



भारत हेवी इलेक्ट्रिकल्स लिमिटेड

(भारत सरकार का उपक्रम)

BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)

TENDER CHANGE NOTE 02 (TCN – 02) DT: 24-08-2010

WITH REFERENCE TO THE NIT, PUBLISHED IN THE WEB SITES FOR ERECTION, TESTING, COMMISSIONING, HANDING OVER ETC OF BOILER, ESP, ROTATING AUX., PIPING, INSULATION, PAINTING ETC ALONG WITH STRUCTURAL STEEL WORKS OF MILL & BUNKER BAY, INTER-CONNECTING PLATFORMS, STRUCTURES ETC FOR PHASE-I, 2X270 MW UNIT-1 & 2 AT 4X270 MW AINL, CHANDWA TPP, LATEHAR, JHARKHAND, FOLLOWING CHANGES MAY PLEASE BE NOTED AND COMPLIED WHILE SUBMITTING THE OFFER FOR THE SUBJECT JOB.

REF: 1) TENDER DOCUMENT NO-PSER-SCT-ABJ-B1119:10

2) TCN-01 vide ref. no. TENDER CHANGE NOTE 01 (TCN – 01) DATED 18-08-2010

1. Further to NIT & TCN-01 published in the web, the details of queries raised by various bidders were discussed in thread bear at the pre-bid meeting on 20/08/2010 at BHEL office, Kolkata. Accordingly the details of bidders' queries and clarifications there off together with other details have been furnished in the enclosed ANNEXURE-AA.
2. Due to typographical error, some dates in NIT are wrongly entered. The modifications shall be as follows:
 - a) Sl. No. ix of NIT- LAST DATE FOR SEEKING CLARIFICATION-
Date: 19/12/2010 shall be read as 19/08/2010
 - b) Sl. No. x of NIT- SCHEDULE of Pre Bid Discussion (PBD)-
Date: 20/09/2010 shall be read as 20/08/2010
3. The Price/Rate schedule detailed as per Volume-II, Rev-0, stands revised for both par-I and Part-II job of Package-A & Package-B and enclosed herewith. As such the Price/Rate schedule, Volume-II, rev-0 stands deleted and not to be considered by the bidders.
4. The estimated weight of various product groups of Boiler of each unit has been revised and enclosed as per Annexure-B, Rev-01.
5. List of T&P to be provided by contractor for each unit/package has been revised and enclosed as per Annexure-C, Rev-01
6. The list of T&Ps to be provided by BHEL on sharing basis Free of charges has been revised and enclosed as per Annexure-D, Rev-01
7. The payment terms as detailed in the GCC for boiler portion of work has been revised and enclosed herewith. As such the payment terms detailed in GCC under the Head "RATE SCHEDULES & TERMS OF PAYMENTS" stands deleted. The revised payment terms enclosed herewith as per Annexure-X need to be considered only for payment terms for boiler.

All the bidders are requested to download the above details and consider the same prior to submission of bid. **BIDDERS TO NOTE THAT ALL TCNS WILL FORM PART OF TENDER DOCUMENT.** ALL THE BIDDERS ARE REQUESTED TO SUBMIT REVISED NO DEVIATION CERTIFICATE AS PER ENCLOSED ANNEXURE-Y.

ALL OTHER TERMS & CONDITIONS OF THE TENDER SHALL REMAIN UNCHANGED.

ENGR (SCT)

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पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960 फोन/Phone : बोर्ड/EPABX : 23211691 / 1684

FORMAT FOR NO DEVIATION CERTIFICATE
(To be submitted in the bidder's letter head)

BHARAT HEAVY ELECTRICALS LIMITED,
Power Sector - Eastern Region,
Plot no 9/1, DJ Block, Sector – II, Salt Lake City,
Kolkata – 700 091

Sub	No Deviation Certificate.	
Job	ERECTION, TESTING, COMMISSIONING, HANDING OVER ETC OF BOILER, ESP, ROTATING AUX., PIPING, INSULATION, PAINTING ETC ALONG WITH STRUCTURAL STEEL WORKS OF MILL & BUNKER BAY, INTER-CONNECTING PLATFORMS, STRUCTURES ETC FOR PHASE-I, 2X270 MW UNIT-1 & 2 AT 4X270 MW AINL, CHANDWA TPP, LATEHAR, JHARKHAND	
Ref	1.0	Tender no PSER-SCT-ABJ-B1119:10
	2.0	BHEL's NIT, vide reference no.PSER:SCT:ABJ-B1119:10 dated 12/08/2010
	3.0	BHEL's TCN-01 vide ref. no.TENDER CHANGE NOTE 01 (TCN – 01) DATED 18/08/10
	4.0	BHEL's TCN-02 vide ref. no.TENDER CHANGE NOTE 02 (TCN – 02) DATED 24/08/10
	5.0	Other references (if any).

