

# TENDER SPECIFICATION

No. BHE/PW/PUR/SAT-CPS/720

FOR

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

AT

SATPURA THERMAL POWER STATION UNIT 10 &11

MADHYA PRADESH POWER GENERATION COMPANY LIMITED

DIST- BETUL

MADHYA PRADESH

PART I

(TECHNICAL BID SPECIFICATION, NOTICE INVITING TENDER & GCC)  
(REVISION – 01 DATED 20/03/2010)



**BHARAT HEAVY ELECTRICALS LIMITED**

(A Govt. of India Undertaking)

POWER SECTOR - WESTERN REGION

345, KINGSWAY - NAGPUR 440 001

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\*: Refer as file already uploaded as in “NIT-720” under BHEL web page NIT-8001

\$: Attached at the end of hard copy of Tender Specifications Part-I. Hosted in BHEL web page ([www.bhel.com](http://www.bhel.com)) as file titled “GCC-720”.

@: Issued as separate hard copy booklet ‘Tender Specifications Part-II (Price Bid-720-Revision-01 dated 20/03/2010)’. Hosted in BHEL web page ([www.bhel.com](http://www.bhel.com)) as file titled “PRICE BID-720(Revision-01 dated 20/03/2010)”

**## Drawing Nos**

**PLOT PLAN ROUTING FOR 11KV LINE DRG NO : BHE/PSWR/SAT/ELC/CPO-01**

**SINGLE LINE DIAGRAM DRG NO. BHE/PSWR/SAT/ELC/CPO-02**(Hosted in BHEL web page ([www.bhel.com](http://www.bhel.com)) as file titled “SLD-720 (Revision-01 dated 20/03/2010)”

**Note:**

Rest of the tender documents are included in Tender Specifications Part-I. Hosted in BHEL web page ([www.bhel.com](http://www.bhel.com)) as file titled “TECH BID-720 (Revision-01 dated 20/03/2010)”

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

**NO.BHE/PW/PUR/SAT-CPS/720**

FOR

PROVIDING CONSTRUCTION POWER SYSTEM INCLUDING DESIGN,  
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SATPURA THERMAL POWER STATION UNIT 10 &11

MADHYA PRADESH POWER GENERATION COMPANY LIMITED

DIST- BETUL

MADHYA PRADESH

EARNEST MONEY DEPOSIT: RS.1, 00,000/- (RUPEES ONE LAKH ONLY)

TENDER DOCUMENTS CONTAINING PART-I TECHNICAL BID AND PART-  
II PRICE BID, ARE ISSUED TO:

M/S.....

.....

.....

( TENDER DOCUMENTS ARE NOT TRANSFERABLE)

FOR BHARAT HEAVY ELECTRICALS LIMITED

ADDL. GENERAL MANAGER (PURCHASE)

PLACE: NAGPUR

DATE :

**PROJECT INFORMATION**

BHARAT HEAVY ELECTRICALS LIMITED : PSWR : Nagpur  
Tender Specs No. BHE/PW/PUR/SAT-CPS/720

## **BACKGROUND**

BHEL'S CLIENT M/S MADHYA PRADESH POWER GENERATION COMPANY LIMITED (MPPGCL) HAS PULVERIZED COAL BASED POWER PLANT AT SATPURA THERMAL POWER PLANT, DISTT-BETUL, MADHYA PRADESH. THE SAID CLIENT HAS UNDERTAKEN THE PROCESS OF EXPANDING THE CAPACITY OF THE POWER PLANT BY SETTING UP TWO POWER GENERATION UNIT OF 250 MW RATING.

THE BIDDER SHALL ACQUAINT HIMSELF BY A VISIT TO THE SITE, IF FELT NECESSARY, WITH THE CONDITIONS PREVAILING AT SITE BEFORE SUBMISSION OF THE BID. THE INFORMATION GIVEN HERE IN UNDER IS FOR GENERAL GUIDANCE AND SHALL NOT BE CONTRACTUALLY BINDING ON BHEL/ OWNER. ALL RELEVANT SITE DATA/INFORMATION AS MAY BE NECESSARY SHALL HAVE TO BE OBTAINED /COLLECTED BY THE BIDDER.

### **LOCATION AND APPROACH :**

- 1) PROJECT: THERMAL POWER STATION EXTENTION UNITS # 10 & 11 (250 MW EACH).
- 2) PROJECT LOCATION: SATPURA, DIST: BETUL, MADHYA PRADESH, INDIA.
- 3) TRANSPORT FACILITIES:
  - A) NEAREST RAILWAY STATION: GHODADONGRI ON NAGPUR ITARSI ROUTE. GHODADONGRI IS 71 KMS FROM ITARSI ON THE ITARSI – BETUL STATE HIGHWAY.
  - B) ROAD: SARNI/SATPURA TPS IS CONNECTED TO GHODADONGRI BY 20 KM LONG ALL-WEATHER DISTRICT ROAD.
  - C) NEAREST AIRPORT: NAGPUR / 200 KMS, BHOPAL / 200 KMS.

### **CLIMATIC CONDITIONS:**

- 1) MAXIMUM AMBIENT TEMPERATURE: 50<sup>o</sup> CENTIGRADE
- 2) MINIMUM AMBIENT TEMPERATURE: 6.5<sup>o</sup> CENTIGRADE
- 3) SEISMIC ZONE : PART 3, ZONE-III AS PER IS:1893/84
- 4) RELATIVE HUMIDITY: 60 %
- 5) WIND SPEED: 10 KMPH AS PER IS 875/87.

### **GEOGRAPHICAL CONDITION:**

- 1) PLANT ELEVATION ABOVE MSL: 439 M

**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 MPMKVCL (MADHY PRADESH MADHYA KSHETRA VIDYUT VITRAN COMPANY LTD)**
- 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 (REFER SECTION 11 OF SPECIAL CONDITIONS OF CONTRACT)		
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 (REGISTERED IN MADHYA PRADESH STATE)	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.	POWER OF ATTORNEY ENCLOSED IN FAVOUR OF PERSON MAKING OFFER.	YES	NO
20.	DETAILS OF SIMILAR WORK DONE IN LAST SEVEN YEARS (AS PER RELEVANT APPENDIX) AND SUPPORTING DOUCMENTS FURNISHED.	YES	NO

21.	PROGRAMME FOR THE SUBJECT WORK FURNISHED	YES	NO
22.	BIDDER HAS FAMILIARIZED HIMSELF WITH ALL RELEVANT LOCAL LAWS & CONDITIONS.	YES	NO
23.	WHETHER ALL THE PAGES OF THE TENDER DOCUMENTS ARE READ, UNDERSTOOD AND SIGNED	YES	NO
24.	<p>WHETHER THE FOLLOWING DETAILS PERTAINING TO YOUR BANK ACCOUNT DULY ENDORSED BY THE BANK HAVE BEEN FURNISHED {TO ENABLE BHEL RELEASE PAYMENTS THROUGH ELECTRONIC FUND TRANSFER (EFT/RTGS) AS SPECIFIED IN SECTION 12 }</p> <p>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</p> <p>NOTE: IN CASE BANK ENDORSED CERTIFICATE REGARDING ABOVE HAS ALREADY BEEN SUBMITTED EARLIER, KINDLY SUBMIT PHOTOCOPY OF THE SAME</p>	YES	NO

NOTE : STRIKE OFF WHICHEVER IS NOT APPLICABLE

DATE :

SIGNATURE OF TENDERER

**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/SAT-CPS/720** 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/SAT-CPS/720**

**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.

DATE:

SIGNATURE OF THE TENDERER

**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/SAT-CPS/720. 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. 1, 00,000/- (RUPEES ONE 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:  
DATE :

SIGNATURE OF TENDERER:  
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**” 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**

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 UNDER SUPERVISION OF MPMKVCL (MADHYA PRADESH MADHYA KHESTRA VIDYUT VITRAN CO. LTD). THE CONTRACTOR SHALL BE “A” CLASS CONTRACTOR REGISTERED IN MP STATE.

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. ALL DRAWINGS/DOCUMENTS SHALL BE VERIFIED BY ELECTRICAL INSPECTOR.

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 IS 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 MPPGCL / 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. 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 MPMKVVCL (A PRIVATE DISTRIBUTION COMPANY IN THAT REGION) ON BEHALF OF MPPGCL, BEYOND THIS POINT FURTHER DISTRIBUTION OF POWER SHALL BE DONE THROUGH A COMBINATION OF OVERHEAD 11 KV LINE (REFER SKETCH NO. BHE/PSWR/SAT/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
	<b>FOR BHEL'S USE:</b>	
S/S NO.1 (280KVA)	FOR CONSTRUCTION YARD UNIT I:  FEEDER PARTICULARS ARE GIVEN BELOW:  2 NO. FEEDER FOR 415 V, 200 AMP  4 NO. FEEDER FOR 415V, 200 AMP  2 NO. FEEDER FOR 415 V, 100 AMP	(400 S, 300E). THE LOCATION SHALL BE 800-1000MTRS AWAY FROM THE TAP OFF CONNECTIONS
S/S NO.2(60KVA)	FOR CONSTRUCTION YARD UNIT II:  FEEDER PARTICULARS ARE GIVEN BELOW:  2 NO. FEEDER FOR 415 V, 50 AMP	ABOUT 100-150 MTR LENGTH.  (300-400 S, 1000-1100E)

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.

**BHARAT HEAVY ELECTRICALS LIMITED : PSWR : Nagpur  
Tender Specs No. BHE/PW/PUR/SAT-CPS/720**

- 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 (MADHYA PRADESH) 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 FROM MADHYA PRADESH STATE , COPY OF WHICH SHOULD BE FURNISHED ALONG WITH THE OFFER. IF THE LICENSE IS OF STATE OTHER THAN MADHYA PRADESH, THEN HIS OFFER SHALL BE REJECTED.
- 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.(2 NOS )

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/M<sup>2</sup>.

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) RATED CURRENT (AMP) MINIMUM CREEPAGE DISTANCE (MM)	AS PER IS 2026 AS PER IS 2026

**BHARAT HEAVY ELECTRICALS LIMITED : PSWR : Nagpur**

**Tender Specs No. BHE/PW/PUR/SAT-CPS/720**

	BASIC IMPULSE LEVEL (KV)PEAK	
15	NEUTRAL BUSHING RATED VOLTAGE (KV) 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 MAKE – L&T OR GE POWER OR CONTROLS & SWITCHGEARS OR SIEMENS	3NO.	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 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 ENERGY METER 3-PHASE, FOUR- WIRE AT POWER MEASUREMENT AT INCOMING POWER. 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

11 KV (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.

#### **4.9.10 RECONDITIONING OF 11 KV/0.433KV ,500KVA TRANSFORMERS**

BHEL OWNS 2 NOS OF TRANSFORMERS OF 11KV/0.433KV, 500KVA RATINGS. THESE TRANSFORMERS ARE RECENTLY RECEIVED FROM OTHER BHEL SITE IN WORKING CONDITION. BOTH THE TRANSFORMERS SHALL BE CHECKED THOROUGHLY, REPLACEMENT OR REPAIR OF ANY COMPONENTS IF REQUIRED IS ALSO INCLUDED IN THE SCOPE OF THE WORK. THE CONTRACTOR MAY HAVE TO CARRY THE OIL FILTRATION AND CHECKING THE OIL HEALTHINESS ETC.

