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

**No. BHE/PW/PUR/PIPVG-CPS/592**

FOR

PROVIDING CONSTRUCTION POWER SYSTEM ON BUILD, OWN, & OPERATE BASIS, INCLUDING DESIGN, PROCUREMENT, SUPPLY OF EQUIPMENTS, INSTALLATION INCLUDING CIVIL WORKS, TESTING & COMMISSIONING, OPERATION & MAINTENANCE COMPRISING OF 11 KV POWER DISTRIBUTION MAIN SYSTEM AND 11/0.433 KV SUBSTATIONS FOR

2x351.43 MW PIPAVAV CCPP

AT

GSPC PIPAVAV POWER COMPANY LIMITED

VILL-KOVAYA (NEAR PIPAVAV), TALUKA: RAJULA,
DIST- AMRELI (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

**CONTENTS**

| | | | |
|---|---|---|---|
| 19 | EXTRA CHARGES FOR MODIFICATION AND RECTIFICATION | SECTION -13 | 02 |
| 20 | INSURANCE | SECTION -14 | 01 |
| | EARNEST MONEY DEPOSIT AND SECURITY DEPOSIT | SECTION-15 | 02 |
| | **APPENDICES** | | |
| 21 | LIST OF STANDARD APPLICABLE FOR 11/0.433 KV CONSTRUCTION POWER | APPENDIX -I | 01 |
| 22 | LIST OF DRAWING/DOCUMENTS ENCLOSED | APPENDIX-II | 02 |
| 23 | DETAILS OF SIMILAR JOBS DONE IN LAST SEVEN YEARS | APPENDIX-III | 01 |
| 24 | CURRENT COMMITMENTS | APPENDIX-IV | 01 |
| 25 | PART-II: PRICE BID | | @ |

LEGEND:

$: Included in Tender Specifications Part-I. Hosted in BHEL web page (www.bhel.com) as file titled **"NIT+GCC-592".**

@: 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-592"**

**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-592"**

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

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GSPC PIPAVAV POWER COMPANY LIMITED

VILL-KOVAYA (NEAR PIPAVAV), TALUKA: RAJULA,
DIST-AMRELI (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

### INTRODUCTION

**GSPC PIPAVAV POWER CO. Ltd.** is going to install 2x351.43 MW Gas Based Combined Cycle Power Plant (CCPP). The entire work of this project have been awarded to BHEL on total turn-key basis (EPC Contract) comprising of Design, Engineering, Manufacturing, Supply, transportation, Unloading, Storage, erection, testing, Commissioning with Auxiliaries and ancillaries including civil & structural works and handing over of ONE MODULE of 351.43 MW (1 GTG FR9FA + 1 STG + 1 HRSG) within 25 months from zero date/ 26.11.2007.

The plant is located at a distance of 115 KM from Mumbai city of Maharashtra state on the way Panvel – Goa National Highway No. 17. **Contractor is advised to visit the site and appraise himself about the conditions of the site and infrastructure available in the area for fulfilling their commitment under the contract.**

### APPROACH TO SITE

**Location:**

In Amreli District of Gujarat State, Latitude 71º 16' N / Longitude 20º 54' E
The site is a PIPAVAV Plant of GSPCL in Amreli District of State of Gujarat.

**Access by Road:**
PIPAVAV is connected by road from State Highway NH 34 running between Rajula and Jafrabad.

**Nearest Railway Station:** Rajula

**Nearest Airport**: Diu (80 kms) / Ahmadabad (375kms by road)

**Nearest Seaport:** Pipavav (35 kms)

1. **Owner** GSPC PIPAVAV POWER COMPANY Ltd (GPPC)
2. **Project Title** 2X351.43 MW PIPAVAV CCPP
3. **Location** Village: Kovaya Near pipavav Taluka: Rajula, Distt :Amreli, Gujrat, India
4. **Nearest Railway Stn.:** Rajula

**METEOROLOGICAL DATA**

5. **Ambient Air Temperature**
   a. Highest ever temperature recorded (Dry Bulb) 43 Deg.C
   b. Lowest ever temperature recorded (Dry Bulb) 10 Deg.C
   c. Maximum Daily Average (Dry Bulb) 33 Deg C
   d. Average Mean temperature (Dry Bulb) : 33 deg C (For CCPP Performance)

e. Average Mean temperature
(Wet Bulb) : 28 deg C (For CCPP Performance)

f. Average Mean temperature
(Wet Bulb) : 28.5 deg C (For Cooling Tower Performance)

g. Design Ambient for Electrical Equipment 50 deg C

**6. Relative Humidity**

a. Maximum 89%

b. Minimum 10%

c. Average 70%

**7. Rainfall**

a. Annual Average – 1050 mm in the period june to october.Maximum intensity of rainfall ;150 mm/hr continuously maximum rainfall in a day – 400mm .

**8. Wind Data**

a. 16.5 km/hr (Normal)

**9. Seismic Zone** - Zone III as per IS: 1893-2005 (Part – IV)

**10. Fuel** - Regassified Liquefied Natural Gas(RNLG)

**11. Ambient Air Quality** - The site is located close to Kovaya village and is bordering Birla group Cement plant and colony .This area is classified under semi-urban area.

