

TENDER SPECIFICATION

No. BHE/PW/PUR/BORLI-STG/554

Collection of materials from BHEL Stores/storage yard, Loading and Transportation to Site of Work, Unloading, Erection, Assembly/Alignment, Testing, Assistance for Commissioning etc. of complete set of STG and Auxiliaries with associated Surface Condenser, Heat Exchangers, Pumps, De-aerator and FST, Tanks and vessels, and Integral piping etc, Drive Turbines and respective Integral piping etc and Other equipments such as pumps, hoists etc Assistance for PG test and Handing Over of 3x33 MW sets

At

Bina Refinery Project

Bharat Oman Refineries Limited

Village: Agasod, Bina

Distt: Sagar, M.P.

PART-I

(TECHNICAL BID SPECIFICATION, NOTICE INVITING TENDER and GCC)



Bharat Heavy Electricals Limited

Power Sector - Western Region, Nagpur

345-Kingsway, Nagpur-440 001

BHARAT HEAVY ELECTRICALS LIMITED: PSWR: NAGPUR
Tender Specification No. BHE/PW/PUR/BORLI-STG

CONTENTS			
SN	DESCRIPTION	SECTION/ APPENDIX NO.	NO OF PAGES
1	Tender Specification issue details	--	1
2	Procedure for Submission of Sealed Tender	--	1
3	Project Information	--	2
4	Check List	--	2
5	Declaration by Bidder's Authorized Signatory	--	1
6	Certificate of No-Deviation	--	1
7	Notice Inviting Tender (includes Qualification Requirements etc.)	--	\$
8	General Conditions of Contract	Sections-1 & 2	\$
9	Offer of Bidder	Section-3	1
Special Conditions of Contract			
10	Scope of Work	Section-4	25
11	Obligations of the Contractor (Tools, Tackles & Consumables)	Section-5	05
12	Contractor's Obligation with Regard to Employment of Supervisory Staff and Workmen	Section-6	02
13	Obligations of BHEL	Section-7	03
14	Inspection/ Quality Assurance/ Quality Control/ Statutory Inspection	Section-8	03
15	Safety Measures	Section-9	15
16	Drawings and Documents	Section-10	01
17	Time Schedule/Mobilization/ Progress Monitoring/ Overrun/ Variation/Advance payment etc.	Section-11	05
18	Terms of Payment	Section-12	06
19	Extra Charges for Modification/Rectification	Section-13	02
20	Insurance	Section-14	02
21	EMD & Security Deposit	Section-15	02
Appendices			
22	Tentative details of Systems in Scope	Appendix-I	04
23	Tentative weight details and dimensions of various equipments & systems in scope etc.	Appendix-II (A)	02
24	Tentative Schedule of Insulation Thickness	Appendix-II (B)	01

CONTENTS			
SN	DESCRIPTION	SECTION/ APPENDIX NO.	NO OF PAGES
25	Summary of Tentative weight schedule under the scope etc.	Appendix-II (C)	
26	Month-wise Manpower Deployment Plan by the Contractor	Appendix-III	01
27	Contractor's T&P Deployment Plan	Appendix-IV	01
28	Planned worker man-days	Appendix-V	01
29	Details of Concurrent Commitment	Appendix-VI	01
30	Analysis of Unit Rates Quoted	Appendix-VII	01
31	Details of Similar Jobs done in last seven years	Appendix - VIII	01
32	Rate Schedule (Part-II :Price Bid)	Price Bid	@

LEGEND:

\$: Attached at the end of hard copy of Tender Specifications Part-I. Hosted in BHEL web page (www.bhel.com) as file titled “**NIT+GCC-554**”.

@: Issued as separate hard copy booklet 'Tender Specifications Part-II (Price Bid)'. Hosted in BHEL web page (www.bhel.com) as file titled “**PRICE BID-554**”

Note:

Rest of the tender documents are included in Tender Specifications Part-I. Hosted in BHEL web page (www.bhel.com) as file titled “**TECH BID-554**”

Bharat Heavy Electricals Limited
Power Sector - Western Region
345-Kingsway, Nagpur-440 001

Tender Specification No. BHE/PW/PUR/BORLI-STG/554

Name of the Work:

Collection of materials from BHEL Stores/storage yard, Loading and Transportation to Site of Work, Unloading, Erection, Assembly/Alignment, Testing, Assistance for Commissioning etc. of complete set of STG and Auxiliaries with associated Surface Condenser, Heat Exchangers, Pumps, De-aerator and FST, Tanks and vessels, and Integral piping etc, Drive Turbines and respective Integral piping etc and Other equipments such as pumps, hoists etc Assistance for PG test and Handing Over of 3x33 MW sets

At

Bina Refinery Project

Bharat Oman Refineries Limited

Village: Agasod, Bina

Distt: Sagar, M.P.

EARNEST MONEY DEPOSIT: Please see Special Conditions of Contract.

LAST DATE FOR TENDER SUBMISSION: Please obtain updated information from
web page www.bhel.com → **Tender**

Notifications → View Corrigendums.

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

M/s.

.....

PLEASE NOTE:

- 1) **THESE TENDER SPECS DOCUMENTS ARE NOT TRANSFERABLE.**
- 2) **BIDDER SHALL NOTE THAT THEIR OFFER WILL BE CONSIDERED SUBJECT TO THE APPROVAL OF BHEL'S CUSTOMER.**

For Bharat Heavy Electricals Limited

DGM (Purchase)

Place: Nagpur

Date:

Bharat Heavy Electricals Limited
(A Government of India Undertaking)
Power Sector - Western Region
345-Kingsway, Nagpur-440 001

Procedure for Submission of Sealed Tenders

The bidders must submit their tenders as required in two parts in separate sealed covers prominently super-scribed 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

Except the rate schedule, all other schedules, data sheets and details 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) along with requisite EMD as indicated earlier and this sealed cover shall be super-scribed and submitted to Dy. General Manager (Purchase) at the above mentioned address before the due date as indicated.

The qualified bidder will be intimated separately about the status of their offer.

Bidders shall fulfil the following conditions.

- Contractor shall deploy adequate resources for this job.
- Contractor should have sound financial stability.
- Bidder should meet quality requirement regarding workmanship, deployment of personnel, erection tools and necessary inspection, measurement & testing instruments.
- All information as called for in various appendices and clauses of tender specification should be furnished. Please refer the checklist. The details so furnished by bidder should be complete in all respects and as per formats specified in tender specification.
- Clarification on tender if any, may be obtained by the bidder before
- Offers must be submitted without any deviation, after seeking clarification, if any.

- Offers received with any deviation or without relevant information as described above are liable to be rejected. Price bids received in the form other than specified in part-II (price bid) are liable to be rejected.
- **Bidder shall note that their offer will be considered subject to the approval of BHEL's customer.**

PROJECT INFORMATION

INTRODUCTION

M/s. BHARAT OMAN REFINERIES LIMITED, as Owner proposes to set up a CFBC based Captive Power Plant, at Bina in the state of Madhya Pradesh (M.P), India based on Petcock as feedstock. A Captive Power Plant (CPP) is to be installed to meet the Steam & Power requirements.

M/s. ENGINEERS INDIA LIMITED, New Delhi have been retained as Project Management Consultant for the project.

The Power Plant comprising of Steam & Power generation, Emergency Power supply system alongwith associated facilities and hook-up with the Refinery.

SITE LOCATION / SITE VISIT

SITE LOCATION

The site is located at an approximate distance of 10 -15 Km from Bina town. The nearest railway station is Agasod – Bina. The nearest port is Kandla, which is approx. 700 Km from the site. The nearest airport is at Bhopal, which is approx. 150 Km.

SITE VISIT

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

Check List			
(Vide Para 1.3 of Section-I of General Conditions of Contract)			
1	Name of the Bidder with Postal Address for Correspondence		
2	Name of Contact Person with Telephone & Fax No.	Mr./Ms Tel No. Fax No.	
3	Nature of the firm	PROPRIETARY / PARTNERSHIP / LIMITED CO.	
4	Details of EMD Please Indicate whether 1) One Time EMD or, 2) Only for this Tender	DD No. DD Date..... Name of Bank..... Amount: Rs.....	
5	Validity of Offer (BHEL's Requirement: 180 days from Last Date for Offer Submission)	Validity _____ days	
6	Mobilization Time (Please refer Section-11 of SCC)	Mobilization Time _____	
7	Whether any conditions stipulated or any Deviations taken?	Yes (vide Document reference:	No
		Bidder to note that tender with conditions unacceptable to BHEL shall be rejected.	
8	Bidder has visited the project site and acquainted with the site conditions	Yes	No
9	Details of concurrent jobs are furnished (Appendix-VI)	Yes	No
10	Headquarters organization is furnished	Yes	No
11	Proposed site organization is furnished	Yes	No
12	Names and particulars of directors/partners are furnished	Yes	No
13	Financial status of the firm (Annexure 'A' of GCC) is furnished	Yes	No
14	Profit & Loss Account for preceding three years is furnished	Yes	No

Check List			
(Vide Para 1.3 of Section-I of General Conditions of Contract)			
15	Latest <i>Solvency Certificate</i> from <i>Govt. Authority</i> or Certificate by Bidder's Banker for Overdraft & BG Limits is Furnished (Certificate shall not be older than six months from the Last Date for offer submission)	Yes	No
16	Copy of the latest <i>Income Tax Clearance Certificate</i> or copy of IT Return along with copy of PAN Card is Furnished	Yes	No
17	Month-wise manpower deployment plan (Appendix-III) is furnished	Yes	No
18	Analysis of unit rates quoted (Appendix-VII) is furnished	Yes	No
19	Month wise deployment plan by Contractor for major T&P (Appendix-IV) is furnished	Yes	No
20	Whether all the pages of the Tender Specification documents are read, understood and signed	Yes	No
21	Power of Attorney Enclosed in favour of Person Making Offer	Yes	No
22	Bidder has familiarized himself with all Relevant Local Laws & Local Conditions	Yes	No
23	Safety Requirement of this work in a Running plant Premises has been understood.	Yes	No
24	Erection and Commissioning programme furnished	Yes	No
25	Details of Similar Work carried out in last seven years furnished in Appendix-VIII		
26	Whether copies of detailed Work Orders (with BOQ) and Completion Certificates in support of above furnished	Yes	No
27	Whether contractor has left any job unfinished? If so, give reasons.	Yes	No
28	Whether any client has terminated the contractor's work before completion? If so, furnish reasons for the same	Yes	No

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

Date:

Signature of Bidder

DECLARATION BY BIDDER'S AUTHORIZED SIGNATORY

I,
HEREBY CERTIFY THAT ALL THE INFORMATION AND DATA FURNISHED
BY ME WITH REGARD TO THE TENDER SPECIFICATION No.
BHE/PW/PUR/BORLI-STG/554 ARE TRUE AND COMPLETE TO THE BEST
OF MY KNOWLEDGE. I HAVE GONE THROUGH THE SPECIFICATIONS,
CONDITIONS AND STIPULATIONS IN DETAIL AND AGREE TO COMPLY
WITH THE REQUIREMENTS AND INTENT OF THE SPECIFICATION. I
FURTHER CERTIFY THAT I AM DULY AUTHORIZED REPRESENTATIVE OF
THE UNDER-MENTIONED TENDERER AND A VALID POWER OF ATTORNEY
TO THIS EFFECT IS ALSO ENCLOSED.

AUTHORISED REPRESENTATIVE'S SIGNATURE WITH
NAME AND ADDRESS

DATE:

BIDDER'S NAME AND ADDRESS

CERTIFICATE OF NO-DEVIATION

TENDER SPECIFICATION No. BHE/PW/PUR/BORLI-STG/554

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

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

DATE:

SIGNATURE OF THE BIDDER

SECTION-3

OFFER OF THE BIDDER

To
The DGM (Purchase)
BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR - WESTERN REGION
SHREEMOHINI COMPLEX
345-KINGSWAY
NAGPUR-440 001

DEAR SIR,

I/WE HEREBY OFFER TO CARRY OUT THE WORK DETAILED IN TENDER SPECIFICATION NO. **BHE/PW/PUR/BORLI-STG/554** 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 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 BIDDER:
ADDRESS:

WITNESSES WITH THEIR ADDRESS

SIGNATURE

NAME

ADDRESS

1.

2.

Section- 4

Special Conditions of Contract

4.0 GENERAL

THE WORK TO BE CARRIED OUT UNDER THE SCOPE OF THESE SPECIFICATIONS IS BROADLY AS UNDER:

- 1) COLLECTION OF MATERIALS AT BHEL/ CLIENT STORES, STORAGE YARD, LOADING, TRANSPORTATION TO AND UNLOADING AT SITE OF WORK, PRE-ASSEMBLY, IF ANY, PRE-ERECTION CHECKS AS APPLICABLE
- 2) ERECTION, ALIGNMENT AND WELDING, BOLTING, FASTENING, GROUTING AS APPLICABLE OF:
 - a) COMPLETE SET OF 3X33 MW STG AND AUXILIARIES AND INCLUDING TG INTEGRAL PIPING
 - b) BALANCE OF PLANT (BOP) MECHANICAL EQUIPMENTS SUCH AS PUMPS, HOISTS, CRANES ETC
 - c) DRIVE TURBINES OF VARIOUS PUMPS WITH ASSOCIATED AUX, INTEGRAL PIPING ETC
- 4) NON-DESTRUCTIVE EXAMINATION & POST WELD HEAT TREATMENT AS REQUIRED
- 5) PRE-COMMISSIONING CHECKS/TEST, TRIAL RUN/TESTING AND COMMISSIONING ASSISTANCE
- 6) TRIAL OPERATION AND PERFORMANCE GUARENTEE TEST.
- 7) HANDING OVER OF THE UNITS

4.1 SCOPE OF WORK IS FURTHER DETAILED IN VARIOUS CLAUSES HEREINAFTER.

4.1.1 GENERAL REQUIREMENTS – COMMON TO ALL WORK

4.1.1.1

THE INTENT OF SPECIFICATION IS TO PROVIDE SERVICES ACCORDING TO THE MOST MODERN AND PROVEN TECHNIQUES AND CODES. THE OMISSION OF SPECIFIC REFERENCE TO ANY METHOD, EQUIPMENT OR MATERIAL NECESSARY FOR PROPER AND EFFICIENT EXECUTION OF THIS WORK SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF PROVIDING SUCH FACILITIES TO COMPLETE THE WORK WITHOUT ANY EXTRA COMPENSATION.

4.1.1.2

THE TERMINAL POINTS DECIDED BY BHEL SHOULD BE FINAL AND BINDING ON THE CONTRACTOR FOR DECIDING THE SCOPE OF WORK AND EFFECTING PAYMENT FOR THE WORK DONE.

4.1.1.3

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 COOPERATE WITH PERSONNEL OF BHEL, BHEL'S CUSTOMER, CUSTOMER'S CONSULTANTS AND OTHER CONTRACTORS, COORDINATING HIS WORK WITH OTHERS AND PROCEED IN A MANNER THAT SHALL NOT DELAY OR HINDER THE PROGRESS OF WORK OF THE PROJECT AS A WHOLE.

4.1.1.4

THE WORK COVERED UNDER THIS SPECIFICATION IS OF HIGHLY SOPHISTICATED NATURE, REQUIRING THE BEST QUALITY WORKMANSHIP, SUPERVISION, ENGINEERING AND CONSTRUCTION MANAGEMENT. THE CONTRACTOR SHOULD ENSURE PROPER PLANNING AND SUCCESSFUL & TIMELY COMPLETION OF THE WORK TO MEET THE OVERALL PROJECT SCHEDULE. THE CONTRACTOR MUST DEPLOY ADEQUATE QUANTITY OF TOOLS & PLANTS, MODERN / LATEST CONSTRUCTION AIDS ETC. HE MUST ALSO DEPLOY ADEQUATE TRAINED, QUALIFIED AND EXPERIENCED SUPERVISORY STAFF AND SKILLED PERSONNEL.

4.1.1.5

CONTRACTOR SHALL ERECT AND COMMISSION ALL THE EQUIPMENTS AND AUXILIARIES AS PER THE SEQUENCE & METHODOLOGY PRESCRIBED BY BHEL DEPENDING UPON THE TECHNICAL REQUIREMENTS. AVAILABILITY OF MATERIALS AND FRONTS WILL DECIDE THIS. BHEL ENGINEER'S DECISION REGARDING CORRECTNESS OF THE WORK AND METHOD OF WORKING SHALL BE FINAL AND BINDING ON THE CONTRACTOR. NO CLAIMS FOR EXTRA PAYMENT FROM THE CONTRACTOR WILL BE ENTERTAINED ON THE GROUND OF DEVIATION FROM THE METHODS / SEQUENCE ADOPTED IN ERECTION OF SIMILAR SETS ELSEWHERE.

4.1.1.6

ALL NECESSARY CERTIFICATES AND LICENSES, PERMITS & CLEARANCES REQUIRED TO CARRY OUT THIS WORK FROM THE RESPECTIVE STATUTORY/ LOCAL AUTHORITIES ARE TO BE ARRANGED BY THE CONTRACTOR AT HIS COST IN TIME TO ENSURE SMOOTH PROGRESS OF WORK.

4.1.1.7

THE WORK SHALL CONFORM TO DIMENSIONS AND TOLERANCES SPECIFIED IN THE VARIOUS DRAWINGS / DOCUMENTS THAT WILL BE PROVIDED DURING VARIOUS STAGES OF ERECTION. IF ANY PORTION OF WORK IS FOUND TO BE DEFECTIVE IN WORKMANSHIP, NOT CONFORMING TO DRAWINGS OR OTHER STIPULATIONS DUE TO CONTRACTOR'S FAULT, THE CONTRACTOR SHALL DISMANTLE AND RE-DO THE WORK DULY REPLACING THE DEFECTIVE MATERIALS AT HIS COST, FAILING WHICH THE WORK WILL BE GOT DONE BY BHEL AND RECOVERIES WILL BE EFFECTED FROM THE CONTRACTOR'S BILLS TOWARDS EXPENDITURE INCURRED INCLUDING COST OF MATERIALS AND DEPARTMENTAL OVERHEADS OF BHEL.

4.1.1.8

THE CONTRACTOR SHALL PERFORM ANY SERVICES, TESTS ETC THAT MAY NOT BE SPECIFIED NEVERTHELESS REQUIRED FOR THE COMPLETION OF WORK WITHIN QUOTED RATES.

4.1.1.9

THE CONTRACTOR SHALL EXECUTE THE WORK IN THE MOST SUBSTANTIAL AND WORKMANLIKE MANNER. THE STORES SHALL BE HANDLED WITH CARE AND DILIGENCE.

4.1.1.10

BHEL RESERVES RIGHT TO RECOVER FROM THE CONTRACTOR ANY LOSS WHICH ARISES OUT OF UNDUE DELAY/DISCREPANCY/SHORTAGE/DAMAGE OR ANY OTHER CAUSES DUE TO CONTRACTOR'S LAPSE(S) DURING ANY STAGE OF WORK. ANY LOSS TO BHEL DUE TO CONTRACTOR'S LAPSE(S) SHALL HAVE TO BE MADE GOOD BY THE CONTRACTOR.