#### **4.9.11 RECONDITIONING OF 415 VOLTS DISTRIBUTION PANELS**

BHEL OWNS 5 NOS OF DISTRIBUTION BOARDS PANELS OF 415V & VARIOUS FEEDERS OF 100AMP TO 800AMP RATINGS. THESE DISTRIBUTION BOARDS PANELS ARE RECENTLY RECEIVED FROM OTHER BHEL SITE IN WORKING CONDITION. ALL DISTRIBUTION BOARDS PANELS SHALL BE CHECKED THOROUGHLY, REPLACEMENT OR REPAIR OF ANY COMPONENTS IF REQUIRED IS ALSO INCLUDED IN THE SCOPE OF THE WORK. THE CONTRACTOR MAY HAVE TO CARRY THE ELECTRICAL CHECKING THE HEALTHINESS ETC.

#### **4.9.12 THE TRANSFORMER SHALL BE INSTALLED ON THE GROUND LEVEL. HENCE NECESSARY CIVIL WORKS**

LIKE COMPACTION ,PCC AND GRAVELS AROUND THE AREA ALONG WITH FENCING SO THAT THE HT POWER SUPPLY CONNECTIONS ARE SAFE AND AS PER STATUTORY REQUIREMENTS.

#### **4.9.13 415 VOLT DISTRIBUTION BOARD PANELS SHALL ALSO BE INSTALLED ON THE GROUND LEVEL.**

NECESSARY CIVIL WORKS LIKE COMPACTION, PCC AND GRAVELS AROUND THE AREA ALONG WITH FENCING ARE ALSO INCLUDED IN THE SCOPE OF WORK.

#### **4.9.14 HT CABLE & LT CABLES**

CONTRACTOR SHALL HAVE TO ARRANGE THE POWER CABLES FOR 11KV SUPPLY AND LT POWER CABLE FROM TRANSFORMER TO DISTRIBUTION PANEL BOARD PANELS ALONG WITH SUITABLE LUGS AS UNDER

3.5C X400SQ MM CABLE, ISI MARKED - 100 MTRS APPROX

3.5CX 70 SQ MM CABLE ISI – 100 MTR APPROX

#### **4.9.15 CONTRACTOR SHALL ARRANGE THE CLEARANCES FROM ELECTRICAL INSPECTOR BEFORE CHARGING OF THE TRANSFORMER**

#### **4.9.16 CONTRACTOR SHALL OBTAIN ALL THE CLEARANCES FROM MPPGCL, MKMPVVCL & ELECTRICAL INSPECTOR SO AS NOT TO DELAY THE FURTHER ACTIVITIES.**

- 4.9.17 THE WORKS OF LAYING OF 11KV LINE WITH POLES & INSTALLATION OF ACCESSORIES REQUIRED TILL 11/0.433 KV, 500KVA TRANSFORMERS SHALL BE SUPERVISED BY MKVVCL OFFICIALS AT SITE. CONTRACTOR SHALL BEAR THE EXPENSES FOR SUPERVISORY CHARGES.
- 4.9.18 THE TREE CUTTING IF ANY REQUIRED FOR LAYING 11KV LINE IS ALSO INCLUDED IN THE SCOPE OF WORK
- 4.9.19 THE DISMANTLING OF TRANSFORMER & OTHER ACCESSORIES AS PER BHEL INSTRUCTION SHALL BE RETURNED TO STORES AFTER COMPLETION OF WORKS.
- 4.9.20 INSTALLATION OF SUFFICIENT ILLUMINATIONS NEAR THE 2 NOS OF SUBSTATIONS IS ALSO INCLUDED IN THE SCOPE OF WORK

## **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 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 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

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 CERTIFICATE SPECIFYING NAME OF SERVICES COVERED UNDER THIS**

**CONTRACT. CONTRACTOR SHALL SUBMIT SERIALY NUMBERED SERVICE TAX AND CESS INVOICE, SIGNED BY HIM OR A PERSON AUTHORIZED BY HIM IN RESPECT OF TAXABLE SERVICE PROVIDED, AND SHALL CONTAIN THE FOLLOWING, NAMELY,**

- I. THE NAME, ADDRESS AND THE REGISTRATION NUMBER OF THE CONTRACTOR,**
- II. THE NAME AND ADDRESS OF THE PARTY RECEIVING TAXABLE SERVICE,**
- III. DESCRIPTION, CLASSIFICATION AND VALUE OF TAXABLE SERVICE PROVIDED AND,**
- IV. THE SERVICE TAX PAYABLE THEREON.**

**ALL THE FOUR CONDITIONS SHALL BE FULFILLED IN THE INVOICE BEFORE RELEASE OF SERVICE TAX PAYMENT.**

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

7.01 BHEL SHALL PAY ALL THE FEES DIRECTLY TO MPMKVCL FOR GETTING THE CONNECTIONS OF 60KVA & 280KVA LIKE DEPOSIT CHARGES, SUPERVISION CHARGES & SUPPLY AFFORDING CHARGES ETC... HOWEVER CONTRACTOR SHALL CO-ORDINATE BETWEEN BHEL & MPMKVCL FOR GETTING THE ELECTRICAL CONNECTION.

#### 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 (REV 01, 24/01/2009)**  
**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.

THE PROTOCOLS BETWEEN CONTRACTOR AND CUSTOMER/ BHEL SHALL BE MADE PRIOR TO INSTALLATION FOR CORRECTNESS OF FOUNDATIONS, MATERIALS, PROCEDURES, AT EACH STAGE OF INSTALLATION, GENERALLY AS PER THE REQUIREMENT OF CUSTOMER/ BHEL. THIS IS NECESSARY TO ENSURE ELIMINATION OF ERRORS OR KEEPING THEM WITHIN TOLERABLE LIMITS AND TO AVOID ACCUMULATION AND MULTIPLICATION OF ERRORS.

8.3 A DAILY LOG BOOK SHOULD BE MAINTAINED BY EVERY SUPERVISOR/ENGINEER OF CONTRACTOR ON THE JOB IN DUPLICATE (ONE FOR BHEL AND ONE FOR CONTRACTOR) FOR DETAILING AND INCORPORATING ALIGNMENT/CLEARANCE / CENTERING / LEVELING READINGS AND INSPECTION DETAILS OF VARIOUS EQUIPMENTS ETC.

HIGH PRESSURE WELDING DETAILS LIKE SERIAL NUMBER OF WELD JOINTS, WELDERS NAME, DATE OF WELDING, DETAILS OF REPAIR, HEAT TREATMENT ETC. WILL BE DOCUMENTED IN WELDING LOG AS PER BHEL ENGINEER'S INSTRUCTIONS.

RECORD OF RADIOGRAPHY CONTAINING DETAILS LIKE SERIAL NUMBER OF WELD JOINTS, DATE OF RADIOGRAPHY, REPAIRS, IF ANY, RE-SHOTS ETC SHALL ALSO BE MAINTAINED AS PER BHEL ENGINEER'S INSTRUCTIONS.

RECORD OF HEAT TREATMENTS PERFORMED SHALL BE MAINTAINED AS PRESCRIBED BY BHEL.

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 FOR SCRUTINY OF BHEL'S ENGINEER. 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/CUSTOMER/CONSULTANT. ONLY WELDERS DULY AUTHORIZED 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 BE

OF BRAND, QUALITY AND ACCURACY SPECIFIED BY BHEL ENGINEER AND SHOULD HAVE NECESSARY CALIBRATION AND OTHER CERTIFICATES AS PER THE REQUIREMENT OF BHEL ENGINEER. DECISION OF BHEL ENGINEER REGARDING ACCEPTANCE OR OTHERWISE OF THE MEASURING INSTRUMENTS/GAUGES/TOOLS FOR THE WORK UNDER THIS SPECIFICATION, IS FINAL AND BINDING ON THE CONTRACTOR. THE INDICATIVE LIST OF MMDS REQUIRED FOR THIS WORK AND TO BE MADE AVAILABLE BY THE CONTRACTOR IS GIVEN IN RELEVANT APPENDIX. THE LIST WILL BE REVIEWED BY BHEL AND THE CONTRACTOR SHALL MEET ANY AUGMENTATION NEEDED WHEREVER REQUIRED.

8.7 IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVE THE ACCURACY OF THE TESTING/MEASURING/CALIBRATING EQUIPMENTS BROUGHT BY HIM BASED ON THE PERIODICITY OF CALIBRATION AS CALLED FOR IN THE BHEL'S QUALITY ASSURANCE STANDARDS/BHEL ENGINEER'S INSTRUCTIONS.

8.8

ANY RE-LAYING OR RE-TERMINATION OF CABLES/RE-ERECTION OF INSTRUMENTS/ RECALIBRATION OF INSTRUMENTS ETC. REQUIRED DUE TO CONTRACTOR'S MISTAKE OR DESIGN REQUIREMENT AND FOUND AT ANY STAGE INSPECTION, SHALL BE CARRIED OUT BY THE CONTRACTOR AT NO EXTRA COST.

8.9 BHEL, POWER SECTOR – WESTERN REGION (PSWR) HAS ALREADY BEEN ACCREDITED WITH ISO 9002 CERTIFICATION AND AS SUCH THIS WORK IS SUBJECT TO VARIOUS AUDITS TO MEET ISO 9002 REQUIREMENTS. ONE PARTICULAR ASPECT WHICH NEEDS SPECIAL MENTION IS ABOUT ARRANGEMENT OF CALIBRATION OF INSTRUMENTS BY THE CONTRACTOR. CONTRACTOR SHALL ENSURE DEPLOYMENT OF RELIABLE AND CALIBRATED MMDS (INSTRUMENT MEASURING AND TEST EQUIPMENT). THE MMDS SHALL HAVE TEST / CALIBRATION CERTIFICATES FROM AUTHORISED / GOVERNMENT APPROVED / ACCREDITED AGENCIES TRACEABLE TO NATIONAL / INTERNATIONAL STANDARDS. RE-TESTING / RE-CALIBRATION SHALL ALSO BE ARRANGED AT REGULAR INTERVALS DURING THE PERIOD OF USE AS ADVISED BY BHEL ENGINEER WITHIN THE CONTRACT PRICE. THE CONTRACTOR WILL ALSO HAVE ALTERNATE ARRANGEMENTS FOR SUCH MMDS SO THAT WORK DOES NOT SUFFER WHEN THE PARTICULAR EQUIPMENT / INSTRUMENT IS SENT FOR CALIBRATION. ALSO IF ANY MMDS NOT FOUND FIT FOR USE, BHEL SHALL HAVE THE RIGHT TO STOP THE USE OF SUCH ITEM AND INSTRUCT THE CONTRACTOR TO DEPLOY PROPER ITEM AND RECALL IE REPEAT THE READINGS TAKEN BY THAT INSTRUMENT, FAILING WHICH BHEL MAY DEPLOY MMD AND RETAKE THE READINGS AT CONTRACTOR'S COST.

8.10 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.