**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. | COPY OF 'A' CLASS ELECTRICAL CONTRACTOR LICENSE ENCLOSED | YES | NO |
| 12. | HEAD QUARTER'S ORGANISATION IS FURNISHED | YES | NO |
| 13. | PROPOSED SITE ORGANISATION IS FURNISHED | YES | NO |
| 14. | NAMES AND PARTICULARS OF DIRECTORS/PARTNERS ARE FURNISHED | YES | NO |
| 15. | FINANCIAL STATUS OF THE COMPANY (ANNEXURE 'A' OF GCC) IS FURNISHED | YES | NO |
| 16. | PROFIT & LOSS ACCOUNT FOR PRECEDING THREE YEARS IS FURNISHED | YES | NO |
| 17. | SOLVENCY CERTIFICATE FROM THE BANKER IS FURNISHED | YES | NO |
| 18. | LATEST INCOME TAX CLEARANCE CERTIFICATE IS FURNISHED | YES | NO |
| 19. | WHETHER ALL THE PAGES OF THE TENDER DOCUMENTS ARE READ, UNDERSTOOD AND SIGNED | YES | NO |
| 20. | WHETHER TECHNICAL DATA SHEET & MAKE OF POWER TRANSFORMER 4.00 MVA, COPPER WOUND 33/11 KV, ONAN COOLED, DYN11 ENCLOSED | YES | NO |
| 21. | WHETHER TECHNICAL PARTICULARS & MAKE OF POWER TRANSFORMER 500 KVA, 11/0.433 KV, ONAN | YES | NO |

| | | | |
|---|---|---|---|
| | COOLED, DYN11 ENCLOSED | | |
| 22. | WHETHER TECHNICAL PARTICULARS OF 33 & 11 KV PIN AND DISC INSULATORS BREAKING STRENGTH , MAKE ENCLOSED | YES | NO |
| 23. | WHETHER RATING, TECHNICAL PARTICULARS & MAKE OF AB SWITCH, DO FUSE & LIGHTING ARRESTOR FOR 33 KV & 11 KV AT 4.00 MVA TRANSFORMER SUBSTATION ENCLOSED | YES | NO |
| 24. | WHETHER RATING, TECHNICAL PARTICULARS & MAKE OF AB SWITCH, DO FUSE & LIGHTING ARRESTOR FOR 11 KV AT 500 KVA TRANSFORMER SUBSTATION ENCLOSED | YES | NO |
| 25. | WHETHER TYPE & SIZE OF ACSR CONDUCTOR FOR 11 KV OVER HEAD LINE ENCLOSED | YES | NO |
| 26. | WHETHER SUB STATION LAY OUT DRGS FOR 4. 0 MVA & 500 KVA TRANSFORMER ENCLOSED | YES | NO |
| 27. | WHETHER TECHNICAL PARTICULARS, MAKE & SIZE OF 11 KV HT CABLE PROPOSED FOR EXTENSION OF 11 KV SUPPLY TO 500 KVA TRANSFORMER SUB STATION ENCLOSED | YES | NO |
| 28. | WHETHER TYPICAL ARRANGEMENT OF POLES, STAY SET , LINES ETC ENCLOSED | YES | NO |
| 29. | WHICH TYPE OF TYPE & MAKE OF POLE SELECTED FOR OVER HEAD LINE 11 KV & DP STRUCTURE FOR SUB STATION / STRAIGHT LINE DP, ENCLOSE TECHNICAL PARTICULARS | YES | NO |
| 30. | WHETHER 4.00 MVA 33/11 KV & 500 KVA 11/0.433 KV TRANSFORMER AND 415 VOLT ACDB SHALL BE DEPLOYED AS PER REQUIREMENT AS SPECIFIED IN THE TENDER SPECIFICATION VIDE CLAUSE NO. 4.8 | YES | NO |

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NOTE : STRIKE OFF WHICHEVER IN NOT APPLICABLE

## DECLARATION BY AUTHORIZED SIGNATORY OF CONTRACTOR

I, HEREBY CERTIFY THAT ALL THE INFORMATION AND DATA FURNISHED BY ME WITH REGARD TO THIS TENDER SPECIFICATION No. **BHE/PW/PUR/PIPVG-CPS/592** 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/PIPVG-CPS/592**

**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/PIPVG-CPS/592 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 Built, Own and Operate basis (BOO). The scope of work includes Design/Detailed Engineering, Procurement, Supply, Receipt, and Storage at Site, associated civil works, Erection, Testing & Commissioning, and Operation & Maintenance. The brief scope of work shall be defined as under.

### 4.2 SCOPE OF WORK UNDER "BOO"

4.2.1 Contractor shall carry out route survey for locating the sub-stations, 11 KV transmission line, poles, LT outdoors power distribution kiosks, earthing location and road crossing etc

4.2.2 Contractor 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.

Contractor shall prepare proposed detailed drawings, substation layout drawings and BOQ of all items with engineering specifications and submit the same along with Technical Bid. However, the work shall be done as per the final layout decided at site which may at variance with proposed drawings as above. This shall be done without any additional financial implication on BHEL.

4.2.3 Contractor shall provide Materials, Equipments, and Devices etc as per finally approved documents. These should be of reputed make and the equipment/components shall conform to BIS specification.

4.2.4 The scope of work also includes receipt of material at site supplied by the contractor himself, handling at stores and site, transport to site, storage & preservation, covered herein.

4.2.4 Contractor shall perform Erection, Testing & Commissioning Including Obtaining Approval of entire installation from appropriate statutory authority. Contractor shall bear all the statutory fees/levies/ charges and all other expenses in connection with the approval of installations.

4.2.5 Construction of Entire System shall also include cutting/ trimming of branches of trees or clearing of any other obstruction that may come in the way of over head line, however this must be done with the approval of GPPC / BHEL.

4.2.6 Contractor shall provide the services of Operation & Maintenance of entire system to ensure reliable availability of the system and shall attend to the break downs and replace the defective components promptly. Failing which BHEL will get the same done at the risk and cost of the contractor.

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

## 4.3 SYSTEM REQUIREMENT

BHEL intends to avail of the services of Complete Construction Power System on Built, Own and Operate (BOO) basis. Suggested Lay-out & Single Line Diagram is attached for information only.

