be performed for cable core before and after laying in the trenches, if any abnormality is observed, the same shall be brought in notice of Engineer- in -Charge. End of the cables shall be sealed with suitable moisture seal tape in case of PVC cables and XLPE cables shall be sealed with end seal caps.

Cable laid in trenches in single tier formation shall have covering of clean dry sand of not less than 17 cms above the base cushion of sand before the protective cover is laid.

In case of vertical multi tier formation after the first cable has been laid, a sand cushion of 30 cms shall be provided over the initial bed before the second tier is laid. If additional tiers are formed, each of the subsequent tires also shall have sand cushion of 30 cms as stated above. The top most cable shall have final sand covering not less than 17 cms before protective cover is laid.

Protective Covering: - Unless otherwise specified, the cable be protected by B class/ second class brick of not less than 20cmsx 10 cms x 10cns (nominal size) as per CPWD building specification or protective cover placed on the top of the sand and both sides of cable (bricks shall be laid breadth wise foe cable top protection / height wise for cable side protection) for full length of cables to the satisfaction of EIC.Where more than one cable is laid in the same trench. This protective covering shall cover all the cables and projects at least 5 cms. over the sides of the end cables. A layer of bricks shall be laid in between two cables when more than one cable are laid in same trench.

Back filling: -The trenches shall be than back filled with excavated earth free from stones or other sharp edged debris and shall be rammed and watered, if necessary, in successive layer not exceeding 30 cms, unless otherwise specified. A crown of earth not less than 50 cms in the centre and tapering towards the sides of the trench shall be left to allow for subsidence. The crown of earth however should not exceed 10 cms so as not to be hazard to vehicular traffic. The temporary reinstatements of road ways should be inspected at regular intervals, particularly during wet weather and any settlement should be made good by further filling as may be required.

Where road berms or lawns have been cut or kerbed stones are displaced, the same shall be repaired and made good except/ turning / asphalting.

Route Marker: -Route marker shall be provided along straight runs of cables and at change in direction locations as approved by EIC and in general at intervals not exceeding 100 meter in straight run.

Route marker shall be made out of 100 mm x 100 mm x 5 mm GI/Aluminium plate bolted or welded on 35 x35 x6 mm MS angle iron of 600 mm long. Such route marker shall be mounted and grouted parallel to and o.5 meter away from the side of trench.

The word “Cable” and voltage grading, size of cable shall be inscribed on the marker.

Single Core XLPE Cable: - three single core cables forming three-phase circuit shall normally laid on close trefoil formation and shall be bounded at interval of 1 meter. The relative position of the three cables shall be changed at each joint, complete transposition being effected in every three consecutive cable lengths. The joints shall be marked in an approved manner to indicate the circuit and phases. The arrangement for laying a number of parallel cables shall be detailed of IS 1255-1967.

Cable Laying in pipe: In location such as road crossing, entry to building, on poles, in paved area etc. cable shall be laid in pipe.

Stone ware pipe, GI /CI or spun reinforcement pipe shall be used for such purpose. The size of the pipe shall be not less than 10 cms dia for single core cable and not less than 15 cms for more than one cable. In a pipe. These pipe shall be laid directly in the ground without any special bed except for SW pipes which shall be laid over 10 cms thick cement concrete 1:5:10 bed. No sand cushion or tiles shall be used in such situation, unless otherwise specified. The top surface of pipe shall be at minimum depth of 1 meter from ground level when laid under road, pavements etc.

Loops in Cable: - Approximately 3 meter of surplus cable shall be left at each end of cable and on each side of under ground joint. Surplus cable may be left in form of loop.

4.6.4 CODES & STANDARDS

All the equipment and system installation shall be confirming to relevant Indian standards, Indian electricity Rules/Acts etc. Suggestive List of such standards is furnished in Appendix-III.

4.6.5 TESTING AND COMMISSIONING

Prior to commissioning and energizing of system, following tests shall be carried out:

1) Insulation Resistance measurement.
2) High Voltage test on HT cables.
3) Earth Resistance Test
4) Mechanical Checks of Overhead lines and all associated components.
5) Any other check/test necessary to ensure desired quality of installation as per Codes and FQP and safe operation of the system.

4.6.6 Miscellaneous items and works

Miscellaneous items and works not specifically described herein but required for completion of system and substations shall be provided as per relevant IS and REC Specifications & Construction Standards and shall constitute part of scope of contract.

4.7. BRIEF TECHNICAL DETAILS POWER DISTRIBUTION TRANSFORMER, SUB STATION & 415 VOLT AC DISTRIBUTION BORAD.

4.7.1 DISTRIBUTION TRANSFORMER

The distribution transformer shall be oil immersed, natural air cooled, 3 phase, 50 HZ, out door type, conforming to IS 2026. Rating 1250 KVA 6.6/.433 KV, Vector group, Dyn11, Neutral solidly earth. The transformer will have 2 neutrals (One for solid earthing and the other one for 415 V Distribution Board 3 phase, 4 wire.