8.11 IN THE COURSES OF ERECTION, IT MAY BECOME NECESSARY TO CARRY REPEATED CHECKS OF THE WORK WITH INSTRUMENTS RECENTLY CALIBRATED, RE-CALIBRATED. BHEL MAY COUNTER/ FINALLY CHECK THE MEASUREMENTS WITH THEIR OWN MMDS. CONTRACTOR SHALL RENDER ALL ASSISTANCE IN CONDUCT OF SUCH COUNTER/FINAL MEASUREMENTS.

8.12 VIBRATION INDICATORS / VIBRATION RECORDERS / VIBRATION ANALYSERS WILL BE PROVIDED BY BHEL FOR CHECKING AND ANALYSING VIBRATION LEVELS OF ROTATING EQUIPMENTS WITH NECESSARY OPERATORS. CONTRACTOR SHALL PROVIDE NECESSARY LABOUR FOR CARRYING OUT SUCH TESTS.

8.13 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 THE SERVICES OF QUALITY ASSURANCE ENGINEER.

**8.14 STAGE INSPECTION BY FES/QA ENGINEERS**

APART FROM DAY-TO-DAY INSPECTION BY BHEL ENGINEERS STATIONED AT SITE AND CUSTOMER'S ENGINEERS, STAGE INSPECTION OF EQUIPMENTS UNDER ERECTION AND COMMISSIONING AT VARIOUS STAGES SHALL ALSO BE CONDUCTED BY TEAMS OF ENGINEERS FROM FIELD ENGINEERING SERVICES OF BHEL'S MANUFACTURING UNITS, QUALITY ASSURANCE TEAMS FROM FIELD QUALITY ASSURANCE, UNIT/FACILITY QUALITY ASSURANCE AND COMMISSIONING ENGINEERS FROM TECHNICAL SERVICES ETC. CONTRACTOR SHALL ARRANGE ALL LABOUR, TOOLS AND TACKLES ETC FOR SUCH STAGE INSPECTIONS FREE OF COST.

8.15 ANY MODIFICATIONS SUGGESTED BY BHEL FES AND QA ENGINEERS' TEAM SHALL BE CARRIED OUT. CLAIMS OF CONTRACTOR, IF ANY, SHALL BE DEALT AS PER SECTION 13, AND PROVIDED SUCH MODIFICATIONS HAVE NOT ARISEN FOR REASONS ATTRIBUTABLE TO THE CONTRACTOR.

STATUTORY INSPECTION OF WORK

8.16 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.

THE WORK RELATED STATUTORY INSPECTIONS, THOUGH NOT LIMITED TO, ARE AS UNDER:

- 1) INSPECTORATE OF STEAM BOILERS AND SMOKE NUISANCE
- 2) FACTORY INSPECTOR, LABOUR COMMISSIONER, ELECTRICAL INSPECTOR PF COMMISSIONER AND OTHER AUTHORITY CONNECTED TO THIS PROJECT WORK

THE SCOPE INCLUDES GETTING THE APPROVALS FROM THE STATUTORY AUTHORITIES, WHICH INCLUDES ARRANGING FOR INSPECTION VISITS OF STATUTORY AUTHORITY PERIODICALLY AS PER BHEL ENGINEER'S INSTRUCTIONS, ARRANGING MATERIALS FOR GROUND INSPECTION, TAKING RUB OUTS FOR THE PRESSURE PARTS TO BE OFFERED FOR INSPECTION, SUBMITTING CO-RELATED INSPECTION REPORTS, DOCUMENTS, RADIOGRAPHS ETC AND FOLLOWING UP THE MATTER WITH THEM. CONTRACTOR SHALL ALSO MAKE ALL ARRANGEMENTS FOR OFFERING THE PRODUCTS / SYSTEMS FOR INSPECTION AT LOCATION, AS APPLICABLE, TO THE CONCERNED AUTHORITY.

8.17 CONTRACTOR SHOULD BE QUALIFIED TO EXECUTE PRESSURE PARTS & PIPING WORK COMING UNDER THE PURVIEW OF IBR, FOR WHICH HE SHOULD REGISTER HIMSELF WITH CIB OF STATE CONCERNED. CONTRACTOR ALSO SHOULD BE AWARE OF THE LATEST IBR REGULATIONS AND ELECTRICITY ACT, INCLUDING THE AMENDMENTS THEREOF.

8.18 ALL FEES CONNECTED WITH THE CONTRACTORS FOR TESTING HIS WELDERS / MEN / WORKERS AND TESTING, INSPECTION, CALIBRATING OF HIS INSTRUMENTS AND EQUIPMENTS, SHALL BE PAID BY THE CONTRACTOR. IT SHALL BE CONTRACTOR'S RESPONSIBILITY TO OBTAIN APPROVAL OF STATUTORY AUTHORITIES, WHEREVER

APPLICABLE, FOR THE CONDUCTING OF ANY WORK WHICH COMES UNDER THE PURVIEW OF THESE AUTHORITIES.

- 8.19 OTHER FEES LIKE FEES FOR PERIODIC VISITS, HYDRAULIC TEST FEES, LIGHT UP INSPECTION FEES ETC. SHALL BE BORNE BY THE CONTRACTOR.
- 8.20 PAYMENT OF REGISTRATION FEES FOR BOILER IS EXCLUDED FROM THE SCOPE.
- 8.21 BHEL SHALL PAY THE GROUND INSPECTION FEES OF BOILER INSPECTORATE. ALL OTHER ARRANGEMENTS FOR SITE VISITS PERIODICALLY BY BOILER INSPECTOR TO SITE, FOR OBTAINING INSPECTION CERTIFICATE ETC, WILL HAVE TO BE MADE BY CONTRACTOR.
- 8.22 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.

#### **FIELD QUALITY ASSURANCE**

- 8.23 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 ITS 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.

THE CONTRACTOR SHALL TRAIN ADEQUATE NUMBER OF WORKERS/SUPERVISORS FOR ADMINISTERING "FIRST AID". LIST OF COMPETENT FIRST AID ADMINISTRATORS SHOULD BE PROMINENTLY DISPLAYED.

9.2.1.19

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

9.2.1.20

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.

9.2.1.21

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.

9.2.1.22

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.

9.2.1.23

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.

9.2.1.24

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.

#### 9.2.1.25 **EMERGENCY RESPONSE**

BHEL WILL HAVE AN EMERGENCY RESPONSE PLAN FOR EACH PROJECT SITE IN CONSULTATION WITH THE OWNER AS THE CASE MAY BE, DETAILING THE PROCEDURE FOR MOBILIZATION OF PERSONNEL AND EQUIPMENT, AND DEFINING THE RESPONSIBILITIES OF THE PERSONNEL INDICATED, IN ORDER TO PREPARE FOR ANY EMERGENCY THAT MAY ARISE IN ORDER TO ENSURE THE PRIORITIES OF

- SAFEGUARD OF LIFE
- PROTECT ASSETS UNDER CONSTRUCTION OR NEIGHBOURING
- PROTECT ENVIRONMENT
- RESUMPTION OF NORMAL OPERATIONS AS SOON AS THE EMERGENCY CONDITION IS CALLED OFF

ALL CONTRACTORS SHALL ALSO BE PART OF THE EMERGENCY RESPONSE PLAN AND THE PERSONNEL SO NOMINATED SHALL BE AWARE OF THEIR DUTIES AND RESPONSIBILITIES IN AN EMERGENCY RESPONSE SITUATION.

#### 9.2.1.27

AT LEAST 5% CONTRACTORS SUPERVISORS AND WORKMEN SHALL UNDERGO TRAINING IN ADMINISTERING 'FIRST AID'. THE TRAINED PERSONS SHOULD REPRESENT FOR ALL CATEGORIES OF WORK AND FOR ALL AREAS OF WORK. ADEQUATE NUMBER OF TRAINED PERSONS SHOULD BE AVAILABLE FOR EACH SHIFT. THESE FIRST AIDES SHALL BE INCLUDED IN THE EMERGENCY RESPONSE TEAM. CONTRACTOR EMPLOYEES AND WORKMEN ARE ENCOURAGED TO PARTICIPATE IN FIRST AID TRAINING PROGRAMMES WHENEVER ORGANIZED BY BHEL.

### **9.2.2 OCCUPATIONAL HEALTH**

#### 9.2.2.1

SPECIFIC OCCUPATIONAL HEALTH HAZARDS WILL BE IDENTIFIED THROUGH THE HAZARD EVALUATION PROCESSES IN CONSULTATION WITH BHEL ENGINEERS AND THE NECESSARY PREVENTION/REDUCTION/ELIMINATION METHODS IMPLEMENTED.

#### 9.2.2.2

ALL PERSONNEL WORKING IN AN ACTIVITY WITH A POTENTIAL RISK TO HEALTH SHALL BE MADE AWARE OF ALL THOSE RISKS AND THE ACTIONS THEY MUST TAKE TO REDUCE/CONTROL/ELIMINATE THE RISK

#### 9.2.2.3

SAFETY COORDINATOR SHALL CONDUCT PERIODIC CHECKS TO ENSURE THAT EVERY GROUP OF WORKERS ENGAGED IN SIMILAR ACTIVITIES ARE AWARE OF POTENTIAL RISKS TO HEALTH AND THE ACTIONS REQUIRED TO BE TAKEN TO MITIGATE THE RISK

#### 9.2.2.4

IN ORDER TO PROTECT PERSONNEL FROM ASSOCIATED HEALTH HAZARDS, THE FOLLOWING MAIN AREAS WILL BE FOCUSED

- ISSUE OF APPROVED PERSONNEL PROTECTIVE EQUIPMENT
- VERIFICATION THAT THE PPE ARE ADEQUATE/MAINTAINED AND WORN BY ALL STAFF INVOLVED IN OPERATIONS THAT ARE POTENTIALLY HAZARDOUS TO THEIR HEALTH
- ENSURE THAT THE PERSONNEL DEPLOYED ARE PHYSICALLY FIT FOR THE OPERATION/WORK CONCERNED
- PROVIDE HYGIENIC AND SANITARY WORKING CONDITIONS

#### 9.2.2.5

CONTRACTOR WORKERS EMPLOYEES ENGAGED IN NOISE RISK AREAS SHALL BE ISSUED WITH HEARING PROTECTION AIDS AND THE USE OF THE SAME WILL BE ENFORCED. FURTHER, THESE WORKERS WILL BE EDUCATED ON THE HAZARDS OF NOISE

9.2.2.6

CONTRACTOR WORKERS ENGAGED IN DUST ENVIRONMENT SHALL BE ISSUED WITH NECESSARY DUST PROTECTION AIDS AND THE USE OF THE SAME SHALL BE ENFORCED

9.2.2.7

WORKERS ENGAGED IN EXPOSURE TO BRIGHT LIGHT/RAYS AS IN WELDING OR RADIATION SHALL BE ISSUED WITH EYE PROTECTION DEVICES AND THE USE OF THE SAME SHALL BE ENFORCED

9.2.2.8

ADEQUATE ARRANGEMENTS SHALL BE MADE TO PROVIDE SAFE DRINKING WATER

9.2.2.9

HEALTH MONITORING RECORDS ON AT LEAST SAMPLE BASIS FOR CONTRACTOR EMPLOYEES & WORKMEN SHALL BE MAINTAINED FOR PERSONS ENGAGED IN SPECIFIED CATEGORIES OF WORK. THESE SHALL INCLUDE

- NOISE INDUCED HEARING LOSS
- LUNG FUNCTION TEST
- ERGONOMIC TEST
- EYE TEST FOR WELDERS, GRINDERS, DRIVERS ETC

**9.2.3.0 HYGIENE AND HOUSEKEEPING**

9.2.3.1

GOOD HOUSE KEEPING AND PROPER HYGIENE IS ONE OF THE KEY REQUIREMENTS OF OCCUPATIONAL HEALTH SAFETY AND ENVIRONMENT MANAGEMENT. TOWARDS THIS THE CONTRACTOR SHALL ENCOURAGE HIS WORKERS AND SUPERVISORS TO MAINTAIN CLEANLINESS IN THEIR AREA OF WORK.

