TENDER SPECIFICATION

NUMBER.BHE/PW/PUR/VNT-PTE/467

HANDLING OF PAINTS AT SITE STORES/STORAGE YARD, TRANSPORTATION TO SITE OF WORK, APPLICATION OF PAINTS FOR BOILERS AND THEIR AUXILIARIES, TG & AUXILIARIES, LP PIPING, CW PIPING AND STRUCTURES AND HANGERS & SUPPORTS OF LP PIPINGS AND POWER CYCLE PIPING, TANKS AND VESSELS, AND OTHER EQUIPMENTS, PAINTING OF COLOUR BANDS, LETTERING, MARKING AND SIGNS FOR DIRECTION OF FLOW/ ROTATION, NAMEPLATES ETC OF 2 X 500 MW STAGE-III, UNITS -9 & 10

AT

NTPC, VINDHYACHAL THERMAL POWER STATION,
VINDHYANAGAR,
DIST: SIDHI, MADHYA PRADESH

PART:I – TECHNICAL BID

(TECHNICAL BID SPECIFICATION, NOTICE INVITING TENDER and GCC)

BOOK NO.

BHARAT HEAVY ELECTRICALS LIMITED

(A Government Of India Undertaking)
POWER SECTOR - WESTERN REGION
SHREEMOHINI COMPLEX
345, KINGSWAY - NAGPUR 440 001

CONTENTS

LEGEND:

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

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

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

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

Tender Specification No. BHE/PW/PUR/VNT-PTE/467

Name of the Work:

HANDLING OF PAINTS AT SITE STORES/STORAGE YARD, TRANSPORTATION TO SITE OF WORK, APPLICATION OF PAINTS FOR BOILERS AND THEIR AUXILIARIES, TG & AUXILIARIES, LP PIPING, CW PIPING AND STRUCTURES AND HANGERS & SUPPORTS OF LP PIPINGS AND POWER CYCLE PIPING, TANKS AND VESSELS, AND OTHER EQUIPMENTS, PAINTING OF COLOUR BANDS, LETTERING, MARKING AND SIGNS FOR DIRECTION OF FLOW/ ROTATION, NAMEPLATES ETC OF 2 X 500 MW STAGE-III, UNITS -9 & 10

AT

NTPC, VINDHYACHAL THERMAL POWER STATION,
VINDHYANAGAR,
DIST: SIDHI, MADHYA PRADESH

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

SR. MANAGER (Purchase)

Place: Nagpur

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 fulfill 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

VINDHYACHAL SUPER THERMAL POWER PROJECT IS A PIT-HEAD COAL BASED PROJECT OWNED BY NATIONAL THERMAL POWER CORPORATION. SIX UNITS OF 210MW (STAGE-I) AND TWO UNITS OF 500 MW (STAGE-II) ARE PRESENTLY OPERATIONAL. THE CAPACITY OF PLANT IS BEING AUGMENTED BY INSTALLATION OF ADDITIONAL 2X500 MW SETS AS STAGE–III ADJECENT TO THE EXISTING UNITS.

THE PROPOSED POWER STATION IS LOCATED IN SIDHI DISTRICT OF MADHYA PRADESH HAVING LATITUDE & LONGITUDE OF 26 °6′ N AND 82° 40 ′E RESPECTIVELY. THE SITE IS SITUSTED ON NORTH – WEST BANK OF RIHAND RESERVOIR.

NEAREST TOWN IS RENUKUT AT A DISTANCE OF 50 KM FROM THE PROJECT. THE NEAREST BROAD GAUGE RAIL-HEAD IS SHAKTINAGAR RAILWAY STATION IS APPROXIMATELY 2.0 KM AWAY FROM THE PROJECT. MIRZAPUR STATION IS APPROCIMATELY 200 KM AWAY FROM THE PROJECT. THE SITE IS ACCESSIBLE BY ALL SEASON ROAD FROM VARANASI - ROBERTSGANJ – RENUKOOT OR SINGRAULI – BEDAN ROAD. THE NEAREST AIR PORT IS VARANASI.

OTHER IMPORTANT DATA

THE PROJECT SITE LIES IN THE SEISMIC ZONE –III AS DEFINED IN IS –1893.

THE BASIC WIND SPEED "V_b " AT TEN METERS ABOVE THE MEAN GROUND LEVEL IS 47.0 METERS / SECOND.

CATEGORY OF TERRAIN IS –2

HIGHEST AMBIENT TEMPERATURE RECORDED IN LAST 10 YEARS IS 44^0 C

LOWEST AMBIENT TEMPERATURE RECORDED IN LAST 10 YEARS IS 1^0 C

THE TENDERERS ARE HOWEVER, ADVISED TO ACQUAINT THEMSELVES WITH THE SITE CONDITIONS, BEFORE QUOTING. NO COMPENSATION WHATSOEVER, ON ACCOUNT OF NON-FAMILIARISATION WITH THE SITE CONDITION, WILL BE ENTERTAINED.

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-III**)		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 *Solvency Certificate* from *Govt. Authority* 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 *Income Tax Clearance Certificate* or c**opy of IT Return along with copy of PAN Card** is Furnished	Yes	No
17	Month-wise manpower deployment plan (**Appendix–II**) is furnished	Yes	No
18	Analysis of unit rates quoted (**Appendix-I**) is furnished	Yes	No
19	Whether all the pages of the Tender Specification documents are read, understood and signed	Yes	No
20	Power of Attorney Enclosed in favour of Person Making Offer	Yes	No
21	Bidder has familiarized himself with all Relevant Local Laws & Local Conditions	Yes	No
22	Safety Requirement of this work in a Running plant Premises has been understood.	Yes	No
23	Erection and Commissioning programme furnished	Yes	No
24	Details of Similar Work carried out in last seven years furnished in **Appendix-IV**		
25	Whether copies of detailed Work Orders (with BOQ) and Completion Certificates in support of above furnished	Yes	No
26	Whether contractor has left any job unfinished? If so, give reasons.	Yes	No
27	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/VNT-PTE/467** 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

4.1.1 CERTIFICATE OF NO-DEVIATION

TENDER SPECIFICATION No. BHE/PW/PUR/VNT-PTE/467

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.

SIGNATURE OF THE BIDDER

DATE:

SECTION-3

OFFER OF THE BIDDER

To
The SR. MANAGER (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/VNT-PTE/467** 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 FURNTHER AGREE TO DEPOSIT SECURITY DEPOSIT FOR THE WORK AS PROVIDED FOR IN THE TENDER SPECIFICATION WITHIN THE STIPULATED TIME AS MAY BE INDICATED BY BHEL, POWER SECTOR – WESTERN REGION, NAGPUR.

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

PLACE: SIGNATURE OF BIDDER:
DATE: ADDRESS:

WITNESSES WITH THEIR ADDRESS

SIGNATURE	NAME	ADDRESS
1.		
2.		

Section- 4

Special Conditions of Contract

4.0 Scope of Work

4.0 SCOPE OF WORK INVOLVING SURFACE CLEANING AND APPLICATION OF PAINTS

THE WORK TO BE CARRIED OUT UNDER THE SCOPE OF THESE SPECIFICATIONS COVERS THE COMPLETE WORK OF LOADING, HANDLING, TRANSPORTING, UNLOADING, SURFACE CLEANING, APPLICATION OF PRIMER AND FINISH/FINAL PAINTS, GRINDING OF WELDING SPATTERS, KEROSENE CLEANING ETC OF BOILER & AUXILIARIES, TG & AUXILIARIES, LP PIPING, CW PIPING AND STRUCTURES AND HANGERS & SUPPORTS OF LP PIPINGS AND POWER CYCLE PIPING, TANKS AND VESSELS, AND OTHER EQUIPMENTS, PAINTING OF COLOUR BANDS, LETTERING, MARKING AND SIGNS FOR DIRECTION OF FLOW/ ROTATION, NAMEPLATES ETC OF 2 X 500 MW STAGE-III UNITS 9 & 10. THE WORK SHALL CONFORM TO INSTRUCTIONS/SPECIFICATIONS/STANDARD PRACTICES AND APPROVED COLOUR CODES THAT WILL BE PROVIDED BY BHEL FROM TIME TO TIME. IF ANY PORTION OF THE WORK IS FOUND TO BE DEFECTIVE IN WORKMANSHIP OR NOT CONFORMING TO SPECIFICATIONS, THE CONTRACTOR SHALL CLEAN THE SURFACE AND RE-DO THE WORK AT HIS COST FAILING WHICH THE WORK WILL BE GOT DONE BY ENGAGING OTHER AGENCIES OR DEPARTMENTALLY AND RECOVERIES WILL BE EFFECTED FROM CONTRACTORS BILL TOWARDS EXPENDITURE INCURRED INCLUDING 30% DEPARTMENTAL CHARGES. ALL TOOLS, TACKLES, FIXTURES, EQUIPMENTS, MATERIALS, MANPOWER, SUPERVISORS/ ENGINEERS, CONSUMABLES ETC 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 CLAUSE. THE CONTRACTOR'S QUOTED RATES SHOULD BE INCLUSIVE OF ALL SUCH CONTINGENCIES. SCOPE OF WORK IS FURTHER DETAILED HEREAFTER.

PAINT, PRIMER & THINNER REQUIRED FOR THE WORK DEFINED IN THIS TENDER SPECIFICATION SHALL BE PROVIDED BY BHEL FREE OF COST. ALL OTHER MATERIALS AND T&Ps REQUIRED TO EXECUTE THE WORK SPECIFIED IN THIS TENDER IS IN CONTRACTORS SCOPE.