The transformer shall be capable of being loaded in accordance with IS 6600 upto 150%. There shall be no limitation imposed by bushing, tap changer etc. The transformer shall be capable of being operated without danger on any tapping at rated KVA with voltage variation of +10% corresponding the voltage of the tapping. The transformer and all accessories shall be capable of withstanding for two seconds any external short circuit at bushing terminals without any damage. The maximum flux density in any part of the core and yoke at nominal voltage and frequency shall be such that the flux density on any tap position with 10% voltage variation from voltage corresponding to the tap shall not exceed 1.9 wb/m2.

Cores shall be constructed from high grade, cold rolled, non-aging grain oriented silicon steel lamination. The insulation structure for the core to bolt and core to clamp plate shall be capable of withstanding shocks during transport, installation, and service.

Winding shall be of fully insulated electrolytic grade copper winding and connection shall be adequate braced to withstand shocks during transportation and short circuit condition.

The tank shall be conventional type, fabricated from commercial grade low carbon steel. All bolted joints shall be fitted with oil tight gaskets. It shall be designed to with stand mechanical shocks and short circuit forces. All accessories such as pressure relief valve, air vent plugs, filling & drain valve, lifting lugs, thermometer pockets, conservator tank, air breather, radiators etc to be provided.

The transformer shall be provided with 3-phase hand operated off circuit tap change switch. The mechanism shall be complete with tap position indicator, direction of operation, warning plate & mechanical stop to prevent over cranking. Suitable pad lock arrangement shall be provided in any working position.

Transformer HT bushing shall be solid porcelain type confirming to IS 2099 & 8603. It should be suitable for ACSR conductor.

Suitable cable box shall be provided on HV / LV side. In addition to neutral terminal, an addition provision shall be provided on the tank for earthing of LV winding neutral.

General Technical Particulars are as under.

1.	Rated Out put	1250 KVA, 3ph, 6.6/0.433KV, ONAN cooled
2.	Voltage Ratio	6.6/0.433 KV

3.	Type	TWO winding (Electrolytic grade copper)
4.	Temp. Rise Winding	55 Deg C
5.	Temp. Rise Top Oil	50 DegC
6.	Impedance at 75 Deg C& permissible tolerance	As per IS 2026
7.	Fault level of system	As per IS 2026
8.	Vector group	Dyn11
9.	Winding Connection/ Nominal System Voltage(KV)	As per IS 2026
10	One minute power frequency withstand voltage (KV) rms	As per IS 2026
11	Lighting impulse withstand voltage (KV) peak	As per IS 2026
12	Insulation Neutral	As per IS 2026
13	Tap Changer	Off circuit tap change switch on HV winding with range of +/- 5% in steps of 2.5 %
14	Phase Bushing Rated voltage (kV) Rated Current (Amp) Minimum Creepage distance (mm) Basic impulse level (kV)peak	As per IS 2026 As per IS 2026
15	Neutral Bushing Rated Voltage (kV) Rated Current (Amps)	As per IS 2026
16	HT & LT Termination	Suitable Cable Box to be provided on HT /LT side. Suitable size cable type XLEP may be selected as per to meet the load / system fault level.
17	Variations to be considered	Voltage-+/-10% Frequency-+/-5% Combined variations-10%
18	Short Circuit level to be considered	40KA for 3 seconds
19	Protections to be incorporated	1. Composite Numerical transformer protection relay including Over current, Earth fault and Under Voltage, Winding temperature, Oil temperature and Buch holtz protection.

4.7.2 **LT DISTRIBUTION OUTDOOR KIOSK (Suitable Covered shed is required)**

Distribution boards shall be suitable for 415 volts, 3-phase, 4-wire 50 Hz system. The board shall be designed for continuous operation at maximum ambient temperature of 50 deg. C and maximum relative humidity of 100 %.

Distribution boards shall be free standing out door type, totally enclosed. Dust and vermin proof, CRCA sheet construction. Frame shall be fabricated out of 2 mm thick sheet steel and thickness of sheet steel enclosure shall not be less than 1.6 mm. Gland plate shall be removable type made of 3 mm thick sheet.

Distribution board shall be single front, fully compartmentalised, having uniform height of not more than 2100 mm. Operating handles shall not more than 1800 mm height. Board shall be provided with outer enclosure so that access to individual compartment, bus bar and cable alley shall be available only after the out door is opened.

It shall be provided with pad lock arrangement with hinged door, slopped canopy to prevent ingress of rain water, base frame mounting, Caution notice, earth bolts, lifting hooks, energy meter, phase indication lamps, voltmeter & ammeter with selector switch etc.

All the cable entry shall be bottom only. All the doors and cut out shall be gasketed with neoprene/ synthetic rubber to give minimum protection of IP 55 . Cable termination shall be suitable for terminating specified number of armoured aluminium cables as per the number of out going feeder asked for.

The board shall be provided with live, neutral earth busbars. Individual out going feeders shall be tapped from vertical section busbars. Vertical cables alley shall be provided covering entire height. Earth bus shall be of 50 x 8 mm GI strip/ welded framework of the panel at bottom through the length.

A minimum clearance in air of 25 mm shall be provided between phases and between phase and earth for horizontal & vertical run of bus bars, bus link connection to ACB & MCCBs. Bus bar shall be bare and supported with insulators of high strength moulded compound or equivalent. The bus bar and supports shall be designed for short circuit capacity of minimum 20 kA rms for 1 sec. Maximum temperature rise while carrying rated current shall not exceeded 40 deg. C above ambient of 50 deg. C.