4.1.1.10

ALL CRANES, TRANSPORT EQUIPMENT, HANDLING EQUIPMENT, TOOLS, TACKLES, FIXTURES, EQUIPMENT, MANPOWER, SUPERVISORS/ENGINEERS, CONSUMABLES ETC, EXCEPT OTHERWISE SPECIFIED AS BHEL SCOPE AS FREE ISSUE, REQUIRED FOR THIS SCOPE OF WORK SHALL BE PROVIDED BY THE CONTRACTOR. ALL EXPENDITURE INCLUDING TAXES AND INCIDENTALS IN THIS CONNECTION WILL HAVE TO BE BORNE

BY HIM UNLESS OTHERWISE SPECIFIED IN THE RELEVANT CLAUSES. THE CONTRACTOR'S QUOTED RATES SHALL BE INCLUSIVE OF ALL SUCH CONTINGENCIES.

4.1.1.11

DURING THE COURSE OF ERECTION, TESTING AND COMMISSIONING CERTAIN REWORK / MODIFICATION / RECTIFICATION / REPAIR / FABRICATION ETC MAY BECOME NECESSARY ON ACCOUNT OF FEED BACK / REVISION OF DRAWING. THIS WILL ALSO INCLUDE MODIFICATIONS / RE-WORKS SUGGESTED BY BHEL / CUSTOMER / OTHER INSPECTION GROUP. CONTRACTOR SHALL CARRY OUT SUCH REWORK / MODIFICATION / RECTIFICATION / FABRICATION / REPAIR ETC PROMPTLY AND EXPEDITIOUSLY. DAILY LOG SHEETS SIGNED BY BHEL ENGINEER AND INDICATING THE DETAILS OF WORK CARRIED OUT, MAN-HOURS ETC SHALL BE MAINTAINED BY THE CONTRACTOR FOR SUCH REWORKS. CLAIM OF CONTRACTOR IF ANY, FOR SUCH WORKS WILL BE GOVERNED BY CLAUSES OF SECTION-13 SPECIAL CONDITIONS OF CONTRACT.

4.1.1.12

ALL WORKS SUCH AS CLEANING, LEVELING, ALIGNING, TRIAL ASSEMBLY, DISMANTLING OF CERTAIN EQUIPMENTS / COMPONENTS FOR CHECKING AND CLEANING, SURFACE PREPARATION, FABRICATION OF STRUCTURES, TUBES AND PIPES AS PER GENERAL ENGINEERING PRACTICE AND AS PER BHEL ENGINEER'S INSTRUCTIONS AT SITE, CUTTING, GOUGING, WELD DEPOSITING, GRINDING, STRAIGHTENING, CHAMFERING, FILING, CHIPPING, DRILLING, REAMING, SCRAPPING, LAPPING, FITTING UP, DRILLING OF HOLES, MAKING DOWEL PINS AND MINOR RECTIFICATION OF FOUNDATION BOLTS ETC AS MAY BE APPLICABLE IN SUCH ERECTION WORKS AND WHICH ARE TREATED INCIDENTAL TO THE ERECTION WORKS AND NECESSARY TO COMPLETE THE WORK SATISFACTORILY, SHALL BE CARRIED OUT BY THE CONTRACTOR AS PART OF THE WORK WITHIN THE QUOTED RATES.

4.1.1.13

THE CONTRACTOR SHALL MAKE ALL FIXTURES, TEMPORARY SUPPORTS, STEEL STRUCTURES REQUIRED FOR JIGS & FIXTURES, ANCHORS FOR LOAD AND GUIDE PULLEYS REQUIRED FOR THE WORK. NECESSARY STEEL SHALL BE ARRANGED BY CONTRACTOR.

4.1.1.14

THE CONTRACTOR SHALL TAKE DELIVERY OF THE COMPONENTS, EQUIPMENTS, CHEMICALS, AND LUBRICANTS ETC FROM THE BHEL STORES/ STORAGE AREA AFTER GETTING THE APPROVAL OF BHEL ENGINEER ON STANDARD INDENT FORMS OF BHEL. COMPLETE AND DETAILED ACCOUNT OF THE MATERIALS AND EQUIPMENTS AFTER USE SHALL BE SUBMITTED TO THE BHEL AND RECONCILED PERIODICALLY. MATERIALS ISSUED EXCESS/ UNSPENT AS ALSO THE PARTIALLY FILLED/ EMPTY CONTAINERS AFTER USE HAVE TO BE RETURNED TO BHEL STORES DULY ACCOUNTED AND IDENTIFIED.

4.1.1.15

CONTRACTOR SHALL PLAN AND TRANSPORT EQUIPMENTS, COMPONENTS FROM STORAGE TO ERECTION SITE AND ERECT THEM IN SUCH A MANNER AND SEQUENCE THAT MATERIAL ACCUMULATION AT SITE DOES NOT LEAD TO CONGESTION AT SITE OF WORK. MATERIALS SHALL BE STACKED NEATLY, PRESERVED AND STORED IN THE CONTRACTOR'S SHED AND AT WORK AREAS IN AN ORDERLY MANNER. IN CASE IT IS NECESSARY TO SHIFT AND RE-STACK THE MATERIALS KEPT AT WORK AREAS/ SITE TO ENABLE OTHER AGENCIES TO CARRY OUT THEIR WORK OR FOR ANY OTHER REASON, SAME SHALL BE DONE BY CONTRACTOR MOST EXPEDITIOUSLY. NO CLAIM FOR EXTRA PAYMENT FOR SUCH WORK WILL BE ENTERTAINED.

4.1.1.16

THE CONTRACTOR SHALL HAVE TOTAL RESPONSIBILITY FOR ALL EQUIPMENT AND MATERIALS IN HIS CUSTODY AT CONTRACTOR'S STORES, LOOSE, SEMI-ASSEMBLED, ASSEMBLED OR ERECTED BY HIM AT SITE. HE SHALL EFFECTIVELY PRESERVE AND PROTECT, INCLUDING BY MAKING SUITABLE SECURITY ARRANGEMENT, THE FINISHED WORKS FROM ACTION OF WEATHER AND FROM DAMAGES OR DEFACEMENT AND

SHALL ALSO COVER THE FINISHED PARTS IMMEDIATELY ON COMPLETION OF WORK AS PER BHEL ENGINEER'S INSTRUCTIONS.

4.1.1.17

PLANT MATERIALS SHOULD NOT BE USED FOR ANY TEMPORARY SUPPORTS / SCAFFOLDING/ PREPARING PRE-ASSEMBLY BED ETC.

4.1.1.18

DETAILS OF EQUIPMENTS TO BE ERECTED UNDER THIS CONTRACT IS GENERALLY AS PER THE SCHEDULE GIVEN IN APPENDIX-I. THESE DETAILS ARE APPROXIMATE AND MEANT ONLY TO GIVE A GENERAL IDEA TO THE TENDERER ABOUT THE WORK INVOLVED. ACTUAL QUANTUM AND TYPE OF EQUIPMENTS WILL BE BASED ON THE ERECTION DOCUMENTS, WHICH WILL BE FURNISHED IN THE COURSE OF ERECTION, AND THE WEIGHT AND QUANTITY AS PER THE RELEVANT ENGINEERING DOCUMENTS WILL ONLY BE ADMISSIBLE FOR THE BILLING PURPOSE.

4.1.1.19

HANGERS & SUSPENSIONS, SUPPORTS ETC FOR TUBES & PIPING, & WILL BE SUPPLIED IN RUNNING / RANDOM LENGTHS / SIZES WHICH SHALL BE CUT TO SUITABLE SIZES AND ADJUSTED AS REQUIRED.

4.1.1.20

LAYOUT OF FIELD ROUTED/ SMALL BORE PIPING SHALL BE DONE AS PER SITE REQUIREMENT. NECESSARY SKETCH FOR ROUTING THESE LINES SHOULD BE GOT APPROVED FROM BHEL BY THE CONTRACTOR. THERE IS A POSSIBILITY OF SLIGHT CHANGE IN ROUTING THE ABOVE PIPE LINES EVEN AFTER COMPLETION OF ERECTION.

4.1.1.21

WELDING OF NECESSARY INSTRUMENTATION TAPPING POINTS, THERMOWELL, THERMOCOUPLE PAD, ROOT VALVE, CONDENSING VESSEL, FLOW METERING & MEASUREMENT DEVICES, AND CONTROL VALVES TO BE PROVIDED ON TG INTEGRAL PIPING.

4.1.1.22

PRE-HEATING, NDE, AND POST WELD HEAT TREATMENT FOR ABOVE SHALL BE DONE AS PER THE SPECIFICATIONS AS PART OF WORK.

4.1.1.23

CERTAIN INSTRUMENTATION LIKE PRESSURE SWITCHES, AIR SETS, FILTERS, REGULATORS, PRESSURE GAUGES, JUNCTION BOXES, POWER CYLINDERS, DIAL THERMOMETERS, FLOW METERS, VALVE ACTUATORS, FLOW INDICATORS, CENTRIFUGAL/SPEED SWITCHES OF MOTORS, ACCUMULATORS ETC ARE RECEIVED IN ASSEMBLED CONDITION AS INTEGRAL PART OF EQUIPMENTS. CONTRACTOR SHALL DISMOUNT SUCH INSTRUMENTS FOR CALIBRATION AND HAND OVER THE SAME TO BHEL. STORAGE, CALIBRATION, RE-ERECTION WILL BE DONE BY C & I ERECTION AGENCY.

4.1.1.24

FIXING AND SEAL WELDING OF THERMOWELLS & PLUGS BEFORE HYDRO TEST/ STEAM BLOWING OF EQUIPMENT OR OTHER PIPING SYSTEM IS WITHIN THE SCOPE OF WORK. CONTRACTOR SHALL ALSO REMOVE THE SEAL WELDED PLUGS BY PROCESS OF GRINDING AND FIX AND SEAL WELD THERMOWELLS AFTER HYDRO TEST/STEAM BLOWING OF LINES AS PART OF WORK.

4.1.1.25

ALL ELECTRICAL MOTORS HAVE TO BE TESTED FOR IR & PI VALUES PRIOR TO THE TRIAL RUN. WHERE REQUIRED, DRY OUT MAY HAVE TO BE CARRIED OUT BY USING EXTERNAL HEATING SOURCE. CONTRACTOR SHALL MAKE ALL ARRANGEMENTS IN THIS REGARD AND COMPLETE THE WORK AS INSTRUCTED. BHEL WILL PROVIDE THE MOTORIZED INSULATION TESTERS.

4.1.1.26

IN INSTALLATION OF VARIOUS EQUIPMENTS IT MAY BECOME NECESSARY TO INSTALL THESE ON TEMPORARY SUPPORTS/ HANGER DUE TO VARIOUS REASONS INCLUDING NON-AVAILABILITY OF SUSPENSION MATERIALS. CONTRACTOR SHALL INSTALL SUCH TEMPORARY SUSPENSIONS/HANGERS AND LATER ON SHIFT THE RELEVANT EQUIPMENTS TO THEIR RESPECTIVE PERMANENT HANGERS/ SUSPENSIONS/ SUPPORTS AS INCIDENTAL TO WORK. REQUISITE MATERIALS FOR SUCH TEMPORARY ARRANGEMENTS WILL BE PROVIDED BY BHEL ON FREE -RETURNABLE BASIS WHICH SHALL BE RETURNED TO BHEL AFTER THE USE.

4.1.1.27

CONTRACTOR SHALL COLLECT ALL SCRAP MATERIALS PERIODICALLY FROM VARIOUS AREA OF WORK SITE, DEPOSIT THE SAME AT ONE PLACE EARMARKED AT SITE OR SHIFT THE SAME TO A PLACE EARMARKED IN BHEL/ CLIENT'S STORES. IN CASE OF FAILURE OF CONTRACTOR IN COMPLIANCE OF THIS REQUIREMENT, BHEL WILL MAKE SUITABLE ARRANGEMENT AT CONTRACTOR'S RISK AND COST.

4.1.1.28

THE WORK SHALL BE CARRIED OUT STRICTLY IN ACCORDANCE TO THE "FIELD QUALITY PLAN" APPROVED BY BHEL/CLIENT. THE CONTRACTOR SHALL PREPARE, JOINTLY WITH BHEL, ALL NECESSARY RECORDS OF MEASUREMENTS/READINGS/ PROTOCOLS ETC.

4.1.1.29

FOR ANY CLASS OF WORK FOR WHICH NO SPECIFICATIONS HAVE BEEN LAID DOWN IN THESE SPECIFICATIONS, WORK SHALL BE EXECUTED AS PER THE INSTRUCTIONS OF BHEL.

4.2 PREPARATION OF FOUNDATIONS, AND GROUTING OF EQUIPMENTS

4.2.1

BUILDINGS, FOUNDATIONS AND OTHER NECESSARY CIVIL WORKS FOR SUPPORTING STRUCTURES, EQUIPMENTS ETC, WILL BE PROVIDED BY THE BHEL/CUSTOMER. THE CHECKING OF DIMENSIONAL ACCURACY, AXES, ELEVATION, LEVELS ETC, WITH REFERENCE TO BENCH MARKS OF FOUNDATIONS AND ANCHOR BOLT PITS AND ALSO ADJUSTMENTS OF FOUNDATION LEVEL, DRESSING AND CHIPPING OF FOUNDATION SURFACES OF ALL EQUIPMENTS CONTRACTOR/BHEL SHALL PREPARE PROTOCOLS BEFORE TAKING OVER THE FOUNDATIONS. DRESSING AND CHIPPING OF FOUNDATIONS UPTO 25MM FOR ACHIEVING PROPER LEVELS WILL BE WITHIN THE SCOPE OF WORK/SPECIFICATION.

4.2.2

ALL TEMPORARY FOUNDATIONS AND ANCHOR POINTS REQUIRED FOR INSTALLING ERECTION EQUIPMENTS AND WINCHES ETC ARE IN THE SCOPE OF CONTRACTOR. ALL BUILDING MATERIALS LIKE CEMENT, STEEL INCLUDING RE-INFORCEMENT BARS, GRITS CEMENTS ETC FOR SUCH TEMPORARY FOUNDATIONS SHALL HAVE TO BE ARRANGED BY THE CONTRACTOR WITHIN THE QUOTED RATES. ALL SUCH FOUNDATIONS SHALL BE DEMOLISHED AND NORMAL GROUND CONDITIONS RESTORED AFTER THE USE.

4.2.3

THE COMPLETE WORK OF SECONDARY GROUTING OF EQUIPMENTS (STATIC AS WELL AS ROTATING) ETC IS INCLUDED IN THE SCOPE OF WORK/SPECIFICATION. CONTRACTOR SHALL ARRANGE ALL MANPOWER, T&P, FORM WORK AND SHUTTERING MATERIALS, ALL GROUTING MATERIALS SUCH AS ORDINARY PORTLAND CEMENT, SAND, STONE CHIPS ETC & QUICK-SETTING-NON-SHRINK-FREE-FLOW SPECIAL GROUT MIX OF REQUIRED SPECIFICATION (LIKE CONBEXTRA-GP1/ GP2 OR EQUIVALENT).

4.2.3.1

THE QUICK-SETTING-NON-SHRINK-FREE-FLOW SPECIAL GROUT MIX SHALL BE PURCHASED ONLY FROM THE FOLLOWING BHEL APPROVED VENDORS:

1. M/S FOSROC CHEMICALS (INDIA) PVT LTD;
2. M/S SIKA INDIA PVT LTD;

BHARAT HEAVY ELECTRICALS LIMITED: PSWR: NAGPUR
Tender Specification No. BHE/PW/PUR/BORLI-STG

3. M/S PAGEL CONCRETE TECHNOLOGIES PVT LTD;
4. M/S PIDILITE INDUSTRIES LTD.

IN ORDER TO ENSURE THE QUALITY, THE MAJOR GROUTING OF EQUIPMENTS USING ANY OF ABOVE GROUT MIXES SHALL ESSENTIALLY BE DONE AS PER THE RECOMMENDATIONS OF SUPPLIER WITH REGARD TO GROUT PREPARATION AND USE OF MACHINERY ETC UNDER THE SUPERVISION OF THE RESPECTIVE SUPPLIER. BHEL HAS ARRANGEMENT WITH ABOVE SUPPLIERS FOR SUPERVISION SERVICES AND THE SUPERVISION CHARGES FOR THE SAME WILL BE BORNE BY BHEL. HOWEVER, THE CONTRACTOR SHALL ENSURE READINESS OF EQUIPMENT FOR GROUTING IN ALL RESPECT BEFORE SUCH A SERVICE IS REQUISITIONED AND THE DURATION IS NOT PROLONGED UNDULY. ANY OVERSTAY REQUIRED DUE TO CONTRACTOR SHALL BE CHARGED TO THE CONTRACTOR WITH BHEL'S DEPARTMENTAL CHARGES. CONTRACT SHALL CONSULT BHEL ENGINEER BEFORE DECIDING UPON THE VENDOR FOR THE ABOVE.

4.2.3.2

CLEANING OF THE FOUNDATION SURFACES, POCKET HOLES, ANCHOR BOLT PITS AND DE-WATERING AND MAKING THEM FREE OF OIL, GREASE, SAND AND OTHER FOREIGN MATERIALS BY SODA WASHING, WATER WASHING, COMPRESSED AIR AND OTHER APPROVED METHODS WILL BE WITHIN THE SCOPE OF THIS WORK.

4.2.4

BHEL WILL PROVIDE ONLY SHIMS AND PACKER PLATES (MACHINED AND/OR PLAIN) WHICH ARE RECEIVED FROM BHEL'S MANUFACTURING PLANTS AND GO AS PERMANENT PART OF THE EQUIPMENT. ADDITIONAL PACKER PLATES AND SHIMS IF REQUIRED, WILL HAVE TO BE PREPARED BY THE CONTRACTOR OUT OF STEEL PLATES, STEEL SHEETS TO MEET SITE REQUIREMENTS. NECESSARY STEEL PLATES FOR THIS PURPOSE WILL BE PROVIDED BY BHEL FREE OF COST.

4.2.5

PACKER PLATES SHALL NOT ONLY BE BLUE MATCHED WITH FOUNDATIONS BUT ALSO INTER-PACKER CONTACT SURFACES, CONTACT SURFACES BETWEEN PACKER AND PEDESTALS, CONTACT SURFACE BETWEEN PACKER AND FOUNDATION FRAME ETC SHALL ALSO BE BLUE MATCHED AND REQUIRED QUANTUM OF CONTACT SHALL BE ACHIEVED BY CHIPPING AND SCRAPPING AS PER ENGINEER'S INSTRUCTIONS.