One supply point at pole of 11 KV existing Transmission line will be provided by PGVCL (A private distribution company in that region) on behalf of GPPC, beyond this point further distribution of power shall be done through a combination of overhead 11 kV line and Multi –run underground cables at Tap-off (Refer sketch no. BHE/PSWR/PIPVG/ELC/CPO – 01 & 02.) To individual 500 KVA, 11/0.433 KV transformer substation. The Tap-off Point should be provided with 4-pole structure on 11 KV overhead line side and 2- pole structure on under ground cable side. These should be provided with Triple Pole gang operated AB switch, DO Fuse, and Lightening Arrestors on incoming side. No. of Transformers along with their Tentative Locations is furnished as below:

| **Sub-Stations** | **Purpose for use** | **Tentative Location**<br><br>**(This may vary in between 50-100 mtrs.)** |
|---|---|---|
| S/S No.1 | **For Customer Utility:**<br><br>Three feeders of 415 V, 250 Amp should be required for Customer's use at following locations:<br><br>1. Administrative Block<br><br>2. Guest House<br><br>3. Colony Construction | In between<br><br>(0-100 N, 100-200E) |
| | **For BHEL's Use**: | |
| S/S No.2 | For Construction Yard:<br><br>Feeder Particulars are given below:<br><br>2 No. feeder for 415 V, 400 Amp<br><br>4 No. Feeder for 415V, 200 Amp<br><br>2 No. Feeder for 415 V, 200 Amp | (400 S, 300E) |
| S/S No.3 | For HRSG & Auxiliaries:<br><br>Feeder Particulars are given below:<br><br>2 No. feeder for 415 V, 400 Amp<br><br>4 No. Feeder for 415V, 200 Amp<br><br>2 No. Feeder for 415 V, 200 Amp | In between<br><br>(300-400 S, 1000-1100E) |

| | | |
|---|---|---|
| S/S No.4 | For GTG Block:<br>Feeder Particulars are given below:<br>2 No. feeder for 415 V, 400 Amp<br>4 No. Feeder for 415V, 200 Amp<br>2 No. Feeder for 415 V, 200 Amp | In between<br>(400-500 S, 1000-1100 E) |
| S/S No.5 | For BOP Area:<br>Feeder Particulars are given below:<br>2 No. feeder for 415 V, 400 Amp<br>4 No. Feeder for 415V, 200 Amp<br>2 No. Feeder for 415 V, 200 Amp | In between<br>(200-300 S, 1300-1400 E) |

Tentative Power Requirement for various Packages for BHEL's use as per above Location is furnished in Appendix-V.

4.3.1 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. Electricians (both for Installation as well as during operation) should have valid license for handling 11 kV HT installation. In addition to shift operation, the contractor shall deploy a supervisor for over all co-ordination purpose.

4.3.2 Sectional isolations in 11KV are to be provided at different locations by using Triple-Pole Gang-Operated AB Switch with earthing switch. Lightening Arrestors are to be provided in the HT side of 11/0.433 KV transformers. The location of sectional isolation is to be decided considering the maintenance aspects.

**4.6.0 OTHER TECHNICAL REQUIREMENT**

4.6.1 All Civil works as required for Installation of this complete system and other incidental civil works e.g. grouting of poles/stays/ posts, foundations, including necessary earthwork like excavation, backfilling and formwork, provision of all requisite materials like cement, sand & grit, reinforcement steel, T&P, shuttering etc. are in scope of contractor.

4.6.2 The substation area shall be fenced as per Indian electricity rules & regulation and shall have provision of lockable door.

4.6.3 Earthing of all the sub-station equipments and overhead line shall be carried out as per IS: 3043.

4.6.4 Contractor 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.

4.6.5 In case of non-availability due to breakdowns/failures attributable to the contractor, he shall restore it within the shortest possible time. BHEL will allow a maximum outage of 24 hours 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.

4.6.5 In case the breakdown/non-availability duration extends beyond 24 hours in a calendar month per substation, recoveries shall be made at the rate of 2 times the pro-rata hourly rate for each Sub- station. Pro-rata hourly rate will be calculated as under.

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

4.6.6 Bidder should ensure that the preventive maintenance schedule is to be submitted and get approved by BHEL.

4.6.7 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. Preventive maintenance as per schedule may get changed.

4.6.8 In the event of breakdown/non-availability of any strategically important substation, BHEL may choose to revive the said substation by cannibalising the relevant equipment/component from another working substation of lesser importance. Contractor shall carry out such cannibalisation including dismantling, local transportation, loading, unloading, erection, testing, commissioning and normalization/restoration after repair of the defective equipments/substation without any extra cost to BHEL.

4.6.9 Any replacement of the equipment caused due to failure shall not be attributable to any additional cost to BHEL.

4.6.10 Failure and supply at source from customer terminal point shall not be counted while working out the total outage attributable to the contractor for levying the penalty

.

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

4.6.12 Contractor shall arrange entry permits as per laws in the state of (Gujarat) and all taxes.

4.6.13 At all stages of this contract, Contractor shall arrange all insurance cover at his own cost for his material, all installation, manpower for this work. Also refer GCC

4.6.14 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.

4.6.15 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 etc. shall be done on day to day basis.

4.6.16 BHEL, Customer, 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.

4.6.17 Contractor shall intimate BHEL engineer immediately on notice any thing adverse and critical in his system, which requires immediate attention and take corrective action as required/directed at his own cost & risk.

4.6.18 In case during the course of contract period & extended period, cable routing can be changed based on site requirement. In such eventuality Rs. 45 /- per mtr will be paid towards the completion of work of cable laying.

4.7.19 In case additional cable length is added to the existing cable & side joint is done, on such occasion per joint Rs.1800/- will be paid.

4.7.20 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.

4.6.21 If Contractor fails to provide the services as per tender specification, BHEL will take suitable action at contractor's risk and cost.

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

**4.7.0 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.

4.7.1 The work covered under this specification is of high voltage 11 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.

4.7.2 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. 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.

4.7.3 The work shall be executed under the usual conditions affecting major power plant construction and in conjunction with numerous other operations at site. The contractor and his personnel shall 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.

4.7.4 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.

4.7.5 Contractor shall be holding valid '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.

4.7.6 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.