Internal wiring shall be carried out with 1.1 KV grade PVC insulated flexible connection, stud type power terminal shall be provided.

The board shall be coated with two coats of primer after proper degreasing, picking, rinsing, phosphating and acid treatment. Two coats of synthetic enamel finish paint of shade 631 as per IS 5 shall be applied on panel exterior. Panel interior shall be painted with glossy white.

FEEDERS PARTICULARS

DESCRIPTION	QUANTITY	TECHNICAL DETAILS
Incomer Make – L&T or GE Power or Controls & Switchgears or Siemens	1No.	1600 Amps, 415 volts, TPN, Air Circuit Breaker, AC 3 pole with over current release, 3 Nos built in CTs, Earth fault release
Outgoing MCCB Make – L&T or GE Power or C&S or Siemens	2 No.	400 Amps, TPN, Moulded Case Circuit Breakers. Built-in over-current & short-circuit protection
	5 Nos.	200 Amps, TPN, Moulded Case Circuit Breakers.
	3 No.	100 Amps, TPN, Moulded Case Circuit Breakers.
Metering		Ammeter & voltmeter 96x96 mm flush mounted, CTR, Selector switch Energy meter 3-phase, four- wire at power measurement at incoming power. Phase indication lamp

4.7.2.1 AIR CIRCUIT BREAKER

Circuit breakers shall be air break, three pole, horizontal, non-draw out type suitable for manual operation. Manual operating mechanism shall be spring charging stored energy type.

It shall have spring charging handle and push button for closing the breaker mechanically after the spring has been fully charged. . However closing by spring charging handle, after the spring is fully charged, shall also be acceptable. It shall be interlocked such that it shall not close unless the spring is fully charged. The closing action of the circuit breaker shall charge the spring, thus making it ready for tripping. Push button shall be provided on front of the panel to trip the breaker manually.

The circuit breaker shall be provided with short circuit release, over current & earth fault release. The tripping characteristic of breaker to provide satisfactory discrimination.

Rating	1600 Amps
Short Circuit Making Current	50 kA

Short time breaking capacity at rated voltage	20 kA
Short time with stand rating	20 kA rms for 1 sec.

MOULDED CASE CIRCUIT BREAKERS.

It shall be 3 pole, quick make, quick break type with short circuit & over current release, manual closing/ opening, automatic tripping under fault condition. Magnetic & thermal release shall be adjustable one .
Short time breaking capacity 20 kA at 0.25 PF at rated voltage.

Short time with stand rating 20 kA rms for 1 sec.

4.7.3 6.6 kV GRADE HT XLPE SINGLE /MULTI CORE CABLE

6.6KV (UE) grade power cable with stranded Aluminium Conductor, conductor screen, XLPE Insulation, insulation screen, Colour coded for phase identification extruded ST-2 PVC inner sheath, GI wire / strip armoured, FRLS outer sheath of ST-2 PVC–FRLS, conforming IS:7098 Part –II (latest**)**

4.7.4 LT POWER CABLE 1.1 KV GRADE

Power cable with stranded aluminium conductor, PVC insulated, colour coded for phase identification, extruded PVC inner sheath, GI wire / strip armoured, FRLS outer sheath of PVC FRLS conforming to IS 1554(latest)

4.8
Contractor shall make own arrangement, for receipt, store, verification, safe custody, watch & ward and transportation of material from store to site, for the equipment is his scope.
If any portion of the work is found to be defective in workmanship or not conforming to drawings or other specifications, the contractor shall dismantle and re-do the work duly replacing the defective materials at his cost.

4.9 **Inspection and Acceptance of Components/Equipment:**

Contractor shall provide all the components as per specifications indicated herein. BHEL will carry out suitable stage inspection and final inspection before accepting the materials.

SPECIAL CONDITIONS OF CONTRACT

SECTION-5

5.0 Obligations of the Contractor (Tools and Tackles, Consumables, Infrastructures, etc.)

5.1 Tools and Plants

5.1.1

Contractor shall provide all tools and plant required for supply of goods and services, handling at site, installation, testing, commissioning, operation and maintenance of the complete scope of Supplies and Work covered in this Tender Specification. It may be noted that BHEL will not provide any Tools and Plants.

5.1.2

The contractor shall provide all the necessary steel/wooden scaffolding, working platforms for working at elevations, temporary structures etc., as required for this work.

5.1.3

In the event of contractor failing to arrange the required tools and plants and testing equipments and non-availability of the same owing to breakdown, or otherwise, BHEL will take appropriate action at contractor's risk and cost.

5.1.4

The T&P and testing equipments arranged by the contractor shall be in proper working condition, which shall not lead to unsafe conditions.

5.2 Consumables

5.2.1

The contractor shall provide all consumables required for carrying out the work covered under this scope of work.

5.2.2

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 BHEL will take appropriate action at his cost and risk.