4.2.6

THE CONTRACTOR SHALL CARRY OUT SCRAPPING AND MATCHING OF EMBEDDED PLATES, PERMANENT SPACERS AND ALL THE MATCHING PARTS OF TURBINE, GENERATOR, PUMPS AND OTHER EQUIPMENTS WHEREVER REQUIRED. THE SUPPORT AND SOLE PLATES MATCHING AND CONCRETE SURFACE BEDDING IS ALSO COVERED IN THE SCOPE OF WORK. THE FINE DRESSING OF CONCRETE SHALL BE WITH PRUSSIAN BLUE-MATCH CHECKS.

4.3 EQUIPMENTS INSTALLATION – COMMON REQUIREMENTS

4.3.1

FILLING OF LUBRICANTS FOR STEAM TURBINE, TURBO-GENERATOR AND OTHER ROTATING AUXILIARIES FOR PURPOSE OF OIL FLUSHING, INITIAL FILL UP AND SUBSEQUENT TOPPING UP DURING VARIOUS STAGES OF WORK.

4.3.2 NOT USED

4.3.3

CLEANING, SERVICING, LUBRICATION OF ACTUATORS, PUMPS, HEADERS, GOVERNING SYSTEM, STOP VALVES, CONTROL VALVES, AND OTHER VALVES, TANKS, VESSELS ETC. DURING ERECTION AND COMMISSIONING STAGES IS IN THE SCOPE OF WORK. HOWEVER, GASKETS/ PACKINGS/ LUBRICANTS FOR REPLACEMENT WILL BE PROVIDED BY BHEL AS FREE ISSUE.

4.3.4

ALL EQUIPMENT SHALL BE PRESERVED AND PROTECTED PERIODICALLY BEFORE AND AFTER ERECTION AS PER ADVICE OF BHEL ENGINEER. THE JOURNALS OF STEAM TURBINE ROTORS, GENERATOR ROTOR, HT MOTORS AND OTHER ROTATING MACHINES SHALL BE THOROUGHLY CLEANED, GREASED/PAINTED WITH PRESERVATIVE AGENTS PERIODICALLY AS INSTRUCTED BY BHEL ENGINEER.

4.3.5

TRIAL RUN OF ALL MOTORS INCLUDING CHECKING DIRECTION OF ROTATION IN UNCOUPLED CONDITION, CHECK ALIGNMENT AND RE-COUPLE THE MOTOR TO DRIVEN EQUIPMENT.

4.3.6

AFTER INITIAL TRIAL OF ROTATING EQUIPMENTS, CONTROL AND POWER CABLING FOR MOTORS AND OTHER EQUIPMENTS/INSTRUMENTATION MAY HAVE TO BE DISCONNECTED FOR CHECKING ALIGNMENT AND RESETTING/ REALIGNMENT/ HOT ALIGNMENT. CONTRACTOR WILL HAVE TO PROVIDE SERVICES FOR DISCONNECTION AND RECONNECTION OF CONTROL AND POWER CABLES.

4.3.7

ALL RACKS OR ASSEMBLED UNITS LIKE GOVERNING CONSOLE ETC SUPPLIED FROM MANUFACTURING UNITS WILL BE TESTED IN BHEL/ CUSTOMER STORES OR AT SITE. THIS MAY REQUIRE TRANSPORTATION, FILLING OF OIL, WATER ETC IN THESE RACKS FOR CARRYING OUT TESTING OF THESE RACKS. DEFECTS NOTICED DURING TESTING OF THESE RACKS WILL HAVE TO BE RECTIFIED BY THE CONTRACTOR. FURTHER, ANY PIPELINE / FLANGES / FITTINGS NOT FOUND ASSEMBLED PROPERLY, THE SAME HAVE TO BE RECTIFIED / CORRECTED BY THE CONTRACTOR.

4.4 PIPING INSTALATION

4.4.1

PIPES OF ALL SIZES WILL BE SUPPLIED ONLY IN STRENGTH COMMERCIAL LENGTHS. THE SCOPE OF WORK IN PIPING SYSTEM (AIR, WATER, OIL, STEAM ETC) WILL INCLUDE CUTTING TO REQUIRED LENGTH, EDGE PREPARATION, LAYING, FIXING AND WELDING OF THE ELBOWS/ FITTINGS/ VALVES, DRILLING AND WELDING BRANCH-OFFS ETC. FIXING SUPPORTS/ HANGERS ETC AND CARRYING OUT ALL OTHER ACTIVITIES TO COMPLETE THE WORK.

4.4.2

CARRYING OUT OF PIPING AS PER THE SPECIFICATIONS BETWEEN EQUIPMENTS CONSTITUTING TERMINAL POINTS, WHETHER THE TERMINAL EQUIPMENTS FALL WITHIN THE SCOPE OF THE WORK/SPECIFICATION OR NOT, IS WITHIN THE SCOPE OF THE WORK/ SPECIFICATION. THE CONTRACTOR SHALL COMPLETE TERMINAL JOINTS AT EITHER ENDS, WITH DUE NDE & PWHT IF APPLICABLE, FOR ALL THE PIPING SCHEMES COVERED IN THE SCOPE OF WORK.

4.4.3

FIT UP AND WELDING/BOLTING/FASTENING OF PIPING TO THE TERMINAL POINTS (SUCH AS STUBS, VALVES, FLANGES ON TERMINAL POINTS/EQUIPMENTS, STUBS ON HEADERS, BATTERY LIMITS ETC) FORMING PART OF THE SCOPE OF WORK/SPECIFICATION AND STRESS RELIEVING AND RADIOGRAPHY OF JOINTS SO MADE ARE ALSO WITHIN THE SCOPE OF WORK. PERMANENT FASTENERS AND GASKETS WILL BE SUPPLIED BY BHEL.

4.4.4

ALL DRAINS / VENTS / RELIEF / ESCAPES / SAFETY VALVE PIPING TO VARIOUS TANKS/ SEWAGE / DRAIN CANAL / FLASH BOX / CONDENSER / SUMP / ATMOSPHERE ETC. FROM THE STUBS ON THE PIPING AND EQUIPMENTS ERECTED BY CONTRACTOR IS COMPLETELY COVERED IN THE SCOPE OF THIS TENDER.

4.4.5

THE FOLLOWING ITEMS OF WORK SHALL BE INCIDENTAL AND FORMING PART OF PIPING FABRICATION AND ERECTION

- A) TO LOCATE CAUSE OF VIBRATIONS IN EQUIPMENTS/AUXILIARIES/PIPELINES AND CARRYING OUT NECESSARY CORRECTIONS.
- B) FABRICATION AND ERECTION & WELDING OF RACKS, STEEL SUPPORTS, GUIDES, RESTRAINTS ETC FOR ALL THE PIPING. STEEL FOR THIS PURPOSE WILL BE SUPPLIED BY BHEL FREE OF CHARGE IN RANDOM AND RUNNING LENGTHS.
- C) PRE-ASSEMBLY OF SPRING SUSPENSION/HANGERS AND SHOCK ABSORBER AS PER REQUIREMENT.
- D) ERECTION OF STEAM TRAPS, FILTERS, FLOW NOZZLES/ FLOW INDICATORS/ FLOW ORIFICES OTHER MEASURING ELEMENTS IN THE PIPING. THESE MAY HAVE BEEN SUPPLIED EITHER BY BHEL OR THEIR CUSTOMER. THIS MAY INVOLVE CUTTING OF PIPE LINES, FRESH EDGE PREPARATION AND WELDING WITH STRESS RELIEVING WHEREVER APPLICABLE.
- E) FABRICATION / MAKING OF BENDS FOR PIPES AND TUBES OF DIAMETER UPTO 65MM.
- F) MATCHING OF ALL FITTINGS LIKE TEES, BENDS, FLANGES, REDUCERS VALVES, SOCKET FITTINGS, ETC WITH PIPES FOR WELDING.
- G) ERECTION, TESTING AND COMMISSIONING OF MOTORISED AND CONTROL VALVES AND ACTUATORS, INCLUDING SERVICING IF REQUIRED.
- H) CLEANING OF ALL PIPES BY WIRE BRUSHING / BLOWING BY COMPRESSED AIR.
- I) WELDING OF ROOT VALVES WITH SMALL LENGTH OF PIPING TO THE PRESSURE, FLOW AND LEVEL TAPPING POINTS ON PIPING OR FLOW NOZZLES/ ORIFICES/METERING/ MEASURING ELEMENTS FIXED ON PIPING.
- J) WELDING OF BLANKS WITH STRESS RELIEVING IF REQUIRED ON A TEMPORARY BASIS.
- K) DRILLING, WELDING OF STUBS FOR DRAINS, VENTS, INSTRUMENT TAPPING POINTS ETC.
- L) FABRICATION OF ACCESS PLATFORMS FOR VALVES ETC FROM RUNNING/RANDOM LENGTH MATERIALS SUPPLIED BY BHEL,

4.4.6

AS FAR AS POSSIBLE PRE-ASSEMBLY SHALL BE DONE. THE PIPE LAYING SHALL BE CARRIED OUT FROM THE AVAILABLE TERMINAL POINT/POINTS OR ANY OTHER AREA BETWEEN THE TERMINAL POINTS. THE ERECTION CAN BE CARRIED OUT ON TEMPORARY SUPPORTS TO OBTAIN PROPER ALIGNMENT AND WELDING. AFTER FIXING THE PERMANENT SUPPORTS, ALL THE TEMPORARY SUPPORTS SHALL BE REMOVED. THE ALIGNMENT, DISTANCES AND LOADING OF THE SUPPORTS SHALL BE CHECKED AND THE REQUIRED SETTINGS TO BE ENSURED AS PER REQUIREMENT.

4.5 CONDENSER INSTALLATION

4.5.1

THE CONDENSER WILL BE DESPATCHED IN LOOSE PARTS MAINLY COMPRISING OF PARTS OF SHELL ASSEMBLY, PARTS OF DOME ASSEMBLY, HOT WELL, SPRING ELEMENTS, SUPPORT PLATES, AIR EXTRACTION PIPES, BELLWS ETC. THE CONDENSER IS TO BE ASSEMBLED AT SITE IN POSITION BY WELDING THE DIFFERENT PARTS. CONDENSER TUBING AND TUBE EXPANSION (ROLLER EXPANSION) IS TO BE DONE AT SITE BY THE CONTRACTOR, AFTER TAKING DUE CARE TO CLEAN ALL THE TUBE HOLES. AFTER FINAL ALIGNMENT AND LEVELLING OF TURBINE EXHAUST AND CONDENSER, THE SAME HAS TO BE WELDED TO THE EXHAUST POSITION OF TURBINE EXHAUST AS PER THE SEQUENTIAL WELDING PROCEDURE. CONDENSER TUBE MATERIAL IS ADMIRALTY BRASS.

4.5.2

BEFORE INSERTION OF TUBES, THE CONTRACTOR SHALL CLEAN THE HOLES IN THE TUBE PLATES AND TUBE SUPPORT PLATES TO REMOVE PAINT, CORROSION SPOTS, OXIDE SCALES ETC. USE OF SUITABLE CLEANING AGENT MAY ALSO BE REQUIRED WHICH HAS TO BE ARRANGED BY THE CONTRACTOR.

4.5.3

THE TUBES SHALL BE EXPANDED USING AN AUTOMATIC ELECTRONIC TORQUE CONTROLLED TUBE EXPANDING UNIT OR PNEUMATIC TUBE EXPANDER. TUBE EXPANSION SHALL BE CHECKED WITH DIAL BORE GAUGE. THE TOTAL SET UP

INCLUDING TUBE EXPANDERS AND TUBE CUTTING TOOLS ETC. FOR CARRYING OUT THE COMPLETE CONDENSER TUBE EXPANSION WORKS SHALL BE PROVIDED BY THE CONTRACTOR.

4.5.4

THE CONTRACTOR SHALL CARRY OUT THE CONDENSER NECK WELDING WITH TURBINE EXHAUST ONLY AFTER FINAL INSTALLATION OF TURBINE.

4.5.5

THE HYDROSTATIC TESTING OF STEAM SPACE AND HYDRAULIC TESTING OF WATER SPACE UP TO THE TERMINAL POINT AFTER ASSEMBLY OF WATER BOXES ARE PART OF THE SCOPE.

4.6 GENERATOR INSTALLATION

GENERATOR ASSEMBLY WHICH INCLUDES STATOR, ENCLOSURES, ROTOR, EXCITER AND BEARINGS WILL BE SENT AS SINGLE PACKAGE WEIGHING APPROX 75 MT INCLUDING WT OF TRANSPORT FRAME. SOME OF THE ITEMS WILL BE SUPPLIED LOOSE AND FURTHER WORKS OF ASSEMBLY SHALL BE CARRIED OUT AT SITE. CONTRACTOR SHALL MAKE ALL ARRANGEMENTS TO HANDLE, TRANSPORT IF REQUIRED, LIFT AND ERECT THE GENERATOR ASSEMBLY TO ITS POSITION. REFER ALSO CLAUSE 7.3.1.7 OF SPECIAL CONDITIONS OF CONTRACT, SECTION-7 IN THIS REGARD

4.7 FST & DEAERATOR INSTALLATION

4.7.1

DE-AERATOR AND FEED STORAGE TANK ALONG WITH OTHER PARTS WILL BE DISPATCHED SEPARATELY IN KNOCKED DOWN CONDITION. BHEL WILL PROVIDE ITS CRAWLER CRANE OF 150 T CAPACITY, ON SHARING BASIS, TO LIFT THE DE-AERATOR AND FEED STORAGE TANK COMPONENTS TO THE NEAREST POSSIBLE FLOOR/ELEVATION. CONTRACTOR HAS TO MAKE ARRANGEMENTS FOR DRAGGING, PLACEMENT ON FOUNDATION/PROPER ELEVATION AND FURTHER WORKS LIKE ALIGNMENT, FITUP, WELDING ETC. CONTRACTOR SHALL ALSO MAKE HIS OWN ARRANGEMENTS FOR LOADING OF THESE COMPONENTS AT STORES, TRANSPORTATION TO SITE AND UNLOADING AT SITE.

4.7.2

ERECTION OF PERMANENT APPROACH PLATFORM AND LADDERS ETC FOR DE-AERATOR AND FST IS IN THE SCOPE OF WORK. THE STRUCTURAL STEEL AND OTHER MEMBERS WILL BE SUPPLIED IN RANDOM LENGTH/SIZE & WILL HAVE TO BE CUT TO REQUIRED SIZE AND PROFILE AS INCIDENTAL TO WORK. NO SEPARATE PAYMENT IS ENVISAGED FOR ERECTION OF THE ABOVE PLATFORM AND LADDERS.

4.8 STEAM TURBINE INSTALLATION

STEAM TURBINE ALONG WITH CASINGS, ROTOR, BEARINGS, GUIDE BLADE CARRIERS, STEAM CHAMBERS, EXHAUST HOOD, SUPPORT BLOCK, STEAM GLANDS, EMERGENCY STOP VALVE & CONTROL VALVES, GEAR BOX, FOUNDATION PARTS/ BASE PLATES AND RELATED AUXILIARIES ETC WILL BE DISPATCHED IN KNOCKED DOWN CONDITION. FURTHER WORKS OF ASSEMBLY, ERECTION AND ALIGNMENT SHALL BE CARRIED OUT AT SITE.

4.9 **OTHER ROTATING MACHINES AND EQUIPMENT INSTALLATION**

4.9.1 ALL ROTATING MACHINERY AND EQUIPMENTS SHALL BE CLEANED, LUBRICATED, CHECKED FOR THEIR SMOOTH ROTATION, IF NECESSARY, BY DISMANTLING AND RE-FITTING BEFORE ERECTION. IF IN THE OPINION OF BHEL ENGINEER, THE EQUIPMENT IS TO BE CHECKED FOR CLEARANCES, TOLERANCES AT ANY STAGE OF THE WORK OR DURING TESTING, PRE-COMMISSIONING, FACILITIES FOR DISMANTLING, CLEANING, LUBRICATING AND RE-FITTING SHALL BE PROVIDED BY THE CONTRACTOR. ALL ROTATING MACHINES SHAFT SHALL BE ROTATED PERIODICALLY TO AVOID BOWING OF SHAFTS.

- 4.9.2 TRIAL RUN OF THE DRIVE IN UN-COUPLED STATE AND THEN COUPLED WITH EQUIPMENT HAS TO BE DONE AFTER NECESSARY ALIGNMENT ETC
- 4.9.3 FORCED LUBE OIL SYSTEMS OF MOTORS AND/OR ROTATING EQUIPMENTS FORM THE PART OF WORK UNDER THIS SPECIFICATION
- 4.9.4 PERFORMANCE OF HYDRO TEST OF OIL COOLERS & AIR COOLERS OF ROTATING MACHINES, IF ANY, IS INCLUDED IN THE SCOPE OF WORK.
- 4.9.5 CERTAIN ROTATING MACHINERY AFTER, INITIAL RUNS AND COMMISSIONING OF THE EQUIPMENT MAY HAVE TO BE HOT ALIGNED.
- 4.9.6 PROTECTIVE LUBRICANT COATS/FILL PROVIDED ON THE CRITICAL AREA OF EQUIPMENTS HAVE TO BE REMOVED AT APPROPRIATE STAGE AND REGULAR LUBRICANTS, AFTER REMOVAL/CLEANING OF PROTECTIVE COAT/FILL, AS PER SPECIFICATIONS SHOULD BE FILLED/APPLIED.
- 4.9.7 AFTER INITIAL TRIAL OF ROTATING EQUIPMENTS, CONTROL AND POWER CABLING FOR MOTORS AND OTHER EQUIPMENTS/INSTRUMENTATION MAY HAVE TO BE DISCONNECTED FOR CHECKING ALIGNMENT AND RE-SETTING / RE-ALIGNMENT / HOT-ALIGNMENT. CONTRACTOR WILL HAVE TO ARRANGE LABOUR FOR DISCONNECTING CONTROL AND POWER CABLING AS PER BHEL ENGINEER'S INSTRUCTIONS AND CLEARANCE AND RECONNECT THE CONTROL AND POWER CABLING AFTER RE-ALIGNMENT, QUOTED TONNAGE RATE SHALL BE INCLUSIVE OF THE ABOVE.
- 4.9.8 EVEN THOUGH ROTATING MACHINES MAY BE GROUTED TO FOUNDATION USING NON-SHRINK GROUT MIX, BLUE MATCHING OF PACKER PLATES /SHIMS WITH FOUNDATION/ BETWEEN PACKERS/EQUIPMENT BASE SHOULD BE DONE WHEREVER INSTRUCTED BY BHEL ENGINEER.
- 4.9.9 VITAL CLEARANCES OF SHOP ASSEMBLED ROTATING MACHINES SHOULD BE CHECKED AT SITE AND ADJUSTED IF REQUIRED.
- 4.10 WELDING, RADIOGRAPHY AND OTHER NON-DESTRUCTIVE TESTING ETC
- A) INSTALLATION OF EQUIPMENT INVOLVES GOOD QUALITY WELDING, NDE CHECKS, POST WELD HEAT TREATMENT ETC CONTRACTOR'S PERSONNEL ENGAGED SHOULD HAVE ADEQUATE QUALIFICATION ON THE ABOVE WORKS.
- B) THE METHOD OF WELDING (VIZ) ARC, TIG OR OTHER METHOD WILL BE INDICATED IN THE DETAILED DRAWING/DOCUMENTS. BHEL ENGINEER WILL HAVE THE OPTION OF CHANGING THE METHOD OF WELDING AS PER SITE REQUIREMENT.
- C) NOT USED
- D) ALL THE WELDERS (STRUCTURAL AND PIPING) SHALL BE TESTED AND APPROVED BY BHEL ENGINEER BEFORE THEY ARE ACTUALLY ENGAGED ON WORK THOUGH THEY MAY POSSESS THE IBR/OTHER CERTIFICATE. BHEL RESERVES THE RIGHT TO REJECT ANY WELDER WITHOUT ASSIGNING ANY REASON.
- E) UNSATISFACTORY AND CONTINUOUS POOR PERFORMANCE MAY RESULT IN DISCONTINUATION OF CONCERNED WELDER.
- F) THE WELDED SURFACE SHALL BE CLEANED OF SLAG AND PAINTED WITH PRIMER PAINT TO PREVENT RUSTING, CORROSION. FOR THIS PAINT WILL BE SUPPLIED BY THE CONTRACTOR.