4.1 SCOPE OF WORK

4.1.1 PAINTING OF STEEL SURFACES (OTHER THAN THOSE EMBEDDED IN CONCRETE) : (REF : NTPC BID DOC NO. CS-2240-108-2, TECHNICAL SPECIFICATION SECTION-VI, PART-B, SUB-SECTION-C)

a) ALL STEEL SURFACES HAVE BEEN PROVIDED AT SHOP WITH SPECIFIED PRIMER OF MINIMUM DFT OF 75MICRON AFTER DUE SURFACE PREPARATION. THIS HAS BEEN FOLLOWED WITH

INTERMEDIATE COAT OF SPECIFIED EPOXY BASED PAINT WITH MINIMUM DFT OF 75MICRON.

b) INTERMEDIATE COAT SHALL BE FOLLOWED WITH THE APPLICATION OF 2 FINISH COATS OF POLYAMIDE CURED COLOUR PIGMENTED EPOXY BASED PAINT (SOLID BY VOLUME MINIMUM 40%) OF MINIMUM 35 MICRON DFT PER COAT. OUT OF THIS, FIRST FINISH COAT SHALL BE APPLIED AT SHOP/ SUB-CONTRACTOR'S WORKS. THE SECOND FINISH COAT OF POLYAMIDE CURED COLOUR PIGMENTED EPOXY BASED PAINT (SOLID BY VOLUME MINIMUM 40%) (MINIMUM DFT OF 35 MICRON) SHALL BE APPLIED AT SITE AFTER ERECTION BY BRUSH AND/OR SPRAY SO AS TO ACHIEVE MINIMUM DFT OF 75 MICRON AFTER SITE FINISH COAT.

c) FINISH COAT SHALL BE FOLLOWED WITH THE APPLICATION OF FINAL FINISH COAT OF POLYURETHANE BASED COLOUR PIGMENTED PAINT (SOLID BY VOLUME MINIMUM 40%) OF MINIMUM 30 MICRON DFT. THIS COAT SHALL BE APPLIED WITHIN SEVEN (7) DAYS (FROM THE COMPLETION OF FINISH COAT), AFTER ERECTION BY BRUSH AND / OR SPRAY. COLOUR AND SHADE OF THE COAT SHALL BE AS APPROVED BY THE EMPLOYER.

4.1.2 TOUCH-UP PAINTING ON DAMAGED AREAS (REF : NTPC BID DOC NO. CS-2240-108-2, TECHNICAL SPECIFICATION SECTION-VI, PART-B, SUB-SECTION-C)

a) FOR COATINGS DAMAGED UP TO METAL SURFACE

SURFACE PREPARATION SHALL BE CARRIED OUT BY MANUAL CLEANING. MINIMUM 6 INCHES ADJOINING AREA WITH EXISTING COATING SHALL BE ROUGHENED BY WIRE BRUSHING, EMERY PAPER RUBBING ETC., FOR BEST ADHESION OF PATCH PRIMER.

PRIMER COAT OF SELF-PRIMING EPOXY TOUCH-UP PRIMER APPLIED BY BRUSH IMMEDIATELY AFTER THE SURFACE PREPARATION. (MINIMUM DFT 100 MICRONS).

OVER THIS PRIMER COAT, INTERMEDIATE COAT, FINISH COAT AND FINAL FINISH COAT SHALL BE APPLIED AS COVERED ABOVE BY BRUSH WITH INTERMEDIATE COAT APPLIED WITHIN MAXIMUM SEVEN (7) DAYS OF APPLICATION OF TOUCH UP PRIMER.

b) FOR COATINGS DAMAGED UPTO INTERMEDIATE COATINGS (I.E. WHERE PRIMER COAT IS INTACT).DAMAGED AREA INCLUDING MINIMUM 6 INCHES ADJOINING AREA WITH EXISTING COATING

SHOULD BE ROUGHENED BY WIRE BRUSHING, EMERY PAPER RUBBING ETC., FOR BEST ADHESION OF PATCH PRIMER WITHOUT DAMAGING THE PRIMER COAT.

TOUCH-UP PRIMER, INTERMEDIATE, FINISH AND FINAL FINISH COATS SHALL BE APPLIED AS SPECIFIED ABOVE FOR COATINGS DAMAGED UP TO METAL SURFACE.

PAINTING SCHEDULE DOCUMENT REF. NO. Q:PL:C3-PS/0624 REV 05 DATED 06/02/2004 IN RESPECT OF BOILER IS ENCLOSED FOR INFORMATION. HOWEVER, FOR EXECUTION ONLY THE LATEST DOCUMENT SHALL BE APPLICABLE AND NO CLAIM WHATSOEVER SHALL BE ENTERTAINED IN CASE OF ANY VARIANCE BETWEEN SUCH DOCUMENTS. SIMILARLY, DOCUMENTS AS PROVIDED PROGRESSIVELY DURING THE EXECUTION OF WORK FOR ALL OTHER PRODUCTS/ EQUIPMENTS ETC SHALL BE APPLICABLE.

4.1.3 PAINTING OF WELDED AREAS / PAINTING OF AREAS EXPOSED AFTER REMOVAL OF TEMPORARY SUPPORTS / TOUCH-UP PAINTING ON DAMAGED AREAS OF EMPLOYER'S STRUCTURES, WHERE INTER-CONNECTION, WELDING / MODIFICATION ETC. HAS BEEN CARRIED OUT BY THE BIDDER.

(A.) CLEAN THE SURFACE TO REMOVE FLUX SPATTERS AND LOOSE RUST, LOOSE COATINGS IN THE ADJOINING AREAS OF WELD SEAMS BY WIRE BRUSH AND EMERY PAPER.
(B.) PAINTING PROCEDURE TO BE FOLLOWED AS MENTIONED ABOVE FOR TOUCH-UP PAINTING ON DAMAGED AREAS.

4.1.4 THE SCOPE OF WORK INCLUDES PAINTING OF COLOUR BANDS, LETTERING, MARKING AND SIGNS FOR DIRECTION OF FLOW/ROTATION, NAMES ETC OF APPROVED COLOURS AS PER THE STANDARD COLOUR CODES AND SPECIFICATIONS SPECIFIED IN TENDER SPECIFICATION OR AS ADVISED BY BHEL/CUSTOMER ENGINEER AT SITE FOR THE EQUIPMENTS/ COMPONENTS COVERED IN THESE SPECIFICATIONS.

4.1.4
ALL EXPOSED METAL PARTS OF THE EQUIPMENT INCLUDING PIPING, STRUCTURES, HAND RAILING, GRATING ETC SHALL BE THOROUGHLY CLEANED OFF DUST, RUST, SCALES AND OTHER FOREIGN MATERIALS BY MANUAL OR MECHANISED WIRE BRUSHING, SCRAPPING, SAND BLASTING ETC AND THE SAME BEING INSPECTED AND APPROVED BY BHEL/CUSTOMER ENGINEER BEFORE APPLICATION OF PRIMER. AFTERWARDS, THE ABOVE PARTS SHALL BE FINISH PAINTED WITH SPECIFIED NUMBER OF COATS AS PER SPECIFICATION.

4.1.5

IN CERTAIN ISOLATED INSTANCES WHERE IT IS NOT POSSIBLE TO CLEAN THE EQUIPMENTS AS EXPLAINED ABOVE, CLEANIN BY GRINDING MIGHT HAVE TO BE RESORTED TO. NO DAMAGE TO THE EQUIPMENT/COMPONENTS SHOULD BE CAUSED.

4.1.6
SURFACE TO BE PAINTED SHOULD BE FREE OF OIL AND GREASE. IT SHOULD BE REMOVED BY USING SUITABLE CLEANING AGENTS INCLUDING PERMITTED SOLVENTS. SURFACE CLEANED BY CHEMICAL AGENT, IF REQUIRED, SHALL BE TREATED FURTHER AS PRESCRIBED IN USE OF SUCH CLEANING AGENTS. THE CONTRACTOR AT HIS OWN COST SHALL PROVIDE ALL THE CONSUMABLES AND APPLICATION IMPLEMENTS.

4.1.7
DURING THE PREPARATION OF SURFACE, IF THE SHOP COAT IS DAMAGE BY CHEMICAL CLEANING OR BY MECHANICAL MEANS, CONTRACTOR SHALL REPAIR THE SAME FREE OF COST TO BHEL. BHEL WILL MAKE AVAILABLE ONLY THE PRIMER AND PAINTS FREE OF ANY CHARGE TO CONTRACTOR.

4.1.8
SPECIFIED DRYING TIME SHALL BE PERMITTED FROM ONE TO ANOTHER COAT.

4.1.9
THIS WORK REQUIRES WORKING AT HIGHER ALTITUDES FROM GROUND LEVEL TO AS HIGH AS 90 M AND MORE. THE WORK SPREAD IS ALSO SUBSTANTIAL INVOLVING SUBSTANTIAL RUN OF STRUCTURES AND PIPING. CONTRACTOR SHALL TAKE SUFFICIENT PRECAUTIONS TO AVOID ANY ACCIDENT AND HAZARD IN ALL RESPECTS. THE ROPES, LADDERS, SCAFFOLDING MATERIALS, CLAMPS ETC AND CLIMBER USED SHOULD BE OF STANDARD QUALITY FOR SAFE AND SMOOTH EXECUTION OF WORK.

4.1.10
CONTRACTOR SHALL CARRY OUT THE WORK IN SUCH A WAY THAT OTHER ERECTED EQUIPMENT, STRUCTURE, CIVIL FOUNDATIONS AND OTHER PROPERTY ARE NOT DAMAGED. FOR DAMAGES IN ANY OF SUCH CASES DUE TO LAPSES BY CONTRACTOR, BHEL SHALL HAVE THE RIGHT TO RECOVER THE COST OF SUCH DAMAGES FROM THE CONTRACTOR.

4.1.11
CONTRACTOR SHALL TAKE DUE CARE TO COVER/PROTECT THE EQUIPMENT WHICH ARE ALREADY PAINTED WHILE CARRYING OUT THE PAINTING OF OTHER ADJACENT EQUIPMENT. IF SO HAPPENS, IT SHALL BE CLEANED AND REPAINTED BY THE CONTRACTOR WITHOUT ANY EXTRA CHARGES.

4.1.12
IN GENERAL, PAINTING OF STRUCTURAL PARTS AND COLOUR BANDS, LETTERING, MARKING OF DIRECTION OF FLOW/ROTATION ETC WILL BE CARRIED OUT BY BRUSH PAINTING. HOWEVER, AREAS/EQUIPMENT INACCESSIBLE FOR MANUAL PAINTING HAVE TO BE PAINTED BY SPRAY PAINTING. THE DECISION OF BHEL ENGINEER, IN THIS REGARD, SHALL BE FINAL AND BINDING ON THE CONTRACTOR. FOR THE PURPOSE OF SPRAY PAINTING, AIR AT ONE POINT WILL BE MADE AVAILABLE BY

BHEL FREE. LAYING OF AIR HOSE PIPE AND ANY OTHER LINE REQUIRED SHALL BE DONE BY CONTRACTOR AT HIS COST. THE CONTRACTOR SHALL PROVIDE SPRAY EQUIPMENT SET.

4.1.13
APPROXIMATE QUANTITY OF WORK INVOLVED IS INDICATED VIDE APPENDIX-I ONLY FOR GENERAL INFORMATION. THESE MAY VARY TO ANY EXTENT. NO CLAIM WHATSOEVER ON ACCOUNT OF ANY VARIATION IN THESE QUANTITIES SHALL BE ENTERTAINED.