5.3 Field office and stores

5.3.1

The contractor shall make his own arrangements for field office cum stores. Only small open space as per availability & at available location will be provided by customer free of charge. **As such there is limitation / shortage of open space in side the project premise and looking to this aspect contractor will plan his small portable type (Porta Cabin) office cum T&P storage arrangement at site. A**fter the completion of work, contractor shall dismantle his structures/ installations and handover the vacant land to customer/BHEL.

5.3.2

The contractor shall make his own transport arrangements and accommodations for his manpower & staff deployed site and all his other operations. BHEL / Customer shall not provide any facility / arrangements in this regard.

5.4 Lighting

5.4.1

The contractor at his cost should arrange for temporary lighting. This arrangement is besides the local lighting that may be required for the execution of the work, which shall also be arranged by the Contractor.

5.4.2

All temporary wiring must comply with regulations and will be subjected to engineer's inspection and approval before connecting to supply point.

5.5 LABOUR COLONY

Bidder shall have his won arrangement for accommodation for his personnel including lighting, water, sanitation etc with hygiene and comply with all requirements.

5.6 TAXES, DUTIES, LEVIES

5.6

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

5.6.1

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.

1.6.1 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.

1.6.2 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.

1.6.3 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.

1.6.4 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.

SECTION-6

SPECIAL CONDITIONS OF CONTRACT

Contractor's Obligation in regard to Employment of Supervisory Staff and Workmen

6.1 SUPERVISORS AND LABOURER

Contractor shall deploy in adequate strength labour, technicians and engineers/ supervisors for this work.

6.2

It is the responsibility of the contractor to engage his workmen in shifts and or on overtime basis for achieving the target 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 target will be final and binding on the contractor.

6.3

Contractor shall employ only qualified and experienced engineers/ supervisors for this job. They shall have professional approach in executing the work having adequate knowledge and experience in the fields of erection, erection methodology, calibration, testing and commissioning, quality control and quality assurance procedures, planning, safety etc. Required to undertake the type of work as per this tender.

6.4

Contractor shall obtain necessary work permits from BHEL/ customer prior to taking up any work on the system. He shall arrange for display of due and necessary caution notices/ boards etc.

6.5

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 another contractors or agencies. Cost of damage, if any, to life and property arising out of such violation of statutory regulations shall be borne by the contractor.

6.6 **Watch and Ward**

Contractor shall arrange and provide watch and ward round the clock for the materials in his custody as well as item and equipment erected by him.

6.7

Contractor shall implement local labour laws, maintain necessary records and co-ordinate with the local labour authorities on all matters of labour and industrial relations.

6.8

The contractor shall comply with the applicable law, rules and regulation etc; with regard to employment of labour. He shall obtain labour license.

The scope includes getting the licences and approvals from the statutory authorities, arranging for inspection of electrical inspector periodically as per BHEL engineer's instructions, submitting documents etc. and following up the matter with them as and when necessary for the work involved in this scope. All expenses, fees, levies etc have to be borne by the contractor.

SPECIAL CONDITIONS OF CONTRACT

SECTION-7

7.0 OBLIGATIONS OF BHEL

7.1 FACILITIES PROVIDED BY BHEL

7.1.1 WATER

For construction purpose, water shall be provided free of charge at a single point. The contractor shall arrange further distribution and connection.

7.12 ELECTRICITY

Bidders shall have to arrange DG set for erection / installation / construction works of Construction Power arrangements / equipments under these tender specifications.

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.

7.1.3 TOOLS AND PALNTS

BHEL will not provide any Tools and Plants for the scope of Services and Supplies under the scope of this Tender Specification.

7.1.4 CONSUMABLES

BHEL will not provide any Consumables for the scope of Services and Supplies under the scope of this Tender Specification.

SECTION-8

SPECIAL CONDITIONS OF CONTRACT

8.0 INSPECTIONS/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.

High pressure welding details like serial number of weld joints, welders name, date of welding, details of repair, heat treatment etc. Will be documented in welding log as per BHEL Engineer's instructions.

Record of radiography containing details like serial number of weld joints, date of radiography, repairs, if any, re-shots etc. shall also be maintained as per BHEL engineer's instructions.

Record of heat treatments performed shall be maintained as prescribed by BHEL. Similarly, performance report of all welders shall be furnished for scrutiny of BHEL Engineer.

8.4
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.

8.5

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.

8.6

Total quality is the watch word 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.

8.7 STAGE INSPECTION BY FES / QA ENGINEERS

8.7.1

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 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.

8.7.2

Any modifications suggested by BHEL FES and 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.

STATUTORY INSPECTION.

8.8.1

The scope includes getting the approvals from the statutory authorities (like boiler inspector and labour officers). This includes arranging for inspection visits of boiler inspector periodically as per BHEL Engineer's instructions, submitting documents, radiographs etc. and following up the matter with them.

8.8.2

All fees connected with the contractors for testing his welders / men / workers and testing, inspection, calibrating of his instruments and equipments, shall be paid by the contractor. 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. **,** Contractor shall pay all other fees (fees for visits, inspection fees, hydraulic test fees, light up inspection fees, registration fees etc.). **I**n case these inspections have to be repeated due to default / fault of the contractor and fees have to be paid again, the contractor shall have to bear the charges. These would be deducted from his bills.