Dear Sirs,

With reference to above, this is to confirm that as per tender conditions, we have visited site before submission of our offer and noted the job content & site conditions etc. We also confirm that we have not changed/ modified the tender documents as appeared in the website/ issued by you along with various TCNs and in case of such observance at any stage, it shall be treated as null and void.

We hereby confirm that we have not taken any deviation from tender clauses together with other references as enumerated in the above referred NIT and TCNs. We hereby confirm our unqualified acceptance to all terms & conditions, unqualified compliance to technical specification, integrity pact and **acceptance to reverse auctioning process.**

In the event of observance of any deviation in any part of our offer at a later date whether implicit or explicit, the deviations shall stand null & void.

We confirm to have submitted offer in accordance with tender instructions and as per aforesaid references.

Thanking you,

Yours faithfully,

(Signature, date & seal of authorized representative of the bidder)

**PRE-BID MEETING ON 20-08-2010 with VENDORS FOR 2x270 MW units 1 & II , PHASE -I OF ANIL, Chandwa TPP, LATEHAR, JHARKHAND
(TENDER NO-PSER:SCT:ABJ-B1119:10)**

Sl.No	Page No	Clause No	Subject	Bidden Quenes	BHEL's Clarifications
1	9 of 49 (TCC)	20.1.4	Land for Labour hutment & Power	Please refer whether power for labour hutment will be supplied as free issue from owner and land also to be provided for Labour Hutment on free of cost basis.	As per tender provision.
2	11 of 49 (TCC)	20.3.6	DG Set required for P-91 /T-91 welding	Please confirm that if construction power supply is not available, adequate continuous power supply from DG set during welding of P91/T91 material shall be made available by bidder.	Yes it shall be as per tender provision.
3	24 of 49 (TCC)	36.4	Contractor's T&P	List provided for contractor's T&P in Sl.No.36.4 is an additional requirement apart from contractor's T&P as per Annexure-C (Page 44 of 49). Please also clarify that list provided for 36.4 is required for one unit.	List provided in clause no. 36.4 is the additional requirement for Part-II scope of work (Mill structural works) and the list provided in Annexure-C (revised & enclosed herewith as Annexure-C, rev-01) is for both Part-I and Part-II portions. The list of T&P provided in the tender are for one unit. However, T&Ps to be provided by BHEL on sharing basis with other agencies.
4	24 29 of 49 (TCC)	47.3	BG required for fabrication/galvanizing work for structural steel	Please specify the rate of structural steel to determine the value of BG otherwise please confirm us to provide the Indemnity Bond in lieu of BG, if required.	This clause is clear and the Rate shall be as intimated when exigency as specified in the tender occurs during execution.
5	38 of 49	16	Filler wire of P-91	Please confirm that filler wire for P-91 welding shall also be supplied from BHEL on free of cost.	Filler wire of P-91 as supplied by maufacturing unit shall be supplied Free by BHEL as detailed in clause no. 4.1.4 of SCC supply. The excess quantity shall be provided by the bidder only
6	47 of 49	2	Mid range crane	Please specify the range or capacity of the crane and also specify that list provided for T&P of M/s. BHEL's sharing crane is required for Pkg-A or Pkg-B individually.	The range or capacity of the mid range crane shall be 200 MT or equivalent. The cranres specified by BHEL on sharing basis vide Annexure-D(Revised & enclosed herewith as Annexure-D, rev-01) is for the project.
7	47 of 49	1/2/3/4/	Crawler crane	Please confirm that operator and fuel for BHEL shared crane shall be supplied by bidder.	The annexure-D , T&Ps to be provided by BHEL has been modified and enclosed herewith as Annexure-D, rev-01 and the details operator & fule as sought have been elaborated therein.
8	22	2.13	GCC—Mobilisation Advance	Please specify the rate of interest to obtain the Mobilization Advance.	There is no provision of mobilisation advance in this tender.