9.2.3.2

THE CONTRACTOR SHALL ARRANGE TO PLACE WASTE BINS/CHUTES AT CONVENIENT LOCATIONS FOR THE COLLECTION OF SCRAP AND OTHER WASTES. THE BINS SHALL BE CLEARLY MARKED AND SEGREGATED FOR METAL, NON-METAL, HAZARDOUS AND NON HAZARDOUS WASTES.

9.2.3.3

BHEL MAY TAKE UP APPROPRIATE REMEDIAL MEASURES AT THE COST OF THE CONTRACTORS IF THE CONTRACTORS FAIL IN GOOD HOUSE KEEPING AND IF THERE IS AN IMMINENT RISK OF POLLUTION

**9.2.4 ENVIRONMENT MANAGEMENT**

9.2.4.1

BHEL HAS A SOUND ENVIRONMENTAL MANAGEMENT SYSTEM, WHICH IS TO BE MAINTAINED AND IMPLEMENTED BY ALL THE CONTRACTORS. THE SYSTEM ALLOWS FOR PROJECT SPECIFIC OBJECTIVES TO BE SET AND DEVELOPED SENSITIVE TO CLIENT REQUIREMENTS, APPLICABLE ENVIRONMENTAL LEGISLATION AND BHEL'S OWN OBJECTIVES AND POLICY. BHEL ENGINEERS WILL ASSESS AND MONITOR THE ENVIRONMENTAL IMPACT OF THEIR WORK AND LAY OUT OBJECTIVES FOR THEIR MINIMIZATION. THE CONTRACTORS SHALL IMPLEMENT THE OBJECTIVES FOR CONTINUAL IMPROVEMENT OF ENVIRONMENTAL PERFORMANCE. BHEL SHALL REGULARLY AUDIT ENVIRONMENTAL IMPACTS AND THEIR IMPROVEMENTS.

**9.2.4.2 WASTE MANAGEMENT**

#### 9.2.4.3.1

THE OBJECTIVE OF WASTE MANAGEMENT IS TO ENSURE THE SAFE AND RESPONSIBLE DISPOSAL OF WASTE, ENSURING THAT IT IS CORRECTLY DISPOSED OF AND BEING ABLE TO AUDIT THE PROCESS TO ENSURE COMPLIANCE.

#### 9.2.4.3.2

CHEMICAL WASTES IF ANY SHALL BE COLLECTED SEPARATELY AND DISPOSED OF TO BHEL DESIGNATED REFUSE YARD AS PER BHEL ADVICE.

#### 9.2.4.3.3

NO DANGEROUS CHEMICALS, NOXIOUS WASTE PRODUCTS OR MATERIALS WILL BE DISPOSED OFF ON OR OFF SITE WITHOUT APPROVAL OBTAINED THROUGH BHEL.

#### 9.2.4.3.4

ALL DISPOSAL OF WASTES GENERATED DURING CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL RELEVANT LEGISLATION.

#### 9.2.4.3.5

ACID AND ALKALI CLEANING WASTES SHALL BE NEUTRALIZED TO ACCEPTABLE NORMS BEFORE DISPOSAL TO THE DESIGNATED AREA.

#### 9.2.4.3.6

ALL NECESSARY MEASURES SHALL BE TAKEN TO ENSURE SAFE COLLECTION AND DISPOSAL OF WASTE OILS. IN PARTICULAR TO ENSURE THE PREVENTION OF THEIR DISCHARGE INTO SURFACE WATERS, GROUND WATERS, COASTAL WATERS OR DRAINAGES

### 9.3 SUPERVISION

#### 9.3.1

CONTRACTOR MUST PROVIDE AT LEAST ONE FULL TIME ON SITE SAFETY COORDINATOR WHEN THE MANPOWER ENGAGED IS IN EXCESS OF 50 FOR THE CONTRACT ACTIVITIES IN THE PREMISES. IF THE MANPOWER IS LESS THAN 50, THE ON SITE SAFETY COORDINATION RESPONSIBILITIES SHALL BE ASSUMED BY ANY ONE OF THE CONTRACTOR'S OTHER SUPERVISORY STAFF; HOWEVER IN BOTH THE CASES, THE CONTRACTOR MUST SPECIFY IN WRITING THE NAME OF SUCH PERSONS TO THE BHEL ENGINEER IN CHARGE.

#### 9.3.2

CONTRACTOR'S SAFETY COORDINATOR OR HIS SUPERVISOR RESPONSIBLE FOR SAFETY AS THE CASE MAY BE SHALL CONDUCT AT HIS WORK SITE, AND DOCUMENT FORMAL SAFETY INSPECTION AND AUDITS AT LEAST ONCE IN A WEEK. SUCH DOCUMENTS ARE TO BE SUBMITTED TO BHEL ENGINEER IN CHARGE FOR HIS REVIEW AND RECORD.

CONTRACTOR, SUPERVISOR MUST ATTEND ALL SCHEDULE SAFETY MEETINGS AS WOULD BE INTIMATED TO HIM BY THE BHEL ENGINEER IN CHARGE.

#### 9.3.3

BEFORE STARTING WORK UNDER ANY CONTRACT, THE CONTRACTOR MUST ENSURE THAT A JOB SPECIFIC SAFETY PROCEDURES/FIELD PRACTICES AS REQUIRED OVER AND ABOVE THE SAFETY PERMIT CONDITIONS ARE PREPARED AND FOLLOWED .HE SHOULD ALSO ENSURE THAT ALL SUPERVISORS AND WORKERS INVOLVED UNDERSTAND AND FOLLOW THIS PROCEDURES /FIELD PRACTICES.

#### 9.3.4

CONTRACTOR MUST ENSURE THAT IN HIS WORK SITE APPROPRIATE DISPLAY BOARDS ARE PUT DISPLAYING SIGNS FOR SITE SAFETY, POTENTIAL HAZARDS AND PRECAUTIONS REQUIRED.

### 9.4.0 **TRAINING & AWARENESS**

#### 9.4.1

CONTRACTOR SHALL DEPLOY EXPERIENCED SUPERVISORS AND OTHER MANPOWER WHO ARE WELL CONVERSANT WITH THE SAFETY AND ENVIRONMENT REGULATIONS OF THE PROJECT. THE ELECTRICIANS TO BE DEPLOYED ON THE JOB SHOULD HAVE WIREMAN LICENSE.

#### 9.4.2

ALL SUPERVISORS & WORKMEN OF THE CONTRACTOR SHALL UNDERGO FIRE SAFETY TRAINING/ DEMONSTRATION WHENEVER ARRANGED BY BHEL WITH THE HELP OF EITHER CUSTOMER'S FIRE AND SAFETY DEPARTMENT OR OUTSIDE FACULTY SO AS TO ACQUIRE KNOWLEDGE OF FIRE PREVENTION AND ALSO TO BE ABLE TO MAKE USE OF APPROPRIATE FIRE EXTINGUISHERS.

#### 9.4.3

CONTRACTOR MUST FAMILIARIZE HIMSELF FROM BHEL ENGINEER IN CHARGE ABOUT ALL KNOWN POTENTIAL FIRE, EXPLOSION OR TOXIC RELEASE HAZARDS RELATED TO THE CONTRACT. HE IN TURN WILL ENSURE THAT SAME INFORMATION HAS BEEN PASSED TO THE SUPERVISORS AND WORKMEN

#### 9.4.4

CONTRACTOR MUST ENSURE THAT ALL HIS SUPERVISORS ARE PROPERLY TRAINED AND EACH EMPLOYEE HAS RECEIVED AND UNDERSTOOD FROM HIS SUPERVISOR NECESSARY TRAINING AND BRIEFING ABOUT THE SAFETY REQUIREMENT. NECESSARY DOCUMENT AS A MEANS TO VERIFY THAT EMPLOYEES HAVE UNDERSTOOD THE TRAINING IS TO BE MAINTAINED.

#### 9.4.5

THE CONTRACTOR SUPERVISORS SHALL ALSO GIVE A SMALL SAFETY BRIEFING TO ALL THE WORKMEN UNDER HIS CHARGE BEFORE UNDERTAKING ANY NEW WORK AND SPECIALLY UNDERSTAND THE SAFETY REQUIREMENTS THAT ARE MANDATORY

### 9.5.0 **REPORTING**

#### 9.5.1

THE CONTRACTOR SHALL SUBMIT REPORT OF ALL ACCIDENTS, FIRES AND PROPERTY DAMAGE, DANGEROUS OCCURRENCES TO THE AUTHORIZED BHEL OFFICIAL IMMEDIATELY AFTER SUCH OCCURRENCE BUT IN ANY CASE NOT LATER THAN TWELVE HOURS OF THE OCCURRENCE. SUCH REPORT SHALL BE FURNISHED IN THE MANNER PRESCRIBED BY BHEL AND ALSO TO MEET STATUTORY REQUIREMENT.

#### 9.5.2

ANY INJURY SUSTAINED BY ANY OF THE CONTRACTOR'S EMPLOYEES WITHIN THE PROJECT PREMISES MUST BE REPORTED TO BHEL SUPERVISOR AND FIRST AID SHOULD BE IMMEDIATELY ADMINISTERED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING AND MAINTAINING PROPER RECORDS OF ACCIDENTS TO HIS PERSONNEL.

#### 9.5.3

CONTRACTOR MUST ARRANGE TO IMMEDIATELY INVESTIGATE, PROPERLY DOCUMENT AND REPORT ANY INJURY, ACCIDENT OR NEAR MISS INVOLVING ANY OF HIS EMPLOYEES AND TAKE APPROPRIATE FOLLOW UP ACTION. HE MUST FURNISH WITHIN 12 HOURS OF THE INCIDENT A WRITTEN REPORT TO BHEL ENGINEER IN CHARGE AND THE SAFETY SECTION.

#### 9.5.4

ACCORDING TO THE FACTORY ACT AND THE EMPLOYEES STATE INSURANCE ACT & REGULATION, ANY PERSON SUSTAINING ANY INJURY WITHIN THE PROJECT PREMISES AND ABSENTING HIMSELF FROM WORK FOR MORE THAN 46 HOURS, HIS ACCIDENT REPORT HAS TO BE SENT TO THE RESPECTIVE GOVERNMENT AUTHORITIES. THEREFORE CONTRACTOR SHALL INFORM THE OWNER'S REPRESENTATIVE SUCH MATTER IMMEDIATELY FOR THEIR NEEDFUL ACTION.