- G) HP JOINT FIT-UPS, SHOULD BE PROTECTED, WHERE REQUIRED, BY USE OF TAPES/PROTECTIVE PAINT AS MAY BE PRESCRIBED BY BHEL. THE CONTRACTOR SHALL SUPPLY PROTECTIVE PAINTS/TAPES ETC
- H) PREHEATING, INTER-PASS HEATING, POST WELD HEATING AND STRESS RELIEVING AFTER WELDING ARE PART OF ERECTION WORK AND SHALL BE PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH BHEL ENGINEER'S INSTRUCTIONS. NORMALLY THE ELECTRIC RESISTANCE HEATING METHOD WILL BE ADOPTED. CONTRACTOR SHALL ARRANGE TO SUPPLY HEATING EQUIPMENT WITH AUTOMATIC RECORDING DEVICES. ALSO THE CONTRACTOR SHALL HAVE TO ARRANGE FOR LABOUR, ALL HEATING ELEMENTS, THERMOCOUPLES AND ATTACHMENT UNITS, GRAPH SHEETS, THERMAL CHALKS, & INSULATING MATERIALS LIKE MINERAL WOOL, ASBESTOS CLOTH, CERAMIC BEADS, ASBESTOS ROPES ETC, REQUIRED FOR ALL HEATING AND STRESS RELIEVING WORKS.
- J) ALL THE RECORDED GRAPHS FOR HEAT TREATMENT WORKS SHALL BE THE PROPERTY OF BHEL AND SHALL BE HANDED OVER TO BHEL SITE IN-CHARGE WHEN DEMANDED.
- K) THE CONTRACTOR SHALL MAINTAIN WELDING RECORDS IN THE FORM AS PRESCRIBED BY BHEL CONTAINING ALL NECESSARY DETAILS, AND SUBMIT THE SAME TO THE BHEL ENGINEER AS REQUIRED. INTERPRETATION OF THE BHEL ENGINEER REGARDING ACCEPTABILITY OF THE WELDS SHALL BE FINAL.
- L) HEAT TREATMENT MAY BE REQUIRED TO BE CARRIED OUT AT ANY TIME (DAY AND NIGHT) TO ENSURE THE CONTINUITY OF THE PROCESS. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS INCLUDING LABOUR REQUIRED FOR THE WORK AS PER DIRECTION OF BHEL.
- M) RADIOGRAPHY WORK OF WELDS CONNECTED WITH THIS CONTRACT SHALL BE ARRANGED BY THE CONTRACTOR INCLUDING PROVISION OF SERVICES OF TECHNICIAN AND NECESSARY EQUIPMENT AND CONSUMABLES LIKE ISOTOPE CAMERA, X-RAY/GAMMA RAY FILMS, CHEMICALS ETC, AND NECESSARY LABOUR REQUIRED SUCH AS RIGGERS, HELPERS, ETC, TO ASSIST THE TECHNICIAN FOR CARRYING OUT THE RADIOGRAPHY WORK AND MAKING OTHER ARRANGEMENTS SUCH AS PROVIDING SCAFFOLDING, APPROACHES, PLATFORM LIGHTING ARRANGEMENTS, ETC, AT THEIR COST AND THE WORK HAS TO BE ARRANGED AS PER THE INSTRUCTION OF BHEL. IT MAY PLEASE BE NOTED THAT INVARIABLY THE RADIOGRAPHY WORK WILL BE CARRIED OUT AFTER THE NORMAL WORKING HOURS AND CLOSE OF OTHER SITE ACTIVITIES ONLY.
- N) RADIOGRAPHY INSPECTION OF WELDS SHALL BE PERFORMED IN ACCORDANCE WITH REQUIREMENTS AND RECOMMENDATION OF BHEL ENGINEER. THE QUANTUM OF RADIOGRAPHIC INSPECTION SHALL BE AS PER PROVISION OF IBR/BHEL'S ERECTION DOCUMENTS. THEY MAY, HOWEVER BE INCREASED DEPENDING UPON THE PERFORMANCE OF THE INDIVIDUAL WELDER AT THE DISCRETION OF BHEL ENGINEER/BOILER INSPECTING AUTHORITY.
- O) ALL RADIOGRAPHY FILMS OF JOINTS SHALL BE PRESERVED PROPERLY AND BE HANDED OVER TO BHEL. THESE SHALL BECOME THE PROPERTY OF BHEL.
- P) THE FIELD WELDED JOINTS SHALL BE SUBJECT TO DYE-PENETRANT / OTHER NON-DESTRUCTIVE EXAMINATION AS SPECIFIED IN THE RESPECTIVE ENGINEERING DOCUMENTS/ AS INSTRUCTED BY BHEL.
- Q) WHEREVER REQUIRED, SURFACE PREPARATION, LIKE SMOOTH GRINDING OF WELDED AREA, PRIOR TO RADIOGRAPHY SHALL BE DONE AS SPECIFIED. IT MAY ALSO BECOME NECESSARY TO ADOPT INTER-LAYER RADIOGRAPHY/MPT/UT DEPENDING UPON THE SITE/TECHNICAL REQUIREMENT NECESSITATING INTERRUPTIONS IN CONTINUITY OF THE WORK AND MAKING NECESSARY

ARRANGEMENTS FOR CARRYING OUT THE ABOVE WORK. THE CONTRACTOR SHALL TAKE ALL THIS INTO ACCOUNT IN HIS OFFER.

- R) NOT USED
 - S) WELDING ELECTRODES HAVE TO BE STORED IN ENCLOSURES HAVING TEMPERATURE AND HUMIDITY CONTROL ARRANGEMENT. THIS ENCLOSURE SHALL MEET BHEL SPECIFICATIONS.
 - T) WELDING ELECTRODES, PRIOR TO THEIR USE, CALL FOR BAKING FOR SPECIFIED PERIOD AND WILL HAVE TO BE HELD AT SPECIFIED TEMPERATURE FOR SPECIFIED PERIOD. ALSO, DURING EXECUTION, THE WELDING ELECTRODES HAVE TO BE CARRIED IN PORTABLE OVENS.
 - U) THE PORTION OF WORK COMING UNDER IBR PURVIEW (E.G. WELDING, HEAT TREATMENT OF HP JOINTS) HAS TO BE EXECUTED AS PER THE LATEST VERSION OF INDIAN BOILER REGULATION AND AMENDMENTS THEREOF. BHEL WILL FURNISH IBR DOCUMENTS FOR PIPING & FITTINGS AND FURTHER APPROVALS OF IBR/ STATUTORY AUTHORITIES FOR PRE-ASSEMBLY & ERECTION AND OTHER WORKS SHALL BE TAKEN BY CONTRACTOR.
- 4.11 TESTING, PRE-COMMISSIONING, ASSISTANCE FOR COMMISSIONING AND ASSISTANCE FOR PG TEST
- 4.11.1 TESTING, PRE-COMMISSIONING, & ASSISTANCE FOR COMMISSIONING WILL INVOLVE, THOUGH NOT LIMITED TO THESE, VARIOUS TESTING, TRIAL RUNS OF VARIOUS EQUIPMENTS ERECTED AND SYSTEMS INSTALLED, FLUSHING OF THE LINES BY AIR, OIL OR STEAM AS THE CASE MAY BE, CHEMICAL CLEANING OF VARIOUS SYSTEMS & PIPING, OIL-FLUSHING, STEAM BLOWING OF THE PIPE LINES, STEAM ROLLING, SYNCHRONIZATION, TRIAL OPERATION ETC, ARE SOME OF THESE ACTIVITIES. ALL THE ACTIVITIES FOR COMMISSIONING OF THE SET, AS INFORMED BY BHEL FROM TIME TO TIME SHALL BE COMPLETED.
 - 4.11.2 ALL THE ABOVE TESTS MAY HAVE TO BE REPEATED TILL ALL THE EQUIPMENTS SATISFY THE REQUIREMENT/ OBLIGATIONS OF BHEL TO THEIR CLIENT AND ALSO THE RELEVANT STATUTORY AUTHORITY.
 - 4.11.3 FOR THE PURPOSE OF CHEMICAL CLEANING, STEAM BLOWING, OIL FLUSHING & HYDRAULIC TEST OF TG PIPING, CONTRACTOR SHALL LAY, ERECT / INSTALL NECESSARY TEMPORARY PIPING, TANKS, VALVES, PUMPS ETC WITH SUPPORTS AS PART OF SCOPE OF ERECTION WORK. NO SEPARATE PAYMENT SHALL BE MADE FOR THIS WORK.
 - 4.11.4 MATERIALS FOR TEMPORARY ARRANGEMENTS OF INSTALLATION ETC WILL BE SUPPLIED BY BHEL IN RANDOM SIZES/LENGTHS. HOWEVER, SERVICING, FABRICATION, ERECTION, DISMANTLING OF THE SAME AFTER COMPLETION OF THE PROCESS AND RETURNING TO BHEL STORES WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 - 4.11.5 FABRICATION, FIT-UP, WELDING, AND POST-WELD-HEAT TREATMENT IF ANY, OF REQUISITE BLANKS FOR CONDUCT OF HYDRAULIC TEST IS PART OF WORK. SIMILARLY, REMOVAL OF BLANKS, RESTORATION AND NORMALIZATION OF THE CONCERNED SYSTEM/LINE IS TO BE DONE AS PART OF WORK. BHEL WILL PROVIDE THE MATERIAL FOR BLANKS FREE OF CHARGE. NO SEPARATE PAYMENT IS ENVISAGED FOR THESE ACTIVITIES.
 - 4.11.6 OVERHAULING, CLEANING, SERVICING OF TANKS, PUMPS, EQUIPMENTS, VALVES, DURING ERECTION, PRE-COMMISSIONING AND COMMISSIONING STAGES ARE IN THE SCOPE OF WORK. GASKETS, PACKING FOR REPLACEMENT WILL BE PROVIDED BY BHEL.

- 4.11.7 AFTER CHEMICAL CLEANING/PICKLING OF LUBRICATING SYSTEM (INCLUDING OIL PIPING, OIL TANK AND OTHER FITTINGS) OF TG, ROTATING MACHINES ETC, OIL FLUSHING FOR LUBRICATING SYSTEMS AS PER INSTRUCTIONS OF BHEL ENGINEER SHALL BE CARRIED OUT. CLEANING OF OIL TANK OF LUBRICATING OIL SYSTEM BEFORE AND AFTER OIL FLUSHING IS IN THE SCOPE OF WORK.
- 4.11.8 NOT USED
- 4.11.9 DURING PRE-COMMISSIONING/COMMISSIONING, REPLACING/ CHANGING MECHANICAL / OTHER SEALS OF EQUIPMENTS, PUMPS, REMOVAL AND CLEANING/REPLACING OF FILTERS ETC ARE WITHIN THE SCOPE OF WORK. SPARE PARTS REQUIRED FOR REPLACEMENT/ CHANGE WILL BE PROVIDED BY BHEL FREE OF COST IN CASE THE DAMAGE IS NOT ATTRIBUTABLE TO THE CONTRACTOR.
- 4.11.10 DURING THIS PERIOD, THOUGH BHEL/ CLIENT'S STAFF WILL ALSO BE ASSOCIATED IN THE WORK, THE CONTRACTOR'S RESPONSIBILITY WILL BE TO ARRANGE FOR COMPLETE REQUIREMENT OF MEN AND REQUIRED TOOLS AND PLANTS, CONSUMABLES, SCAFFOLDING AND
- 4.11.11 COMMISSIONING ACTIVITIES WILL CONTINUE TILL THE COMPLETION OF TRIAL OPERATION/COMMERCIAL OPERATION. DURING THIS PERIOD CONTRACTOR SHALL MAKE AVAILABLE THE SERVICES OF SEPARATE DEDICATED LABOUR-FORCE COMPRISING OF SUITABLE SKILLED AND SEMI/UN-SKILLED HANDS ALONG WITH NECESSARY TOOLS AND PLANTS, CONSUMABLES ETC
- 4.11.12 IT SHALL BE SPECIFICALLY NOTED THAT THE CONTRACTOR MAY HAVE TO WORK ROUND THE CLOCK DURING THE PRE-COMMISSIONING AND COMMISSIONING PERIOD ALONG WITH BHEL ENGINEERS AND HENCE CONSIDERABLE OVERTIME PAYMENT IS INVOLVED. THE CONTRACTOR'S QUOTED RATES SHALL BE INCLUSIVE OF ALL THESE FACTORS.
- 4.11.13 THE CONTRACTOR SHALL CARRY OUT ANY OTHER TESTS AS DESIRED BY BHEL ENGINEER ON ERECTED EQUIPMENT COVERED UNDER THE SCOPE OF THIS CONTRACT DURING TESTING, PRE-COMMISSIONING AND COMMISSIONING, TO DEMONSTRATE THE COMPLETION OF ANY PART OR WHOLE OF WORK PERFORMED BY THE CONTRACTOR.
- 4.11.14 IN CASE ANY DEFECT IS NOTICED DURING TESTS, TRIAL RUNS OF ALL EQUIPMENTS AND THEIR AUXILIARIES, SUCH AS INTERFERENCES, RUBBING, LOOSE COMPONENTS, ABNORMAL NOISE OR VIBRATION, STRAIN ON CONNECTED EQUIPMENT ETC THE CONTRACTOR SHALL IMMEDIATELY ATTEND TO THESE DEFECTS AND TAKE NECESSARY CORRECTIVE MEASURES. RE-ADJUSTMENT AND/OR RE-ALIGNMENT, IF NECESSARY, SHALL BE DONE AS PER BHEL ENGINEER'S INSTRUCTIONS. CLAIM, IF ANY, FOR THESE WORKS SHALL BE GOVERNED BY SECTION-13, SPECIAL CONDITIONS OF CONTRACT PROVIDED THE CAUSE OF SUCH WORK IS NOT ATTRIBUTABLE TO THE CONTRACTOR.
- 4.11.15
- i) CONTRACTOR SHALL CUT / OPEN / DISMANTLE WORK, IF NEEDED, AS PER BHEL ENGINEER'S INSTRUCTIONS DURING COMMISSIONING FOR INSPECTION, CHECKING AND MAKE GOOD THE WORKS AFTER INSPECTION IS OVER.
 - ii) SIMILARLY, DURING THE COURSE OF ERECTION, IF CERTAIN PORTION OF EQUIPMENTS ERECTED BY THE CONTRACTOR HAS TO BE UNDONE FOR ENABLING OTHER CONTRACTORS / AGENCIES OF BHEL / CUSTOMER TO CARRY OUT THEIR WORK, CONTRACTOR SHALL CARRY OUT SUCH JOBS EXPEDITIOUSLY AND PROMPTLY AND MAKE GOOD THE JOB AFTER COMPLETION OF WORK BY OTHER CONTRACTORS / AGENCIES OF BHEL / CUSTOMER AS PER BHEL ENGINEER'S / AGENCIES OF BHEL / CUSTOMERS INSTRUCTIONS. CLAIMS, IF ANY, IN THIS REGARD SHALL BE GOVERNED AS PER CLAUSES 13.1 TO 13.7.

4.12 ASSISTANCE FOR PG TEST

THE CONTRACTOR SHALL PROVIDE ASSISTANCE FOR CONDUCTING PERFORMANCE GUARANTEE (PG) TEST TO BHEL AS A PART OF HIS REGULAR SCOPE OF WORK. THIS SHALL INCLUDE MANPOWER ASSISTANCE, SMALL T&P, PROVIDING ACCESS PLATFORMS/ SCAFFOLDING/LADDERS, LIGHTING ARRANGEMENTS AND OTHER ENABLING FACILITIES ASSOCIATED WITH TYPICAL PG TEST ACTIVITY. CONTRACTOR SHALL INSTALL ALL NECESSARY TAPPING POINTS, INSTRUMENTS ETC.

4.13 EXCLUSIONS

THE FOLLOWING WORKS ARE SPECIFIC EXCLUSIONS FROM THE SCOPE OF WORK / SPECIFICATION:

1. CONTROL AND INSTRUMENTATION JOBS INCLUDING PANELS PLACEMENT, ERECTION/MOUNTING OF INSTRUMENTS & THEIR CALIBRATION, CABLING, CABLE TRAYS EXCEPT THOSE WHICH ARE SPECIFICALLY INCLUDED IN THESE SPECIFICATIONS.
2. TESTING OF MOTORS. HOWEVER ANY ASSISTANCE REQUIRED FOR TESTING & COMMISSIONING OF THESE MOTORS WILL BE PROVIDED BY CONTRACTOR
3. PNEUMATIC COPPER TUBING AND FITTINGS THEREOF.
4. APPLICATION OF THERMAL INSULATION OF MAIN AND DRIVE TURBINES.
5. MAIN STEAM PIPING UP TO EMERGENCY STOP VALVE .
6. CIVIL WORKS EXCEPT TO THE EXTENT SPECIFICALLY INDICATED ELSEWHERE IN THIS TENDER.
7. FINAL PAINTING

SECTION-5
SPECIAL CONDITIONS OF CONTRACT

5.0 OBLIGATIONS OF THE CONTRACTOR (TOOLS, TACKLES, CONSUMABLES ETC.)

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

5.1.1

CONTRACTOR SHALL MAKE HIS OWN ARRANGEMENTS FOR LABOUR COLONY AND STAFF QUARTERS INCLUDING LIGHTING, WATER, SANITATION ETC WITH HYGIENE AND COMPLY WITH ALL REQUIREMENTS. ONLY THE OPEN LAND WILL BE PROVIDED BY THE CLIENT FOR LABOUR COLONY. THATCHED CONSTRUCTION SHALL NOT BE PERMITTED, STEEL AND BRICK & MORTAR CONSTRUCTION ONLY SHALL BE USED FOR ACCOMMODATION QUARTERS. ALSO, THE CONTRACTOR HAS TO MAKE HIS OWN ARRANGEMENT FOR TRANSPORTATION OF HIS WORKMEN AND OTHER EMPLOYEES. BHEL/CLIENT SHALL NOT PROVIDE ANY FACILITY WITH REGARD TO ABOVE.