4.7.7 Miscellaneous items and works not specifically described herein but required for this work shall be provided as per relevant IS and REC Specifications & Construction Standards.

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

### 4.8.1 DISTRIBUTION TRANSFORMER

The distribution transformer shall be oil immersed, natural air cooled, 3 phase, 50 HZ, out door type, conforming to IS 2026. Rating 500 KVA, 11/0.433 KV, Vector group, Dyn11, Neutral solidly earth.

The transformer shall be capable of being loaded in accordance with IS 6600 up to 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 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 | 500 kVA, 3 Ph, 50 Hz |
| 2. | Voltage Ratio | 11/0.433 kV |
| 3. | Type | Two Winding |
| 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)<br>Rated Current (Amp)<br>Minimum Creepage distance (mm)<br>Basic impulse level (kV)peak | As per IS 2026 As per IS 2026 |
| 15 | Neutral Bushing<br>Rated Voltage (kV)<br>Rated Current (Amps) | As per IS 2026 |
| 16 | Termination | |

4.8.2 **LT DISTRIBUTION OUTDOOR KIOSK**

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<br>Make – L&T or GE Power or Controls & Switchgears or Siemens | 1No. | 800 Amps, 415 volts, TPN, Air Circuit Breaker, AC 3 pole with over current release, 3 Nos built in CTs, Earth fault release |
| Outgoing MCCB<br>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 |
| | 4 Nos. | 200 Amps, TPN, Moulded Case Circuit Breakers. |
| | 2 No. | 100 Amps, TPN, Moulded Case Circuit Breakers. |
| Metering | | Ammeter & voltmeter 96x96 mm flush mounted, CTR, Selector switch<br>Energy meter 3-phase, four- wire at power measurement at incoming power.<br>Phase indication lamp |

**4.8.2.1 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 | 800 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.

**4.8.3 11 kV GRADE HT XLPE SINGLE /MULTI CORE CABLE**

11KV (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**)**

### 4.8.4 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)

## 4.9.0 Inspection and Acceptance of Components/Equipment:

Contractor shall provide all the components as per finally approved documents. BHEL will carry out suitable stage inspection and final inspection before the materials are installed / put to use.

## 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 this 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; 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 **Site office and stores**

5.3.1 Contractor shall make his own arrangements for site office cum stores. Only open space will be provided by BHEL free of cost for contractor's office & storage area on a temporary basis.

5.4 Lighting

5.4.1 The contractor at his cost should arrange for lighting in the sub station areas. 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

Customer/BHEL will not provide land for construction of labour colony. Contractor shall make his own arrangements for labour colony including lighting, water etc and comply with all requirements.

5.6 CONSTRUCTION WATER

For construction purpose, water will not be provided by BHEL. The contractor shall make his own arrangement for this.

5.7 CONSTRUCTION POWER

Construction power for construction work will not be provided by BHEL. Contractor shall bring his own DG set for this purpose and make his own arrangement for further distribution and connection.

However, once the system becomes operational, contractor will be allowed construction power for his use free of charge at one point. All arrangement for drawl & distribution for this purpose shall be arranged by the contractor.

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.

5.8 TOOLS AND PLANTS

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

5.9 CONSUMABLES

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

5.10 **Taxes, Duties, Levies**

**TAXES, DUTIES, LEVIES**

5.10
Refer to Clause 2.8.4 of General Conditions of Contract. Notwithstanding anything contained therein, the following provisions shall be applicable for this contract.

**5.10.1**
The contractor shall pay all (save the specific exclusions as enumerated in this contract) taxes, fees, license charges, deposits, duties, tools, royalty, commissions or other charges which may be levied on the input goods & services consumed and output goods & services delivered in course of his operations in executing the contract. In case BHEL is forced to pay any of such taxes, BHEL shall have the right to recover the same from his bills or otherwise as deemed fit.
However, provisions regarding Service Tax and Value Added Tax (VAT) on output services and goods shall be as per following clauses.

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

after depositing the tax with concerned authorities. Contractor shall obtain prior written consent from BHEL before billing the amount towards such taxes.

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

**5.10.3 VAT (Sales Tax /WCT)**

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

**5.10.4 Modalities of Tax Incidence on BHEL**

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

**5.10.5 New Taxes/Levies**

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

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

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

## 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

Refer Section-5

7.1.2 ELECTRICITY

Refer Section-5

7.1.3 TOOLS AND PALNTS

Refer Section-5

7.1.4 CONSUMABLES

Refer Section-5

# SECTION-8
# SPECIAL CONDITIONS OF CONTRACT

8.0 Inspection/Quality Assurance/Quality Control/ Statutory Inspection

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

8.2 Preparation of quality assurance log sheets and protocols with customer/ consultants/statutory authority, welding logs, NDE records, testing & calibration records and other quality control and quality assurance documentation as per BHEL engineer's instructions, is within the scope of work/specification. These records shall be submitted to BHEL/customer for approval from time to time.

**8.3** A daily logbook of all measurements and testing/calibration should be maintained by contractor on the job for detailing inspection details of various equipments**.**

8.4 The performance of welders will be reviewed from time to time as per the BHEL standards. Welders' performance record shall be furnished periodically. Corrective action as informed by BHEL shall be taken in respect of those welders not conforming to these standards. This may include removal/ discontinuance of concerned welder(s). Contractor shall arrange for the alternate welders immediately.

8.5 All the welders shall carry identity cards as per the proforma prescribed by BHEL only welders duly uthorized by BHEL/customer/consultant shall be engaged on the work.

8.6 Contractor shall provide all the measuring monitoring devices (MMDs) required for completion of the work satisfactorily. These MMDs shall conform to job requirement in respect of measurement range, accuracy level & any other specification. The indicative list of MMDs required for this work and to be made available by the contractor is given in appendix-III. The list will be reviewed by BHEL and the contractor shall meet any augmentation needed.