### 9.5.5

IN ADDITION, CONTRACTOR SHALL SUBMIT PERIODIC REPORTS ON SAFETY TO THE AUTHORISED BHEL OFFICIAL FROM TIME TO TIME AS PRESCRIBED.

### 9.5.6

BEFORE COMMENCING THE WORK, THE CONTRACTOR SHALL APPOINT/NOMINATE A RESPONSIBLE OFFICER TO SUPERVISE IMPLEMENTATION OF ALL SAFETY MEASURES AND LIAISON WITH HIS COUNTERPART OF BHEL.

## 9.6 AUDIT REVIEW AND INSPECTION

### 9.6.1

BHEL SHALL CONDUCT AUDIT ON THE CONTRACTOR PERFORMANCE AND COMPLIANCE WITH THE PROJECT SPECIFIC REQUIREMENTS OF THE ENVIRONMENT AND OCCUPATIONAL HEALTH & SAFETY MANAGEMENT SYSTEMS. THE PROGRAMME OF AUDIT SHALL COVER ALL ACTIVITIES UNDER THE CONTRACT BUT WILL FOCUS PARTICULARLY ON HIGH-RISK ACTIVITIES. THE CONSTRUCTION MANAGER SHALL DECIDE THE SCHEDULE OF AUDIT. THE AUDIT FINDINGS SHALL BE COMMUNICATED TO THE CONTRACTORS AND NECESSARY REMEDIAL ACTION AS ADVISED BY BHEL ENGINEERS SHALL BE UNDER TAKEN WITHIN THE STIPULATED TIME.

### 9.6.2

INSPECTIONS SHALL BE CARRIED OUT REGULARLY BY THE CONTRACTORS AND BY BHEL ENGINEERS ON ACTIVITIES, FACILITIES, EQUIPMENT, DOCUMENTATION, TO COVER THE FOLLOWING ASPECTS.

- COMPLIANCE WITH PROCEDURES AND SYSTEMS
- AVAILABILITY, CONDITION AND USE OF PPE
- CONDITION OF MAINTENANCE TOOLS, EQUIPMENTS, FACILITIES
- AVAILABILITY OF FIRE FIGHTING EQUIPMENTS AND ITS CONDITION
- USE OF FIRE FIGHTING EQUIPMENTS AND FIRST AID KIT
- AWARENESS OF OCCUPATIONAL HEALTH HAZARD
- AWARENESS OF SAFE WORKING PRACTICES
- PRESENCE OF QUALITY SUPERVISION
- HOUSEKEEPING

THE SAFETY COORDINATOR SHALL VISIT AND INSPECT WORK SITES DAILY. ALL UNSAFE ACTS, UNSAFE CONDITIONS THAT HAVE IMMINENT POTENTIAL FOR CAUSING HARM/INJURY/DAMAGE WILL BE IMMEDIATELY CORRECTED. HE SHALL MAINTAIN A DAILY LOGBOOK GIVING DETAILS OF UNSAFE ACTS OR CONDITIONS OBSERVED AND THE CORRECTIVE ACTION TAKEN AND RECOMMENDATIONS FOR PREVENTING RECURRENCE. ADEQUACY OF CORRECTIVE ACTIONS WILL BE VERIFIED

THE CONTRACTOR SHALL TAKE REMEDIAL MEASURES AS PER THE FINDINGS OF EACH INSPECTION

BESIDES THE ABOVE, THE CONTRACTOR SHALL BE REQUIRED TO CARRY OUT THE FOLLOWING INSPECTIONS

SL NO	EQUIPMENT	SCOPE OF INSPECTION	INSPECTION BY	SCHEDULE
1	HAND TOOLS	TO IDENTIFY UNSAFE/DEFECTIVE TOOL	USER	DAILY
2	POWER TOOLS	TO IDENTIFY UNSAFE/DEFECTIVE TOOL	USER	DAILY
3	FIRE EXTINGUISHERS	TO CHECK PRESSURE AND ANY DEFECT	USER / SAFETY COORDINATOR	DAILY EVERY MONTH

4	LIFTING EQUIPMENT/TACKLES	TO CHECK FOR DEFECTS AND EFFICACY OF BRAKES	USER THIRD PARTY	DAILY EVERY YEAR
5	PPE	TO CHECK FOR DEFECTS	USER	DAILY

### 9.7 **NON COMPLIANCE:-**

#### 9.7.1

NONCONFORMITY OF SAFETY RULES AND SAFETY APPLIANCES WILL BE VIEWED SERIOUSLY AND THE BHEL HAS RIGHT TO IMPOSE FINES ON THE CONTRACTOR AS UNDER **FOR EVERY INSTANCE OF VIOLATION NOTICED:**

SL. NO	INSTANCE OF VIOLATION	FINE (IN RS)
01	NOT WEARING SAFETY HELMET	50/-
02.	NOT WEARING SAFETY BELT	100/-
03.	GRINDING WITHOUT GOGGLES	50/-
04.	NOT USING 24 V SUPPLY FOR INTERNAL WORK	500/-
05.	ELECTRICAL PLUGS NOT USED FOR HAND MACHINE	100/-
06.	NOT SLINGING PROPERTY	200/-
07.	USING DAMAGED SLING	200/-
08.	LIFTING CYLINDERS WITHOUT CAGE	500/-
09.	NOT USING PROPER WELDING CABLE WITH LOT OF JOINTS AND NOT INSULATED PROPERTY.	200/-
10.	NOT REMOVING SMALL SCRAP FROM PLATFORMS	200/-
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 VI CTI M

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 SEWAGE SYSTEM
IS 1287	1986		ELECTRIC TOASTER
IS 13063	1991		STRUCTURAL SAFETY OF BUILDINGS ON SHALLOW FOUNDATIONS ON ROCKS
IS 13385	1992		SPECIFICATIONS FOR FIRE EXTINGUISHERS 50 LITRE

BHARAT HEAVY ELECTRICALS LIMITED : PSWR : Nagpur

Tender Specs No. BHE/PW/PUR/SAT-CPS/720

IS NO	YEAR	AMD UPTO	DESCRIPTION
			WHEEL MOUNTED WATER TYPE (GAS CARTRIDGES)
IS 13386	1992		SPECIFICATIONS FOR FIRE EXTINGUISHERS 50 LITRE MECHANICAL FOAM TYPE
IS 13415	1992		CODE OF SAFETY FOR PROTECTIVE BARRIERS IN AND AROUND BUILDINGS
IS 13416	1992		RECOMMENDATIONS FOR PREVENTIVE MEASURES AGAINST HAZARDS AT WORKING PLACE PART 1 TO PART 5
IS 13430	1992		CODE OF PRACTICE FOR SAFETY DURING ADDITIONAL CONSTRUCTION AND ALTERATION TO EXISTING BUILDINGS
IS 13849	1993		PORTABLE FIRE EXTINGUISHERS DRY POWDER TYPE ( CONSTANT PRESSURE)
IS 1446	1985		CLASSIFICATION OF DANGEROUS GOODS (FIRST REVISION)
IS 1476	1979		REFRIGERATORS
IS 1641	1988		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): GENERAL PRINCIPLES OF FIRE GRADING AND CLASSIFICATION
IS 1642	1989		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS- DETAILS OF CONSTRUCTION
IS 1643	1988		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): EXPOSURE HAZARD
IS 1646	1997		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): ELECTRICAL INSTALLATIONS
IS 1904	1986		CODE OF PRACTICE FOR DESIGN AND CONSTRUCTION OF FOUNDATIONS IN SOIL
IS 1905	1987		STRUCTURAL SAFETY OF BUILDINGS MASONARY WALLS
IS 2082	1985		ELECTRICAL GEYSERS
IS 2171	1985		PORTABLE FIRE EXTINGUISHERS DRY POWDER TYPE (CARTRIDGE)
IS 2309	1989		PRACTICE FOR THE PROTECTION OF BUILDINGS AND ALLIED BUILDINGS AGAINST LIGHTENING
IS 2312	1967		EXHAUST FANS
IS 2361	1994		SPECIFICATION FOR BUILDING GRIPS - FIRST REVISION
IS 2418	1977		TUBULAR FLUORSCENT LAMPS IS 2418 (FT-1)
IS 2750	1964		STEEL SCAFFOLDINGS
IS 2762	1964		SAFE WORKING LOADS IN KGS FOR WIRE ROPE SLINGS
IS 2878	1986		FIRE EXTINGUISHERS CARBON DIOXIDE 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 NO	YEAR	AMD UPTO	DESCRIPTION
IS 3737	1996		LEATHER SAFETY BOOTS FOR WORKERS IN HEAVY METAL INDUSTRIES
IS 374	1979		CEILING FANS INCLUDING REGULATORS
IS 3764	1992		EXCAVATION WORK - CODE OF SAFETY
IS 3786	1983		METHOD FOR COMPUTATION OF FREQUENCY AND SEVERITY RATES FOR INDUSTRIAL INJURIES AND CLASSIFICATION OF INDUSTRIAL ACCIDENTS
IS 3935	1966		CODE OF PRACTICE FOR COMPOSITE CONSTRUCTION
IS 4014	1967		CODE OF PRACTICE FOR STEEL TUBULAR SCAFFOLDING
IS 4081	1986		SAFETY CODE FOR BLASTING AND RELATED DRILLING OPERATIONS
IS 4082	1977	1996	STACKING AND STORAGE OF CONSTRUCTION MATERIALS AND COMPONENTS AT SITE
IS 4130	1991		DEMOLITION OF BUILDINGS - CODE OF SAFETY PART 1 TO 2
IS 4138	1977		SAFETY CODE FOR WORKING IN COMPRESSED AIR (FIRST REVISION)
IS 4155	1966		GLOSSARY OF TERMS RELATING TO CHEMICAL AND RADIATION HAZARDS AND HAZARDOUS CHEMICALS
IS 4209	1967		CODE OF SAFETY FOR CHEMICAL LABORATORY
IS 4250	1980		FOOD MIXERS
IS 4262	1967		CODE OF SAFETY FOR SULFURIC ACID
IS 4756	1978		SAFETY CODE FOR TUNNELING WORK
IS 4912	1978		SAFETY REQUIREMENTS FOR FLOOR AND WALL OPENINGS, RAILINGS AND TOE BOARDS
IS 5121	1969		SAFETY CODE FOR PILING AND OTHER DEEP FOUNDATIONS
IS 5182	1969	1982	METHODS FOR MEASUREMENT OF AIR POLLUTION
IS 5184	1969		CODE OF SAFETY FOR HYDROFLUORIC ACID
IS 5216	1982	2000	RECOMMENDATIONS ON SAFETY PROCEDURES AND PRACTICE IN ELECTRICAL WORK PART I AND II
IS 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