5.2 TOOLS AND TACKLES, MEASURING AND MONITORING DEVICES:

5.2.1

THE CONTRACTOR SHALL PROVIDE ALL (EXCEPTING THOSE INDICATED IN BHEL SCOPE) REQUIRED TOOLS AND PLANTS, MONITORING AND MEASURING DEVICES (MMD) AND HANDLING & TRANSPORTATION EQUIPMENTS FOR THE SCOPE OF WORK COVERED UNDER THESE SPECIFICATIONS. CONTRACTOR HAS TO PROVIDE SUITABLE CRANES FOR MATERIAL HANDLING AT BHEL/CLIENT'S STORES/STORAGE YARD. PLEASE REFER RELEVANT APPENDIX FOR THE LIST OF T&P BEING PROVIDED BY BHEL FREE OF CHARGES ON SHARING BASIS.

5.2.2

ALL TOOLS AND TACKLES TO BE DEPLOYED BY THE CONTRACTOR FOR THE WORK SHALL HAVE THE PRIOR APPROVAL OF BHEL ENGINEER WITH REGARD TO BRAND, QUALITY AND SPECIFICATION. INDICATIVE LIST OF MAJOR T&P TO BE ARRANGED BY THE CONTRACTOR HAS BEEN FURNISHED IN RELEVANT APPENDIX. CONTRACTOR SHALL ALSO MOBILIZE ALL OTHER T&P NECESSARY FOR TIMELY AND SATISFACTORY COMPLETION OF THE WORK IN SCOPE.

5.2.3

CONTRACTOR'S RESPONSIBILITY WITH REGARD TO OPERATOR, FUEL, LUBRICANTS AND DAILY UPKEEP OF T&P PROVIDED BY BHEL IS FURTHER DETAILED IN SECTION-7.

5.2.4

TIMELY DEPLOYMENT OF ADEQUATE QUANTITY OF T&P IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE PREPARED TO AUGMENT THE T&P AT SHORT NOTICE TO MATCH THE PLANNED PROGRAMME AND TO ACHIEVE THE MILESTONES.

5.2.5

CONTRACTOR SHALL MAINTAIN AND OPERATE HIS TOOLS AND PLANTS IN SUCH A WAY THAT MAJOR BREAKDOWNS ARE AVOIDED. IN THE EVENT OF MAJOR BREAKDOWN, CONTRACTOR SHALL MAKE ALTERNATIVE ARRANGEMENTS EXPEDITIOUSLY SO THAT THE PROGRESS OF WORK IS NOT HAMPERED.

5.2.6

IN THE EVENT OF CONTRACTOR FAILING TO ARRANGE THE REQUIRED TOOLS, PLANTS, MACHINERY, EQUIPMENT, MATERIAL OR NON-AVAILABILITY OF THE SAME OWING TO BREAKDOWN, BHEL WILL MAKE THE ALTERNATIVE ARRANGEMENT AT THE RISK AND COST OF THE CONTRACTOR.

5.2.7

THE T&P TO BE ARRANGED BY THE CONTRACTOR SHALL BE IN PROPER WORKING CONDITION AND THEIR OPERATION SHALL NOT LEAD TO UNSAFE CONDITION. THE

MOVEMENTS OF CRANES, AND OTHER EQUIPMENT SHOULD BE SUCH THAT NO DAMAGE / BREAKAGE OCCURS TO FOUNDATIONS, OTHER EQUIPMENTS, MATERIAL, PROPERTY AND MEN. ALL ARRANGEMENTS FOR THE MOVEMENT OF THE T&P ETC SHALL BE THE CONTRACTOR'S RESPONSIBILITY. THE NECESSARY TEST CERTIFICATES FOR EQUIPMENTS TO BE SUBMITTED.

5.2.8

USE OF WELDING GENERATORS/ RECTIFIERS FOR WELDING ONLY SHALL BE PERMITTED. USE OF WELDING TRANSFORMERS WILL BE SUBJECT TO SPECIFIC APPROVAL OF BHEL ENGINEER.

5.2.9

THE CONTRACTOR AT HIS COST SHALL CARRY OUT PERIODICAL TESTING OF HIS CONSTRUCTION EQUIPMENTS AND CALIBRATION OF MEASURING & MONITORING DEVICES (MMD). TEST/ CALIBRATION CERTIFICATES SHALL BE FURNISHED TO BHEL. MMDS SHALL BE CALIBRATED ONLY AT ACCREDITED LABORATORY AS PER THE LIST AVAILABLE WITH BHEL OR ANY OTHER LABORATORY APPROVED BY BHEL.

5.2.10

BHEL T&P WILL BE ISSUED IN BASIC ASSEMBLED CONDITION; CONTRACTOR SHALL TRANSPORT THESE T&P TO & FRO BETWEEN BHEL STORES AND SITE. ADDITIONAL LOOSE COMPONENTS / SUB-ASSEMBLIES / ATTACHMENTS AS AND WHEN NECESSARY, WILL BE ISSUED BY BHEL. ASSEMBLY OF SUCH ADDITIONAL LOOSE COMPONENTS/SUB-ASSEMBLIES/ ATTACHMENTS IS IN CONTRACTOR'S SCOPE. TRANSPORTATION OF SUCH ADDITIONAL LOOSE COMPONENTS/ SUB-ASSEMBLIES/ ATTACHMENTS ETC FROM AND BACK TO BHEL STORES/YARD IS IN CONTRACTOR'S SCOPE.

5.3 CONSUMABLES

5.3.1

THE CONTRACTOR SHALL PROVIDE ALL CONSUMABLES REQUIRED INCLUDING WORK SPECIFIC SPECIAL CONSUMABLES LIKE PRUSSIAN BLUE, MOLYKOTE, HYLOMAR, BRICOSIT STAG-B, GREASES AND SEALING COMPOUND FOR THREADED JOINTS OF GI PIPING ETC FOR CARRYING OUT THE WORK COVERED UNDER THESE SPECIFICATIONS EXCEPTING THOSE SPECIFICALLY INDICATED AS BHEL SCOPE.

5.3.2

ALL CONSUMABLES TO BE USED FOR THE WORK SHALL HAVE PRIOR APPROVAL OF BHEL ENGINEER WITH REGARD TO BRAND AND QUALITY SPECIFICATIONS. TEST REPORTS / CERTIFICATES IN RESPECT OF THESE CONSUMABLES, WHEREVER APPLICABLE, SHALL BE SUBMITTED TO BHEL ENGINEER.

5.3.3 PRIMERS & PAINTS

ALL PRIMERS AND PAINTS (OTHER THAN WHICH ARE SPECIFICALLY INCLUDED IN SCOPES OF BHEL) SHALL BE IS IN THE SCOPE OF CONTRACTOR. BITUMINOUS BLACK COAL TAR FOR APPLICATION INSIDE CONDENSER WATER BOX, IF REQUIRED, SHALL BE SUPPLIED BY THE CONTRACTOR.

5.3.4 CONSUMABLES FOR BHEL SUPPLIED EQUIPMENTS (CRANES, T &P ETC)

REFER RELEVANT CLAUSE OF SECTION-7 SPECIAL CONDITIONS OF CONTRACT IN THIS REGARD.

5.4 WELDING ELECTRODES, FILLER WIRES FOR TIG WELDING AND GASES

5.4.1

ALL THE REQUIRED WELDING ELECTRODES AS APPROVED BY BHEL SHALL BE ARRANGED BY CONTRACTOR AT HIS COST. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN PRIOR APPROVAL OF BHEL, BEFORE PROCUREMENT, REGARDING MANUFACTURER, TYPE OF ELECTRODES ETC. ON RECEIPT OF THE

ELECTRODES AT SITE, IT SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY BHEL REGARDING TYPE OF ELECTRODES, BATCH NUMBER, DATE OF EXPIRY ETC. BATCH TEST CERTIFICATES SHALL BE MADE AVAILABLE FOR VERIFICATION & RECORD BEFORE THE ACTUAL USE OF THE WELDING CONSUMABLES.

BHEL RESERVES THE RIGHT TO REJECT THE USE OF ANY ELECTRODES, IF FOUND NON-ACCEPTABLE BECAUSE OF BAD QUALITY, DETERIORATION IN QUALITY DUE TO IMPROPER STORAGE, SHELF LIFE EXPIRY, UNAPPROVED TYPE / BRAND ETC.

5.4.2

ALL FILLER WIRES FOR TIG WELDING OF PIPING SHALL BE PROVIDED BY THE CONTRACTOR.

5.4.3

GASES LIKE ARGON, OXYGEN, AND ACETYLENE ETC THAT ARE REQUIRED FOR ALL ERECTION AND WELDING RELATED ACTIVITIES SHALL BE ARRANGED BY THE CONTRACTOR AT HIS COST.

5.5 FIELD OFFICE

5.5.1

THE CONTRACTOR SHALL MAKE HIS OWN ARRANGEMENTS FOR FIELD OFFICE AND STORES FOR ACCOMMODATING NECESSARY EQUIPMENTS, TOOLS ROOM FOR EXECUTION OF THE WORK. ONLY OPEN SPACE WILL BE PROVIDED BY BHEL / CUSTOMER, FREE OF CHARGES WITHIN THE PROJECT PREMISES AS PER THE AVAILABILITY OF SPACE.

5.5.2

ON COMPLETION OF WORK, ALL THE TEMPORARY BUILDINGS, STRUCTURES, PIPELINES, CABLES, ETC SHALL BE DISMANTLED AND LEVELED AND DEBRIS SHALL BE REMOVED AS PER INSTRUCTION OF BHEL BY THE CONTRACTOR AT HIS COST. IN THE EVENT OF HIS FAILURE TO DO SO, THE SAME WILL BE ARRANGED TO BE REMOVED AND EXPENDITURE THEREOF WILL BE RECOVERED FROM THE CONTRACTOR. THE DECISION OF BHEL ENGINEER IN THIS REGARD SHALL BE FINAL. HOWEVER, THE SCOPE OF DISMANTLING AND LEVELING THE AREA IS LIMITED ONLY TO THE CONTRACTOR'S SITE OFFICE, YARD AND OTHER SPACES OCCUPIED BY THE CONTRACTOR.

5.6 AREA LIGHTING

5.6.1

CONTRACTOR SHALL ARRANGE ADEQUATE FLOODLIGHTS, HAND LAMPS AND AREA LIGHTING. CONTRACTOR SHALL USE HIS OWN MATERIALS LIKE CABLES, FUSES, SWITCH-BOARDS ETC. BHEL/CLIENT WILL NOT PROVIDE ANYTHING IN THIS REGARD.

5.7 CONSTRUCTION POWER & WATER

5.7.1

CONSTRUCTION POWER (THREE PHASE, 415V / 440V, 3PHASE, 50HZ) WILL BE PROVIDED AT ONE POINT NEAR THE SITE APPROXIMATELY 500 METER FROM ERECTION SITE FREE OF CHARGE, HOWEVER ALL TAXES, DUTIES, LEVIES, CHARGES ETC SHALL ALSO BE BORNE BY THE CONTRACTOR. REQUIRED ENERGY METER, ALL CABLES, FUSES, DISTRIBUTION BOARDS, SWITCHES, SWITCHBOARDS, BUS BARS, EARTHING ARRANGEMENTS, PROTECTION DEVICES E.G. ELCB, IF ANY, AND ANY OTHER INSTALLATION AS SPECIFIED BY STATUTORY AUTHORITY, CLIENT IN THIS REGARD, FOR DRAWL OF CONSTRUCTION POWER SHALL BE ARRANGED BY THE CONTRACTOR. OBTAINING APPROVALS, PAYMENT OF NECESSARY FEES, DUTIES ETC TOWARDS THE CLEARANCE OF SUCH INSTALLATIONS, PRIOR TO THESE BEING PUT TO USE OR AS MAY BE SPECIFIED, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

5.7.2

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE, MAINTAIN THE COMPLETE INSTALLATION ON THE LOAD SIDE OF THE SUPPLY WITH DUE REGARD TO

THE SAFETY REQUIREMENTS AT SITE. ALL CABLING AND INSTALLATIONS SHALL COMPLY IN ALL RESPECTS WITH THE APPROPRIATE STATUTORY REQUIREMENTS. INSTALLATION AND MAINTENANCE OF THIS SHALL BE DONE BY LICENSED AND EXPERIENCED ELECTRICIAN.

5.7.3

THE CUSTOMER WILL PROVIDE WATER FOR CONSTRUCTION PURPOSE AT A SINGLE POINT FREE OF CHARGE. HOWEVER, TAXES, DUTIES, LEVIES, CHARGES, IF ANY, SHALL BE BORNE BY THE CONTRACTOR. ALL ARRANGEMENTS FOR FURTHER DISTRIBUTION HAVE TO BE MADE BY THE CONTRACTOR.

5.7.4

CONTRACTOR SHALL BE WELL EQUIPPED WITH BACK-UP ARRANGEMENT TO TACKLE SITUATIONS ARISING DUE TO FAILURE OF CUSTOMER SUPPLIED POWER, SO AS TO ENSURE CONTINUITY AND COMPLETION OF CRITICAL PROCESSES AND ACTIVITIES THAT ARE UNDERWAY AT THE TIME OF POWER FAILURE OR IMPORTANT ACTIVITIES PLANNED IN IMMEDIATE FUTURE.

5.7.5

BHEL IS NOT RESPONSIBLE FOR ANY LOSS OR DAMAGE TO THE CONTRACTOR'S EQUIPMENT AS A RESULT OF VARIATIONS IN VOLTAGE OR FREQUENCY OR INTERRUPTIONS IN POWER SUPPLY.

5.8 RESPONSIBILITIES WITH REGARD TO LABOUR EMPLOYMENT ETC.

REFER CLAUSE 2.8 OF GENERAL CONDITIONS OF CONTRACT ALSO IN THIS REGARD.

5.8.1

CONTRACTOR SHALL ALSO COMPLY WITH THE REQUIREMENTS OF LOCAL AUTHORITIES/ PROJECT AUTHORITIES CALLING FOR POLICE VERIFICATION OF ANTECEDENTS OF THE WORKMEN, STAFF ETC.

5.8.2

BHEL / CUSTOMER MAY INSIST FOR WITNESSING THE REGULAR PAYMENT TO THE LABOUR. THEY MAY ALSO LIKE TO VERIFY THE RELEVANT RECORDS FOR COMPLIANCE WITH STATUTORY REQUIREMENTS. CONTRACTOR SHALL ENABLE SUCH FACILITIES TO BHEL / CUSTOMER.

5.8.3

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ARRANGE GATE PASS FOR ALL HIS EMPLOYEES, T&P ETC FOR ENTERING THE PROJECT PREMISES. NECESSARY COORDINATION WITH CUSTOMER OFFICIALS IS THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR TO FOLLOW ALL THE PROCEDURES LAID DOWN BY THE CUSTOMER FOR MAKING GATE PASSES. WHERE PERMITTED, BY CUSTOMER / BHEL, TO WORK BEYOND NORMAL WORKING HOURS, THE CONTRACTOR SHALL ARRANGE NECESSARY WORK PERMITS FOR WORKING BEYOND NORMAL WORKING HOURS.

5.8.4.

CONTRACTOR SHALL PROVIDE, ON HIS OWN COST, AT DIFFERENT ELEVATION SUITABLE ARRANGEMENT FOR URINAL AND DRINKING WATER FACILITY WITH NECESSARY PLUMBING & DISPOSAL ARRANGEMENT INCLUDING CONSTRUCTION OF SEPTIC TANK. THESE INSTALLATIONS SHALL BE MAINTAINED IN HYGIENIC CONDITION AT ALL TIMES.

5.9

IF AT ANY TIME DURING THE EXECUTION OF WORK, IT IS NOTICED THAT THE WORK IS SUFFERING ON ACCOUNT OF NON-AVAILABILITY/SHORTFALL IN PROVISION OF RESOURCES FROM THE CONTRACTOR'S SIDE, BHEL WILL MAKE SUITABLE ALTERNATE ARRANGEMENTS AT THE RISK AND COST OF CONTRACTOR. THE EXPENDITURE INCURRED WITH OVERHEADS THEREON SHALL BE RECOVERED FROM THE CONTRACTOR.

5.10

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

BHARAT HEAVY ELECTRICALS LIMITED: PSWR: NAGPUR
Tender Specification No. BHE/PW/PUR/BORLI-STG

5.10.1

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

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

5.10.2 Service Tax & Cess on Service Tax

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

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

5.10.3 VAT (Sales Tax /WCT)

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

5.10.4 Modalities of Tax Incidence on BHEL

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

5.10.5 New Taxes/Levies

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

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

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

5.11 SUBMISSION OF PERIODICAL REPORTS

CONTRACTOR SHALL SUBMIT PERIODICAL REPORTS IN RESPECT OF FOLLOWING ASPECTS OF OPERATION:

- 1) CONSUMPTION OF CONSUMABLES LIKE WELDING ELECTRODES, GASES AND PAINTS
- 2) CONSUMPTION OF CONSTRUCTION POWER
- 3) AVAILABILITY AND UTILIZATION OF BHEL'S TOOLS & PLANTS
- 4) AVAILABILITY AND UTILIZATION OF CONTRACTOR'S TOOLS & PLANTS
- 5) DAILY MANPOWER REPORTS
- 6) DAILY PROGRESS REPORTS OF ACTIVITIES & INCIDENTS
- 7) CALIBRATION REPORTS
- 8) RECORDS OF WAGES PAYMENT
- 9) ANY OTHER REPORT/RECORD AS MAY BE SPECIFIED BY BHEL/CLIENT.

SECTION-6

SPECIAL CONDITIONS OF CONTRACT

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

6.1 THE CONTRACTOR SHALL DEPLOY ALL THE SKILLED/SEMISKILLED/ UNSKILLED LABOUR INCLUDING HIGHLY SKILLED WORKMEN LIKE HIGH PRESSURE WELDERS ETC THESE WORKMEN SHOULD HAVE PREVIOUS EXPERIENCE ON SIMILAR JOB. THEY SHALL HOLD VALID CERTIFICATES WHEREVER NECESSARY. BHEL RESERVES THE RIGHT TO INSIST ON REMOVAL OF ANY EMPLOYEE OF THE CONTRACTOR AT ANY TIME IF HE IS FOUND TO BE UNSUITABLE AND THE CONTRACTOR SHALL FORTHWITH REMOVE HIM. CONTRACTOR SHOULD FURNISH A TENTATIVE DEPLOYMENT PLAN OF HIS MANPOWER AS REQUIRED VIDE APPENDIX-IV. ALSO THE ACTUAL DEPLOYMENT WILL BE SO AS TO SATISFY THE ERECTION AND COMMISSIONING TARGETS SET BY BHEL.