**PRE-BID MEETING ON 20-08-2010 with VENDORS FOR 2x270 MW units 1 & II , PHASE -I OF ANIL, Chandwa TPP, LATEHAR, JHARKHAND
(TENDER NO-PSER:SCT:ABJ-B1119:10)**

SI.No	Page No	Clause No	Subject	Bidden Quenes	BHEL's Clarifications
9			Rate Schedule & Terms of Payment	Please clarify the rate schedule and terms of payment in GCC as it contains the whole system of power plant like turbine, electrical, Instrumentation as such it is not required in this package.	GCC is the standard General condition of contract encompassing all sorts services job. However, for this tender, all other rate schedule and Payment terms detailed in GCC under the Head "RATE SCHEDULES & TERMS OF PAYMENTS" stand deleted except the "RATE SCHEDULE FOR STEAM GENERATOR AND CW PIPING" as specified against sl.no.2.2 of Index of "RATE SCHEDULE & TERMS OF PAYMENT", under the document no."PS MSX: TOP-SG & CWP", towards payment of boiler portion of work. The applicable rate schedule and payment terms for boiler portion of work has been revised and enclosed herewith as Annexure-X as payment terms and Rate Schedule, as Volume II, rev-01. For payment of further items, please refer clause no.42.0 of TCC, TERMS OF PAYMENT limited to scope detailed in the tender. For structural work Part-II, wherever specified in the Price/Rate schedule, the same Terms of Payment shall prevail AND for the unspecified portion, the T.O.P. specified vide cl.no.42.5 of TCC shall prevail.
10			Insulation & Painting	Please confirm that insulation and painting shall be excluded from bidder's scope of work.	Both Insulation and Painting are covered in the scope. For quoting purpose, tonnage of insulation is being incorporated in the revised rate schedule (Rev-1).
11			Unloading of boiler drum	Please confirm that during unloading of Boiler Drum, M/s. BHEL's higher capacity crane (250 MT Crawler Crane) shall be issued to us free of cost.	BHEL's 250 T crane will not be available for drum unloading.
12		Item No. 2301A	Handrails/Chequered Plate/Gratings	Please specify the quantity of handrail of MS or Galvanised to be fabricated. Please also confirm that hand railing pipes shall be supplied to us free of cost.	The quantum of Mill Bunker of any 250/270 MW unit may be referred for getting idea about the query raised. The Hand rail pipes shall be supplied free

**PRE-BID MEETING ON 20-08-2010 with VENDORS FOR 2x270 MW units 1 & II , PHASE -I OF ANIL, Chandwa TPP, LATEHAR, JHARKHAND
(TENDER NO-PSER:SCT:ABJ-B1119:10)**

SI.No	Page No	Clause No	Subject	Bidden Quenes	BHEL's Clarifications
13		Item No. 2301B	Quantification of Hand railing/Chequered Plate	As supply is included in this item rate, please specify the quantity of hand railing and chequered out of 25 MT.	Quantity of handrail, chequered plates etc cannot be spelt outb at this stage. The same shall be intimated during execution.
14		Item No. 2306	Stainless steel liner plate	Please confirm that stainless steel liner plate along with MS Plate shall be supplied to us free of cost at site.	Shall be supplied free as detailed in the tender.
15			Structural work BHEL shared Crane.	Please confirm whether 75T Cap./Higher capacity crane if required shall be provided free of cost at site for structural fabrication and erection work apart from Boiler Erection work.	Yes and shall be provided as indicated in the tender for the total scope of work of the project.
16					ANNEXURE-B,ANNEXURE-C & ANNEXURE-D have been revised and enclosed herewith as ANNEXURE-B,Rev-01, ANNEXURE-C,Rev-01 and ANNEXURE-D, Rev-01.
17					One MILL BAY GA AND FOUNDATION LOADING DRAWING Is enclosed hrewith vide drawing no. PE-DG-344-616-R3 for tender purpose.