IS NO	YEAR	AMD UPTO	DESCRIPTION
			WORK
IS 7293	1974		SAFETY CODE FOR WORKING WITH CONSTRUCTION MACHINERY
IS 7323	1994		GUIDELINES FOR OPERATIONS OF RESERVOIRS
IS 7812	1975		CODE OF SAFETY FOR MERCURY
IS 7969	1975		SAFETY CODE FOR HANDLING AND STORAGE OF BUILDING MATERIALS
IS 8089	1976		CODE OF SAFE PRACTICE FOR LAYOUT OF OUTSIDE FACILITIES IN AN INDUSTRIAL PLANT
IS 8091	1976		CODE OF PRACTICE FOR INDUSTRIAL PLANT LAYOUT
IS 8095	1976		ACCIDENTS PREVENTION TAGS
IS 818	1968	1997	CODE OF PRACTICE FOR SAFETY AND HEALTH REQUIREMENTS IN ELECTRIC AND GAS WELDING, AND CUTTING OPERATIONS
IS 8448	1989		AUTOMATIC LINE VOLTAGE CORRECTOR (STABILISER)
IS 8519	1977		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR BODY PROTECTION
IS 8520	1977		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR EYE, FACE AND EAR PROTECTION
IS 875	1987		STRUCTURAL SAFETY OF BUILDING: LOADING STANDARD PART 1 TO 5
IS 8807	1978		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR PROTECTION OF ARMS AND HANDS
IS 8978	1985		INSTANTANEOUS WATER HEATERS
IS 8989	1978		SAFETY CODE FOR ERECTION OF CONCRETE FRAMED STRUCTURES
IS 940	1989		PORTABLE FIRE EXTINGUISHERS WATER TYPE ( GAS CARTRIDGE)
IS 9457	1980		SAFETY COLOURS AND SIGNS
IS 9679	1980		CODE OF SAFETY FOR WORK ENVIRONMENTAL MONITORING
IS 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 DETAILED DRAWINGS, SPECIFICATIONS AVAILABLE WITH BHEL ENGINEERS WILL ALSO FORM PART OF THIS TENDER SPECIFICATION. REVISION OF DRAWINGS/DOCUMENTS MAY TAKE PLACE DUE TO VARIOUS CONSIDERATIONS AS IS NORMAL IN SUCH LARGE PROJECT. WORK WILL HAVE TO BE CARRIED OUT AS PER REVISED DRAWINGS/DOCUMENTS. THESE DOCUMENTS WILL BE MADE AVAILABLE TO THE CONTRACTOR DURING EXECUTION OF WORK AT SITE.

### 10.2

ONE SET OF NECESSARY DRAWINGS/DOCUMENTS TO CARRY OUT THE ERECTION WORK WILL BE FURNISHED TO THE CONTRACTOR BY BHEL ON LOAN THAT SHALL BE RETURNED TO BHEL AFTER COMPLETION OF THE WORK. CONTRACTOR'S PERSONNEL SHALL TAKE CARE OF THESE DOCUMENTS GIVEN TO THEM.

### 10.3

THE DATA FURNISHED IN VARIOUS SECTIONS AND APPENDICES AND THE DRAWINGS ENCLOSED WITH THIS TENDER SPECIFICATION DESCRIBE THE EQUIPMENT TO BE INSTALLED, TESTED AND COMMISSIONED UNDER THIS SPECIFICATION, BRIEFLY. HOWEVER, THE CHANGES IN THE DESIGN AND IN THE QUANTITY MAY BE EXPECTED TO OCCUR AS IS USUAL IN ANY SUCH LARGE SCALE OF WORKS.

### 10.4

IF ANY ERROR OR AMBIGUITY IS DISCOVERED IN THE SPECIFICATION/INFORMATION CONTAINED IN THE DOCUMENTS/DRAWINGS AND TENDER, THE CONTRACTOR SHALL FORTHWITH BRING THE SAME TO THE NOTICE OF BHEL BEFORE SUBMISSION OF OFFER.

### 10.5

IN CASE AN AMBIGUITY IS DETECTED AFTER AWARD OF WORK, THE SAME MUST BE BROUGHT TO THE NOTICE OF BHEL BEFORE COMMENCEMENT OF THE WORK/ACTIVITY. BHEL'S INTERPRETATION IN SUCH CASES WILL BE FINAL AND BINDING ON THE CONTRACTOR.

### 10.6

IN CASE OF ANY CONFLICT BETWEEN GENERAL INSTRUCTIONS TO TENDERNESS, GENERAL CONDITIONS OF CONTRACT CONTAINED IN SECTIONS 1 & 2 RESPECTIVELY AND SPECIAL CONDITIONS OF CONTRACT CONTAINED IN SECTIONS 4 TO 15 AND APPENDICES, PROVISIONS CONTAINED IN SPECIAL CONDITIONS OF CONTRACT IN SECTIONS 4 TO 15 AND APPENDICES SHALL PREVAIL.

## SPECIAL CONDITIONS OF CONTRACT SECTION-11

### 11.0 TIME SCHEDULE, QUANTITY VARIATION, PRICE VARIATION ETC.

#### 11.1 TIME SCHEDULE

THE CONTRACTOR SHALL MOBILISE HIS RESOURCES SO THAT THE ENTIRE WORK SHALL BE COMPLETED TO MEET THE FOLLOWING SCHEDULE.

SN	DESCRIPTION OF ACTIVITY	COMPLETION BY
01	COMPLETION OF RECONDITIONING OF TRANSFORMERS(11/0.433KV ,500KVA- 2 NOS & DISTRIBUTION BOARDS PANELS FOR 415VOLTS SUPPLY- 5 NOS	WITHIN ONE WEEKS FROM AWARD OF WORK BY FAX L.O.I.
01	COMPLETION OF ENGINEERING AND BOQ, FINALISATION OF 11 KV LINE ROUTE SURVEY, LOCATION OF SUB-STATIONS ETC.	WITHIN TWO 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.	3 WEEKS FROM THE DATE OF FAX LOI.
03	PROVIDING THE SERVICES OF OPERATION, MAINTENANCE & UP KEEP OF ENTIRE SYSTEM	12 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 12 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 & 1<sup>ST</sup> EXTENSION PERIOD. HOWEVER, DURING 2<sup>ND</sup> 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 THREE MONTHS I.E. BEYOND THE END OF

1<sup>ST</sup> 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 SHALL BE PRIME LEADING RATE OF SBI PLUS 2% PER ANNUM, 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 BY THE TIME CONTRACTOR REACHES 90% BILLING OF TOTAL VALUE OF WORK EXECUTED & 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 CONTRACTOR SHALL SUBMIT HIS MONTHLY RA ACCOUNT BILLS WITH ALL THE DETAILS REQUIRED BY BHEL ON SPECIFIED DATE EVERY MONTH COVERING PROGRESS OF WORK IN ALL RESPECTS AND AREAS FOR THE PREVIOUS CALENDAR MONTH. HOWEVER, FIRST RA BILL SHALL BE RELEASED ONLY AFTER SIGNING OF CONTRACT AGREEMENT.

##### 12.0.2

GENERAL CONDITIONS OF CONTRACT SHALL BE REFERRED TO AS REGARDS MODE OF PAYMENT, AND MEASUREMENT OF THE WORK COMPLETED.

##### 12.0.3

RELEASE OF PAYMENT IN EACH RUNNING BILL WILL BE RESTRICTED TO 95% OF THE VALUE OF WORK ADMITTED, AS PER THE PERCENTAGE BREAK-UP FOR THE STAGE OF WORK COMPLETION STIPULATED VIDE CLAUSES HEREINAFTER.

THE 5% THUS REMAINING SHALL BE ON ACCOUNT OF WORKMANSHIP GUARANTEE OF WORK EXECUTED. THE SAME WILL BE RELEASED AFTER COMPLETION OF THE GUARANTEE PERIOD OF **12 MONTHS** FROM THE DATE OF COMPLETION OF ENTIRE WORK AS CERTIFIED BY BHEL.

##### 12.0.4

THE PAYMENT FOR RUNNING BILLS WILL NORMALLY BE RELEASED WITHIN AROUND 30 DAYS OF SUBMISSION OF RUNNING BILL WITH MEASUREMENT SHEETS. CONTRACTOR SHALL MAKE HIS OWN ARRANGEMENT FOR MAKING PAYMENT OF IMPENDING LABOUR WAGES AND OTHER DUES IN THE MEANWHILE.

##### 12.0.5

BHEL WILL RELEASE PAYMENT THROUGH ELECTRONIC FUND TRANSFER (EFT)/RTGS. IN ORDER TO IMPLEMENT THIS SYSTEM, THE FOLLOWING DETAILS ARE TO BE FURNISHED BY THE CONTRACTOR PERTAINING TO HIS BANK ACCOUNTS WHERE PROCEEDS WILL BE TRANSFERRED THROUGH BHEL'S BANKER:

1. NAME OF THE COMPANY
2. NAME OF BANK
3. NAME OF BANK BRANCH
4. CITY/PLACE
5. ACCOUNT NUMBER
6. ACCOUNT TYPE
7. IFSC CODE OF THE BANK BRANCH
8. MICR CODE OF THE BANK BRANCH

BHEL MAY ALSO CHOOSE TO RELEASE PAYMENT BY OTHER ALTERNATIVE MODES AS SUITABLE.

#### 12.1 STAGES OF PROGRESSIVE PRO-RATA PAYMENTS

#### 12.2 TERMS OF PAYMENT

##### 12.2.1 PROGRESSIVE PAYMENT

SN	ACTIVITY	% Break up Payment
----	----------	--------------------

SN	ACTIVITY	% Break up Payment
01	Reconditioning of Transformer & Distribution Boards	2.5%
02	For 1st Substation (60KVA, 11/0.433KV)- On Completion of Installation, Testing & Commissioning and on clearance of statutory authority for charging the system.	25 %
03	For subsequent substation (280KVA ,11/0.433KV) on completion of Installation, Testing & Commissioning and on clearance of statutory authority for charging the system	67 %
04	For Dismantling works	0.5 %
05	Monthly charges for the services to be provided for operation and maintenance @ 5 % of contract value for both substations 1& 2 { i.e. % Break up payment(5 %) / No. of hiring months(12) }  a. For 60KVA - 40% of Lumpsum value  b. For 280KVA – 60% of Lumpsum value  Payment will be made pro-rata basis from the date of commissioning of respective substation treating the above fraction as monthly service charges.	5 %
	<b>TOTAL</b>	<b>100%</b>

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 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 1<sup>ST</sup> 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 & 1<sup>ST</sup> EXTENSION PERIOD, MONTHLY CHARGES FOR EACH SUBSTATION SHALL BE AT THE RATE OF 0.25% 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.