4.2 COLLECTION OF MATERIALS AND STORAGE ETC.

4.2.1
THE CONTRACTOR SHALL TAKE DELIVERY OF PAINTS, PRIMER ETC FROM THE STORAGE YARD/STORES/SHEDS OF BHEL/CUSTOMER, WHICH IS WITHIN A RADIUS OF 2 KM.

4.2.2
THE CONTRACTOR SHALL PROVIDE ACCOUNT OF ALL THE ITEMS ISSUED TO HIM AND RETURN ALL PRIMER, PAINTS ETC REMAINING EXTRA OVER THE NORMAL REQUIREMENT WITH PROPER IDENTIFICATION TAGS IN A PACKED CONDITION TO BHEL STORES. IN CASE OF ANY MISUSE OR EXCESS USE OVER THE NORMAL REQUIREMENT, BHEL RESERVES THE RIGHT TO RECOVER THE COST OF SUCH MISUSE/ EXCESS USE. DECISION OF BHEL ENGINEER IN THIS REGARD WILL BE FINAL AND BINDING ON THE CONTRACTOR.

4.2.3
THE CONTRACTOR SHALL MAKE ADEQUATE SECURITY ARRANGEMENTS INCLUDING EMPLOYMENT OF SECURITY PERSONNEL AND ENSURE PROTECTION FROM THEFT, FIRE, PILFERAGE, DAMAGE AND LOSS OF PAINTS ETC ISSUED TO HIM FOR THE WORK.

4.3 SITE CLEANLINESS

4.3.1
DURING THE COURSE OF WORK, SCRAP LUMBER WITH PROTRUDING NAILS, SHARP EDGES ETC AND ALL THE DEBRIS SHALL BE KEPT CLEARED FROM WORKING AREA, PASSAGE WAYS AND STAIRS IN AND AROUND SITE. PROPER HOUSEKEEPING IS THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL DEPOSIT ALL THE SCRAP, PACKING MATERIAL, RUBBISH, UNUSED AND OTHER MATERIALS AT SPECIFIED PLACE.

4.3.2
THE CONTRACTOR SHALL PROVIDE NECESSARY FIRST AID FACILITIES AND SAFETY APPLIANCES AND OUTFIT FOR ALL HIS EMPLOYEES, REPRESENTATIVES AND WORKMEN WORKING AT SITE.

4.4.0 GENERAL

4.4.1
THE WORK COVERED UNDER THIS SPECIFICATION REQUIRES THE BEST QUALITY OF WORKMANSHIP. THE CONTRACTOR SHOULD ENSURE TIMELY COMPLETION OF WORK. THE CONTRACTOR MUST HAVE ADEQUATE QUANTITY OF TOOLS, CONSTRUCTION IMPLEMENTS, EQUIPMENTS ETC, IN HIS POSSESSION. HE MUST ALSO HAVE ON HIS ROLLS ADEQUATE, TRAINED, QUALIFIED & EXPERIENCED SUPERVISORY STAFF AND SKILLED PERSONNEL.

4.4.2
THE WORK SHALL BE EXECUTED UNDER THE USUAL CONDITIONS AFFECTING MAJOR POWER PLANT CONSTRUCTION AND IN CONJUNCTION WITH NUMEROUS OTHER OPERATIONS AT SITE. THE CONTRACTOR AND HIS PERSONNEL SHALL CO-OPERATE WITH THE PERSONNEL OF OTHER OF OTHER AGENCIES, CO-ORDINATE HIS WORK WITH OTHERS AND PROCEED IN A MANNER THAT SHALL NOT DELAY OR HINDER THE PROGRESS OF WORK AS A WHOLE.

4.4.3
ALL THE WORK SHALL BE CARRIED OUT AS PER THE INSTRUCTIONS OF BHEL ENGINEER. BHEL ENGINEERS DECISION REGARDING THE CORRECTNESS OF THE WORK AND METHOD & SEQUENCE OF WORKING SHALL BE FINAL AND BINDING ON THE CONTRACTOR.

4.4.4
ALL THE NECESSARY CERTIFICATES AND LICENSES WHEREVER REQUIRED TO CARRYOUT THIS WORK ARE TO BE ARRANGED BY THE CONTRACTOR EXPEDITIOUSLY AT HIS COST.

4.4.5
THE TERMINAL POINTS AS DECIDED BY BHEL SHALL BE FINAL AND BINDING ON THE CONTRACTOR.

4.4.6
CONTRACTOR IS STRICTLY PROHIBITED FROM USING THE REGULAR COMPONENTS LIKE ANGLES, CHANNELS, BEAMS, PLATES, PIPE/TUBES, AND HANDRAILS ETC FOR ANY TEMPORARY SUPPORTING OR SCAFFOLDING WORKS. CONTRACTOR SHALL ARRANGE HIMSELF ALL SUCH MATERIALS. IN CASE OF SUCH MISUSE OF BHEL MATERIALS, A SUM AS DETERMINED BY BHEL ENGINEER WILL BE RECOVERED FROM CONTRACTOR'S BILLS. THE DECISION OF BHEL ENGINEER IS FINAL AND BINDING ON THE CONTRACTOR.

4.4.7
THE CONTRACTOR SHOULD VISIT THE SITE BEFORE QUOTING HIS RATES, EVALUATE THE VOLUME/ QUANTITY TO BE PAINTED, GET ACQUAINTED WITH SITE CONDITIONS AND SUBMIT HIS RATES. NO REVISION OF RATES SHALL BE ALLOWED UNDER ANY CIRCUMSTANCES.

4.5 EXCLUSIONS

FOLLOWING ARE EXCLUDED FROM THE CONTRACTOR'S SCOPE OF WORK UNDER THIS TENDER SPECIFICATION:

01 SUPPLY OF PRIMER, PAINTS AND THINNER

SPECIAL CONDITIONS

SECTION-5

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

5.1 TOOLS AND TACKLES AND MMDs

5.1.1
CONTRACTOR IS REQUIRED TO PROVIDE ALL NECESSARY TOOLS AND PLANTS, MEASURING INSTRUMENTS (ELCOMETER ETC) AND HANDLING EQUIPMENTS FOR THIS SCOPE OF WORK. BHEL IS NOT PROVIDING ANY T & P FOR THIS WORK.

5.1.2
THE CONTRACTOR SHALL PROVIDE ALL THE NECESSARY SCAFFOLDING MATERIALS, TEMPORARY STRUCTURES AND NECESSARY SAFETY DEVICES ETC, DURING EXECUTION OF THE WORK.

5.1.3
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.

5.2.0 CONSUMABLES

5.2.1
THE CONTRACTOR SHALL PROVIDE ALL CONSUMABLES REQUIRED FOR CARRYING OUT THE WORK COVERED UNDER THIS SCOPE OF WORK EXCEPTING THOSE WHICH ARE SPECIFICALLY INDICATED AS BHEL SUPPLY.

5.2.2
ALL CONSUMABLES, TO BE PROCURED AND USED FOR THE WORK SHALL HAVE PRIOR APPROVAL OF BHEL ENGINEER IN REGARD TO BRAND AND QUALITY SPECIFICATION.

5.3 ACCOMMODATION, DRINKING WATER & LOCAL TRANSPORTATION FOR THE LABOUR OTHER EMPLOYEES (ONLY OPEN SPACE FOR CONSTRUCTION OF LABOUR WILL BE PROVIDED BY CLIENT)

a) DEVELOPMENT OF THE LAND AND CONSTRUCTION OF LABOUR COLONY, WITH ARRANGEMENTS OF LIGHTING, DRINKING WATER, AND SANITATION ETC IS IN CONTRACTOR'S SCOPE.
b) FOR ELECTRICITY FOR LABOUR COLONY, CONTRACTOR SHALL MAKE ARRANGEMENT FOR DRAWING AND FURTHER DISTRIBUTION CONFORMING TO THE STATUTORY & SAFETY REQUIREMENTS. THE ELECTRICITY FOR LABOUR

CAMP WILL BE ON CHARGEABLE BASIS AT THE PREVAILING RATE OF STATE ELECTRICITY BOARD.

c) FOR DRINKING WATER CONTRACTOR HAS TO MAKE HIS OWN ARRANGEMENT INCLUDING DIGGING OF BORE-WELL IF REQUIRED.

d) THE CONTRACTOR HAS TO MAKE HIS OWN ARRANGEMENT FOR TRANSPORTATION OF HIS WORKMEN AND OTHER EMPLOYEES. BHEL/CLIENT SHALL NOT PROVIDE ANY FACILITY IN THIS REGARD.

e) SPACE FOR CONSTRUCTION OF LABOUR COLONY WILL BE PROVIDED BY CLIENT FREE OF COST.

5.4.0 FIELD OFFICE

5.4.1
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.

5.4.2
ON COMPLETION OF WORK, ALL THE TEMPORARY BUILDINGS, STRUCTURESETC 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.

5.5.0 AREA LIGHTING

5.5.1
CONTRACTOR SHALL ARRANGE ADEQUATE FLOODLIGHTS, HAND LAMPS AND AREA LIGHTING. PROVISION OF DISTRIBUTION LINES FOR LIGHTING FROM THE SINGLE POINT TO THE REQUIRED PLACE WITH PROPER DISTRIBUTION BOARDS, OBSERVING THE SAFETY RULES LAID DOWN BY THE ELECTRICAL AUTHORITIES OF THE STATE SHALL BE DONE BY THE CONTRACTOR INCLUDING ALL THE MATERIALS LIKE CABLES, FUSES, SWITCH BOARDS ETC

5.6.0 CONSTRUCTION POWER & WATER

5.6.1
CONSTRUCTION POWER (415 V) WILL BE PROVIDED FREE OF COST AT A SINGLE POINT NEAR WORK SITE. HOWEVER THE TAXES & DUTIES (IF ANY) AS CHARGED BY

CUSTOMER SHALL BE PAYABLE BUY CONTRACTOR. ADDITIONAL SOURCE AT THE DISCRETION OF BHEL MAY ALSO BE PROVIDED IF NEED ARISES. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY CABLES, FUSES, SWITCHES, SWITCHBOARDS, ENERGY METERS ETC, AND ANY OTHER INSTALLATION AS SPECIFIED BY STATUTORY AUTHORITY IN THIS REGARD FOR FURTHER DRAWL OF POWER. OBTAINING APPROVALS / CLEARANCE OF SUCH INSTALLATIONS, PRIOR TO THEIR BEING PUT TO USE OR AS MAY BE SPECIFIED, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

5.6.2
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.

5.6.3
THE CONTRACTOR SHALL MAKE HIS OWN ARRANGEMENT FOR CONSTRUCTION/DRINKING WATER BY DRILLING SUITABLE BORE WELLS OR ANY OTHER ARRANGEMENT AT HIS COST.