ANNEXURE -X							
TERMS OF PAYMENT FOR STEAM GENERATOR & PIPING							
SL NO	Contract (Main Package) Identification ---->			Rotating Machine	ESP	PIPING	INSULATION
	Rate schedule Identification ----->	Pressure Parts & Trim Piping	Non Pressure Parts incl. structures & ducting	1) RM 2) APH & 3) Handling Eqpts	ESP	1)P-91 2) AS 3) CS (HP) 4) CS (LP) 5) SS 6)H&S	1) Castable & Pourable 2) Iron Components 3) Wool mattresses 4) Aluminium sheeting
I	PRO RATA PAYMENTS (85%)						
1.1	ON PRE-ASSEMBLY WHEREVER APPLICABLE (IF NOT APPLICABLE, THIS PORTION SHALL BE CLUBBED WITH PLACEMENT IN POSITION)	20	25	15	15	20	--
1.2	PLACEMENT IN POSITION	10	10	20	20	20	50
1.3	ALIGNMENT	15	10	20	15	10	15
1.4	WELDING/BOLTING/FIXING	20	15	20	20	15	20
1.5	COMPLETION OF NON DESTRUCTIVE EXAMINATION & STRESS RELIEVING/ HEAT TREATMENT (if not applicable, then this portion to be paid along with welding)	10	--	--	--	5	--
1.6	On Drum Lifting						
1.7	COMPLETION OF ATTACHMENT WELDING, FIN WELDING, SUPPORTS	5					
1.8	COMPLETION OF ROOF SKIN CASING	5					
1.9	INSTALLATION OF TEMPORARY PIPING						
1.10	DISMANTLING OF TEMPORARY PIPING, EDGE PREPARATION AND RETURN TO BHEL STORES, AREA CLEANING						
1.11	HANGERS & SUPPORTS ETC WHEREVER NECESSARY AS PER DRG	--	25	--	--	10	--
1.12	COMPLETION OF FURNACE ALIGNMENT AND FIRE BALL CHECKING						
1.13	COMPLETION OF BACK PASS ALIGNMENT						
1.14	COMPLETION OF VIBRATION SNUBBERS, MECHANICAL SPACERS, CASSETTE BAFFLES, STEAM COOLED SPACERS						
1.15	COMPLETION OF HOPPERS ALONG WITH ALL DOORS, HEATING ELEMENTS, POKING DOORS, ETC	--	0	--	5	--	--

TERMS OF PAYMENT FOR STEAM GENERATOR & PIPING

SL NO	Contract (Main Package) Identification ---->			Rotating Machine	ESP	PIPING	INSULATION
	Rate schedule Identification ----->	Pressure Parts & Trim Piping	Non Pressure Parts incl. structures & ducting	1) RM 2) APH & 3) Handling Eqpts	ESP	1)P-91 2) AS 3) CS (HP) 4) CS (LP) 5) SS 6)H&S	1) Castable & Pourable 2) Iron Components 3) Wool mattresses 4) Aluminium sheeting
1.16	COMPLETION OF INNER, OUTER ROOF INSULATOR HOUSING, RECTIFIER TRANSFORMERS, PENT HOUSE MONO RAILS, HOISTS ETC	--	--	--	5	--	--
1.17	ERECTION OF EMITTING AND COLLECTING RAPPING SYSTEM WITH ALL DRIVES	--	--	--	5	--	--
1.18	EQUIPMENT TRIAL OPERATION			10			
1.19	HYDRAULIC TEST OR PNEUMATIC TEST					3	
1.20	FLOATING OF LINES, FINAL ADJUSTMENT OF SUPPORTS FOR COLD AND HOT VALUES (if not applicable, this portion to be clubbed along with hydraulic test/pneumatic test)					2	