8.7 The MMDs deployed by the contractor shall, at all stages of work, have valid and current calibration. BHEL shall be done the calibration of these MMDs from the agencies accredited/ approved. Copy of calibration certificates in respect of these MMDs has to be submitted to BHEL. Periodical status report regarding validity of calibration has to be submitted to BHEL. Re-calibration/ re-validation shall be done periodically as per BHEL specifications. Contractor shall conform to the specifications of BHEL regarding storage of the MMDs.

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

**8.9** In the course of work BHEL may counter/ finally check the measurements with their own MMDs. Contractor shall render all assistance in conduct of such counter/final measurements**.**

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

8.11 Stage Inspection By FES/QA Engineers

Apart from day-to-day inspection by BHEL engineers stationed at site and also by customer's engineers, stage inspection of equipments under erection and commissioning at various stages of erection and commissioning by teams of engineers from field engineering services of BHEL's manufacturing units and quality assurance teams from field quality assurance 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 as part of work.

**8.12 Statutory Inspection of Work:**

8.13 Statutory Inspection of Work

8.13.1
The work to be executed under these specifications has to be offered for inspection, at appropriate stages of work completion, to various statutory authorities for compliance with applicable regulations.

8.13.2
The work related statutory inspections, though not limited to, are as under:

1) Inspectorate of the Chief Electrical Inspector of Madhya Pradesh OR Central Electricity Authority as per statute.
2) Any other authority connected to this work.

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

8.13.3
It shall be contractor's responsibility to obtain approval of statutory authorities, whenever applicable, for conducting any work which comes under the purview of these authorities.

8.13.4
BHEL will pay fees for visits, inspection fees etc. of these statutory authorities. Please refer Section-5 for working arrangement for payment of fees in this regard. All other expenses shall be borne by the contractor. In case these inspections have to be repeated due to reasons attributable to the contractor and fees have to be paid again, the contractor has to pay such additional charges.

8.13.5
It shall be the responsibility of contractor to obtain license from chief electrical inspector, Maharashtra for carrying out high voltage work. Contractor shall also comply with the provisions of the latest Electricity Act, including the amendments thereof.

8.13.6

The contractors shall pay all fees connected with testing of his welders/workers and testing, inspection & calibration of his MMD and T&P.

8.14.0

The quality management system of BHEL, Power Sector – Western Region (PSWR) has already been certified and accredited under ISO 9002 standards in this regard. The basic philosophy of the quality management system is to define the organizational responsibility, work as per documented procedures, verify the output with respect to acceptance norms, identify the non-conforming product/ procedure and take corrective action for removal of non-conformance specifying the steps for avoiding recurrence of such non-conformities, & maintain the relevant quality records. The non-conformities are to be identified through the conduct of periodical audit of implementation of quality systems at various locations/stages of work. Suppliers/vendors of various products/services contributing in the work are also considered as part of the quality management system. .as such the contractor is expected not only to conform to the quality management system of BHEL but also it is desirable that they themselves are accredited under any quality management system standard.

8.15.0 Field Quality Assurance

**Contractor shall carry out all activities conforming to the approved Field Quality Plan (FQP) as revised from time to time. Total quality shall be the watchword of the work and contractor shall strive to achieve the quality standards, procedures laid down by BHEL. He shall follow all the instructions as per BHEL drawings and quality standards. Contractor shall provide the services of quality assurance engineer as per the relevant clauses.**

SECTION-9

SPECIAL CONDITIONS OF CONTRACT

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<br><br>Every month |
| 4 | Lifting equipment/tackles | To check for defects and efficacy of brakes | User<br><br>Third party | Daily<br><br>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/- |
| 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 ( |

| IS No | YEAR | Amd upto | DESCRIPTION |
|---|---|---|---|
| | | | CONSTANT PRESSURE) |
| IS 1446 | 1985 | | CLASSIFICATION OF DANGEROUS GOODS (FIRST REVISION) |
| IS 1476 | 1979 | | REFRIGERATORS |
| IS 1641 | 1988 | | CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): GENERAL PRINCIPLES OF FIRE GRADING AND CLASSIFICATION |
| IS 1642 | 1989 | | CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS- DETAILS OF CONSTRUCTION |
| IS 1643 | 1988 | | CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): EXPOSURE HAZARD |
| IS 1646 | 1997 | | CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): ELECTRICAL INSTALLATIONS |
| IS 1904 | 1986 | | CODE OF PRACTICE FOR DESIGN AND CONSTRUCTION OF FOUNDATIONS IN SOIL |
| IS 1905 | 1987 | | STRUCTURAL SAFETY OF BUILDINGS MASONARY WALLS |
| IS 2082 | 1985 | | ELECTRICAL GEYSERS |
| IS 2171 | 1985 | | PORTABLE FIRE EXTINGUISHERS DRY POWDER TYPE (CARTRIDGE) |
| IS 2309 | 1989 | | PRACTICE FOR THE PROTECTION OF BUILDINGS AND ALLIED BUILDINGS AGAINST LIGHTENING |
| IS 2312 | 1967 | | EXHAUST FANS |
| IS 2361 | 1994 | | SPECIFICATION FOR BUILDING GRIPS - FIRST REVISION |
| IS 2418 | 1977 | | TUBULAR FLUORSCENT LAMPS IS 2418 (FT-1) |
| IS 2750 | 1964 | | STEEL SCAFFOLDINGS |
| IS 2762 | 1964 | | SAFE WORKING LOADS IN KGS FOR WIRE ROPE SLINGS |
| IS 2878 | 1986 | | FIRE EXTINGUISHERS CARBON DIOXIDE 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 No | YEAR | Amd upto | DESCRIPTION |
|---|---|---|---|
| IS 4138 | 1977 | | SAFETY CODE FOR WORKING IN COMPRESSED AIR (FIRST REVISION) |
| IS 4155 | 1966 | | GLOSSARY OF TERMS RELATING TO CHEMICAL AND RADIATION HAZARDS AND HAZARDOUS CHEMICALS |
| IS 4209 | 1967 | | CODE OF SAFETY FOR CHEMICAL LABORATORY |
| IS 4250 | 1980 | | FOOD MIXERS |
| IS 4262 | 1967 | | CODE OF SAFETY FOR SULFURIC ACID |
| IS 4756 | 1978 | | SAFETY CODE FOR TUNNELING WORK |
| IS 4912 | 1978 | | SAFETY REQUIREMENTS FOR FLOOR AND WALL OPENINGS, RAILINGS AND TOE BOARDS |
| IS 5121 | 1969 | | SAFETY CODE FOR PILING AND OTHER DEEP FOUNDATIONS |
| IS 5182 | 1969 | 1982 | METHODS FOR MEASUREMENT OF AIR POLLUTION |
| IS 5184 | 1969 | | CODE OF SAFETY FOR HYDROFLUORIC ACID |
| IS 5216 | 1982 | 2000 | RECOMMENDATIONS ON SAFETY PROCEDURES AND PRACTICE IN ELECTRICAL WORK PART I AND II |
| IS 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 No | YEAR | Amd upto | DESCRIPTION |
|---|---|---|---|
| IS 8807 | 1978 | | GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR PROTECTION OF ARMS AND HANDS |
| IS 8978 | 1985 | | INSTANTANEOUS WATER HEATERS |
| IS 8989 | 1978 | | SAFETY CODE FOR ERECTION OF CONCRETE FRAMED STRUCTURES |
| IS 940 | 1989 | | PORTABLE FIRE EXTINGUISHERS WATER TYPE ( GAS CARTRIDGE) |
| IS 9457 | 1980 | | SAFETY COLOURS AND SIGNS |
| IS 9679 | 1980 | | CODE OF SAFETY FOR WORK ENVIRONMENTAL MONITORING |
| IS 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 |