8.9

BHEL, Power Sector – Western Region (PSWR) has already been accredited with ISO 9002 certification and as such this work is subject to various audits to meet ISO 9002 requirements. One particular aspect which needs special mention is about arrangement of calibration of instruments by the contractor. Contractor shall ensure deployment of reliable and calibrated MMD (instrument measuring and test equipment). The MMD shall have test / calibration certificates from authorised / government approved / accredited agencies traceable to national / international standards. Re-testing / re-calibration shall also be arranged at regular intervals during the period of use as advised by BHEL Engineer within the contract price. The contractor will also have alternate arrangements for such MMD so that work does not suffer when the particular equipment / instrument is sent for calibration. Also if any MMD not found fit for use, BHEL shall have the right to stop the use of such item and instruct the contractor to deploy proper item and recall i.e. Repeat the readings taken by that instrument, failing which BHEL may deploy MMD and retake the readings at contractor's cost.

SECTION-9

SPECIAL CONDITIONS OF CONTRACT

SAFETY, OCCUPATIONAL HEALTH AND ENVIRONMENTAL MANAGEMENT

Safety, Occupational Health and Environmental Management

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 endeavour 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.

9.0 Responsibility of the Contractor in Respect of Safety of Men, Equipment, Material and Environment.

9.1 The Contractor shall:

9.1.1

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

9.1.2

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.

9.1.3

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 authorized by the Customer/Client.

9.1.4
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

9.1.5
Prepare a signboard giving the following information and display it near 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.

9.1.6
Abide by the rules and regulations existing during the contract period as applicable for the contractors at the Project premises.

9.1.7
Observe the timings of work as advised by BHEL Engineer-in-charge for carrying out the contract work.

9.2 SPECIAL CONDITIONS

9.2.1 Safety

9.2.1.1 Safety Plan

Before commencing the work, contractor shall submit a "safety plan" to the authorized 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 authorized 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 authorized 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 energized 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 authorized 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 guardrails, covers or protective devices unless authorized 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 authorized persons holding relevant license will drive and operate site plant and equipments e.g. cranes, dumpers, excavators, transport vehicles etc

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

9.2.1.16
Gas Cylinders shall be handled and stored as per Gas Cylinders 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 administers 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 authorized 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 mobilization 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.

9.2.1.27
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 aides shall be included in the emergency response team. Contractor employees and workmen are encouraged to participate in first aid training programmes whenever organized by BHEL.

9.2.2 OCCUPATIONAL HEALTH

9.2.2.1
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.

9.2.2.2
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

9.2.2.3
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

9.2.2.4
In order to protect personnel from associated health hazards, the following main areas will be focused

- Issue of approved Personnel Protective Equipment
- Verification that the PPE 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

9.2.2.5
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

9.2.2.6
Contractor workers engaged in dust environment shall be issued with necessary dust protection aids and the use of the same shall be enforced

9.2.2.7
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

9.2.2.8
Adequate arrangements shall be made to provide safe drinking water

9.2.2.9
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

9.2.3.0 HYGIENE and HOUSEKEEPING

9.2.3.1
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.

9.2.3.2
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.

9.2.3.3
BHEL may take up appropriate remedial measures at the cost of the contractors if the contractors fail in good house keeping and if there is an imminent risk of pollution

9.2.4 ENVIRONMENT MANAGEMENT

9.2.4.1
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 minimization. The contractors shall implement the objectives for continual improvement of environmental performance. BHEL shall regularly audit environmental impacts and their improvements.

9.2.4.2 WASTE MANAGEMENT

9.2.4.3.1
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.

9.2.4.3.2
Chemical wastes if any shall be collected separately and disposed of to BHEL designated refuse yard as per BHEL advice.

9.2.4.3.3
No dangerous chemicals, noxious waste products or materials will be disposed off on or off site without approval obtained through BHEL.

9.2.4.3.4
All disposal of wastes generated during construction shall be in accordance with all relevant legislation.

9.2.4.3.5
Acid and alkali cleaning wastes shall be neutralized to acceptable norms before disposal to the designated area.

9.2.4.3.6
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**
9.3.1

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.

9.3.2
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.

9.3.3
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.

9.4.0 **TRAINING & AWARENESS**

9.4.1

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.

9.4.2
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.

9.4.3
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

9.4.4
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.

9.4.5
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

9.5.0 **REPORTING**

9.5.1
The contractor shall submit report of all accidents, fires and property damage, dangerous occurrences to the authorized 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.

9.5.2
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.

9.5.3
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.

9.5.4
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.

9.5.5
In addition, contractor shall submit periodic reports on safety to the authorised BHEL official from time to time as prescribed.

9.5.6
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.

9.6 **AUDIT REVIEW AND INSPECTION**

9.6.1
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.

9.6.2
Inspections shall be carried out regularly by the contractors and by BHEL Engineers on activities, facilities, equipment, documentation, to cover the following aspects.