5.6.4
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 THAT ARE UNDERWAY AT THE TIME OF POWER FAILURE OR IMPORTANT ACTIVITIES PLANNED IN IMMEDIATE FUTURE.

5.6.5
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.

5.7
CONTRACTOR SHALL AUGMENT HIS RESOURCES SO AS TO MEET THE PROGRAMME OF COMPLETION CONVEYED FROM TIME TO TIME DURING EXECUTION OF WORK.

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 AT DIFFERENT ELEVATION SUITABLE ARRANGEMENT FOR URINAL AND DRINKING WATER FACILITY WITH NECESSARY PLUMBING & DISPOSAL ARRANGEMENT INCLUDING CONSTRUCTION OF SEPTIC TANK. THESE INSTALLATION SHALL BE MAINTAINED IN HYGIENIC CONDITION AT ALL TIMES.

5 5.9 TAXES, DUTIES, LEVIES

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

5.9.1

The contractor shall pay all (save the specific exclusions as enumerated in this contract) taxes, fees, license charges, deposits, duties, tools, royalty, commissions or other charges which may be levied on the input goods & services consumed and output 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.

5.9.2 Service Tax & Cess on Service Tax

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

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

5.9.3 VAT/WCT

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

5.9.4 Modalities of Tax Incidence on BHEL

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

5.9.5 New Taxes/Levies

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

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

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

5.10 Submission of Periodical Reports

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

1) Consumption of welding electrodes and gases
2) Consumption of Construction Power
3) Manpower reports
4) Progress reports - periodically
5) Field calibration reports

BHEL at site will inform formats for these reports.

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

5.12 **Compliance with Requirements of Statutory/Mandatory Authorities**

5.12.1 Refer section-8 for contractor's responsibilities regarding the work related inspection by statutory authorities.

5.12.2 The responsibilities of contractor with regard to compliance with requirements of statutory/mandatory authorities have been specified in various clauses of the specification. However, in addition to those specified already, the requirements of any other authority viz. factory inspector, provident fund commissionerate, labour commissionerate etc, in connection with this work has to be complied with by the contractor.

SECTION-6

SPECIAL CONDITIONS OF CONTRACT

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

6.1 SUPERVISORY STAFF AND LABOUR

6.1.1
The contractor shall supply all the skilled/unskilled labour for the work. BHEL reserves the right to decide on the suitability of the workers and other personnel who will be employed by the contractor. BHEL reserves the right to insist on removal of any employee of the contractor at any time if he is found to be unsuitable and the contractor shall forthwith remove him.

6.1.2
It is the responsibility of the contractor to engage his workmen in shifts and or on overtime basis for achieving the target set by BHEL. This target may be set to suit BHEL's commitments to its customer or to advance date of completion of events or due to other reasons. The decision of BHEL in regard to setting the targets will be final and binding on the contractor.

6.1.3
Contractor shall employ only qualified and experienced engineers/supervisors for this job. They shall have professional approach in executing the work having adequate knowledge and experience in the fields. Contractor shall give an organization chart indicating the staffing pattern.

6.2 INDUSTRIAL RELATIONS AND LABOUR LAWS

6.2.1
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. Contractor has to ensure minimum wages payment to their labours as per the rule of the state and they have to produce documentary evidence to that effect to BHEL.

6.2.2
Contractor shall provide the names and details of Engineer/ Supervisors at the time of mobilization to BHEL as per the proposed organization chart.

6.2.3
In case at any time the contractor is not in a position to deploy the required Engineers/Supervisors due to any reason, BHEL shall have the option to deploy their Engineers/supervisors. The expenditure incurred with overheads on this account will be recovered from the contractor's bills.

6.2.4
The contractor's supervisory staff shall execute the work in the most substantial and workmanlike 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.

6.2.5
The supervisory staff employed by the contractor shall ensure proper outturn of work and discipline on the part of the labour put on the job by the contractor and in general, 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.

6.2.6
Contractor will deduct the necessary amount from his employees towards provident fund and contribute the equal amount as per Government of India rules. This amount will be deposited regularly to the Provident Fund Commissioner and an account code obtained. Contractor shall submit the above account code duly certified by PF Commissioner to BHEL project in-charge. Also all other employees' benefits are to be borne by the contractor as per statutory laws.

6.2.7
The contractor shall obtain independent Labour License under the Contract Labour (regulation and abolition) Act from the concerned authorities based on the certificate (form-V) issued by the principal employer/customer.

6.2.8
The contractor shall pay for all taxes, fees, license charges, local body clearance, duties, tools, royalty, commissions and other charges, Gate passes which may be leviable on account of his operation in executing the contract. In case BHEL is forced to make any such payments, BHEL shall have the right to recover the same from Contractor's bills.

SECTION-7

SPECIAL CONDITIONS OF CONTRACT

7.0 OBLIGATIONS OF BHEL

7.1 FACILITIES PROVIDED BY BHEL

7.1.1 SPACE FOR FIELD OFFICE

REFER SECTION-5 IN THIS REGARD.

7.1.2 CONSTRUCTION WATER

REFER SECTION-5 IN THIS REGARD.

7.1.3 CONSTRUCTION POWER

REFER SECTION-5 IN THIS REGARD.

7.1.4 OTHER MATERIALS AND CONSUMABLES:

BHEL SHALL NOT PROVIDE ANY MATERIAL/CONSUMABLES EXCEPT THOSE SPECIFICALLY MENTIONED IN THIS TENDER SPECIFICATION.

7.2 TOOLS & PLANTS

BHEL IS NOT PROVIDING ANY TOOLS AND PLANTS AND MEASURING INSTRUMENTS FOR THIS WORK.

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 administers should be prominently displayed.

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

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

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

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

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

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

9.2.1.25 If the contractor fails to improve the standards of safety in its operation to the satisfaction of BHEL after being given a reasonable opportunity to do so, and/or if the contractor fails to take appropriate safety precautions or to provide necessary safety devices and equipment or to carry out instructions regarding safety issued by the 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 schedule safety meetings as would be intimated to him by the BHEL Engineer in Charge.

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

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

9.4.0 **TRAINING & AWARENESS**

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

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

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

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

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

9.5.0 **REPORTING**

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

SN	Equipment	Scope of inspection	Inspection by	Schedule
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 Slinging property	200/-
07.	Using Damaged Sling	200/-
08.	Lifting Cylinders Without Cage	500/-
09.	Not Using Proper Welding Cable With Lot of Joints And Not Insulated Property.	200/-
10.	Not Removing Small Scrap From Platforms	200/-
11.	Gas Cutting Without Taking Proper Precaution or Not Using Sheet Below Gas Cutting	200/-
12.	Not Maintaining Electric Winches Which are Operated Dangerously	500/-
13.	Improper Earthing Of Electrical T&P	500/-
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:

6 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:

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

IS No	YEAR	Amd upto	DESCRIPTION
IS 10204	1982		PORTABLE FIRE EXTINGUISHERS MECHANICAL FOAM TYPE
IS 10245	1994		SPECIFICATION FOR BREATHING APPARATUS
IS 10291	1982		SAFETY CODE FOR DRESS DRIVERS IN CIVIL ENGINEERING WORKS
IS 10658	1983		HIGHER CAPACITY DRY POWDER FIRE EXTINGUISHERS (TROLLEY MOUNTED)
IS 10662	1992		COLOUR TELEVISION
IS 10667	1983		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR PROTECTION OF FOOT AND LEG
IS 11037	1984		ELECTRONIC FAN REGULATORS
IS 11057	1984		INDUSTRIAL SAFETY NETS
IS 11451	1998		RECOMMENDATION FOR SAFETY AND HEALTH REQUIREMENT RELATING TO OCCUPATION EXPOSURE TO ASBESTOS
IS 1169	1967		PEDESTAL FANS
IS 1179	1967		SPECIFICATION FOR EQUIPMENT FOR EYE AND FACE PROTECTION DURING WELDING
IS 11833	1986		DRY POWDER FIRE EXTINGUISHERS FOR METAL FIRES
IS 11972	1987		CODE OF PRACTICE FOR SAFETY PRECAUTION TO BE TAKEN WHEN ENTERING A SEWARAGE SYSTEM
IS 1287	1986		ELECTRIC TOASTER
IS 13063	1991		STRUCTURAL SAFETY OF BUILDINGS ON SHALLOW FOUNDATIONS ON ROCKS
IS 13385	1992		SPECIFICATIONS FOR FIRE EXTINGUISHERS 50 LITRE WHEEL MOUNTED WATER TYPE (GAS CARTRIDGES)
IS 13386	1992		SPECIFICATIONS FOR FIRE EXTINGUISHERS 50 LITRE MECHANICAL FOAM TYPE
IS 13415	1992		CODE OF SAFETY FOR PROTECTIVE BARRIERS IN AND AROUND BUILDINGS
IS 13416	1992		RECOMMENDATIONS FOR PREVENTIVE MEASURES AGAINST HAZARDS AT WORKING PLACE PART 1 TO PART 5
IS 13430	1992		CODE OF PRACTICE FOR SAFETY DURING ADDITIONAL CONSTRUCTION AND ALTERATION TO EXISTING BUILDINGS
IS 13849	1993		PORTABLE FIRE EXTINGUISHERS DRY POWDER TYPE (CONSTANT PRESSURE)
IS 1446	1985		CLASSIFICATION OF DANGEROUS GOODS (FIRST REVISION)
IS 1476	1979		REFRIGERATORS
IS 1641	1988		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): GENERAL PRINCIPLES OF FIRE GRADING AND CLASSIFICATION
IS 1642	1989		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS- DETAILS OF CONSTRUCTION
IS 1643	1988		CODE OF PRACTICE FOR FIRE SAFETY OF