## 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.

10.3

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.

**In case of any conflict between general instructions to tenderers, General Conditions of Contract and Special Conditions of Contract contained in sections 4 to 14 and Appendices, provisions contained in sections 4 to 14 and Appendices shall prevail**.

**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 by** |
|---|---|---|
| 01 | Completion of engineering and BOQ, finalisation of 11 kV line route survey, location of sub-stations etc. | Within 2 Weeks from award of work by Fax L.O.I. |
| 02 | Procurement, Supply, Installation, Testing & Commissioning & Clearance for charging the system with approval of statutory authority. | 12 Weeks from the date of Fax LOI. |
| 03 | Providing the services of Operation, Maintenance & Up keep of Entire System | 33 Months |

11.1.2 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.

11.1.3 BHEL at its discretion 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 to the satisfaction of BHEL that the reasons for delay are not in his control.

11.1.4 **Contract Period, Grace Period and Overrun Compensation**

Total Contract Period shall be of 36 Months from the date of Fax LOI.

No overrun charges & grace period will be applicable for the scope of work covered under this contract.

**11.2 Price Variation**

The contract price shall remain firm through out the contract period & 1st extension period. However, during 2nd Extension, price variation as provided vide section -12 will be applicable.

### 11.3 Extension of Hiring Period

The Contact period may be extended on existing terms & conditions of contract for First extension up to Three months and if required, Second extension up to another Six Months i.e. beyond the end of 1st Extension on existing terms&conditions with variation in monthly service charges as provided in section-12.

### 11.5 Contract Variations

#### 11.5.1 Variation in Quantities

Quantities of various items to cover the work under this tender specification may vary from those indicated during offer & agreed before execution of work. The Contractor shall provide the complete Set up as indicated within the total quoted price without any additional cost to BHEL.

### 11.6 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).

### 11.7 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.

### 11.8 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 97% of the value arrived at, based on the accepted measurements. The 3% 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:

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

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

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## 12.2 TERMS OF PAYMENT

### 12.2.1 PROGRESSIVE PAYMENT

| SN | ACTIVITY | % Break up Payment |
|---|---|---|
| 01 | For 1st Substation - On Completion of Installation, Testing & Commissioning and on clearance of statutory authority for charging the system. | 5.75% |
| 02 | For subsequent substations @ 5% of contract value each - on completion of Installation, Testing & Commissioning and on clearance of statutory authority for charging the system | 20.00% |
| 03 | Monthly charges for the services to be provided on BOO Basis @ 0.45% of contract value for each substation { i.e. % Break up payment(74.25 %) / No. of Substations(5) / No. of hiring months(33) }<br><br>Payment will be made pro-rata basis from the date of commissioning of respective substation treating the above fraction as monthly service charges. | 74.25% |
| **10** | **TOTAL** | **100%** |

The monthly hiring charges will be paid even if the BHEL does not utilize the same. However, the respective system should be available for use by BHEL/Client. Pro-rata rate shall be calculated as under:

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

### 12.2.2 PAYMENTS TOWARDS THE SERVICES TO BE PROVIDED DURING THE EXTENDED PERIOD IF APPLICABLE.

BHEL may extend the contract period for services to be provided on BOO Basis as specified in the tender specification depending up on the requirement and it shall be reviewed at appropriate time. For extended period BHEL shall pay Monthly charges for the services as indicated above in clause 12.2.1 at the following rate:

**1.** For 1st Extension of 3 Months after the end of contract, Same Monthly charges as above will be paid.

**2.** For subsequent extension i.e. after expiry of contract period & 1st Extension period, Monthly charges for each substation shall be at the rate of 0.225% of contract value and will be subject to same variation as the variation in Consumer Price Index for Industrial Workers applicable for the respective month. The base for variation will be the CPI-IW applicable for the last month of contract period.

### 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

**13.1** If extra works (requiring less than 20 man-hours) for modification, rework, revamping, in brief, any work done to change the state existing to a stage desired and also fabrication, all or any, are needed due to any change in or deviation from the drawings and design of equipment, operation/ maintenance requirements, mismatching, transit damages and other allied works which are not very specifically indicated in the drawings, but are found essential for satisfactory completion of the work, are done, no extra charges will be paid. The contractors are requested to take this aspect into account and the quoted rate should include all such contingencies.