TERMS OF PAYMENT FOR STEAM GENERATOR & PIPING

SL NO	Contract (Main Package) Identification ---->			Rotating Machine	ESP	PIPING	INSULATION
	Rate schedule Identification ----->	Pressure Parts & Trim Piping	Non Pressure Parts incl. structures & ducting	1) RM 2) APH & 3) Handling Eqpts	ESP	1)P-91 2) AS 3) CS (HP) 4) CS (LP) 5) SS 6)H&S	1) Castable & Pourable 2) Iron Components 3) Wool mattresses 4) Aluminium sheeting
1.21	<u>AIR PRE HEATERS (PG 52)</u> From the total amount payable for the PGMA weight at tonnage rates, payment will be regulated as under:						
1.21.1	Completion of Support steel squareness and levelling, Expansion arrangement, Housing panel erection and alignment, Erection, alignment and welding of pedestals						
1.21.2	Completion of Erection, alignment and welding of Support Bearing, Guide Bearing, Rotor post, Bottom and Top centre sections, Hot and cold end connecting plates						
1.21.3	Completion of erection and alignment of modules						
1.21.4	Completion of erection, alignment and welding of Pin Rack assembly and Drive assembly						
1.21.5	Completion of seals setting						
1.21.6	Erection, alignment and welding of Lube oil systems, Cleaning Device, Fire sensing device, Deluge and water wash lines, Observation port and lighting assemblies and other accessories						
1.21.7	Completion of PGMA						
1.21.8	Air preheater Trial Run						
	TOTAL FOR PRO RATA PAYMENTS (TOTAL 85%)	85	85	85	85	85	85
II	STAGE/MILESTONE PAYMENTS (15%)						
2.1	AIR & GAS TIGHTNESS TEST	--	5	--	1	--	--
2.2	GAS DISTRIBUTION TEST	--	--	--	1	--	--
2.3	CHARGING OF ESP FIELDS	--	--	--	4	--	--
2.4	COMPLETION OF AIR & GAS TIGHTNESS TEST FOR FURNACE	2					
2.5	BOILER HYDRAULIC TEST (DRAINABLE)	2					

TERMS OF PAYMENT FOR STEAM GENERATOR & PIPING

SL NO	Contract (Main Package) Identification ---->			Rotating Machine	ESP	PIPING	INSULATION
	Rate schedule Identification ----->	Pressure Parts & Trim Piping	Non Pressure Parts incl. structures & ducting	1) RM 2) APH & 3) Handling Eqpts	ESP	1)P-91 2) AS 3) CS (HP) 4) CS (LP) 5) SS 6)H&S	1) Castable & Pourable 2) Iron Components 3) Wool mattresses 4) Aluminium sheeting
2.6	BOILER HYDRAULIC TEST (NON DRAINABLE)	1					
2.7	Reheater Coils Hydraulic Test	2					
2.8	Clean Air Flow test			1			

TERMS OF PAYMENT FOR STEAM GENERATOR & PIPING

SL NO	Contract (Main Package) Identification ---->			Rotating Machine	ESP	PIPING	INSULATION
		Pressure Parts & Trim Piping	Non Pressure Parts incl. structures & ducting	1) RM 2) APH & 3) Handling Eqpts	ESP	1)P-91 2) AS 3) CS (HP) 4) CS (LP) 5) SS 6)H&S	1) Castable & Pourable 2) Iron Components 3) Wool mattresses 4) Aluminium sheeting
	Rate schedule Identification ----->						
2.9	Boiler Light Up	1		1		1	1
2.10	ABO	1	1	1		1	1
2.11	Steam Blowing		2	1		1	1
2.12.	SVF	2				1	1
2.13	Oil Flushing (TG)						
2.14	Barring Gear (TG)						
2.15	Rolling and Synchronisation						
2.16	Coal Firing		2	2	2		1
2.17	Full Load			1		1	1
2.18	Trial Operation of Unit			2	1	2	2
2.19	Completion of sheet covering for Boiler roof, burner roof, lift shaft cladding, completion of gutters						
2.20	Completion of all drains and vents to respective locations and placement of instrument sensors after steam blowing					2	
2.21	Painting	0	1	2	2	2	0
2.22	Area cleaning, temporary structures cutting/removal and return of scrap	1	1	1	1	1	3
2.23	Punch List points/pending points liquidation	1	1	1	1	1	1
2.24	Submission of 'As Built Drawings'						
2.25	Material Reconciliation	1	1	1	1	1	2
2.26	Completion of Contractual Obligation	1	1	1	1	1	1
	TOTAL FOR STAGE/MILESTONE PAYMENTS (15%)	15	15	15	15	15	15
	TOTAL I + II	100	100	100	100	100	100
	*INCLUDING NDE AND SR/HT WHERE EVER APPLICABLE (IF APPLICABLE, WEIGHTAGE OF 10%)						