IS No	YEAR	Amd upto	DESCRIPTION
			BUILDINGS (GENERAL): EXPOSURE HAZARD
IS 1646	1997		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): ELECTRICAL INSTALLATIONS
IS 1904	1986		CODE OF PRACTICE FOR DESIGN AND CONSTRUCTION OF FOUNDATIONS IN SOIL
IS 1905	1987		STRUCTURAL SAFETY OF BUILDINGS MASONARY WALLS
IS 2082	1985		ELECTRICAL GEYSERS
IS 2171	1985		PORTABLE FIRE EXTINGUISHERS DRY POWDER TYPE (CARTRIDGE)
IS 2309	1989		PRACTICE FOR THE PROTECTION OF BUILDINGS AND ALLIED BUILDINGS AGAINST LIGHTENING
IS 2312	1967		EXHAUST FANS
IS 2361	1994		SPECIFICATION FOR BUILDING GRIPS - FIRST REVISION
IS 2418	1977		TUBULAR FLUORSCENT LAMPS IS 2418 (FT-1)
IS 2750	1964		STEEL SCAFFOLDINGS
IS 2762	1964		SAFE WORKING LOADS IN KGS FOR WIRE ROPE SLINGS
IS 2878	1986		FIRE EXTINGUISHERS CARBON DIOXIDE TYPE (PORTABLE AND TROLLEY MOUNTED)
IS 2925	1984		SPECIFICATION FOR INDUSTRIAL SAFETY HELMETS
IS 3016	1982		CODE OF PRACTICE FOR FIRE PRECAUTIONS IN WELDING AND CUTTING OPERATIONS- FIRST REVISION
IS 3315	1974		DESERT COOLERS
IS 3521	1989		INDUSTRIAL SAFETY BELTS AND HARNESS
IS 368	1983		IMMERSION WATER HEATERS
IS 3696	1991		SAFETY CODE OF SCAFFOLDS AND LADDERS PART 1 TO 2
IS 3737	1996		LEATHER SAFETY BOOTS FOR WORKERS IN HEAVY METAL INDUSTRIES
IS 374	1979		CEILING FANS INCLUDING REGULATORS
IS 3764	1992		EXCAVATION WORK - CODE OF SAFETY
IS 3786	1983		METHOD FOR COMPUTATION OF FREQUENCY AND SEVERITY RATES FOR INDUSTRIAL INJURIES AND CLASSIFICATION OF INDUSTRIAL ACCIDENTS
IS 3935	1966		CODE OF PRACTICE FOR COMPOSITE CONSTRUCTION
IS 4014	1967		CODE OF PRACTICE FOR STEEL TUBULAR SCAFFOLDING
IS 4081	1986		SAFETY CODE FOR BLASTING AND RELATED DRILLING OPERATIONS
IS 4082	1977	1996	STACKING AND STORAGE OF CONSTRUCTION MATERIALS AND COMPONENTS AT SITE
IS 4130	1991		DEMOLITION OF BUILDINGS - CODE OF SAFETY PART 1 TO 2
IS 4138	1977		SAFETY CODE FOR WORKING IN COMPRESSED AIR (FIRST REVISION)
IS 4155	1966		GLOSSARY OF TERMS RELATING TO CHEMICAL AND

IS No	YEAR	Amd upto	DESCRIPTION
			RADIATION HAZARDS AND HAZARDOUS CHEMICALS
IS 4209	1967		CODE OF SAFETY FOR CHEMICAL LABORATORY
IS 4250	1980		FOOD MIXERS
IS 4262	1967		CODE OF SAFETY FOR SULFURIC ACID
IS 4756	1978		SAFETY CODE FOR TUNNELING WORK
IS 4912	1978		SAFETY REQUIREMENTS FOR FLOOR AND WALL OPENINGS, RAILINGS AND TOE BOARDS
IS 5121	1969		SAFETY CODE FOR PILING AND OTHER DEEP FOUNDATIONS
IS 5182	1969	1982	METHODS FOR MEASUREMENT OF AIR POLLUTION
IS 5184	1969		CODE OF SAFETY FOR HYDROFLUORIC ACID
IS 5216	1982	2000	RECOMMENDATIONS ON SAFETY PROCEDURES AND PRACTICE IN ELECTRICAL WORK PART I AND II
IS 555	1979		TABLE FANS
IS 5557	1995		INDUSTRIAL AND SAFETY LINED RUBBER BOOTS (SECOND REVISION)
IS 5916	1970		SAFETY CODE FOR CONSTRUCTION INVOLVING USE OF HOR BITUMINOUS MATERIALS
IS 5983	1980		SPECIFICATION FOR EYE PROTECTORS - FIRST REVISION
IS 6234	1986		PORTABLE FIRE EXTINGUISHERS WATER TYPE (STORED PRESSURE)
IS 692	1994		CRITERIA FOR SAFETY AND DESIGN OF STRUCTURES SUBJECTED TO UNDERGROUND BLASTS
IS 6994	1973		SPECIFICATION FOR SAFETY GLOVES
IS 7155	1986		CODE OF RECOMMENDED PRACTICE FOR CONVEYOR SAFETY (PART 1 TO 8)
IS 7205	1974		SAFETY CODE FOR ERECTION OF STRUCTURAL STEEL WORK
IS 7293	1974		SAFETY CODE FOR WORKING WITH CONSTRUCTION MACHINERY
IS 7323	1994		GUIDELINES FOR OPERATIONS OF RESERVOIRS
IS 7812	1975		CODE OF SAFETY FOR MERCURY
IS 7969	1975		SAFETY CODE FOR HANDLING AND STORAGE OF BUILDING MATERIALS
IS 8089	1976		CODE OF SAFE PRACTICE FOR LAYOUT OF OUTSIDE FACILITIES IN AN INDUSTRIAL PLANT
IS 8091	1976		CODE OF PRACTICE FOR INDUSTRIAL PLANT LAYOUT
IS 8095	1976		ACCIDENTS PREVENTION TAGS
IS 818	1968	1997	CODE OF PRACTICE FOR SAFETY AND HEALTH REQUIREMENTS IN ELECTRIC AND GAS WELDING, AND CUTTING OPERATIONS
IS 8448	1989		AUTOMATIC LINE VOLTAGE CORRECTOR (STABILISER)
IS 8519	1977		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY

IS No	YEAR	Amd upto	DESCRIPTION
			EQUIPMENT FOR BODY PROTECTION
IS 8520	1977		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR EYE, FACE AND EAR PROTECTION
IS 875	1987		STRUCTURAL SAFETY OF BUILDING: LOADING STANDARD PART 1 TO 5
IS 8807	1978		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR PROTECTION OF ARMS AND HANDS
IS 8978	1985		INSTANTANEOUS WATER HEATERS
IS 8989	1978		SAFETY CODE FOR ERECTION OF CONCRETE FRAMED STRUCTURES
IS 940	1989		PORTABLE FIRE EXTINGUISHERS WATER TYPE (GAS CARTRIDGE)
IS 9457	1980		SAFETY COLOURS AND SIGNS
IS 9679	1980		CODE OF SAFETY FOR WORK ENVIRONMENTAL MONITORING
IS 9706	1997		CODE OF PRACTICE FOR THE CONSTRUCTION OF AERIAL RPEWAYS FOR THE TRANSPORTATION OF MATERIAL
IS 9759	1981		GUIDELINES FOR DEWATERING DURING CONSTRUCTION
IS 9815	1989		SERVO MOTOR OPERATED LINE VOLTAGE CORRECTOR (SERVO STABILISER)
IS 9944	1992		RECOMMENDATIONS ON SAFE WORKING LOAD FOR NATURAL AND MAN-MADE FIBRE ROPE SLINGS
IS 996	1979		SINGLE PHASE ELECTRIC MOTORS
ISO 3873	1977		SAFETY HELMET

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.

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SPECIAL CONDITIONS

SECTION-11

Time Schedule, Mobilisation, Progress and Monitoring, Completion, Variation etc.

11.1 TIME SCHEDULE

CONTRACTOR HAS TO MOBILISE HIS RESOURCES AND WORK FORCE IN SUCH A MANNER THAT THE ENTIRE WORK AS DETAILED IN THIS SPECIFICATION IS COMPLETED SATISFACTORILY IN ALL RESPECTS IN 8 (EIGHT) MONTHS FROM START OF WORK AT SITE. HOWEVER, WITHIN THIS OVERALL SCHEDULE, THE UNIT-9 HAS TO BE COMPLETED WITHIN 4 MONTHS FROM START OF WORK

11.2 GRACE PERIOD

A GRACE PERIOD OF 2 MONTHS BEYOND THE TIME SCHEDULE SPECIFIED ABOVE IS PROVIDED.

11.3 MOBILISATION

11.3.1
THE CONTRACTOR SHOULD REACH SITE AND ESTABLISH HIS SITE OFFICE AND MOBILISE TO COMMENCE THE WORK AS PER DIRECTIONS OF BHEL ENGINEER. THE DATE OF START OF PAINTING WORK ON ANY EQUIPMENT AS DIRECTED BY BHEL ENGINEER AND SO CERTIFIED BY BHEL ENGINEER WILL BE CONSIDERED AS THE DATE OF START OF CONTRACT. THE TIME TAKEN FOR PREPARATORY WORK SHALL NOT BE CONSEDERED FOR RECONING THE COMMENCEMENT CONTRACT.

11.3.2
CONTRACTOR SHALL MOBILISE AND ARRANGE HIS RESOURCES FOR COMPLETION OF WORK TO SUIT THE PEAK REQUIREMENTS AS ALSO TO ACHIEVE MONTHLY PROGRAMMES AND TARGETS SET BY BHEL ENGINEER. IN A PROJECT OF THIS MAGNITUDE, PREPONEMENT OF SCHEDULES ARE TO BE EXPECTED AND ALSO NORMAL DELAYS IN MATERIAL SUPPLIES AND FRONT AVAILABILITY ARE LIKELY. CONTRACTOR'S OFFER SHALL ACCOUNT FOR ALL SUCH CONTINGENCIES.

11.4.1 **Progress Monitoring**

Progress will be reviewed periodically including month end review vis-à-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.

11.4.2 **Ascertaining and Establishing the Reasons for Shortfall**

The onus probandi that the causes leading to extension in 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. 11.4.1 above will be made considering the availability of components to be erected and other

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.

11.4.3 **Contract Extension**

If the completion of work as detailed in these specification gets delayed beyond the end of contract period and grace period then depending on the balance work left out, BHEL at its discretion may extend the contract.

11.4.4 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 describe vide clause no. 11.4.2 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 the performance, the agreed plan shall be reduced by shortfall attributable to the BHEL). BHEL may disallow contractor's claim for over run charges if the monthly programme as mentioned here not made by him.

11.4.5 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 then on account of BHEL.

11.4.6 **Overrun Compensation**

If the contract is extended for any reason other than those attributable to the contractor or force majeure conditions, the contractor will be compensated by payment of over run charges at the rate of Rs.30,000/- (Rupees Thirty Thousand Only) per month. Overrun compensation will be paid for the extension attributable to BHEL. No overrun compensation will be payable for the extension on account of reasons attributable to contractor and/or force majeure conditions.

11.5 **Price Variation**

THE RATES QUOTED BY THE CONTRACTOR SHALL REMAIN FIRM DURING THE CONTRACT PERIOD AND GRACE PERIOD AS ALSO DURING THE EXTENDED PERIOD, IF ANY.

No price variation is applicable under this contract. Accordingly, the clause no. 2.15 of general conditions of contract shall not be applicable.