6.2 IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENGAGE HIS WORKMEN IN SHIFTS AND OR ON OVERTIME BASIS FOR ACHIEVING THE TARGETS SET BY BHEL. THIS TARGET MAY BE SET TO SUIT BHEL'S COMMITMENTS TO ITS CUSTOMER OR TO ADVANCE DATE OF COMPLETION OF EVENTS OR DUE TO OTHER REASONS. THE DECISION OF BHEL IN REGARD TO SETTING THE ERECTION AND COMMISSIONING TARGETS WILL BE FINAL AND BINDING ON THE CONTRACTOR.

6.3 CONTRACTOR SHALL DEPLOY ONLY QUALIFIED AND EXPERIENCED ENGINEERS/ SUPERVISORS. THEY SHALL HAVE PROFESSIONAL APPROACH IN EXECUTING THE WORK.

6.4 THE CONTRACTOR'S SUPERVISORY STAFF SHALL EXECUTE THE WORK IN THE MOST PROFESSIONAL MANNER IN THE STIPULATED TIME. ACCURACY OF WORK AND AESTHETIC FINISH ARE ESSENTIAL PART OF THIS CONTRACT. THEY SHALL BE RESPONSIBLE TO ENSURE THAT THE ASSEMBLY AND WORKMANSHIP CONFORM TO DIMENSIONS AND TOLERANCES GIVEN IN THE DRAWINGS/INSTRUCTIONS GIVEN BY BHEL ENGINEER FROM TIME TO TIME.

6.5 THE SUPERVISORY STAFF EMPLOYED BY THE CONTRACTOR SHALL ENSURE PROPER OUT-TURN OF WORK AND DISCIPLINE ON THE PART OF THE LABOUR PUT ON THE JOB BY THE CONTRACTOR. ALSO IN GENERAL THEY SHOULD SEE THAT THE WORKS ARE CARRIED OUT IN A SAFE AND PROPER MANNER AND IN COORDINATION WITH OTHER LABOUR AND STAFF EMPLOYED DIRECTLY BY BHEL OR OTHER CONTRACTORS OF BHEL OR BHEL'S CLIENT.

6.6 INDUSTRIAL RELATIONS AND LABOUR LAWS

AN INDUSTRIAL RELATIONS SUPERVISOR SHALL COORDINATE FOR THE IMPLEMENTATION OF LOCAL LABOUR LAWS, MAINTENANCE OF RECORDS AS REQUIRED BY CONTRACT LABOUR (REGULATION AND ABOLITION) ACT AND ALSO COORDINATE WITH THE LOCAL LABOUR AUTHORITIES AND ANY OTHER SUCH AUTHORITIES UNDER WHOM THIS WORK FALLS.

6.7 IF AT ANY TIME, IT IS FOUND THAT THE CONTRACTOR IS NOT IN A POSITION TO DEPLOY THE REQUIRED ENGINEERS/SUPERVISORS/ WORKMEN DUE TO ANY REASON, BHEL SHALL HAVE THE OPTION TO MAKE ALTERNATE ARRANGEMENTS AT THE CONTRACTOR'S RISK AND COST.

6.8 SITE ORGANIZATION

THE CONTRACTOR SHALL PROVIDE ADEQUATE STAFFING IN THE FOLLOWING MAJOR AREAS SEPARATELY FOR STG WORKS.

- PLANNING, MONITORING AND CONTROL
- CONDENSER & AUXILIARIES

- TURBINE & AUXILIARIES
- GENERATOR AND AUXILIARIES
- PUMPS & AUXILIARIES
- DEAERATOR AND PIPING
- WELDING AND NDT
- QUALITY ASSURANCE AND CONTROL
- SAFETY
- INDUSTRIAL RELATIONS AND WELFARE

CONTRACTOR SHALL FURNISH AN ORGANISATION CHART INDICATING THE STAFFING PATTERN FOR THE ABOVE FUNCTIONS. CONTRACTOR SHALL PROVIDE THE NAMES AND DETAILS OF ENGINEER/SUPERVISORS AT THE TIME OF MOBILIZATION TO BHEL AS PER THE PROPOSED ORGANIZATION CHART.

SECTION-7

SPECIAL CONDITIONS OF CONTRACT

7.0 OBLIGATIONS OF BHEL

7.1 FACILITIES TO BE PROVIDED BY BHEL

7.1.1 SPACE FOR SITE OFFICE / STORES
REFER SECTION-5 IN THIS REGARD.

7.1.2 CONSTRUCTION POWER & WATER
REFER SECTION-5 IN THIS REGARD.

7.1.3 OTHER MATERIALS AND CONSUMABLES:

BHEL SHALL NOT PROVIDE ANY MATERIAL / CONSUMABLES EXCEPT THOSE SPECIFICALLY MENTIONED AS BHEL SCOPE IN THESE SPECIFICATIONS.

7.1.4 MATERIALS FOR WELDER SITE QUALIFICATION TEST (PIPES)

BHEL WILL PROVIDE ONLY THE TUBES/PIPES FREE OF CHARGES FOR PREPARATION OF TEST PIECES FOR CONDUCTING THE SITE QUALIFICATION TEST OF PIPE WELDERS. CONTRACTOR SHALL PREPARE THE REQUIRED TEST PIECES FROM SUCH RAW MATERIALS. FOR SITE QUALIFICATION TEST OF ALL OTHER WELDERS CONTRACTOR SHALL ARRANGE ALL THE MATERIALS AND PREPARE TEST COUPONS.

7.2 FILLER WIRE FOR TIG WELDING FOR WELDING OF PIPING
REFER SECTION-5 IN THIS REGARD.

7.3 EQUIPMENTS – TOOLS & PLANTS

BHEL WILL MAKE AVAILABLE T&P LISTED IN THE RELEVANT APPENDIX FREE OF CHARGE. FURTHER DETAILS ARE AS UNDER:

7.3.1 CRANES TO BE PROVIDED BY BHEL

7.3.1.1

BHEL WILL MAKE AVAILABLE THE CRANE FREE OF CHARGES TO THE CONTRACTOR ON SHARING BASIS MAINLY FOR THE PURPOSE OF POSITIONING OF FST AND DE-AERATOR SUB-ASSEMBLIES (REF CL 4.7.1 – FST & DE-AERATOR INSTALATION).

7.3.1.2

CONTRACTOR SHALL PROVIDE SLEEPERS AND LAY NECESSARY SLEEPER BEDS, BACKFILLING OF APPROACHES WHEREVER NECESSARY FOR SAFE MOVEMENT OF THE CRANES AS DIRECTED BY BHEL. CONTRACTOR SHALL TRANSPORT THE EQUIPMENTS AND COMPONENTS/SUB ASSEMBLIES/ATTACHMENTS OF BHEL EQUIPMENTS TO & FRO BETWEEN BHEL STORES AND SITE.

7.3.1.3

CRANE WILL BE INITIALLY ISSUED IN BASIC ASSEMBLED CONDITION. ANY ALTERATION/ADDITION LIKE BOOM REDUCTION/EXTENSION, ASSEMBLY OF COMPONENTS/SUB-ASSEMBLIES NEEDED FOR MODULATING THE CAPACITY/ REACH / OTHER FEATURES OF CRANES AND RESTORATION TO THE STATE AS DIRECTED BY BHEL SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

7.3.1.4

CONTRACTOR SHALL PROVIDE THE FUEL FOR HIS USE FOR THE CRANES PROVIDED BY BHEL.

7.3.1.5

WHERE THE SERVICES OF THE CRANES PROVIDED BY BHEL ARE TO BE SHARED BY OTHER AGENCIES/ CONTRACTORS OF BHEL, THE CONTRACTOR'S RESPONSIBILITIES

DEFINED ABOVE WILL ALSO BE APPORTIONED ACCORDINGLY TO THE BENEFICIARY AGENCY. WORKING ARRANGEMENTS IN THIS REGARD WILL BE DONE AT SITE BY BHEL ENGINEER AND IN ANY CASE HIS DECISION SHALL BE FINAL AND BINDING.

7.3.1.6

FACILITY OF 30/5 MT CAPACITY EOT CRANE INSIDE THE TG HALL WILL BE EXTENDED FREE OF HIRE CHARGES FOR ERECTION OF TG EQUIPMENTS, SUBJECT TO ITS AVAILABILITY AND ACCESSIBILITY. OPERATOR FOR THE SAME IS TO BE PROVIDED BY THE CONTRACTOR.

7.3.1.7

AS INDICATED HEREIN, THE GENERATOR FRAME INCLUDING STATOR, ROTOR, EXCITER ETC WEIGHTING ROUGHLY ABOUT 75 MT (REF CL 4.6 – GENERATOR INSTALATION). UNLOADING OF THE SAME WILL BE DONE BY THE MATERIAL HANDLING AGENCY OF BHEL.

CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR LIFTING OF THE GENERATOR ASSEMBLY TO ITS DESIGNED LOCATION AS THE CAPACITY OF EOT CRANE IS NOT ADEQUATE FOR THIS PURPOSE. THE ARRANGEMENT SHOULD BE STRAND & JACK (LIFT AND SHIFT) OR SIMILAR ARRANGEMNT. SIMILARLY FOR ALIGNMENT AND FURTHER WORK ALL T & P SUCH AS HYDRAULIC OPERATED JACKS ETC SHALL BE ALSO BE ARRANGED BY THE CONTRACTOR.

7.4 OTHER T&P

7.4.1

THE RESPONSIBILITIES OF CONTRACTOR DEFINED ABOVE FOR BHEL CRANES SHALL ALSO BE APPLICABLE, MUTATIS – MUTANDIS, IN RESPECT OF OTHER TOOL & PLANTS PROVIDED BY BHEL.

7.4.2

SPECIAL TOOLS WHICH ARE SUPPLIED BY BHEL AS PART OF MAINTENANCE TOOLS TO BE HANDED OVER TO CUSTOMER UNDER REGULAR DU / DESS NUMBERS IN VARIOUS PRODUCT GROUPS MAY BE ISSUED TO THE CONTRACTOR FREE OF CHARGES FOR SPECIFIC ACTIVITIES, AT THE DISCRETION OF BHEL. CONTRACTOR SHALL RETURN THEM AFTER THE COMPLETION OF THE SPECIFIC ACTIVITY FOR WHICH THE TOOLS WERE SPARED, IN GOOD WORKING ORDER.

7.4.3

THE CONTRACTOR MUST NOT USE THESE EQUIPMENTS FOR ANY PURPOSE OTHER THAN WHAT THEY ARE INTENDED FOR.

7.4.4

IF THE ABOVE ITEMS ISSUED TO CONTRACTOR ARE FOUND NOT UTILISED / NOT MAINTAINED TO THE SATISFACTION OF BHEL ENGINEER OR MISUSED, THESE WILL BE WITHDRAWN AND NO REPLACEMENT WILL BE DONE FOR SUCH ITEMS.

7.5 LUBRICANTS FOR PRE-COMMISSIONING AND COMMISSIONING

7.5.1

BHEL/CUSTOMER WILL PROVIDE ONLY LUBE OIL FOR FLUSHING, FRESH FILLING AND SUBSEQUENT TOPPING UP IN LUBE OIL SYSTEMS OF ALL PERMANENT PLANT EQUIPMENTS/SYSTEMS. BHEL/CLIENT MAY ISSUE USED AND RE-CYCLED OIL FOR THE PURPOSE OF FLUSHING. IN SUCH CASE CONTRACTOR MUST TAKE CARE TO ENSURE THAT SUCH OIL DOES NOT GET MIXED UP WITH FRESH OIL.

Section-8

Special Conditions of Contract

8.0 Inspection/Quality Assurance/Quality Control/ Statutory Inspection

- 8.1 Various inspection/quality control/quality assurance procedures/methods at various stages of erection and commissioning will be as per BHEL/customer quality control procedure/codes/IBR 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 and post weld heat treatment records, testing & calibration records and other quality control and quality assurance documentation as per BHEL engineer's instructions, is within the scope of work/specification. These records shall be submitted to BHEL/customer for approval from time to time.
- 8.3 A daily logbook of all measurements and testing/calibration should be maintained by contractor on the job for detailing inspection details of various equipments.
- 8.4 The performance of HP welders will be reviewed from time to time as per the BHEL/IBR standards. High-pressure welders' performance record shall be furnished periodically. Corrective action as informed by BHEL shall be taken in respect of those welders not conforming to these standards. This may include removal/ discontinuance of concerned welder(s). Contractor shall arrange for the alternate welders immediately.
- 8.5 All the welders including HP welders shall carry identity cards as per the pro-forma prescribed by BHEL only welders duly authorised by BHEL/boiler inspector/customer/consultant shall be engaged on the work.
- 8.6 Contractor shall provide all the inspection, measurement and monitoring devices (MMD) required for completion of the work satisfactorily. These MMD shall conform to job requirement in respect of measurement range, accuracy level & any other specification. The list will be reviewed by BHEL and the contractor shall meet any augmentation needed.
- 8.7 The MMD deployed by the contractor shall, at all stages of work, have valid and current calibration. The calibration of these MMD shall be got done from the agencies accredited/ approved by BHEL. Copy of calibration certificates in respect of these MMD has to be submitted to BHEL. Periodical status report regarding validity of calibration has to be submitted to BHEL. Re-calibration/ re-validation shall be done periodically as per BHEL specifications. Contractor shall conform to the specifications of BHEL regarding storage of the MMD.

- 8.8 Re-work necessitated on account of use of invalid MMD shall be entirely to the contractor's account. He shall be responsible to take all corrective actions, including resource augmentation if any, as specified by BHEL to make-up for the loss of time.
- 8.9 In the course of work BHEL may counter/ finally check the measurements with their own MMD. Contractor shall render all assistance in conduct of such counter/final measurements.
- 8.10 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 be provided necessary labour for carrying out such tests. Similarly, BHEL will provide the oscilloscope for any specific requirement.
- 8.11 Total quality is the watchword of the work and contractor shall strive to achieve the quality standards, procedures laid down by BHEL. He shall follow all the instructions as per BHEL drawings and quality standards. Contractor shall provide for the services of quality assurance engineer.

8.12 **Stage Inspection By FES/QA Engineers**

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

8.13 **Statutory Inspection of Work**

- 8.13.1 The work to be executed under these specifications has to be offered for inspection, at appropriate stages of work completion, to various relevant statutory authorities to show compliance with applicable regulations.
- 8.13.2 The work related statutory inspections, though not limited to, are as under:
- 1) Inspectorate of steam boilers and smoke nuisance
 - 2) Any other authority connected to this 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, submitting documents, radiographs etc And following up the matter with them. Contractor shall also make all arrangements for offering

the products/systems for inspection, as applicable, to the concerned authority.

- 8.13.3 The contractors shall pay all fees connected with testing of his welders/workers and testing, inspection & calibration of his MMD and T&P.
- 8.13.4 It shall be contractor's responsibility to obtain approval of statutory authorities, whenever applicable, for the conducting of any work which comes under the purview of these authorities. Any cost arising from this shall be contractor's account.
- 8.13.5 BHEL will pay fees for visits, inspection fees etc Of these statutory authorities. All other expenses shall be borne by the contractor. In case these inspections have to be repeated due to default/fault of the contractor and fees have to be paid again, the contractor has to bear the charges.
- 8.13.6 Contractor should be qualified to execute pressure parts & piping work coming under the purview of IBR, for which he should register himself with CIB concerned state. Similarly it is the responsibility of contractor to obtain license from chief electrical inspector, concerned state for carrying out high voltage work. Contractor also should be aware of the latest IBR regulations and electricity act, including the amendments thereof.
- 8.14.0 The quality management system of BHEL, Power Sector – Western Region (PS-WR) has already been certified and accredited under I.S.O. 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.

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 authorised 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
- 9.1.5.1 Prepare a signboard giving the following information and display it near work site:
 - Name of Contractor
 - Name of Contractor Site-in-charge & Telephone number
 - Job Description in short
 - Date of start of job
 - Date of expected completion

- Name of BHEL Site-in-charge.

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

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

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

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

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

- Safety helmets conforming to IS 2925/1984 (1990)
- Safety belts conforming to IS 3521/1989
- Safety shoes conforming to IS 1989 part-II / 1986(1992)
- Eye and face protection devices conforming to IS 2573/1986(1991), IS 6994 (1973), part-I (1991), IS 8807/1978 (1991), IS 8519/1977(1991).
- Other job specific PPEs of standard ISI make as may be prescribed

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

9.2.1.5 All electrical equipment, connections and wiring for construction power, its distribution and use shall conform to the requirements of Indian Electricity Act and Rules. Only electricians licensed by

the appropriate statutory authority shall be employed by the contractor to carryout all types of electrical works. All electrical appliances including portable electric tools used by the contractor shall have safe plugging system to source of power and be appropriately earthed.

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

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

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

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

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

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

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

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

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

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

- 9.2.1.16 Gas cylinders shall be handled and stored as per Gas Cylinder Rules and relevant safe working practices
- 9.2.1.17 All wastes generated at Site shall be segregated and collected in a designated place so as to prevent spillage/contamination/scattering at Site, until the waste is lifted for disposal to designated disposal area as advised by BHEL official.
- 9.2.1.18 The contractor shall arrange at his cost (wherever not specified) appropriate illumination at all work spots for safe working when natural day light is not adequate for clear visibility.
- 9.2.1.19 The contractor shall train adequate number of workers/supervisors for administering "FIRST AID". List of competent first aid administrators should be prominently displayed.
- 9.2.1.20 The contractor shall display at strategic places and in adequate numbers the following in fluorescent markings

- Emergency telephone numbers
- Exit, Walkways
- Safe working load charts for wire ropes, slings, D shackles etc
- Warning signs

- 9.2.1.21 The contractor shall be held responsible for any violation of statutory regulations (local, state or central) and BHEL instructions that may endanger safety of men, equipment, material and environment in his scope of work or other contractors or agencies. Cost of damage, if any, to life and property arising out of such violation of statutory regulations and BHEL instructions shall be borne by the contractor.
- 9.2.1.22 In case of a fatal or disabling injury/accident to any person at construction sites due to lapses by the contractor, the victim and/or his/her dependents shall be compensated by the contractor as per statutory requirements. However, if considered necessary, BHEL shall have the right to impose appropriate financial penalty on the contractor and recover the same from payments due to the contractor for suitably compensating the victim and/or his/her dependents. Before imposing any such penalty, appropriate enquiry shall be held by BHEL giving opportunity to the contractor to present his case.
- 9.2.1.23 In case of any damage to property due to lapses by the contractor, BHEL shall have the right to recover cost of such damages from payments due to the contractor after holding an appropriate enquiry.
- 9.2.1.24 In case of any delay in the completion of a job due to mishaps attributable to lapses by the contractor, BHEL shall have the

right to recover cost of such delay from payments due to the contractor after notifying the contractor suitably and giving him opportunity to present his case.