- Compliance with procedures and systems
- Availability, condition and use of PPE

- 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 coordinator 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 Extinguishers	To check pressure and any defect	User / Safety Coordinator	Daily Every month
4	Lifting equipment/tackles	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**:-

9.7.1
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**:

Sl. No	**Instance of Violation**	**Fine (in 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 Slinging 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/-

Sl. No	Instance of Violation	Fine (in Rs)
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/-
	Major Accident or Accidents causing partial loss of earning to the victim	50,000/- per victim
14	Fatal Accident or Accidents causing permanent loss of earning to the victim	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.

9.8

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 recognize the safety performance of the contractor may be considered by BHEL after completion of the job

9.9 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 authorized representative of M/s----------

Name :

Place & Date:

9.10

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 11972	1987		CODE OF PRACTICE FOR SAFETY PRECAUTION TO BE TAKEN WHEN ENTERING A SEWARAGE 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

IS No	YEAR	Amd upto	DESCRIPTION
			(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 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 No	YEAR	Amd upto	DESCRIPTION
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 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

IS No	YEAR	Amd upto	DESCRIPTION
			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 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

9.11

Contractor shall abide by local laws, Rules & Regulations of safety & other statutory requirements as enforced by customer and statutory authorities including the statutory law wherein the Chewing of Pan, Gutkha, Smoking of BIDI & Cigarettes is banned in Public Places" as has been enforced by State Government of Gujarat."

SPECIAL CONDITIONS OF CONTRACT

SECTION-10

10.0 DRAWINGS AND DOCUMENTS

10.1

The technical details and drawings of the equipments and systems given in this tender specification are only for guidance and only indicative of the requirement. The contractor shall take note of all the aspects of technical details furnished while arranging the required equipments/ materials/services as the case may be.

10.2

Contractor shall prepare detailed drawings and get the same approved by BHEL and GSEG/Client and statutory authority as the case may be and submit to BHEL within Ten days of award of fax LOI.

10.3

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 commencement of the work. BHEL's interpretation in such cases will be final and binding on the contractor.

10.4
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.

10.5
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.

10.6
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 quoted for offer evaluation.

10.7
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.

SPECIAL CONDITIONS OF CONTRACT

SECTION-11

11.0 TIME SCHEDULE, QUANTITY VARIATION, PRICE VARIATION ETC.

11.1 TIME SCHEDULE

The contractor shall mobiles his resources so that the entire work shall be completed to meet the following schedule.

SN	Description of Activity	**Completion PERIOD**
01	Completion of Finalisation of Scheme, Engineering, Design and BOQ for entire 1250KVA, 6.6/0.433KV Construction Power arrangements / Equipments and preparation of installation Drawings with approval of authorities as per tender specifications etc.	Within Ten days of award of work by Fax L.O.I.
02	Arranging of all required materials including Transformer, Cables, ACDBs and associated items/materials including protections & metering materials	Within 2 months of award of work by Fax L.O.I.
03	Completion of Installation, Erection, Testing, Commissioning and putting / charging of system including arranging the Operation, Maintenance and Up keeping services of entire system	Within 3 months of award of work by Fax L.O.I.
04	Providing the services of Operation, Maintenance and upkeep of the entire construction power distribution system	20 Months from date of successful commissioning and charging of system
05	Withdrawal, dismantling and clearing of site for clear possession by Client	Within 15 days after clearance by BHEL for withdrawal & dismantling of system

11.1.2 In case of non-availability of the system in full or part for reasons attributable to the Contractor, the same shall be dealt as per conditions under Section-4.

11.1.3 Contractor to note that delay in achieving the schedule shall attract Liquidated Damages in accordance with the relevant provisions of General Conditions of Supply / Installation Contract.

11.1.4 BHEL may grant extension of time schedule in case the reasons are beyond the control of the contractor. Contractor shall provide every documentary evidence to prove the reasons for delay not in his control as required by BHEL.

3.1 **Contract Period, Grace period and Overrun compensation**

The total contract period shall be 23 months from date of Fax LOI.

No overrun charges and grace period are applicable for the scope of work covered under this contract.

11.3. EXTENSION OF HIRING PERIOD

BHEL may extend the hiring period for the services to be provided on BOO basis as specified in this tender specifications depending upon the requirement reviewed from time to time. The extension of hiring period if applicable shall be in two tranches as given below:

- 1st Extension of six months at the end of contract period
- Subsequent (2nd) extension of six months after expiry of contract period + 1st extension.

Payments for the extended hiring periods shall be as defined in Sec-12

11.4. PRICE VARIATION

The contract price shall remain firm throughout the contract period. For the 1st extension period of six months and the subsequent (i.e 2nd) extension period of six months, price variation as provided in section-12 shall become applicable.

PVC as provided in General Conditions of Contract in not applicable.

11.5 INTEREST BEARING ADVANCE

Interest bearing (rate of interest will be 1% per annum more than bank interest rate, 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).

11.6 Review and Monitoring

The detailed plan and progress of supply and installation of the system shall be made by the contractor and approved by BHEL. This shall be reviewed regularly and contractor shall take necessary action based up on the review and as per instruction of BHEL.

11.7 Definition of Work Completion:

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

Special Conditions of Contract

Section-12

12.0 TERMS OF PAYMENT

12.0.1
The agreed rates for each item shall be paid progressively as per the break up given hereunder based on the progress of work.