11.6 Variation in Quantities

THE QUANTITIES OF VARIOUS ITEMS OF WORK COVERED UNDER THESE SPECIFICATIONS AND INDICATED IN RELEVANT APPENDICES ARE LIKELY TO VARY. ACCEPTED ITEM RATES SHALL REMAIN FIRM FOR ANY VARIATION EITHER UPWARD OR DOWNWARD IN THESE QUANTITIES AND ONLY THE PRO-RATA PAYMENT BASED ON ACTUAL QUANTITY EXECUTED APPLIED WITH ACCETPED ITEM RATE SHALL BE MADE. However, no additional/extra payment will be made on account of any variation of quantities.

11.7 INTEREST BEARING RECOVERABLE ADVANCE

Interest bearing (@ 12% per annum interest on monthly reducing balance basis) recoverable advance limited to 5% of the contract value may be paid by BHEL at its discretion depending on the merit of the case against receipt & acceptance of bank guarantee from the contractor for the amount sought. This Bank Guarantee (BG) shall be valid at least for one year or the recovery duration, whichever is less. 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 work under the scope of contractor will be deemed to have been completed in all respect, only when all the activities in these specifications are completed satisfactorily and so certified by BHEL Construction Manager. The decision of BHEL in this regard shall be final and binding on the contractor.

SECTION-12
SPECIAL CONDITIONS

12.0 TERMS OF PAYMENT

12.0.1
THE CONTRACTOR SHOULD SUBMIT HIS MONTHLY R.A. BILLS WITH ALL THE DETAILS REQUIRED BY BHEL ON SPECIFIED DATE EVERY MONTH COVERING PROGRESS OF WORK IN ALL RESPECTS AND AREAS FROM THE 25 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.

12.1

PAYMENT IN EACH RUNNING BILL WILL BE RESTRICTED TO 95% OF THE VALUE ARRIVED AT, AS PER THE PERCENTAGE BREAK-UP (TOTALING TO 100%) FOR THE STAGE OF WORK COMPLETION STIPULATED VIDE CLAUSES HEREINAFTER.

THE 5% THUS REMAINING SHALL BE TREATED AS AMOUNT PAYABLE BUT NOT PRESENTLY DUE AND SHALL BE ON ACCOUNT OF SATISFACTORY COMPLETION OF ALL WORKS AND ALL CONTRACTUAL OBLIGATIONS, STATUTORY CLEARANCES AND SITE CLEARANCE. BHEL ENGINEER WILL RELEASE THIS AMOUNT FOR UNIT#9 AFTER SATISFACTORY COMPLETION OF WORK AND FULFILMENT OF THE OTHER OBLIGATIONS AS MENTIONED ELSEWHERE IN THESE SPECIFICATIONS AND CERTIFICATION OF THE SAME. THIS AMOUNT FOR UNIT#10 WILL BE RELEASED ALONGWITH FINAL BILL. NO BANK GUARANTEE IS REQUIRED FOR THESE.

12.2

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

12.3
THE CONTRACTOR SHALL SUBMIT HIS BILLS ONCE IN A BILLING PERIOD DULY FURNISHING ALL DUE INFORMATION AS DESIRED BY BHEL.

12.4 STAGE-WISE BREAK UP FOR PRO-RATA PROGRESSIVE PAYMENT

12.4.1

98% OF THE ITEM RATE ON PRORATA BASIS ON COMPLETION OF SURFACE CLEANING, COATINGS OF PRIMER AS APPLICABLE AND APPLICATION OF SPECIFIED COATS OF FINISH PAINTS AS PER THE REQUIREMENT.

12.4.2
2% OF THE ITEM RATE ON PRORATA BASIS ON COMPLETION OF COLOUR BAND MARKING, LEGENDS, DIRECTION OF FLOW/ROTATION ETC.

12.2 MEASUREMENT OF THE WORK COMPLETED

A) WHERE PAYMENT IS TO BE MADE ON THE BASIS OF WEIGHT, THE WEIGHT PER UNIT GIVEN IN THE BHEL DOCUMENT ONLY SHALL BE TAKEN IN TO CONSIDERATION. IN CASE SUCH INFORMATION IS NOT AVAILABLE IN BHEL DOCUMENTS, THEN THE LATEST RELEVANT INDIAN STANDARDS IN THIS REGARD MAY BE APPLIED.

B) 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.

C) WHERE THE PAYMENT IS MADE ON THE BASIS OF ITEM RATE, ACTUAL EXECUTED QUANTITY MEASURED JOINTLY SHALL ONLY BE PAID FOR.

D) 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.

E) 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.

SECTION-13

SPECIAL CONDITIONS OF CONTRACT

EXTRA WORK FOR MODIFICATIONS: NOT APPLICABLE

SECTION-14
SPECIAL CONDITIONS

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 and 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 a third party liability insurance, indicating in the proposal for such insurance that sub-contractors will be taking part in the erection work detailed in this tender. However, the 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. 1,00,000/-** (Rupees One lakh 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.

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
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-II
FORMAT FOR MONTH-WISE MANPOWER DEPLOYMENT PLAN
(CATEGORY-WISE NUMBERS TO BE INDICATED FOR EACH MONTH)
Use additional sheet for remaining period

SN	CATEGORY	MONTHS										
		1	2	3	4	5	6	7	8	9	10	So on
01	RESIDENT ENGINEER											
02	APPLICATION ENGINEERS											
03	QUALITY ASSURANCE ENGINEER											
04	SAFETY ENGINEER											
05	MATERIALS MANAGEMENT SUPERVISORS											
06	SKILLED LABOURS(SUCH AS PAINTERS)											
07	STORE KEEPERS											
08	ELECTRICIANS											
09	SEMISKILLED/ UNSKILLED WORKERS											
	MONTH WISE TOTAL											

SIGNATURE OF BIDDER
DATE:

APPENDIX-III

CONCURRENT COMMITMENTS

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

SIGNATURE OF THE BIDDER
DATE:

APPENDIX–IV

DETAILS OF SIMILAR WORK DONE DURING THE LAST SEVEN YEARS

SL.NO.	FULL POSTAL ADDRESS OF CLIENT & NAME OF OFFICER IN CHARGE	DESCRIP-TION OF WORK	VALUE OF CONT RACT	DATE OF AWARD OF WORK	DATE OF COMMENC EMENT OF WORK	TIME SCHEDULE (MONTHS)	DATE OF ACTUAL COMPLETION OF WORK	REMARKS

SIGNATURE OF TENDERER WITH SEAL

- PLEASE USE ADDITIONAL SHEET IF NEEDED IN THE SAME FORMAT.
- PLEASE ENCLOSE COPIES OF WORK ORDERS INCLUDING DETAILED BILL OF QUANTITIES, COMPLETION CERTIFICATES IN SUPPORT OF THIS STATEMENT.

PAINTING SCHEDULE – ANNEX-V

Prepared by	**L.Gragori SSO /Plant Lab**		**NTPC Ref Doc. No:** **NTPC DRG No: 2240 – 108 – 01TR – PVG – W – 061 (Painting Schemes for boiler)**	**Document No: Q: PL: C3 - PS / 0624**
Reviewed by	**R.Sundaraman DM / PE / FB**			**Revision No: 05** **Date: 06.02 2004**
	M. Somu Manager/ Plant Lab			
	P. Ravishankar Manager / QA Piping Centre			
Approved by	**M.Ponnusamy SM/Plant Lab**			**Page: i**

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CONTENTS

6.1.1

6.2 Pages

RECORD OF REVISIONS

Rev. No	Date	Details of revision	Remarks
00	09.05.2003	New	--
01	19.06.2003	a) The details of surface preparation in sl.no: 3 of Part – I & III are indicated as given in the bid document. b) Further, the details of surface preparation are indicated uniformly to Swedish standard SIS – 05 – 5900 for the rest of painting schemes of the document. c) The details of paint and its paint system in sl.no: 3 of Part – I & III are modified as indicated in the bid document. d) The Red oxide zinc chrome primer paint to IS 2074 specified in the document is substituted by the Red oxide zinc phosphate primer to IS 12744.	-- -- -- In view of health hazards of chrome pigments, BIS formulated this specification and found that IS 12744 gives a matching anti-corrosive performance to IS 2074 - Red oxide zinc chrome Primer. Ref: IS12744, Forward Page.
02	07.07.2003	a) The surface preparation details in sl.no: 1,2,4,5 of Part – I, sl.no: 1, 3 of Part – II & sl.no: 1, 2 of Part – III are indicated as given in NTPC – Rihand - II Painting schedule. b) Painting scheme for valve hand wheel is included in Part – II. c) Painting of Damaged area is given in Part – VI. d) The point no: 12 of Notes, Part – IV is modified. e) Description for sl.no: 1,2,3&6 of Part – III is indicated.	This revision has been made as per comments by NTPC. Ref: CC: PEV: 2240: 108: SGA dt.01.07.2003
03	06.08.2003	a)Painting thickness has been modified to a minimum DFT of 100μm in line with NTPC's requirements. b) Painting for Hand Rails has been incorporated in line with Rihand Contract	NTPC Letter No. CC:PEV:2240:108:TR:02 Dt.23-07-03
04	20.08.2003	a)Painting thickness has been maintained as per BHEL norms for pressure parts.b) Structures finish paint shade changed.	As per instructions of Contract/FB
05	06.02.2004	a)11 PGMAs are deleted from Sl.No.04 of Part I; The deleted 11 PGMAs are added in Sl.No.05 of Part I. b) The shade for the Hand Rails changed in Sl.No.07 of Part I	-- Scope of supply &Services BID DOC.NO:CS-2240-108-2

Part – I

Painting schemes for Boiler components (other than Valves & Piping)

Sl.No.	6.3.1.1 PGMA / Description	Surface Prepa-ration & Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT µm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
1	Drum (Except Internals), Drum suspension 04 – 126,146,196	SSPC-SP3/ Power Tool Cleaning	Red Oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744 DFT= 30µm per coat	2	--	--	Synthetic Enamel paint (Long Oil Alkyd) to IS 2932 DFT= 20µm per coat	1	Inter-natioal-Orange Shade No: 592 of IS 5	80
2	Drum internals 04 – 136	SSPC-SP1/ or SSPC – SP3 Solvent / Power Tool Cleaning	Rust Preventive Fluid to PR: CHEM: 09 – 04 DFT=25µm per coat	1	--	--	--	--	--	25

Sl.No.	6.3.1.2 PGMA / Description	Surface Prepa-ration &	Primer coat	Intermediate coat	Finish coat	Total DFT