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

Emergency Response

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

- Safeguard of life
- Protect assets under construction or neighbouring
- Protect environment
- Resumption of normal operations as soon as the emergency condition is called off

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

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

9.2.2 OCCUPATIONAL HEALTH

- 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 focussed
- Issue of approved Personnel Protective Equipment
 - Verification that the PPEs are adequate/maintained and worn by all staff involved in operations that are potentially hazardous to their health
 - Ensure that the personnel deployed are physically fit for the operation/work concerned
 - Provide hygienic and sanitary working conditions
- 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 housekeeping 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 minimisation. 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 advise
- 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 neutralised 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 scheduled 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 authorised BHEL official immediately after such occurrence but in any case not later than twelve hours of the occurrence. Such report shall be furnished in the manner prescribed by BHEL and also to meet statutory requirement.
- 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 PPEs
 - Condition of maintenance tools, equipments, facilities
 - Availability of fire fighting equipments and its condition
 - Use of fire fighting equipments and first aid kit
 - Awareness of occupational health hazard

- Awareness of safe working practices
- Presence of quality supervision
- Housekeeping

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

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

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

SN	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:**

SN	Violation of Safety Norm	Fine (Rs.)
01	Not Wearing Safety Helmet	50/-
02.	Not wearing Safety Belt	100/-
03.	Grinding Without Goggles	50/-
04.	Not using 24 V Supply For Internal Work	500/-
05.	Electrical Plugs Not used for hand Machine	100/-
06.	Not Slings property	200/-
07.	Using Damaged Sling	200/-

08.	Lifting Cylinders Without Cage	500/-
09.	Not Using Proper Welding Cable With Lot of Joints And Not Insulated Property.	200/-
10.	Not Removing Small Scrap From Platforms	200/-
11.	Gas Cutting Without Taking Proper Precaution or Not Using Sheet Below Gas Cutting	200/-
12.	Not Maintaining Electric Winches Which are Operated Dangerously	500/-
13.	Improper Earthing Of Electrical T&P	500/-
14.	Accident Resulting in Partial Loss in Earning Capacity	25,000/- per victim
15.	Fatal Accident/Accidents Resulting in total loss in Earning Capacity	1,00,000/- per victim

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

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 recognise 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 authorised representative of M/s-----

Name :

Place & Date:

BHARAT HEAVY ELECTRICALS LIMITED: PSWR: NAGPUR
Tender Specification No. BHE/PW/PUR/BORLI-STG

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 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

IS No	YEAR	Amd upto	DESCRIPTION
			BUILDINGS (GENERAL): ELECTRICAL INSTALLATIONS
IS 1904	1986		CODE OF PRACTICE FOR DESIGN AND CONSTRUCTION OF FOUNDATIONS IN SOIL
IS 1905	1987		STRUCTURAL SAFETY OF BUILDINGS MASONARY WALLS
IS 2082	1985		ELECTRICAL GEYSERS
IS 2171	1985		PORTABLE FIRE EXTINGUISHERS DRY POWDER TYPE (CARTRIDGE)
IS 2309	1989		PRACTICE FOR THE PROTECTION OF BUILDINGS AND ALLIED BUILDINGS AGAINST LIGHTENING
IS 2312	1967		EXHAUST FANS
IS 2361	1994		SPECIFICATION FOR BUILDING GRIPS - FIRST REVISION
IS 2418	1977		TUBULAR FLUORSCENT LAMPS IS 2418 (FT-1)
IS 2750	1964		STEEL SCAFFOLDINGS
IS 2762	1964		SAFE WORKING LOADS IN KGS FOR WIRE ROPE SLINGS
IS 2878	1986		FIRE EXTINGUISHERS CARBON DIOXIDE TYPE (PORTABLE AND TROLLEY MOUNTED)
IS 2925	1984		SPECIFICATION FOR INDUSTRIAL SAFETY HELMETS
IS 3016	1982		CODE OF PRACTICE FOR FIRE PRECAUTIONS IN WELDING AND CUTTING OPERATIONS- FIRST REVISION
IS 3315	1974		DESERT COOLERS
IS 3521	1989		INDUSTRIAL SAFETY BELTS AND HARNESS
IS 368	1983		IMMERSION WATER HEATERS
IS 3696	1991		SAFETY CODE OF SCAFFOLDS AND LADDERS PART 1 TO 2
IS 3737	1996		LEATHER SAFETY BOOTS FOR WORKERS IN HEAVY METAL INDUSTRIES
IS 374	1979		CEILING FANS INCLUDING REGULATORS
IS 3764	1992		EXCAVATION WORK - CODE OF SAFETY
IS 3786	1983		METHOD FOR COMPUTATION OF FREQUENCY AND SEVERITY RATES FOR INDUSTRIAL INJURIES AND CLASSIFICATION OF INDUSTRIAL ACCIDENTS
IS 3935	1966		CODE OF PRACTICE FOR COMPOSITE CONSTRUCTION
IS 4014	1967		CODE OF PRACTICE FOR STEEL TUBULAR SCAFFOLDING
IS 4081	1986		SAFETY CODE FOR BLASTING AND RELATED DRILLING OPERATIONS
IS 4082	1977	1996	STACKING AND STORAGE OF CONSTRUCTION MATERIALS AND COMPONENTS AT SITE
IS 4130	1991		DEMOLITION OF BUILDINGS - CODE OF SAFETY PART 1 TO 2
IS 4138	1977		SAFETY CODE FOR WORKING IN COMPRESSED AIR (FIRST REVISION)
IS 4155	1966		GLOSSARY OF TERMS RELATING TO CHEMICAL AND RADIATION HAZARDS AND HAZARDOUS CHEMICALS
IS 4209	1967		CODE OF SAFETY FOR CHEMICAL LABORATORY
IS 4250	1980		FOOD MIXERS
IS 4262	1967		CODE OF SAFETY FOR SULFURIC ACID

BHARAT HEAVY ELECTRICALS LIMITED: PSWR: NAGPUR

Tender Specification No. BHE/PW/PUR/BORLI-STG

IS No	YEAR	Amd upto	DESCRIPTION
IS 4756	1978		SAFETY CODE FOR TUNNELING WORK
IS 4912	1978		SAFETY REQUIREMENTS FOR FLOOR AND WALL OPENINGS, RAILINGS AND TOE BOARDS
IS 5121	1969		SAFETY CODE FOR PILING AND OTHER DEEP FOUNDATIONS
IS 5182	1969	1982	METHODS FOR MEASUREMENT OF AIR POLLUTION
IS 5184	1969		CODE OF SAFETY FOR HYDROFLUORIC ACID
IS 5216	1982	2000	RECOMMENDATIONS ON SAFETY PROCEDURES AND PRACTICE IN ELECTRICAL WORK PART I AND II
IS 555	1979		TABLE FANS
IS 5557	1995		INDUSTRIAL AND SAFETY LINED RUBBER BOOTS (SECOND REVISION)
IS 5916	1970		SAFETY CODE FOR CONSTRUCTION INVOLVING USE OF HOR BITUMINOUS MATERIALS
IS 5983	1980		SPECIFICATION FOR EYE PROTECTORS - FIRST REVISION
IS 6234	1986		PORTABLE FIRE EXTINGUISHERS WATER TYPE (STORED PRESSURE)
IS 692	1994		CRITERIA FOR SAFETY AND DESIGN OF STRUCTURES SUBJECTED TO UNDERGROUND BLASTS
IS 6994	1973		SPECIFICATION FOR SAFETY GLOVES
IS 7155	1986		CODE OF RECOMMENDED PRACTICE FOR CONVEYOR SAFETY (PART 1 TO 8)
IS 7205	1974		SAFETY CODE FOR ERECTION OF STRUCTURAL STEEL WORK
IS 7293	1974		SAFETY CODE FOR WORKING WITH CONSTRUCTION MACHINERY
IS 7323	1994		GUIDELINES FOR OPERATIONS OF RESERVOIRS
IS 7812	1975		CODE OF SAFETY FOR MERCURY
IS 7969	1975		SAFETY CODE FOR HANDLING AND STORAGE OF BUILDING MATERIALS
IS 8089	1976		CODE OF SAFE PRACTICE FOR LAYOUT OF OUTSIDE FACILITIES IN AN INDUSTRIAL PLANT
IS 8091	1976		CODE OF PRACTICE FOR INDUSTRIAL PLANT LAYOUT
IS 8095	1976		ACCIDENTS PREVENTION TAGS
IS 818	1968	1997	CODE OF PRACTICE FOR SAFETY AND HEALTH REQUIREMENTS IN ELECTRIC AND GAS WELDING, AND CUTTING OPERATIONS
IS 8448	1989		AUTOMATIC LINE VOLTAGE CORRECTOR (STABILISER)
IS 8519	1977		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR BODY PROTECTION
IS 8520	1977		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR EYE, FACE AND EAR PROTECTION
IS 875	1987		STRUCTURAL SAFETY OF BUILDING: LOADING STANDARD PART 1 TO 5
IS 8807	1978		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR PROTECTION OF ARMS AND HANDS
IS 8978	1985		INSTANTANEOUS WATER HEATERS

BHARAT HEAVY ELECTRICALS LIMITED: PSWR: NAGPUR

Tender Specification No. BHE/PW/PUR/BORLI-STG

IS No	YEAR	Amd upto	DESCRIPTION
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

Section-10

Special Conditions of Contract

10.0 Drawings and Documents

10.1

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

10.2

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

10.3

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

10.4

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

10.5

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

10.6

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

10.7

In case of discrepancy between quoted item rate and corresponding amount in the rate schedule, the **quoted item rates shall be reckoned as correct and amount recalculated**. Quoted item rates shall also prevail for arriving at the total price quoted for offer evaluation. Total price of all the items of Price Bid shall be reckoned for evaluation of tender.

10.8

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

SECTION-11

SPECIAL CONDITIONS OF CONTRACT

TIME SCHEDULE, MOBILISATION, PROGRESS AND MONITORING, COMPLETION, VARIATION ETC.

11.1

CONTRACTOR SHALL MOBILIZE HIS RESOURCE INITIALLY TO START THE WORK WITHIN 4 WEEKS FROM THE DATE OF LETTER OF INTENT. SUBSEQUENTLY CONTRACTOR SHALL AUGMENT HIS RESOURCES IN SUCH A MANNER THAT THE ENTIRE WORK IS COMPLETED TO ACHIEVE THE FOLLOWING TENTATIVE SCHEDULE:

ACTIVITY	SCHEDULE OF COMPLETION
COMMISSIONING AND TRIAL OPERATION OF UNIT#1 (INTERVENING MILESTONES WILL BE DECIDED AT SITE PRIOR TO START OF WORK)	WITHIN 6 MONTHS FROM START OF ERECTION

THE COMPLETION SCHEDULE OF UNIT # 2 AND UNIT#3 WILL HAVE A PHASE SHIFT OF 2 MONTHS AND 4 MONTHS RESPECTIVELY WITH REFERENCE TO UNIT#1.

IN ORDER TO MEET ABOVE SCHEDULE IN GENERAL, AND ALL OTHER INTERMEDIATE TARGETS SET, TO MEET CUSTOMER/ PROJECT SCHEDULE REQUIREMENTS, CONTRACTOR SHALL ARRANGE & AUGMENT ALL NECESSARY RESOURCES FROM TIME TO TIME ON THE INSTRUCTIONS OF BHEL WITHOUT ANY COST TO BHEL.

11.2 CONTRACT PERIOD

THE TOTAL CONTRACT PERIOD FOR COMPLETION OF ENTIRE WORK UNDER THIS SCOPE SHALL BE 10 (TEN) MONTHS.

PERMANENT ERECTION OF MAJOR SUB-ASSEMBLY/MAIN ASSEMBLY OR ANY OTHER EQUIPMENT ON ITS DESIGNATED FOUNDATION FOLLOWING DUE PROCESS OF PRE-ASSEMBLY AND QUALITY CHECKS AS PER APPROVED FIELD QUALITY PLAN (FQP) SHALL BE RECKONED AS THE START OF ERECTION. PREPARATORY ACTIVITIES AND/ OR PLACEMENT OF PACKER PLATES, SHIM, ANCHORS, AND EMBEDMENTS ETC SHALL NOT BE CONSIDERED FOR THIS PURPOSE.

11.3 GRACE PERIOD

GRACE PERIOD OF 2 (TWO) MONTHS BEYOND THE CONTRACT PERIOD MAY BE PROVIDED FOR THIS CONTRACT AT THE DISCRETION OF BHEL.

11.4 CONSEQUENCE OF DELAY

IT MAY BE NOTED THAT IN THE EVENT OF DELAY IN COMPLETION IS ATTRIBUTABLE TO THE CONTRACTOR AND LEADS TO IMPOSITION OF LIQUIDATED DAMAGES BY BHEL'S CLIENT, BHEL WILL IMPOSE LD ON THE CONTRACTOR AS PER GCC.

11.5 PROGRESS MONITORING, CONTRACT EXTENSION AND OVERRUN

11.5.1 PROGRESS MONITORING

PROGRESS WILL BE REVIEWED PERIODICALLY (DAILY/WEEKLY/MONTHLY) INCLUDING MONTH END REVIEW VIS-A-VIS THE PLANS DRAWN AS ABOVE. THE CONTRACTOR SHALL SUBMIT PERIODICAL PROGRESS REPORTS AND OTHER REPORTS/INFORMATION INCLUDING MANPOWER, CONSUMABLES ETC AS DESIRED BY BHEL.

11.5.2 ASCERTAINING AND ESTABLISHING THE REASONS FOR SHORTFALL

THE ONUS PROBANDI THAT THE CAUSES LEADING TO EXTENSION OF THE CONTRACT PERIOD IS NOT DUE TO ANY REASONS ATTRIBUTABLE TO THE CONTRACTOR IS ON HIM (THE CONTRACTOR). REVIEW OF THE PERFORMANCE AS STATED VIDE CL. 11.5.1 ABOVE WILL BE MADE CONSIDERING THE AVAILABILITY OF COMPONENTS TO BE ERECTED AND OTHER INPUTS / CONSTRAINTS OVER WHICH THE CONTRACTOR HAS NO CONTROL. THE PROGRAMME WILL BE REVIEWED AREA-WISE AND THE FOLLOWING FACTS WILL BE RECORDED IN CASE OF SHORTFALL AT THE END OF EVERY MONTH:

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

11.5.3 CONTRACT EXTENSION

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

11.5.4

A JOINT PROGRAMME SHALL BE DRAWN FOR THE WORK TO BE COMPLETED DURING THE EXTENDED CONTRACT PERIOD. REVIEW OF THE PROGRAM AND RECORD OF SHORTFALL AS DESCRIBED VIDE CLAUSE NO. 11.5.2 SHALL BE DONE DURING THE EXTENDED PERIOD. THE OVER RUN CHARGES WILL BE PAID IN PROPORTION TO THE ACHIEVEMENT OF THE RESPECTIVE MONTH VIS-À-VIS THE PLAN FOR THE MONTH (FOR ASSESSING PERFORMANCE, AGREED PLAN SHALL BE REDUCED BY SHORTFALL ATTRIBUTABLE TO THE BHEL). BHEL MAY DISALLOW CONTRACTOR'S CLAIM FOR OVERRUN CHARGES IF MONTHLY PROGRAMME AS MENTIONED HEREIN ARE NOT MADE BY HIM.

11.5.5

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

11.5.6 OVERRUN COMPENSATION

IF THE CONTRACT IS EXTENDED BEYOND THE CONTRACT AND GRACE PERIOD FOR ANY REASON OTHER THAN THOSE ATTRIBUTABLE TO THE CONTRACTOR OR FORCE MAJEURE CONDITIONS, THE CONTRACTOR WILL BE COMPENSATED BY PAYMENT OF OVERRUN CHARGES AT THE RATE OF RS. 40,000/- (RUPEES FORTY THOUSAND ONLY) PER MONTH. OVERRUN COMPENSATION WILL BE PAID FOR THE EXTENSION ATTRIBUTABLE TO BHEL ONLY. NO OVERRUN COMPENSATION WILL BE PAYABLE FOR THE EXTENSION ON ACCOUNT OF REASONS ATTRIBUTABLE TO CONTRACTOR AND/OR FORCE MAJEURE CONDITIONS. OVERRUN COMPENSATION FOR ELIGIBLE PERIOD SHALL BE IN PROPORTION TO THE PROGRESS ACHIEVED AGAINST THE PLAN FOR RESPECTIVE PERIOD.

11.6 PRICE VARIATION

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

11.7 CONTRACT VARIATIONS

11.7.1 VARIATION IN QUANTITIES & WEIGHTS ETC

QUANTITIES AND WEIGHTS ETC OF VARIOUS EQUIPMENTS, QUANTITIES OF VARIOUS ITEMS OF WORK COVERED UNDER THESE SPECIFICATIONS, & INDICATED IN RELEVANT APPENDICES ARE LIKELY TO VARY. FOR ANY UPWARD OR DOWNWARD VARIATION IN THE QUANTITIES, THE RATES ACCEPTED SHALL BE APPLICABLE WITHOUT ANY VARIATION. PAYMENT WILL BE MADE FOR THE ACTUALLY EXECUTED QUANTITIES OF VARIOUS ITEMS OF WORK.

11.8 INTEREST BEARING RECOVERABLE ADVANCE

Interest bearing (rate of interest will be 1% per annum more than bank interest rate, on monthly reducing balance basis) recoverable advance limited to 5% of the contract value may be paid by BHEL at its discretion depending on the merit of the case against receipt & acceptance of bank guarantee from the contractor for the amount sought. This bank guarantee (BG) shall be valid at least for one year or the recovery duration. In case recovery of dues does not get completed within the aforesaid BG validity period, the contractor must renew the validity of BG or submit fresh BG for the outstanding amount and remaining recovery period. BHEL is entitled to make recovery of the entire outstanding amount in case the contractor fails to comply with the BG requirement as above.

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

11.9 DEFINITION OF WORK COMPLETION

THE CONTRACTOR'S SCOPE OF WORK UNDER THESE SPECIFICATIONS WILL BE DEEMED TO HAVE BEEN COMPLETED IN ALL RESPECT, ONLY WHEN ALL THE ACTIVITIES ARE COMPLETED SATISFACTORILY AND SO CERTIFIED BY BHEL SITE IN CHARGE. THE DECISION OF BHEL IN THIS REGARD SHALL BE FINAL AND BINDING ON THE CONTRACTOR.

SECTION-12

SPECIAL CONDITIONS OF CONTRACT

TERMS OF PAYMENT

12.0 TERMS OF PAYMENT

12.0.1

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

12.0.2

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

12.0.3

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

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

However, on specific request of vendor, this amount may be released on pro rata basis for the value of work executed and accepted by BHEL, along with any RA Bill and onwards, subject to receipt and acceptance of bank guarantee of equal amount in BHEL's prescribed format. The BG shall be kept valid till completion of such guarantee period and an additional six months claim period. This is also subject to the condition that the contractor has started the work and also furnished/remitted the initial Security Deposit as per contract.

12.0.4

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

12.0.5

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

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

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

12.1 STAGES OF PROGRESSIVE PRO-RATA PAYMENTS

FOR EACH UNIT THE ACCEPTED PRICE WILL BE BROKEN DOWN IN THE FOLLOWING BROAD HEADS OF WORK AREA. FOR THE PROGRESSIVE PAYMENTS, THESE HAVE TO BE FURTHER BROKEN DOWN. CONTRACTOR SHALL FINALIZE AT SITE THE DETAILED BILLING BREAK UP IN CONSULTATION WITH AND ON APPROVAL OF BHEL CONSTRUCTION MANAGER.