**SECTION-13**  
**SPECIAL CONDITIONS OF CONTRACT**

**13.0      EXTRA CHARGES FOR MODIFICATION AND RECTIFICATION**

**GENERAL CONDITIONS OF CONTRACT SHALL BE REFERRED**

**SECTION-14  
SPECIAL CONDITIONS OF CONTRACT**

**INSURANCE**

**GENERAL CONDITIONS OF CONTRACT SHALL BE REFERRED**

**SECTION-15  
SPECIAL CONDITION OF CONTRACT**

**GENERAL CONDITIONS OF CONTRACT SHALL BE REFERRED**

GUIDELINES FOR ACCEPTANCE OF BANK GUARANTEES ARE AS FOLLOWS :

- VENDORS ARE ADVISED TO OBTAIN BG FROM ANY OF THE FOLLOWING BHEL CONSORTIUM BANKS

STATE BANK OF INDIA  
CORPORATION LTD.  
ICICI BANK LTD  
BANK OF BARODA  
CANARA BANK  
CITI BANK N.A  
CORPORATION BANK  
DETSHE BANK  
HDFC BANK LTD

THE HONGKONG AND SHANGHAI BANKING  
ABN AMRO BANK N.V  
IDBI LTD  
PUNJAB NATIONAL BANK  
STANDARD CHARTERED BANK  
STATE BANK OF TRAVANCORE  
STATE BANK OF HYDRABAD  
SYNDICATE BANK

- THE BANK GUARANTEES OF ALL PUBLIC SECTOR BANKS SHALL BE ACCEPTED (OTHER THAN CONSORTIUM BANKS ALSO).
- THE BANK GUARANTEES OF CO-OPERATIVE BANKS SHALL NOT BE ACCEPTED.
- BANK GUARANTEES OF OTHER BANKS (BANKS OTHER THAN CONSORTIUM BANK, PUBLIC SECTOR BANK, & CO-OPERATIVE BANKS) CAN BE ACCEPTED SUBJECT TO AN OVERALL EXPOSURE LIMIT (AT BHEL, PSWR, NAGPUR) OF RS. 10 CRORES FOR BANKS WITH NET WORTH OF MORE THAN RS. 500 CRORES AS ON LAST BALANCE SHEET DATE AND RS 5 CRORES FOR BANKS WITH NET WORTH BETWEEN RS. 350 TO RS 500 CRORES (A CERTIFICATE AND COPY OF LATEST BALANCE SHEET TO BE GIVEN AT THE TIME OF SUBMISSION OF BANK GUARANTEES .
- IN CASE BANK GUARANTEES GIVEN BY NON CONSORTIUM BANKS (PRIVATE SECTOR OR PUBLIC SECTOR), THE BANK GUARANTEES SHALL BE ENFORCEABLE AT NAGPUR, MAHARASTRA.

**SECTION 16**  
**SUSPENSION OF BUSINESS DEALING WITH CONTRACTORS**  
**(W.E.F 18.05.09)**

- 16.1 A BIDDER MAY BE PUT ON HOLD FOR A PERIOD OF 6 MONTHS, FOR FUTURE TENDERS FOR SPECIFIC WORKS ON THE BASIS OF ONE OR MORE OF THE FOLLOWING REASONS:
- I. BIDDER DOES NOT HONOUR HIS OWN OFFER OR ANY OF ITS CONDITIONS WITHIN THE VALIDITY PERIOD.
  - II. BIDDER FAILS TO RESPOND AGAINST THREE CONSECUTIVE ENQUIRES OF BHEL.
  - III. AFTER PLACEMENT OF ORDER, BIDDER FAILS TO EXECUTE A CONTRACT.
  - IV. BIDDER FAILS TO SETTLE SUNDRY DEBT ACCOUNT, FOR WHICH HE IS LEGITIMATELY LIABLE, WITHIN ONE YEAR OF ITS OCCURRENCE.
  - V. BIDDER'S PERFORMANCE RATING FALLS BELOW 60% IN SPECIFIC CATEGORY.
  - VI. BIDDER WORKS ARE UNDER STRIKE/ LOCKOUT FOR A LONG PERIOD.
- 16.2 A BIDDER MAY BE DE-LISTED FROM THE LIST OF REGISTERED BIDDERS OF THE REGION FOR A PERIOD OF 1 YEAR ON THE BASIS OF ONE OR MORE OF THE FOLLOWING REASONS:-
- I. BIDDER TAMPERS WITH TENDERING PROCEDURE AFFECTING ORDERING PROCESS OR COMMITS ANY MISCONDUCT WHICH IS CONTRARY TO BUSINESS ETHICS.
  - II. BIDDER HAS SUBSTITUTED, DAMAGED, FAILED TO RETURN, SHORT RETURNED OR UNAUTHORIZEDLY DISPOSED OFF MATERIALS/ DOCUMENTS/ DRAWINGS/ TOOLS ETC OF BHEL.
  - III. BIDDER NO LONGER HAS THE TECHNICAL STAFF, EQUIPMENT, FINANCIAL RESOURCES ETC. REQUIRED TO EXECUTE THE ORDERS/ CONTRACTS.
- 16.3 A BIDDER CAN BE BANNED FROM DOING ANY BUSINESS WITH ALL UNITS OF BHEL FOR A PERIOD OF 3 YEARS ON THE BASIS OF ONE OR MORE OF THE FOLLOWING REASONS:
- I. BIDDER IS FOUND TO BE RESPONSIBLE FOR SUBMITTING FAKE/ FALSE/ FORGED DOCUMENTS, CERTIFICATES, OR INFORMATION PREJUDICIAL TO BHEL'S INTEREST.
  - II. IN SPITE OF WARNINGS, THE BIDDER PERSISTENTLY VIOLATES OR CIRCUMVENTS THE PROVISIONS OF LABOUR LAWS/ REGULATIONS/ RULES AND OTHER STATUTORY REQUIREMENTS.
  - III. BIDDER IS FOUND TO BE INVOLVED IN CARTEL FORMATION.
  - IV. THE BIDDER HAS INDULGED IN MALPRACTICES OR MISCONDUCT SUCH AS BRIBERY, CORRUPTION AND FRAUD, PILFERAGE ETC WHICH ARE CONTRARY TO BUSINESS ETHICS.
  - V. THE BIDDER IS FOUND GUILTY BY ANY COURT OF LAW FOR CRIMINAL ACTIVITY/ OFFENCES INVOLVING MORAL TURPITUDE IN RELATION TO BUSINESS DEALINGS.
  - VI. THE BIDDER IS DECLARED BANKRUPT, INSOLVENT, HAS WOUND UP OR BEEN DISSOLVED; I.E CEASES TO EXIST FOR ALL PRACTICAL PURPOSES.
  - VII. BIDDER IS FOUND TO HAVE OBTAINED OFFICIAL COMPANY INFORMATION/ DOCUMENTATION BY QUESTIONABLE MEANS.
  - VIII. COMMUNICATION IS RECEIVED FROM THE ADMINISTRATIVE MINISTRY OF BHEL TO BAN THE BIDDER FROM BUSINESS DEALINGS.

## 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-electric 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

BHARAT HEAVY ELECTRICALS LIMITED : PSWR : Nagpur

Tender Specs No. BHE/PW/PUR/SAT-CPS/720

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			transformer.
33	3043		Earthing.

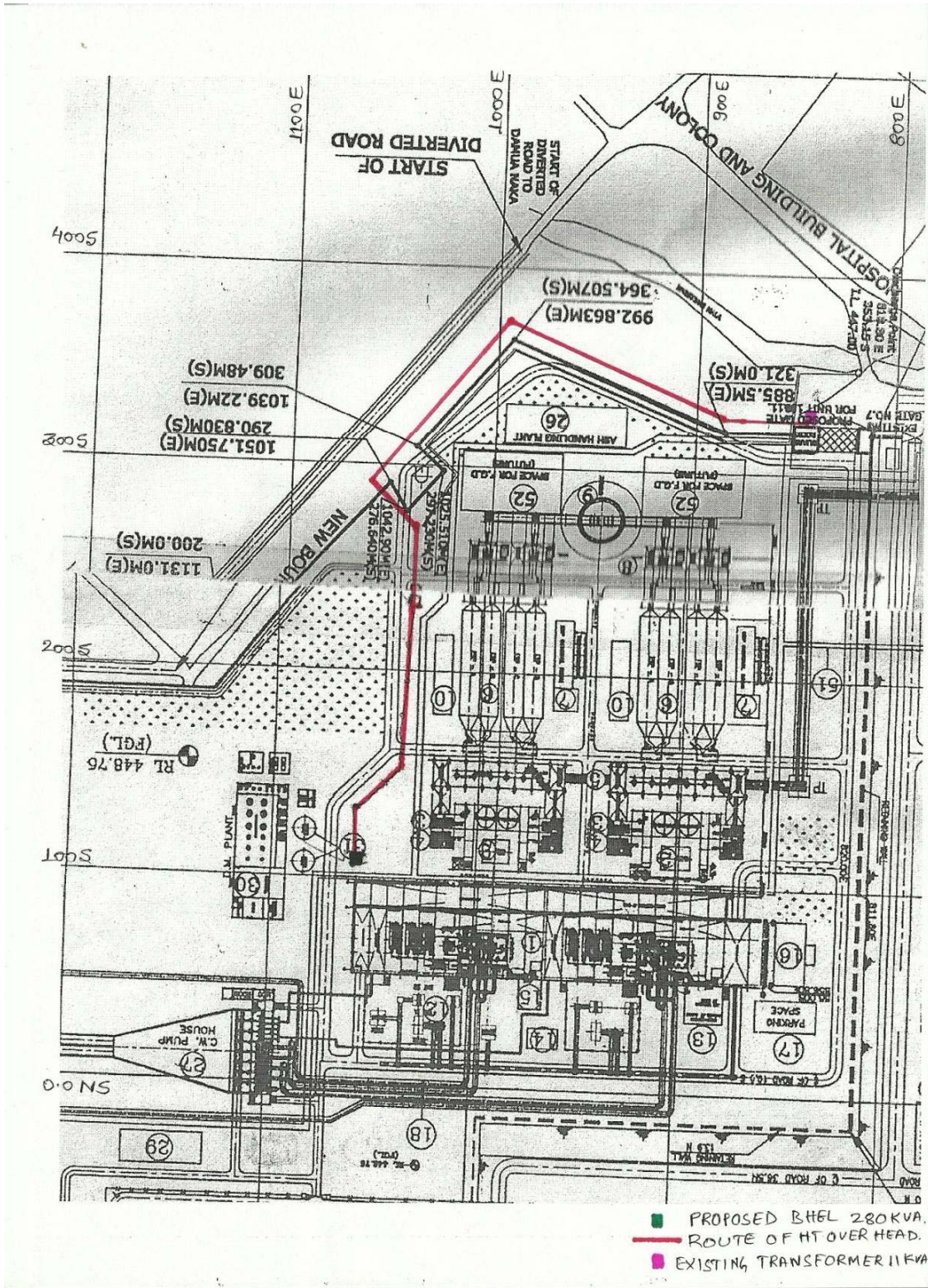
APPENDIX -II

**LIST OF DRAWINGS FOR TENDERING PURPOSE**

SN	Description	Drawing No
01	Plot Plan	Sketch No. BHE/PSWR/SAT/ELC/CPO-01
02	Proposed Single line diagram For 11 KV Construction Power	Sketch No. BHE/PSWR/SAT/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.**

SATPUDA THERMAL POWER STATION 2X250MW : CONSTRUCTION POWER



**PLOT PLAN ROUTING FOR 11KV LINE DRG NO :**  
**BHE/PSWR/SAT/ELC/CPO-01**

**BHARAT HEAVY ELECTRICALS LIMITED : PSWR : Nagpur**  
**Tender Specs No. BHE/PW/PUR/SAT-CPS/720**

**APPENDIX-III**

**DETAILS OF SIMILAR WORK DONE DURING THE LAST SEVEN YEARS**

<b>SL.NO.</b>	<b>FULL POSTAL ADDRESS OF CLIENT &amp; NAME OF OFFICER IN CHARGE</b>	<b>DESCRIP- TION OF WORK</b>	<b>VALUE OF CONTRACT</b>	<b>DATE OF AWARD OF WORK</b>	<b>DATE OF COMMENCEMENT OF WORK</b>	<b>ACTUAL COMPLETION TIME (MONTHS)</b>	<b>DATE OF ACTUAL COMPLETION OF WORK</b>	<b>REMARKS</b>

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 COMMENCEMENT OF WORK	SCHEDULE OF COMPLE-TION	% OF WORK COMPLETED AS ON DATE	EXPECTED DATE OF COMPLETION	REMARKS

SIGNATURE OF TENDERER WITH SEAL

## APPENDIX-V

### TENTATIVE POWER REQUIREMENT FOR VARIOUS PACKAGES AT 2x250 MW MPPGCL SATPURA UNIT 10 & 11 TPS

❖ Steam turbine & GTG	- 200 Amps
❖ Piping package	- 200 Amps
❖ Boiler	- 400 Amps
❖ Misc	- 200 Amps
<b>TOTAL REQUIREMENT</b>	<b>1000 Amps</b>
❖ Expected average peak load (60 %)	<b>600 Amps</b>

## APPENDIX-VI BOQ

(1)

BOQ For 280 kVA.