		Surface Profile	Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	µm (min)
3	**Buck stays** **08 – 001, 003,006,007,111,380,382,400** **08 – 501,503,901,907,910** **Boiler supporting structures** **35 – 111, 112,121,122,130,140,150,190** **35 – 211,212,213,214,221,222,231,232** **35 – 311,312,321,322,331,332,341,342** **35 – 351, 352,361,362,381,382,383,390** **35 – 441,442,443,451,452,453,511,512** **35– 513,521,522,523,531,532,533,821** **Galleries & Stair-ways** **36 – 110,130,150,311,312,313,314** **36 – 315,316,321,322,323,324,325** **36 – 326,327,331,332,333,334,335** **36 – 341,342,343,344,345,346,347** **36 – 348,351,352,353,354,355,361** **36 – 362,363,391,392,393,394,395** **36 – 610,611,613,620,621,740** **Interconnecting walkways** **38 – 110,210,299,310,380,381,410** **38 – 510,610,611,710** **ID system structures** **39 – 101,102,141,142,150,300,301** **39 – 302,304,305,306**	**Abrasive Blast cleaning to Sa 2 ½ (Near white metal) finish of Swedish standard SIS-05-5900 with surface profile 35-50 µm**	**Self curing Inorganic Ethyl Zinc Silicate Primer coat (Solid by Volume minimum 60%) of minimum 75 micron Dry Film Thickness (DFT) per coat.**	**1**	**Polyamide cured pigmented Titanium Dioxide (Tio2) Epoxy Based Paint (Solid by Volume Minimum 60%) of Minimum 75 Micron Dry Film Thickness (DFT) per coat . This coat shall be applied after an interval of minimum overnight (from the application of primer coat).**	**1**	**# Polyamide cured colour pigmented Epoxy based paint (Solid by Volume Minimum 40%) of Minimum 35 Micron DFT per coat** **+** **# Polyurethane based colour pigmented Paint (Solid by Volume Minimum 40%) of Minimum 30Micron DFT per coat.**	**2** **1**	****Grey white RAL Shade No: 9002**	**250**

Out of 2 coats of Epoxy based finish paint, one coat of Epoxy finish paint shall be given at shop / subcontracting works and second coat of Epoxy finish and one coat of aliphatic Polyurethane paint shall be applied at site after erection by brush and / or spray.

** Shade RAL 9002 is applicable to Polyurethane Finish paint only.

Sl.No.	PGMA / Description	Surface Prepn &- Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT µm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
4	Loose tubes, SH, RH & Eco.coils, 07 – 215,216,217,218,223,225,226 07 – 231,232 11 – 036,037,038,077,078,095,278 11 – 336,337,338,377,378,395,768, 11 – 791,991 16 – 077,079,277,377,379 19 – 814,824,884,914,924,984	SSPC – SP2 or SSPC – SP3 Hand tool / Power tool cleaning	Zinc chrome Dip coat primer to PR: CHEM: 09 – 03 DFT=35µm per coat	1	--	--	--	--	--	35
5	Drum commg spare 04 – 988 Headers 05 – 137,139,147, 158,159 05 – 227,229,231,251 WW, SH panel 06 – 400,631,633,634,637,641,643 06 – 644,647,651,653,655,670 DC, riser, S.manifold 07 – 102,104,106,107 07 – 402,403,404,405,420,431,500 07 – 601 Seal Boxes 09 – 001,002,003 SH Headers 10 –	SSPC-SP3/ Power Tool Cleaning	Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744 DFT= 30µm per coat	2	--	--	Syn. Enamel paint (Long Oil Alkyd) to IS 2932 DFT= 20µm per coat	1	Smoke Grey Shade No: 692 of IS5	80

	135,178,182,183,185,191,195 10 – 218,235,278,283,291,295,315 10 – 687 11 – 606,608,716,717,718,767,769,787,916,917,918,967,968,969,987									

Sl.No.	PGMA / Description	Surface Prepn &- Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT µm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
5 contd..	SH lines & links 12 – 178,395,495,515,619,803,805 12 - 850,852,900,903 12 – 906, 914,917,924,927,928,944 12 – 948,954,968,991 RH Headers 15 – 177,279 RH pipes 17 – 776,807,900,904 17 – 919,929 Roof skin casing 18 – 002,003,010,020 Eco. Links & elements 19 – 701,702,850,851,905,906,907 SB piping 21 – 600,601,700 Trim piping & fitting 24 –	SSPC-SP3/ Power Tool Cleaning	Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744 DFT= 30µm per coat	2	--	--	Syn. Enamel paint (Long Oil Alkyd) to IS 2932 DFT= 20µm per coat	1	Smoke Grey Shade No: 692 of IS5	80

	300,301,315,320,325,335,340 24 - 374,375 Manhole Doors 28 – 220 Fixing components (Blr) 30 – 103,105,211,212,215,219,235 Boiler skin casing & Fixg. Com (aux) 31 – 010,102,104,105 32 – 010,110,120,310,410,510,710									

Sl.No.	6.3.1.3 PGMA / Description	**Surface Prepa-ration & Surface Profile**	**Primer coat**		**Intermediate coat**		**Finish coat**			**Total DFT µm (min)**
			Paint	**No. of coats**	**Paint**	**No. of coats**	**Paint**	**No. of coats**	**Shade**	

5 contd..	**Oil & gas burners 41 – 350,390 Oil & gas system 42 – 002,005,010,020,030,065,120 42 – 128,150,152,154,157,158,170 Ignitor & Scanner air system 43 – 004,005,104,105,200 Coal burner system 45 – 321,325,326 Pulverized fuel piping & supports 47 – 261,263,266,267,268,269 Cold & Hot air ducts/dampers/Gates 48 – 002,007,010,012 to 014,019,022 48 – 032,033,102, 105,107,110,112 48 – 113,114,115, 132,133,135,141 48 – 142,143,144, 145,160,202,203 48 – 204,205,207,209,212,222,223 48 – 224,225,232,234,362, 363,364 48 – 372,374,382, 383,384,385,386 48 – 388,389,432, 433,434,435,438 48 – 439,460,462, 464,465,466,467 48 – 469,480, 482,484,485,486,489**	**SSPC-SP3/ Power Tool Cleaning**	**Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744 DFT= 30µm per coat**	**2**	**--**	**--**	**Syn. Enamel paint (Long Oil Alkyd) to IS 2932 DFT= 20µm per coat**	**1**	**Smoke Grey Shade No: 692 of IS5**	**80**

Sl.No.	6.3.1.4 PGMA / Description	Surface Prepa-ration & Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT µm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
5 contd..	48 – 490,492,494 to 496,660,662, 48 – 663,664,667 Coal & Gr. Feeder 65 – 736 67 – 272,276,283,801,802,803	SSPC-SP3/ Power Tool Cleaning	Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744 DFT= 30µm per coat	2	--	--	Syn. Enamel paint (Long Oil Alkyd) to IS 2932 DFT= 20µm per coat	1	Smoke Grey Shade No: 692 of IS5	80
6	For CLH & VLH PGs 07,08,12,17,19,21,24,47,48	Blast cleaning to Sa2 ½ finish of Swedish standard SIS-05-5900 with surface profile 35-50 µm	Polyamide cured Epoxy zinc rich primer to IS 14589 Gr.II %VS=35.0,min DFT=40.0 microns per coat	1	--	--	Aliphatic acrylic Poly-urethane paint to IS 13213 %VS=40.0 (min) DFT=30.0 microns per coat	1	Phirozi Blue Shade No. 176 of IS5	70

7	Hand rails and posts, ladders / rungs 35 – @ 822, @823,851 36 – @820,851,852,853 38 – @820,850 39 – @820,850 ** Floor Grills, Step threads 35-811,36-811 to 814,38-810,39 – 810	a)Hot dip Galvanizing to a coating weight of 610 gm per sq.m (minimum) and to a coating thickness of 87.0 microns (minimum).b) After galvanizing, one coat of etch primer to a DFT of 6-8 microns + one coat of epoxy finish paint to a DFT of 35 microns + one coat of Polyurethane finish paint to a DFT of 30microns, Grey White RAL shade no: 9002 for Ladders,Posts,Rungs and Blue RAL shade no:5012 for Hand rails shall be given. THIS PAINTING SHALL BE GIVEN ONLY FOR ALL HANDRAILS AND LADDER PIPES EXCEPT AT OPERATING FLOORS ;THE PAINTING IS DONE AT SITE. @ Refer Notes given in the footnote. Refer Notes given below **

@ NOTES: Step threads under PG 35,36,38, & 39 shall be galvanized to 610 gm per sq.m. but no painting is required.
@ Stringer channels under PGs 35,36,38 & 39 shall be painted as described in sl.no: 03.
Notes **: The Guard plates and Stringer channels under sl.no. 07 shall be painted as per painting scheme prescribed in sl.no: 03.

6.3.1.5Part – II

6.3.1.6Painting schemes for Valves

Sl.No.	PGMA / Description	Surface Prepa-ration & Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT µm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
1	Cast carbon steel valves (Conventional) Cast alloy steel valves (Conventional) All API valves, QCNRV, SV & SRV Silencers	SSPC-SP3/ Power Tool Cleaning	Heat resistant Alumimum paint to IS 13183 Gr. I	2	--	--	--	--	6.3.1.6.1.	30
2	Forged valves	Phosphating	To a coating weight of 1500 mg per sq.ft.	--	--	--	--	--	6.3.1.6.1.	--

3	Soot Blower components	SSPC-SP3/ Power Tool Cleaning	Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744 DFT= 30μm per coat	2	--	--	Syn. Enamel paint (Long Oil Alkyd) to IS 2932 DFT= 20μm per coat	1	Verdigris Green Shade No. 280 of IS5	80
4	HP / LP system	Sa2 finish (Comml. Blast Cleaning), 35-50μm	Heat Resistant Aluminium Paint to IS 13183 Gr.I	2	--	--	--	--	--	30
5	Valve Hand wheels	SSPC-SP3/ Power Tool Cleaning	General purpose Aluminium paint to IS 2339	2	--	--	--	--	--	30