12.0.2
The contractor shall submit his running bills with the details of measurement required by BHEL engineer as per the billing calendar decided by BHEL Engineer at site.

12.0.3
Payment against each running bill will be restricted to 95% of the value arrived at, based on the accepted measurements. The 5% thus remaining shall be treated as amount payable but not due and shall be on account of demobilization & cleaning as per tender specification. The same shall be released after completion of demobilization by the contractor and as certified by BHEL Engineer

12.0.4
The payment for running bills will normally be released within 30 days of submission of running bill. 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:

15. Name of the Company
16. Name of Bank
17. Name of Bank Branch
18. City/Place
19. Account Number
20. Account type
21. IFSC code of the Bank Branch
22. MICR Code of the Bank Branch

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

12.1 SCHEDULE OF PAYMENTS

A. ACITIVITY BASED PAYMENT:

SN	ACTIVITY	Progressive Payment
01	On supply and receipt of entire system Equipments, Materials at site with submission of all relevant documents like Purchase bills, test report/ test certificates, Guarantee Certificates, LR Copies, Entry bills etc. and same shall be varied at on receipt of these materials at site.	8 % of contract Value
02	On successful Installation and Commissioning of entire system	7 % of Contract Value
03	Monthly hire charges for providing services on BOO basis	85% of Contract value divided by 20
	TOTAL	**100%**

B. MONTHLY HIRING CHARGES for PROVIDING SERVICES DURING THE EXTENDED HIRING PERIOD (IF ANY) APPLICABLE.

For the extended periods, BHEL shall pay monthly charges at the following rates:

1. For 1st Extension period of Six Months : 30% x Accepted monthly hire charges { 30% of 85% of Contract Value divided by 20} .

2. For 2nd Extension period of Six Months: 20% x Accepted monthly hire charges { 20% of 85% of Contract Value divided by 20}.

3. Price Variation Clause is applicable for both the above extended periods and shall be in the same variation as the variation in Consumer price Index for Industrial Workers applicable for the respective month. The Base for the variation shall be the CPI-IW applicable for the last month of Contract period.

C. PRO RATA PAYMENT

In case hiring services are provided for part of calendar month, during the normal contract period and the extended periods, pro- rata payment of monthly hiring charges for the utilised numbers of days shall be made by BHEL.

Pro-rata rate shall be calculated as under:

- Pro-rata daily rate = accepted monthly hire charges divided by 30

12.2 Mode of Payment and measurement of work completed

Refer clause 2.6 of General Conditions of Contract for work in construction management of BHEL

SECTION-13

Special Conditions of Contract

13.0 Extra Charges For Modification And Rectification:

There shall not any extra charges on any account.

14.0 Insurance

14.1.1 Transit Storage and Erection Insurance

14.1.2 BHEL will arrange insurance cover for materials, which are to be owned by BHEL.

14.1.3 It shall be the responsibility of Bidder to take insurance cover for all his materials / Construction Power arrangements during transit, complete installation, testing, commissioning and all throughout the Operation & Maintenance period including the extended period along with manpower deployed for operation & maintenance & third party liability for the contract period in extension if any.

14.1.3 Insurance cover under this policy will be as per clauses 2.10.1 to 2.10.4 of general conditions of contract.

14.2 In case of theft / damage / loss of materials due to negligence or 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 shall be recovered from the contractor. Recovery will be limited to normal deductible franchise (DF) / excess as per applicable insurance tariff (TAC) guidelines. However, in case such insurance claim is summarily rejected by the underwriters due to wilful damage/loss on the part of the contractor, the total cost of repair/ replacement shall be recovered from the contractor.

14.3 INSURANCE BY THE CONTRACTOR AND INDEMNIFICATION OF BHEL

BHEL have taken a 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. However, the tenderer 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 tenderer's specific attention is also invited to clause 2.10 of General Conditions of Contract.

SECTION-15

SPECIAL CONDITION OF CONTRACT

15.0 EARNEST MONEY DEPOSIT , SECURITY DEPOSIT & BANK GUARANTEE

1.1 Earnest Money Deposit:

i) EMD for this tender is Rs. 2,00,000/- (Rupes Two lakhs only).
ii) Bidders who have already deposited One Time EMD of Rs. 2.00 lakh are exempted from submission of EMD for this tender. However a copy of 'One Time EMD' certificate issued by BHEL/PSWR, Nagpur shall be enclosed along with the Offer.
iii) EMD is to be paid in cash (as permissible under Income Tax Act), Pay order or Demand Draft in favour of Bharat Heavy Electricals Limited and payable at Nagpur.
iv) No other form of EMD remittance shall be acceptable to BHEL.

1.1.1 EMD by the bidder will be forfeited as per Tender Documents if

i) After opening the tender, the bidder revokes his tender within the validity period or increases his earlier quoted rates.

ii) The bidder 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.

1.1.2 EMD shall not carry any interest.

1.1.3 In the case of unsuccessful bidders, the Earnest Money will be refunded to them after acceptance of tender by successful bidder

1.2 Security Deposit

1.2.1 Security Deposit shall be furnished by the successful bidder. The rate of Security Deposit will 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 should be furnished before start of the work by the contractor.