**13.2** It may also be noted that if any such said extra works arise on account of the contractor's fault it will have to be carried out by the contractor free of cost. Under such circumstances, any material and consumable required for this purpose will also have to be arranged by the contractor at his cost.

**13.3** However, BHEL may consider for payment as extra, for such of those works detailed in clause 13.1 which require more than 20 man hours and such payment will be regulated by the terms, conditions and stipulations contained in the clauses 13.4 and or 14.2.1 to 14.2.10. It may be specifically noted that the decision of BHEL as to whether such payment is due shall be final and binding on the contractor.

**13.4** BHEL may, at their absolute discretion, consider for payment as extra on man day basis as found by them as justifiable for such of those works specified in clause 13.1 which require major modification, major repair, major reworks, major rectification etc It may also be noted that only those works, which are identified as major and warrant extra payment and certified as such by the project manager and accepted by the designers and/or competent authority of BHEL, will be considered for extra payment.

**13.5** Such extra works arising out of transit, storage and erection damages, payment, if found due, will be regulated by clauses 14.2.1 to 14.2.10.

**13.6** A separately identified gang shall carry out the extra works. No diversion of regular gang for such extra works will be permissible and no delay or slow progress should be caused due to executing extra works. Hence, the question of granting extension of time for this reason should not arise.

Daily log sheets in the pro forma prescribed by BHEL should be maintained and shall be signed by the contractor's representative and BHEL engineer. No claim for extra work will be considered/ entertained in the absence of the said supporting documents i.e. Daily log sheets. It may, however, be noted that signing of log sheets by BHEL engineer does not mean the acceptance of such

works as extra works eligible for payment of the acceptance of number of man days needed for the work. Also contractor shall complete the extra work done regularly and submit the same within 30 days after completion of extra work.

**13.7** BHEL retains the right to award or not to award any of the major repair/major rework/major modification/major rectification/major fabrication works under clauses 13.1 to 13.6 to the contractor, at their discretion without assigning any reason for the same.

**13.8** After eligibility of extra works is established and finally accepted by BHEL engineer/designer, payment will be released on competent authority's approval at the following rate.

**Extra Charges**

Single average man day rate, including overtime if any, and other site expenses and incidentals, including consumables, tools and tackles for carrying out any major rework/repairs/ rectification/ modification/ fabrication of 8 hours as may arise during the course of erection:

**Rs. 240/- (Rs. Two Hundred forty only)**

No payment will be made if an item of work lasts less than 20 man-hours.

## SECTION-14

## Special Conditions

### 14.0 Insurance

#### 14.1.1 Transit Storage and Erection Insurance

14.1.2 It is responsibility of Contractor to take insurance cover for transit, complete installation, 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

**15.1 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.

**15.1.1** 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.

**15.1.2** EMD shall not carry any interest.

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

**15.2 Security Deposit**

**15.2.1** 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.

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

i. Cash (as permissible under the Income Tax Act)

ii. Pay Order, Demand Draft in favour of BHEL.

iii. Local cheques of scheduled banks, subject to realization.

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

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

## **15.3** 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 11/0.433 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 |
|---|---|---|
| 01 | Plot Plan | Sketch No. BHE/PSWR/PIPVG/ELC/CPO-01 |
| 02 | Proposed Single line diagram For 11 KV Construction Power | Sketch No. BHE/PSWR/PIPVG/ELC/CPO-02 |

**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 and shall be decided at site.**

## 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 CONTRAC T | DATE OF AWARD OF WORK | DATE OF COMMENCE MENT OF WORK | ACTUAL COMPLETION TIME (MONTHS) | DATE OF ACTUAL COMPLETIO N OF WORK | REMARKS |
|---|---|---|---|---|---|---|---|---|
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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 COMMEN CEMENT OF WORK | SCHEDUL E OF COMPLE-TION | % OF WORK COMPLETED AS ON DATE | EXPECTED DATE OF COMPLETION | REMARKS |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
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SIGNATURE OF TENDERER WITH SEAL

## APPENDIX-V

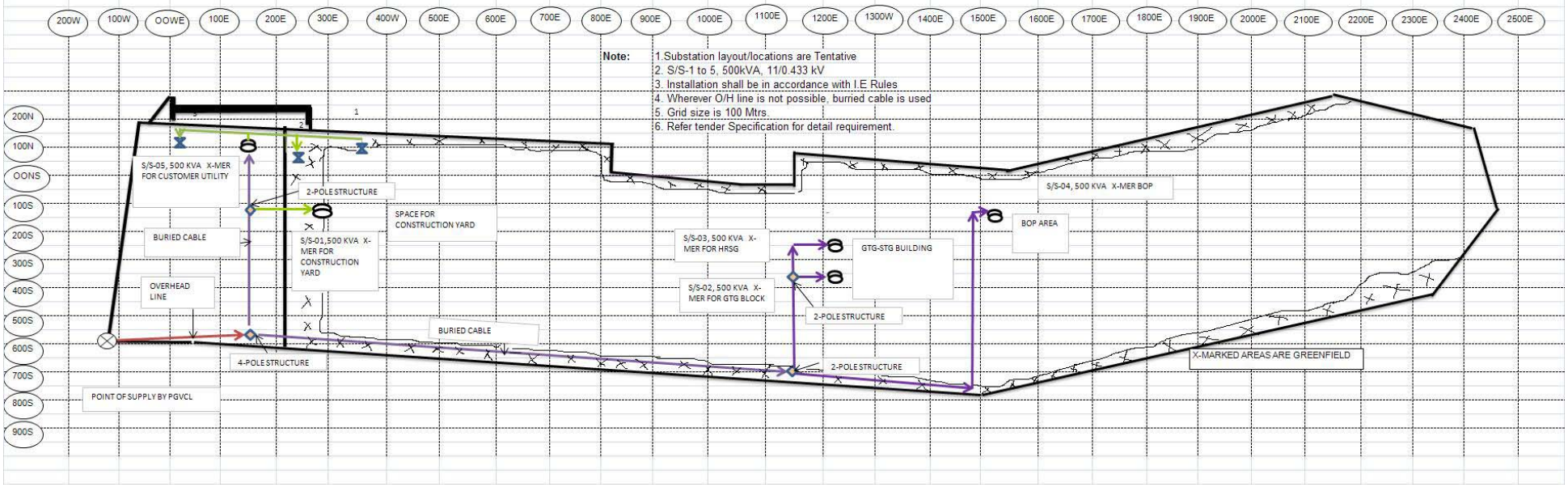
## TENTATIVE POWER REQUIREMENT FOR VARIOUS PACKAGES AT 2x351.43 MW GPPCL, PIPAVAV