SL. NO.	DESCRIPTION	ASSIGNED %
A.	ERECTION & TESTING:	(90%)
1.	SURFACE CONDENSER	15
2.	MAIN STEAM TURBINE AND ITS AUXILIARIES INCLUDING LUB OIL SYSTEM EQUIPMENTS ETC	20
3.	DRIVE TURBINES AND ITS AUXILIARIES INCLUDING OIL SYSTEM EQUIPMENT ETC	3
4.	TURBO-GENERATOR AND ITS AUXILIARIES	15

SL. NO.	DESCRIPTION	ASSIGNED %
5.	INTEGRAL PIPING OF BOTH MAIN AND DRIVE TURBINES	7
6.	ALL BALANCE OF PLANT MECHANICAL EQUIPMENTS INCLUDING PUMPS AND THEIR DRIVES, LP DOSING SYSTEM, OTHER TANKS AND VESSELS, HOISTS ETC	15
7.	HEAT EXCHANGERS AND FST & DE-AERATORS ETC	15
B.	PRE-COMMISSIONING AND COMMISSIONING	(10%)
1.	BARRING GEAR OF MAIN STEAM TURBINE	2
2.	TRIAL RUN AND COMMISSIONING OF FEED PUMPS INCLUDING DRIVES	2
3.	TRIAL RUN AND COMMISSIONING OF CONDENSATE EXTRACTION PUMPS INCLUDING DRIVES	1
4.	TRIAL RUN AND COMMISSIONING OF OTHER PUMPS INCLUDING DRIVES & BOP MECHANICAL EQUIPMENTS, HOISTS ETC	2
5.	ROLLING AND SYNCHRONIZATION	1
6.	COMPLETION OF TRIAL OPERATION	1
7.	COMPLETION OF PG TEST	1
	GRAND TOTAL	100%

12.2 MEASUREMENT OF THE WORK COMPLETED

- A) SPARES, SURPLUS QUANTITY, ERECTION CONTINGENCY MATERIALS WILL NOT BE PAID FOR UNLESS THE SAME HAS BEEN CONSUMED IN PLACE OF REGULAR ITEM OF MEASURABLE WORK AS PER THE RATE SCHEDULE.
- B) IT IS CLARIFIED THAT AS FAR AS WEIGHT CONSTITUTED BY WELDING CONSUMABLES AND OTHER CONSUMABLES SUPPLIED BY BHEL AS WELL AS BY THE CONTRACTOR, SHALL BE IGNORED FOR THE PURPOSE PAYMENT.
- C) BHEL ENGINEER'S DECISION REGARDING STAGE OF PAYMENT CORRESPONDING TO PROGRESS OF WORK, CALCULATION OF WEIGHT ETC. WILL BE FINAL AND BINDING ON THE CONTRACTOR.
- D) NO SEPARATE PAYMENT SHALL BE MADE FOR GROUTING OF EQUIPMENTS ETC SPECIFIED ELSEWHERE IN THESE SPECIFICATIONS.

SECTION -13

SPECIAL CONDITIONS OF CONTRACT

13.0 EXTRA CHARGES FOR RECTIFICATION AND MODIFICATION

- 13.1 IF EXTRA WORKS (REQUIRING LESS THAN **100 MAN-HOURS**) FOR MODIFICATION, REWORK, REVAMPING, IN BRIEF, ANY WORK DONE TO CHANGE THE STATE EXISTING TO A STAGE DESIRED AND ALSO FABRICATION, ALL OR ANY, ARE NEEDED DUE TO ANY CHANGE IN OR DEVIATION FROM THE DRAWINGS AND DESIGN OF EQUIPMENT, OPERATION/ MAINTENANCE REQUIREMENTS, MISMATCHING, TRANSIT DAMAGES AND OTHER ALLIED WORKS WHICH ARE NOT VERY SPECIFICALLY INDICATED IN THE DRAWINGS, BUT ARE FOUND ESSENTIAL FOR SATISFACTORY COMPLETION OF THE WORK, ARE DONE, NO EXTRA CHARGES WILL BE PAID. THE TENDERERS ARE REQUESTED TO TAKE THIS ASPECT INTO ACCOUNT AND THE QUOTED RATE SHOULD INCLUDE ALL SUCH CONTINGENCIES.
- 13.2 IT MAY ALSO BE NOTED THAT IF ANY SUCH SAID EXTRA WORKS ARISE ON ACCOUNT OF THE CONTRACTOR'S FAULT IT WILL HAVE TO BE CARRIED OUT BY THE CONTRACTOR FREE OF COST. UNDER SUCH CIRCUMSTANCES, ANY MATERIAL AND CONSUMABLE REQUIRED FOR THIS PURPOSE, WILL ALSO HAVE TO BE ARRANGED BY THE CONTRACTOR AT HIS COST.
- 13.3 HOWEVER, BHEL MAY CONSIDER FOR PAYMENT AS EXTRA, FOR SUCH OF THOSE WORKS DETAILED IN CLAUSE 13.1 WHICH REQUIRE MORE THAN **100 MAN-HOURS** AND SUCH PAYMENT WILL BE REGULATED BY THE TERMS, CONDITIONS AND STIPULATIONS CONTAINED IN THE CLAUSES 13.4 TO 13.8 AND/OR 14.2.1 TO 14.2.10 AS THE CASE MAY BE. IT MAY BE SPECIFICALLY NOTED THAT THE DECISION OF BHEL AS TO WHETHER SUCH PAYMENT IS DUE SHALL BE FINAL AND BINDING ON THE CONTRACTOR.
- 13.4 BHEL MAY, AT THEIR ABSOLUTE DISCRETION, CONSIDER FOR PAYMENT AS EXTRA ON MAN-DAY BASIS AS FOUND BY THEM AS JUSTIFIABLE FOR SUCH OF THOSE WORKS SPECIFIED IN CLAUSE 13.1 WHICH REQUIRE MAJOR MODIFICATION/ REPAIR/ REWORKS/ RECTIFICATION ETC IT MAY ALSO BE NOTED THAT ONLY THOSE WORKS WHICH ARE IDENTIFIED AS MAJOR AND WARRANT EXTRA PAYMENT AND CERTIFIED AS SUCH BY THE SITE ENGINEER AND ACCEPTED BY THE DESIGNERS AND/OR COMPETENT AUTHORITY OF BHEL, WILL BE CONSIDERED FOR EXTRA PAYMENT.
- 13.5 FOR EXTRA WORKS ARISING OUT OF TRANSIT, STORAGE AND ERECTION DAMAGES, PAYMENT, IF FOUND DUE, WILL BE REGULATED BY CLAUSES 14.2.1 TO 14.2.10.
- 13.6 ALL THE EXTRA WORK SHOULD BE CARRIED OUT BY A SEPARATELY IDENTIFIABLE GANG, WITHOUT AFFECTING ROUTINE ACTIVITIES. DAILY LOG SHEETS IN THE PRO-FORMA PRESCRIBED BY BHEL SHOULD BE MAINTAINED AND SHALL BE SIGNED BY THE CONTRACTOR'S REPRESENTATIVE AND BHEL ENGINEER. NO CLAIM FOR EXTRA WORK WILL BE CONSIDERED/ENTERTAINED IN THE ABSENCE OF THE SAID SUPPORTING DOCUMENTS IE. DAILY LOG SHEETS. IT MAY, HOWEVER BE NOTED THAT SIGNING OF LOG SHEETS BY BHEL ENGINEER DOES NOT MEAN THE ACCEPTANCE OF SUCH WORKS AS EXTRA WORKS. ALL ADMISSIBLE CLAIMS SHALL BE SUBMITTED TO BHEL
- 13.7 BHEL RETAINS THE RIGHT TO AWARD OR NOT TO AWARD ANY OF THE MAJOR REPAIR/REWORK/MODIFICATION/RECTIFICATION/FABRICATION WORKS UNDER CLAUSES 13.1 TO 13.8 TO THE CONTRACTOR, AT THEIR DISCRETION WITHOUT ASSIGNING ANY REASON FOR THE SAME.

- 13.8 AFTER ELIGIBILITY OF EXTRA WORKS IS ESTABLISHED AND FINALLY ACCEPTED BY BHEL ENGINEER/DESIGNER, PAYMENT WILL BE RELEASED ON COMPETENT AUTHORITY'S APPROVAL AT THE FOLLOWING RATE.

EXTRA CHARGES

SINGLE AVERAGE MAN-DAY RATE, INCLUDING OVERTIME IF ANY, AND OTHER SITE EXPENSES AND INCIDENTALS, INCLUDING CONSUMABLES, TOOLS AND TACKLES, FOR CARRYING OUT ANY MAJOR REWORK/ REPAIRS/ RECTIFICATION/ MODIFICATION/ FABRICATION OF 8 HOURS AS MAY ARISE DURING THE COURSE OF ERECTION. (REFER CLAUSES 13.1 TO 13.8 AND 14.2.1 TO 14.2.10)

RS. 320/- (RUPEES THREE HUNDRED AND TWENTY ONLY)

NO PAYMENT WILL BE MADE IF AN ITEM OF WORK LASTS LESS THAN 100 MAN-HOURS.

SECTION-14

SPECIAL CONDITIONS OF CONTRACT

14.0 Insurance

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

14.1.1

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

14.2 Reporting Damages and Carrying out Repairs

14.2.1

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

14.2.2

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

14.2.3

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

14.2.4

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

14.2.5

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

14.2.6

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

14.2.7

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

14.2.8

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

14.2.9

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

14.2.10

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

14.2.11

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

14.2.12

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

14.3 Insurance by the Contractor and Indemnification of BHEL

14.3.1

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

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

14.3.2

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

SECTION-15

Special Condition of Contract

15.0 Earnest Money Deposit & Security Deposit

15.1 Earnest Money Deposit:

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

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

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

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

15.1.2 EMD shall not carry any interest.

15.2 Security Deposit

15.2.1 Security Deposit shall be furnished by the successful tenderer. The rate of Security Deposit will be as below:

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

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

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

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

BHARAT HEAVY ELECTRICALS LIMITED: PSWR: NAGPUR
Tender Specification No. BHE/PW/PUR/BORLI-STG

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

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

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

Appendix-I

QUANTITATIVE INFORMATION

A. ATTACHED SEPARATELY as Annexure (i),(ii) and (iii):

i. WEIGHT AND DESPATCHABLE DIMENSIONS FOR HEAT EXCHANGERS

ii. WEIGHT AND DIMENSION SCHEDULE FOR STEAM TURBINE & AUX

iii. WEIGHT AND DIMENSION SCHEDULE FOR BFP DRIVE STEAM TURBINE & AUX

B. Details of BOILER FEED PUMP and MAIN CW PUMPS shall be furnished later

C. FURNISHED HEREIN:

1. DETAILS OF INTEGRAL PIPING:

Sl. No.	DESCRIPTION	CS	SS	VALVES
1	MAIN TURBINE	4500 Kg	3000 Kg	2000 Kg
2	DRIVE TURBINE	3000 Kg	2000 Kg	1500 Kg

2. DETAILS OF BOP – MECH EQUIPMENTS:

SL.NO.	DESCRIPTION		DIMENSIONS (LxBxH) M	WEIGHT (Kgs)	TOTAL WEIGHT (Kg)
M.00.00	<u>BOP MECHANICAL PACKAGES</u>	-			
	-	-			
M.01.00	PUMPS				
M.01.01	Emergency Boiler Feed Pump- With Diesel Engine Drive	1	7.2x3.3x3.0	16,000	16000
M.01.03	MP FW Pumps for Export (*)	2	4.7x2.1x2.0	7,400	14800
M.01.04	CW Pumps for Export (Vertical) - with EI Drive	3	1.5x1.5x11.7	9,500	28500
M.01.05	Auxiliary CW Pumps (Vertical)- with EI Drive.	2	1.5x1.5x11.0	8,000	16000
M.01.06	Auxiliary CW Pumps (Vertical) -with Turb Drive.	1	3.0x1.5x8.3	5,500	5500

M.01.07	Emergency CW Pump for Boiler (Vertical)-with EL Drive.	1	0.5x0.5x8.5	1,200	1200
M.01.08	Condensate Extraction Pumps (Vertical) - with EL. Drive	6	2.2x1.0x6.3	3,000	18000
M.01.09	Condensate Transfer Pumps (CTP) (*)	2	3.6x1.5x2.85	4,300	8600
M.01.10	Boiler Blow-Down Transfer Pumps - with EL. Drive	2	1.0x1.0x7.5	2,850	5700
M.01.13	Portable Sump Pumps - with EL. Drive	2	0.5x0.4x0.6	50	100
M.01.14	GSC Condensate Pumps with EL drive (for BFP - DT)	2	1.55x0.76x0.7	500	1000
M.01.15	Misc Sump Pumps	6	--	--	
M.03.00	DOSING SYSTEMS				
M.03.01	LP Dosing Skid - Hydrazine	1	3 x 3.5 x 3.5	2,100	2100
M.03.02	LP Dosing Skid - Morpholene	1	3 x 5 x 3.5	2,500	2500
M.04.00	CONDENSATE TANKS & FLASH VESSELS				
M.04.02	HP Steam Flash Vessels	3	2 x 2 x 2.5	1,700	5100
M.04.03	LP Steam Flash Vessels	3	2 x 2 x 2.5	1,700	5100
M.07.00	CRANES / HOISTS / LIFTS				
M.07.05	Chain Pully Blocks/ Hoists (Assorted capacities)	8	-----	150	1200
				TOTAL	131400

1. BESIDES ITEMS INDICATED HEREIN, THERE IS LIKELIHOOD OF ADDITION OF SOME OTHER ITEMS INTEGRAL TO THIS WORK. THESE SHALL ALSO BE EXECUTED AS PART OF WORK WITHIN QUOTED RATES.
2. EQUIPMENTS/ ITEMS SUPPLIED BY VENDORS OF BHEL UNITS AS PART OF / WHOLE OF ASSEMBLY SHALL ALSO FORM PART OF THIS WORK AND SHALL BE EXECUTED WITHIN QUOTED RATES.

APPENDIX-II

LIST OF T&P TO BE PROVIDED BY BHEL FREE OF HIRE CHARGES ON SHARING BASIS			
SN	DESCRIPTION & CAPACITY OF T&P	QUANTITY	REMARKS
01	CRAWLER CRANE 150 TON CAPACITY	01	REFER SECTION-4, & SECTION-7, SPECIAL CONDITONS OF CONTRACT
02	EOT CRANE 30/5 TON	01	REFER SECTION-4, & SECTION-7, SPECIAL CONDITONS OF CONTRACT

Appendix-III
Format for Month-wise Manpower Deployment Plan
(Category-wise numbers to be indicated for each month)

SN	Category	Months						
		1	2	3	4	5	6	7
01	Resident engineer							
02	Erection engineers							
03	Erection supervisors							
04	Quality Assurance engineer							
05	Safety engineer							
06	Materials management supervisors							
07	Welders							
08	Fitters							
09	Millwright fitters							
10	Crane operator							
11	Truck/trailer drivers							
12	Store keepers							
13	Electricians							
14	Semiskilled/ unskilled workers							
	Month wise total							

NOTE: 1. THE DEPLOYMENT PLAN SHALL BE FOR ENTIRE CONTRACT PERIOD.

Date:

Signature of bidder

BHARAT HEAVY ELECTRICALS LIMITED: PSWR: NAGPUR
Tender Specification No. BHE/PW/PUR/BORLI-STG

Page 71 of 77

Appendix-I V
Format for deployment plan for major Tools and Plants of contractor

SN	Description & capacity of T&P	Min. Qty	Months quantity						
			1	2	3	4	5	6	7
1.	Mobile Crane of 8-10 T capacity	1 No.							
2.	Trailer with Tractor of suitable capacity	As reqd.							
3.	TIG welding sets	As reqd.							
4.	Pipe bending m/c electro-hydraulic	As reqd.							
5.	Radiography source & other arrangement	1set							
6.	Electric distribution board with energy meter	1set							
7.	Welding Generators/rectifiers	As reqd.							
8.	Hydraulic test pump cap.250 Kg/cm2	As reqd.							
9.	Tube expander for condenser	As reqd.							
10.	Hydraulic jacks of suitable capacity	As reqd.							
11.	Torque wrench 0-2000n-m capacity	As reqd							
12.	Vacuum cleaner –industrial	As reqd							
13.	Mixer for grouting of eqpt. Foundation	As reqd							
14.	Slings of suitable capacity for lifting heavy equipments like Condenser, Turbine and generator of	As reqd							
15.	Spanners/eye bolts/jack bolts of all sizes	As reqd							
16.	Long feeler gauge set	As reqd							
17.	Electrode baking oven(Baking – Static)	As reqd							
18.	Portable Electrode baking oven								
19.	Measuring and Monitoring Devices								

NOTE:

1. This list is neither exhaustive nor limiting. Quantities indicated above are only the minimum required. Contractor shall deploy all necessary T&P to meet the schedules & as prescribed by BHEL
2. No claim whatsoever will be entertained on this account.
3. Deployment plan shall cover the entire contract period.

Signature of the bidder

Date:

Appendix-V
Planned workers man-days in various areas

Sl.No.	Description	Mandays Planned
1	Planning, Monitoring and Control	
2	Materials Management	
3	Condenser & Auxiliaries	
4	Turbine & Auxiliaries	
5	Generator and Auxiliaries	
6	Pumps & Auxiliaries	
7	Piping & supports	
8	Welding and NDT	
9	Insulation & Cladding	
10	Quality Assurance and Control	
11	Safety and house keeping	
12	Industrial relations and welfare	

Appendix-VI

Concurrent Commitments

Sr. No.	Full postal address of client and name of officer in-charge	Description of the work	Value of the contract	Commencement date	Scheduled completion	% compltd. As on date	Anticipated compln. Date	Remarks

Date:

Signature of the bidder

Appendix-VII
Analysis of unit rate quoted

Sl. no.	Description	% of quoted rate	Remarks
01	Site facilities viz., electricity, water other infrastructure.		
02	Salary and wages + retrenchment benefits		
03	Consumables		
04	T&P depreciation & maintenance		
05	Establishment & administrative expenses		
06	Overheads		
07	Profit		

Date

Signature of the bidder

APPENDIX-VIII

DETAILS OF SIMILAR WORK DONE DURING THE LAST SEVEN YEARS

S N	FULL POSTAL ADDRESS OF CLIENT & NAME OF OFFICER IN CHARGE	DESCRIP- TION OF WORK	VALUE OF CONTRACT	DATE OF AWARD OF WORK	DATE OF COMMENCE MENT OF WORK	ACTUAL COMPLETION TIME (MONTHS)	DATE OF ACTUAL COMPLETIO N OF WORK	REMARKS
1								
2								
3								
4								
5								
6								
7								
8								
9								

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

DATE

SIGNATURE OF TENDERER WITH SEAL