1.2.2 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 SD has to be remitted either by cash or in the other forms 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 remitted (either by cash/DD or **BG for maximum 50%** of total SD) before start of the work and the balance 50% may be recovered from the running bills.

viii. EMD of the successful bidder shall be converted and adjusted against the cash Security Deposit excepting for such bidder who has 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.

15.2.3 SECURITY DEPOSIT SHALL NOT BE REFUNDED TO THE CONTRACTOR EXCEPT IN ACCORDANCE WITH THE TERMS OF THE CONTRACT

1.3 BANK GUARANTEE

i. It is the responsibility of the bidder to get the Bank Guarantees revalidated/extended for the required period as per the advice of BHEL Site Engineer / Construction Manager. BHEL shall not be held liable for issue of any reminders regarding expiry of the Bank Guarantees.

ii. In case further extensions of any Bank Guarantees are not required, the bidders shall ensure that the same is explicitly conveyed through the Construction Manager to BHEL PSWR/HQ

iii. In case the Bank Guarantees are not extended before the expiry date, BHEL reserves the right to invoke the same by informing the concerned Bank in writing, without any advance notice/communication to the concerned bidder.

iv. **Bidders to note that any corrections to Bank Guarantees shall be done by the issuing Bank, only through an amendment in an appropriate non judicial stamp paper.**

Appendix – I

LIST OF STANDARD APPLICABLE FOR 33/11/6.6/0.433 KV CONSTRUCTION POWER

Sl.No	IS No. and Amendment	IEC PUB	Description
01	585/1962 Amd 1,2,3	38/1967	AC transmission line
02	1818/1972 Amd.1 to 6	129/1961	Ac current Isolators & earth switch
03	2607/1967	129/1986	AB isolator upto 1000 volts
04	2099/1986 Amd. 1to 4	137/1962	HV porcelain bushing
05	3347/1965 & 67		-------Do------- for transformer
06	4257/1967		-------Do-------clamping arrangement for transformer bushing
07	2516/1985		Ac Circuit breaker < 1000 volts
08	398/1976	209	ACSR conductor
09	2121/1962 Part 1 to 5		Fittings for ACSR conductor & over head line accessories
10	3835/1966		Aluminiumised steel core wire for AL conductor
11	2147/1972	144/1963	LT SWGR enclosure
12	4237/1967		LT SWGR <1000 volts
13	3427/1069		SWGR >1000 volts
14	6262/1971		Di-eclectric for Ins.oil
15	6209/1971		Distribution pillar <1000 volts
16	3043/1966		Earthling
17	5792/1970		HT fuses
18	4770/1968		Rubber gloves
19	335/1983		Ins. Oil for transformer & SWGR
20	731/1971		Porcelain Insulators for O/H lines.>1000 volts
21	1445/1977		Porcelain Insulators for O/H lines.<1000 volts
22	2486/1963 part 1 to 4		Insulator fitting for O/H lines >1000 volts
23	2544/1963		Porcelain post insulators 3.3 KV and above.
24	3188/1980		Disc Insulator/string insulators for O/H line
25	5613/1970 Part 1 to 4		Installation & maintenance of O/H lines
26	5216/1982 Part 1 & 2		Safety procedure in electrical works
27	375/1963		SWGR
28	3072/1965		SWGR Installation & Maintenance
29	4067/1967		Normal duty AB switch upto 1000 volts
30	1886/1967		Installation & Maintenance of Transformers
31	2026/1962 Part 1 to 4		Power transformers
32	3639/1966		Fitting & accessories of power transformer.
33	3043		Earthing.

APPENDIX -II

LIST OF DRAWINGS FOR TENDERING PURPOSE

SN	Description	Drawing No
	Sectional Layout Plot Plan	(TCE.4824A-100-GA-1002
01	Scheme of available 6.6KV feeder source	1AYE344083 (8 sheets)
02	Proposed Single line diagram For 6.6/0.433KV Construction Power	---

NOTE: -The above listed drawings are suggestive for tendering purpose and not to be considered as final. Actual layout and arrangements shall depend on job requirement (The above drawings/sketches are uploaded in website as annexure to corrigendum-01)

APPENDIX–III

DETAILS OF SIMILAR WORK DONE DURING THE LAST SEVEN YEARS

SL. NO.	FULL POSTAL ADDRESS OF CLIENT & NAME OF OFFICER IN CHARGE	DESCRIP-TION OF WORK	VALUE OF CONTRACT	DATE OF AWARD OF WORK	DATE OF COMMENCE MENT OF WORK	ACTUAL COMPLETION TIME (MONTHS)	DATE OF ACTUAL COMPLETION OF WORK	REMARKS

SIGNATURE OF TENDERER WITH SEAL

APPENDIX –IV

CURRENT COMMITMENTS OF THE TENDERER

SL. NO.	FULL POSTAL ADDRESS OF CLINT & NAME OF OFFICER IN CHARGE	DESCRIP-TION OF WORK	VALUE OF CONTRACT	DATE OF COMMENC EMENT OF WORK	SCHEDULE OF COMPLE-TION	% OF WORK COMPLETED AS ON DATE	EXPECTED DATE OF COMPLETION	REMARKS

SIGNATURE OF TENDERER WITH SEAL