ANNEXURE – B,Rev.01

ESTIMATED WEIGHT OF VARIOUS PRODUCT GROUPS OF BOILER OF EACH UNIT

SI NO.	PGMA	DESCRIPTION	DESIGN WT (Tons)
GROUP-I : PRESSURE PARTS			
1	04	BOILER DRUM WITH INTERNALS	166.32
2	05	WATER WALL HEADERS	77.4
3	06	WATER WALL PANELS	369.12
4	07	CIRCULATION SYSTEM e.g. DOWNCOMER & RISER TUBES AND HANGERS & SUSPENSION	356.52
5	08	BUCKSTAYS & FURNACE GUIDES	333
6	09	SEAL BOXES FOR FURNACE OPENING & INSTRUMENT INSERTS	7.08
7	10	SUPER HEATER HEADERS	106.2
8	11	SUPER HEATER COILS	757.92
9	12	SH SPACER TUBES, SAT.LINKS,DASH & DESH LINKS,SH HANGERS & SUPPORTS	388.56
10	15	REHEATER HEADERS	28.8
11	16	REHEATER COILS	176.4
12	17	REHEATER LINKS & SUSPENSIONS	35.88
13	18	FURNACE ROOF SKIN CASING	15.58
14	19	ECONOMISER COILS,HEADERS & PIPES	426.12
15	20	SOOT BLOWERS	34.18
16	28	FURNACE DOORS & FASTENERS	6.36
17	31	SKIN CASING AND COMPONENTS	12.24
18	32	FIXING COMPONENTS FOR INSULATION (ONLY ATTACHMENTS TO PR.PARTS & PIPING)	15
19	37	BOILER OUTER CASING	43.44
		SUB-TOTAL	3356.12
GROUP-II : INTEGRAL/TRIM PIPING			
20	21	SOOT BLOWING STEAM PIPING	16.9
21	24	BOILER TRIM PIPING,SAFETY VALVES, SILENCERS,NAME PLATES ETC.	189.76
22	42	OIL SYSTEM PIPINGS	23.26
		SUB-TOTAL	229.92
GROUP-III : NON PRESSURE PARTS			
23	30	MAIN BOILER ENCL	100.44
24	35	MAIN BOILER STRUCTURES	2437.2
25	36	BOILER MAIN FLOORS,STAIRS & LADDERS ETC.	1020.12
26	38	INTERCONNECTING STRUCTURES & PLATFORMS	462.96
27	39	COLUMNS & FRAMES FOR DUCTING, FAN HANDLING STRUCTURES ETC	19.56
28	41	OIL & GAS BURNERS,IGNITORS ETC	2.62
29	43	IGNITOR,SCANNER & SEAL AIR SYSTEM	62.16

30	45	COAL BURNERS	81.6
31	47	PULVERISED FUEL PIPING & SUPPORTS	279.48
32	48	AIR DUCTS,FLUE GAS DUCTS, DAMPERS , EXPN.JOINTS ,DUCT SUPPORTS	1170
33	50	STEAM COIL AIR HEATER	5
34	57	GATES & DAMPERS	230.47
35	67	MILL PLANT AUXILIARIES	72.72
36	80	MISC TEMP.PPG FOR ACID CLEANING/STEAM BLOWING ,H&S , ETC(80-399/80604+VALVES)	60
37	99	MISC. HANDLING EQUIPMENT	15
		SUB-TOTAL	6019.33
GROUP-IV : ROTATING MACHINES			
37	52	AIR PREHEATER	535.423
38	55 & 56	FD,ID & PA FANS WITH SUB-DELIVERIES	230.85
39	-	MOTORS(ID,FD,PA,MILLS,SA,SC ETC)	100
40	61	COAL MILLS & SUB-DELIVERIES	900
41	65	COAL FEEDERS	45.96
42	81	EXPANDERS,GAUGES ETC	6
43	97	PNEUMATIC ACTUATORS,MTM PADS & CLAMPS ETC.	71.38
		SUB-TOTAL	1889.613
GROUP-V :ELECTROSTATIC PRECIPITATOR			
	79 & 89	ELECTROSTATIC PRECIPITATOR	3881.598
GROUP- VI :INSULATION			
24	32	FIXING COMPONENTS/IRON PARTS	93.48
25	33	INSULATION/REFRACTORIES	603.12
	81	IRON PARTS,SEALING COMPOUNDS,ALUMIMUM	38.2
		SUB-TOTAL	734.8
GROUP- VII :PIPING			
	80 & 81	PIPING INCLUDING P91 PIPING	789.110
PGMA WISE DETAILS OF PIPING FURNISHED BELOW			
Proj. Def.	Short ID	Description	Estimated Wt In kg
P1/7070	1-80-300	MS FROM SUPERHEATER TO BOILER STOP VALVE	14000
P1/7070	1-80-920	H AND S FOR HYDRO TEST	8500
P1/7070	1-80-992	IMPORTED ELECTRODES	1800
P1/7070	1-80-993	MISC ERECTION MATLS	500
P1/7070	1-80-340	AUX STEAM HEADER	4000
P1/7070	1-80-342	AUX STEAM TO SCAPH	4200
P1/7070	1-80-343	AUX STEAM TO AH SOOT BLOWERS	1300