0.80km

**BOQ OF 11 KV LINE ON 13M RAIL POLES/H-BEAM WITH A MAXIMUM SPAN OF 60 METRES  
USING RACCOON AAAC CONDUCTOR " Schedule A"**

No.	Particulars	Unit	152x152x11Mtrs. Long H-Beam	
			Qty.	
	2	3	4	
1	Line support	No.	11	
2	11 KV 'V' cross-arms cleat type with back clamps	No.	11	
3	11 KV Top clamps cleat type	No.	11	
4	Earthing Set (Coil earth as per Drg. No. G/007)	No.	11	
5	11 KV Pin Insulator with GI Pin	No.	33	
6	AAAC Conductor Raccoon with 3 % Sag	Km.	2.47	
7	Joining Sleeves suitable for 80 Sq. mm. Al. Eq. AAAC conductor	No.	9	
8	Stay set 16 mm. complete with back clamps, stay wire 7/3.15 mm. (6.5	Set	8	
9	Concreting(1:3:6) @ 0.3 cmt. per stay and 0.8 per Rail Pole/H-Beam	Cmt.	11.2	
10	Red oxide paint	Ltr.	2	
11	Aluminium paint	Ltr.	2	
12	Anti climbing devices	No.	11	
13	Danger Boards	No.	11	
14	Binding wire and tape	Kg.	2.75	
15	M.S.Nuts and Bolts	Kg.	17	
16	Carpet guarding with G.I. Wire – 2x6SWG + 1x8 SWG & 10 SWG for	Km.	1	

For 280 KVA

(2)

11 KV T.P. STRUCTURE ON 13M RAILS/H-BEAM For B.H.E.L.B.T.G area STPS 10th 11th "Schedule B"

Sl. No.	Particulars	Unit	C-4(ii)	
			152x152x13 Mrs. Long H-Beam	
			Qty.	
1	2	3	4	
1	Line supports	No.	9	
2	D.C.cross- arm of 100 X 50 mm. channel 4' centre)	No.	6	
3	11 KV strain set with hard ware	Set	27	
4	11 KV Pin Insulator with G.I.Pins	No.	18	
5	Horizontal and cross bracing 4' centre with set of four back clamps	Set	6	
6	Stay set 16 mm. complete with back clamp[s, stay wire 7/3.15 mm. (6.5 kn stay wire per stay set) and sum	Set	18	
7	Concreting(1:3:6) @ 0.3 cmt. per stay and 0.8 per 13mtrs Rail Pole/H-Beam	Cmt.	12.6	
8	Earthing Set (Coil earth as per Drg. No. G/007)	No.	9	
9	Red oxide paint	Ltr.	4.5	
10	Aluminium paint	Ltr.	4.5	
11	Anti climbing devices	No.	9	
12	Danger Boards	No.	9	
13	11 KV A.B. switch	Set	0	
14	M.S.Nuts and Bolts	Kg.	30	

For 280 KVA

(3)

Schedule - C

IV D.P. STRUCTURE ON 13M RAIL/H-BEAM For B.H.E.L. B.T.G. Area at Saml Batching Plant "Schedule 6"

C-4(II)

152x152x13 Mtrs. Long H-Beam

Particulars	Unit	Qty.
2	3	
Line supports (152x152x11 Mtrs. Long H-Beam	No.	6
D.C. cross- arm of 100 X 50 mm. channel 8' centre)	No.	3
11 KV strain set with hard ware	Set	18
11 KV Pin Insulator with G.I. Pins	No.	9
Horizontal and cross bracing 8' centre with set of four back clamps	Set	3
Stay set 16 mm. complete with back clamp[s, stay wire 7/3.15 mm. (6.5 kg. stay wire per stay set ) and turn buckles	Set	18
Concreting(1:3:6) @ 0.2 cmt. per stay and 0.66 per 11mtrs Rail Pole/H-Beam	Cmt.	10.2
Earthing Set (Coil earth as per Drg. No. G/007 )	No.	6
Red oxide paint	Ltr.	3
Aluminium paint	Ltr.	3
Anti climbing devices	No.	6
Danger Boards	No.	3
11 Lighting Arrester	No.	6
M.S. Nuts and Bolts	Kg.	18

For 280 KVA

(4)

SCHEDULE - D

11/0.4 KV OUT DOOR SUB-STATION ON 11 M. H-BEAM IN TOWN AREA					
DT-10					
250 KVA Transformer					
Sl.No.	Particulars	Unit	Qty.	Rate	Amount (Rs.)
1	2	3	7	8	9
2	H-Beam 152X152 mm, 37.1Kg/Mtr, 11 Mtr Long	No.	4		
3	D.C.cross-arm of 100 X50 mm. 8' centre	No.	2		
4	11 KV Strain set with hardware	Set	6		
5	11 KV D.O. fuse and lightning arrestors mounting D.C. cross-arm(100 X 50 mm.)	Set	2		
6	11 KV D.O. fuse unit(one set of 3 nos.)	Set	2		
8	Stay set 16 mm. complete with back clamps, stay wire 7/3.15 mm. (6.5 kg.stay wire per stay set ) and turn buckles	Set	8		
9	Concreting of supports @ 0.66 cmt. per pole and @ 0.2 cmt. per stay	Cmt. (1:3:6)	4.42		
10	Transformer belfing with 50 X 50 X 6 mm.angle with two cross fixing channels	Set	0		
11	Transformer mounting cross-arm 100 X 50 mm. channel	Set	0		
12	Danger board	No.	2		
13	Complete earthing three different pits as per Drawing at DTR S/S ( @ B Class 40 mm G I Pipe of 3 Mtr length, 8 SWG G I Wire, Bentonite Powder , Connecting arrangement etc per pit )	Set	2		
14	Anti climbing devices	No.	4		
15	Red oxide paint	Ltr.	2		
16	Aluminium paint	Ltr.	2		
17	11 KV Lightning arrestors	No.	6		
18	M.S.Nuts and Bolts	Kg.	28		
19	Stay /back clamp	No.	20		
20	M.S. angle 75x75x6mm. With back clamp for mounting of distribution box.	No.	4		

For 280 KVA

(5)

24	300 Sq.mm.,3.5 core PVC insulated un-armoured	Mtr.	0
25	L.T. Distribution box suitable for 100 KVA transformer (without TPN switches) with MCCB on incoming and PF units on outgoing side	No.	-
26	L.T. Distribution box suitable for 200 KVA transformer (without TPN	No.	1
27	11 KV A.B. switch	Set	1
28	CT operated static electronic meter 100/5 Amps. with communication port, 4 Nos. of LT CTs & meter box (class-0.5 for energy audit)	No.	0
29	Plinth for Transformer Charges		2
29	Total		

BOC for  
60 KVA Connection.

1/2

60 KVA

11 KV Line ON 11M RAILS/H-BEAM For B.H.E.L storage area at STPS 10th 11th "Schedule A"

Sl.No.	Particulars	Unit	C-3(ii)
			152x152x11Mtrs. Long H-Beam
			Qty.
1	2	3	4
1	Line support	No.	6
2	11 KV 'V' cross-arms cleat type	No.	6
3	11 KV Top clamps cleat type	No.	6
4	Earthing Set (Coil earth as per Drg. No. G/007)	No.	6
5	11 KV Pin Insulator with GI Pin	No.	18
6	AAAC Conductor Raccoon with 3 % Seg	Km.	1
7	Joining Sleeves suitable for 80 Sq. mm. Al. Eq. AAAC conductor	No.	3
8	Stay set 16 mm. complete with back clamps, stay wire 7/3.15 mm. (6.5 kg. stay wire per stay set) and turn buckles	Set	3
9	Concreting(1:3:6) @ 0.2 cmt. per stay and 0.66 per Rail Pole/H-Beam	Cmt.	4.56
10	Red oxide paint	Ltr.	1
11	Aluminium paint	Ltr.	1
12	Anti climbing devices	No.	6
13	Danger Boards	No.	6
14	Binding wire and tape	Kg.	1.5
15	M.S.Nuts and Bolts	Kg.	9
16	Carpet guarding with G.I. Wire – 2x6SWG + 1x8 SWG & 10 SWG for lacings., Guarding Channel set, Guarding angle, I-Bolts and 2 Stay set complete with concreting etc	Km.	5

2/2

for 60KV A .

11 KV D.P. STRUCTURE ON 11M RAIL-SH-BEAM For B.H.E.L. Storage Area S.T.P.S 10th & 11th "Schedule B"

Sl. No.	Particulars	Unit	152x152x11 Mtrs. Long H-Beam	
			Qty.	
1	2	3		
1	Line supports (152x152x11 Mtrs. Long H-Beam	No.	4	
2	D.C. cross-arm of 100 X 50 mm. channel 8' centre)	No.	2	
3	11 KV strain set with hard ware	Set	12	
4	11 KV Pin Insulator with G.I.Pins	No.	6	
5	Horizontal and cross bracing 4' centre with set of four back clamps	Set	1	
5	Horizontal and cross bracing 8' centre with set of four back clamps	Set	1	
6	Stay set 16 mm. complete with back clamps, stay wire 7/3.15 mm. (6.5 kg. stay wire per stay set ) and turn buckles	Set	12	
7	Concreting(1:3:5) @ 0.2 cum. per stay and 0.66 per 11mtrs Rail Pole/H-Beam	Cum.	5.04	
8	Earthing Set (Coil earth as per Drg. No. G/007 )	No.	4	
9	Red oxide paint	Ltr.	2	
10	Aluminium paint	Ltr.	2	
11	Anti climbing devices	No.	4	
12	Danger Boards	No.	2	
13	11 KV A.B. switch	Set	1	
14	M.S.Nuts and Bolts	Kg.	12	