Part – III
Painting schemes for SG, PCP & TG Piping

Sl.No.	PGMA / Description	Surface Prepa-ration & Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT μm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
1	MS/HRH/CRH/Aux./Feed	SSPC-	Red oxide	2	--	--	--	--	--	60

	lines IBD, CBD tanks 80 – 342,343,344,351,355,364,365, 366,368,371,373,375,379,381, 382,385,388,390,399,395,402, 403,419,420,421,423,424,425, 430,431,450,451, 452,453,454,455,650,300, 301,303,304,307,310,311,312, 320,321,322,323,324,329,331, 332,335,336,337,339,340,341, 345,349,362,432,433,439,442, 443,444,446,447,448,449,452, 453,493,494, 81 – 003,009,012, 041,	**SP3/ Power Tool Cleaning**	**Zinc Phosphate Primer (Alkyd Base) to IS 12744 DFT= 30μm per coat**							
2	**Feed / Condensate lines 80 – 400,401,407,408,412,429,460, 471,473,477,480,600,604 435,436,457,459,495,601,673 81 – 036**	**SSPC-SP3/ Power Tool Cleaning**	**Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744 DFT= 30μm per coat**	**2**	**--**	**--**	**Syn. Enamel paint (Long Oil Alkyd) to IS 2932 DFT= 20μm per coat**	**1**	**Smoke Grey Shade No: 692 of IS5**	**80**

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Sl.No.	PGMA / Description	Surface Prepn &- Surface Profile	Primer coat		Intermediate coat		Finish coat			Total DFT µm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
3	Auxiliary Structures 80 – 805,818,820,821,822,803,817, 818,840,845,877,879,882,	Abrasive Blast cleaning to Sa2 ½ (Near white metal) finish of Swedish standard SIS-05-5900 with surface profile 35-50 µm	Self curing Inorganic Ethyl Zinc Silicate Primer coat (Solid by Volume minimum 60%) of minimum 75 micron Dry Film Thickness (DFT) per coat.	1	Polyamide cured pigmented Titanium Dioxide (Tio2) Epoxy Based Paint (Solid by Volume Minimum 60%) of Minimum 75 Micron Dry Film Thickness (DFT) per coat . This coat shall be applied after an interval of minimum overnight (from the application of primer coat).	1	# Polyamide cured colour pigmented Epoxy based paint (Solid by Volume Minimum 40%) of Minimum 35 Micron DFT per coat + # Polyurethane based colour pigmented Paint (Solid by Volume Minimum 40%) of Minimum 30Micron DFT per coat.	2 1	Smoke Grey Shade No: 692 of IS 5	250

 # Out of 2 coats of Epoxy based finish paint, one coat of Epoxy finish paint shall be given at shop / subcontracting works and second coat of Epoxy finish and one coat of aliphatic Polyurethane paint shall be applied at site after erection by brush and / or spray.

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Sl.No.	PGMA / Description	Surface Prepa-ration &	Primer coat	Intermediate coat	Finish coat	Total DFT

		Surface Profile	Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	μm (min)
4	**Hangers & supports** **80 – 802,812,814,815,931,800,811, 831,832,833,834,835,836,866,868, 871,927,**	**Blast cleaning to Sa2 ½ finish of Swedish standard SIS-05-5900 with surface profile 35-50 μm**	**Polyamide cured Epoxy zinc rich primer To IS 14589 Gr.II %VS=35.0,min DFT=40.0 microns per coat**	**1**	**--**	**--**	**Aliphatic acylic Poly-urethane paint to IS 13213 %VS=40.0 (min) DFT=30.0 microns per coat**	**1**	**Phirozi Blue Shade No. 176 of IS5**	**70**
5	**BHEL Valves** **80 – 901,907**	The painting scheme as per sl.no: 1 of Part – II (Painting schemes for Valves)								
6	**Service / instrument air for individual unit** **80 – 612,616**	**Hot Dip Galvanization to 610 g per sq.m (min) and coating thickness of 86.0 microns (min)**								

Part – IV
General Notes for Painting

NOTES:

1. Rust Preventive Coating should be given on HSFG Bolt threads.

2. Machined surfaces are to be applied with a coating of Temporary Rust Preventive oil.

3. All threaded and other surfaces of foundation (35 – 010, 39 – 012, 48 – 019) bolts and its materials, insulation pins, Anchor channels, Sleeves shall be coated with Temporary Rust Preventive Fluid and during execution of civil works; the dried film of coating shall be removed using organic solvents.

4. All shade numbers are as per IS 5. Unless otherwise specified Color / Shade of the finish coat shall be Smoke gray Shade No. 692 of IS 5.

5. PGMAs under Sub-Vendor items are not indicated. Please refer respective Engg. Document.

6. These Painting Schemes are valid for only Customer No: 0624 & 0625, 6741 & 6742 of NTPC – Vindhyachal STPP.

07. No painting is required for Stainless Steel components.

08. Wherever inside surfaces of Expansion Joints, Ducts & Dampers under PGMA 48 – XXX, need protection till erection, two coats of Red-oxide zinc phosphate primer paint to IS 12744 to a DFT of 60 microns shall be applied.

09. The Temporary Rust Preventive coating that already been applied on any components, tubes, pipes etc., shall be removed by suitable solvents / heating to 350 -400 °C for an hour before primer paint application -but, in this case, it should be ensured that the minimum surface cleanliness required for primer paint application shall be SSPC - SP2 (equivalent - Hand Tool cleaning).

10. In components, wherever plates / sheets of thickness less than or equal to 5 mm and rods are used, power tool / hand tool cleaning to SSPC - SP3 / SP2 shall be followed and the painting shall be done as described in Scheme No: 05.

11. The erection materials under PGMAs 07 – 993, 24 – 993, 31 – 993, 36 – 993, 48 – 993 & boiler casing materials under PGMAs 37 – 010, 810 are coated with one coat of Red oxide zinc phosphate primer to IS 12744 after power tool cleaning.

12. Ground Shade / Colour of Finish paints & identification Tag / Band for various boiler supporting structures and other boiler components will be followed as given in NTPC doc. CS-2240-108-2, Tech.spen. Section-VI, Part-B, Sub-section-C at site.

Part - V
Detail of Paints for procurement and paint application

Sl.No.	Generic nature of paint	Theoretical	No. of	Volume solids,	DFT in microns	Shade	Shade No.	Mode of	Over coatin

		Covering Capacity Sq.m per Litre.	pack	% (min)**	(min) per coat		to IS5	appln.	g interval, Hrs.
1	Self curing Inorganic ethyl zinc silicate Primer paint to IS 14946	8	2	60	75	6.3.1.6.	--	Spray Only	16
2	Polyamide cured Epoxy based Tio2 pigmented intermediate coat	6	2	60	75	6.3.1.6.	--	##	24
3	Polyamide cured Epoxy based colour pigmented finish paint to IS 14209	10	2	40	35	6.3.1.6.	692	Spray	24
4	Aliphatic acrylic Polyurethane based colour pigmented finish paint to IS 13213	10	2	40	30	6.3.1.6. Phiroz i -	RAL 9002 176	Spray Spray	24 24

						Blue.			
5	Heat resistant aluminimum paint to IS 13183 Grade I	10	1	--	15	6.3.1.6.	--	Brush / Spray	24
6	Alkyd based Red oxide zinc phosphate primer paint to IS 12744	10	1	--	30	6.3.1.6.	--	Brush / Spray	12
7	Zinc chrome Dip coat primer paint to PR: CHEM: 09-03	10	1	--	35	6.3.1.6.	---	Dip	12
8	Long oil alkyd synthetic enamel finish paint to IS 2932	10	1	--	20	6.3.1.6.	Corrpdg. Shade no.	Brush / Spray	12
9	Temporary Rust preventive fluid to PR: CHE: 09 - 04	10	1	--	25	6.3.1.6.	--	--	12
10	Polyamide cured Epoxy based zinc rich primer paint to IS 14589 Grade II.	8	2	35	40	6.3.1.6.	--	Brush / Spray	24

1.0 ## Brush application may be permitted if permitted by Paint suppliers. 2.0 The covering capacity of paints specified is only approximate.
3.0 The paints and Rust Preventive fluid shall be procured from BHEL's approved suppliers.
4.0 ** Values are indicative. The final values shall be as per paint manufacturers, finally selected for supply of paints.

Part VI
Painting of Damaged Areas

(Areas where the paint has deteriorated badly by erosion and areas where the paint film has lost its adhesion and where the steel has rusted appreciably, should be repainted as follows)

Sl.No.	Components	Surface Prepa-ration	Primer coat		Intermediate coat		Finish coat			Total DFT µm (min)
			Paint	No. of coats	Paint	No. of coats	Paint	No. of coats	Shade	
1	Paint damaged components fall under Sl.no: 3 of Part - I Sl.no: 3 of Part - III	Power tool cleaning to bare metal	One coat of Epoxy zinc rich primer to IS 14589 Grade II to a DFT of 40 microns	1	As given in scheme	1	As given in scheme	3	As given in scheme	250
2	Paint damaged components fall under Sl.no: 6 of Part – I Sl.no: 4 of Part - III	Power tool cleaning to bare metal	One coat of Epoxy zinc rich primer to IS 14589 Grade II to a DFT of 40 microns	1	--	--	As given in scheme	1	As given in scheme	70
3	Paint damaged components fall under Sl.no: 1,2,4,5 of Part – I Sl.no: 1,3,4,5 of Part – II Sl.no: 1,2,5 of Part – III	Power tool cleaning to bare metal	As given in scheme	As given in scheme	--	--	As given in scheme	As given in scheme	As given in scheme	As given in scheme

DETAILS OF PAINTING REQUIREMENT AT VINDHYACHAL STPP 2X500MW

PER UNIT

	BOILER AREA	UNIT	QTY/UNIT	QTY FOR UNIT#9 &10
1	BOILER --STRUCTURE	MT	10500	21000
2	ESP-- STRUCTURE	MT	1250	2500
3	MOTORS ID+FD+PA+SEAL AIR, LUB OIL SYSTEM, COUPLING, HOOD TO SILENCER (PA & FD ONLY) ETC	SET	2 NOS EACH	4 NOS EACH
4	MILLS WITH MOTORS/ LUB OIL SYSTEMS, FEEDERS ETC	SET	10	20
5	COAL PIPING + BENDS + FEEDER TO ZERO MTR COAL REJECT	SQ MTR	10250	20500
6	HANGERS+ SUPPORTS FOR ABOVE	MT	100	200
TG AREA				
7	CONDENSER	SQ MTR	1800	3600
8	TURBINE/ GENERATOR			
9	OTHER EQUIPS.LIKE MISC. PUMPS/ MOTORS/ COOLERS/ PHE/ RACKS (OIL & WATER)/ OIL TANKS			
10	OIL PIPING (GEN+LUB+CONTROL)	SQ MTR	1200	2400

COMMON FOR BOTH UNITS

1	LP PIPING STRUCTURE /HANGERS/ SUPPORTS/ PUMPS/ TANKS	MT	400
2	PC PIPING STRUCTURE /HANGERS/ SUPPORTS/ TANKS	MT	950
3	LP PIPING	SQ MTR	35000
4	CW PIPING	SQ MTR	600