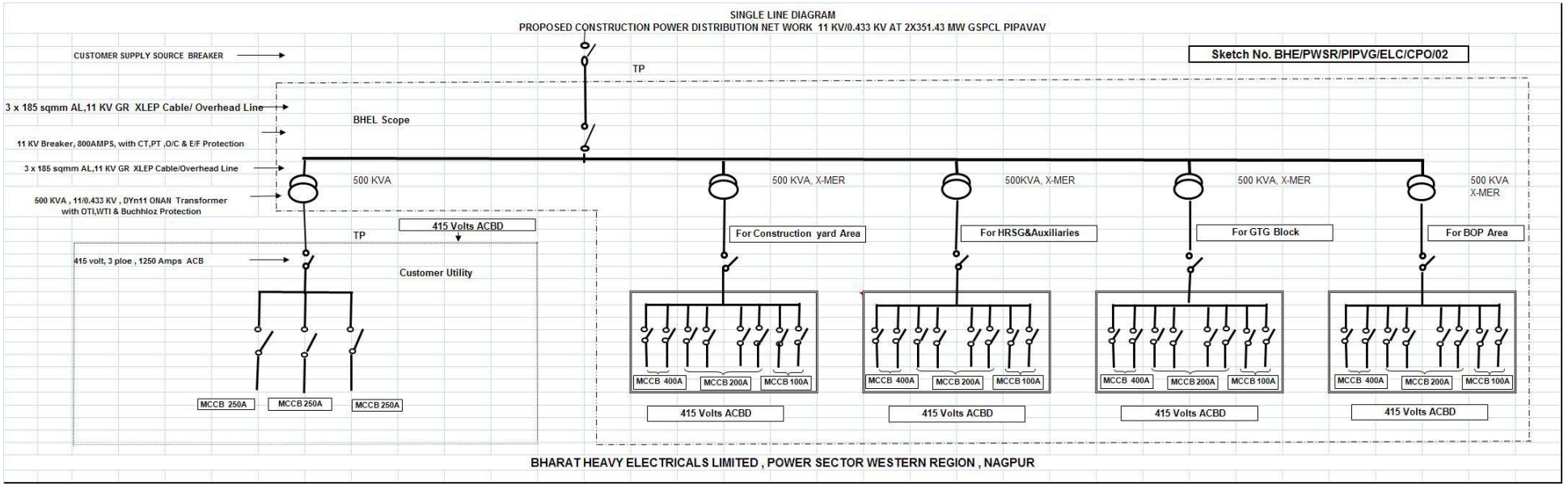
| | |
|---|---|
| ❖ **Civil & Batching plant** | **- 100 Amps** |
| ❖ **Structure Fabrication** | **- 300 Amps** |
| ❖ **BOP Civil** | **- 200 Amps** |
| ❖ **Turnkey packages** | **- 200 Amps** |
| ❖ **Steam turbine & GTG** | **- 200 Amps** |
| ❖ **Piping package** | **- 400 Amps** |
| ❖ **HRSG & stack** | **- 600 Amps** |
| ❖ **Electrical & C&I** | **- 100 Amps** |
| ❖ **BOP vendor** | **- 200 Amps** |
| ❖ **Misc** | **- 200 Amps** |
| **TOTAL REQUIREMENT** | **2500 Amps** |
| ❖ **Expected average peak load (60 %)** | **1500 Amps** |

## PROPOSED CONSTRUCTION POWER DISTRIBUTION NETWORK FOR 2X351.43 MW CCPP PIPAVAV

PLOT PLAN

Sketch No. BHE/PSWR/PIPVG/ELC/CPO/01




SINGLE LINE DIAGRAM
PROPOSED CONSTRUCTION POWER DISTRIBUTION NET WORK 11 KV/0.433 KV AT 2X351.43 MW GSPCL PIPAVAV
Sketch No. BHE/PWSR/PIPVG/ELC/CPO/02
CUSTOMER SUPPLY SOURCE BREAKER
TP
3 x 185 sqmm AL,11 KV GR XLEP Cable/ Overhead Line
BHEL Scope
11 KV Breaker, 800AMPS, with CT,PT ,O/C & E/F Protection
3 x 185 sqmm AL,11 KV GR XLEP Cable/Overhead Line
500 KVA
500 KVA, X-MER
500KVA, X-MER
500 KVA, X-MER
500 KVA X-MER
500 KVA , 11/0.433 KV , DYn11 ONAN Transformer with OTI,WTI & Buchhloz Protection
415 Volts ACBD
TP
For Construction yard Area
For HRSG&Auxiliaries
For GTG Block
For BOP Area
415 volt, 3 ploe , 1250 Amps ACB
Customer Utility
MCCB 400A
MCCB 200A
MCCB 100A
MCCB 250A
415 Volts ACBD
BHARAT HEAVY ELECTRICALS LIMITED , POWER SECTOR WESTERN REGION , NAGPUR