P1/7070	1-80-344	AUX STEAM TO FO SYSTEM TP	10000
P1/7070	1-80-355	STEAM TRACING PIPING	4000
P1/7070	1-80-366	IBD TANK VENT TO ATMOSPHERE	7300
P1/7070	1-80-373	AUX STEAM HEADER SV EXHAUST	2500
P1/7070	1-80-395	AUX STEAM TO FUEL OIL ATOMISING	200
P1/7070	1-80-418	ERECTION MATERIALS FOR INSTRUMENTS	300
P1/7070	1-80-420	BOILER FEED PUMP SUCTION	7000
P1/7070	1-80-421	BOILER FEED PUMP RECIRCULATION	4000
P1/7070	1-80-423	BOILER FEED PUMP TO HPH INCLUDING BYPASS	33000
P1/7070	1-80-424	BFD BETWEEN HTRS AND GROUP PROTECTION	25000
P1/7070	1-80-425	BFD FROM FINAL HPH TO SG TP	38000
P1/7070	1-80-430	SPRAY WATER TO HPBP	500
P1/7070	1-80-431	SPRAY WATER TO AUX PRDS	2000
P1/7070	1-80-432	SPRAY WATER TO BOILER DESH UPTO SG TP	1500
P1/7070	1-80-450	CBD AND EMERGENCY DRUM DRAIN	2600
P1/7070	1-80-451	BOILER INTEGRAL PIPING DRAINS	3400
P1/7070	1-80-452	HP PIPING DRAINS - SG SCOPE	13000
P1/7070	1-80-453	LP PIPING DRAINS - SG SCOPE	1100
P1/7070	1-80-454	SCAPH DRAINS	900
P1/7070	1-80-455	DRAIN FROM UNLISTED EQPT/VESSEL-SG SCOPE	2400
P1/7070	1-80-460	SG AUX COOLING WATER UNIT SYSTEM	23000
P1/7070	1-80-471	BOILER WATER WASH TO AND FROM UNIT	3500
P1/7070	1-80-477	SERVICE WATER PIPING	15000
P1/7070	1-80-480	FIRE WATER-OTHER AREAS	4200
P1/7070	1-80-600	HIGH PRESSURE DOSING PIPING	1000
P1/7070	1-80-610	SERVICE AIR-COMP SUCT AND DIS TO RECEI	20000
P1/7070	1-80-612	SERVICE AIR FOR INDIVIDUAL UNITS	4700
P1/7070	1-80-614	INST AIR COMP SUC AND DIS TO RECEIVER	20000
P1/7070	1-80-616	INSTRUMENT AIR FOR INDIVIDUAL UNIT	7600
P1/7070	1-80-650	FUEL OIL SUPPLY AND RETURN PIPING	36000
P1/7070	1-80-901	SUB DELIVERY VALVES FOR LIGHT UP	1700
P1/7070	1-80-921	H AND S FOR LIGHT UP STEAM LINE	18000
P1/7070	1-80-926	H AND S FOR TEMPORARY PIPING ACID AND AL	4100
P1/7070	1-80-933	H AND S FOR LP PIPING	15000
P1/7070	1-80-934	STANDARD HANGER COMPONENTS	22000
P1/7070	1-81-003	CONTINUOUS BLOW DOWN EXPANDER-D1500 MM	2400
P1/7070	1-81-009	INTERMITTENT BLOW DOWN EXPANDER-D2500 MM	6500
P1/7070	1-81-128	HIGH PRESSURE DOSING SYSTEM	1800
P1/7070	1-81-415	TEST THERMOWELLS	500
P1/7070	1-81-432	CONSUMABLES AND ERECTION MATERIALS	10
P1/7070	1-80-301	MS FROM BOILER STOP VALVE TO ESV	58000
P1/7070	1-80-303	MS HEADER TO AUX PRDS	10500
P1/7070	1-80-304	MS HEADER TO HPBP VALVE	5000
P1/7070	1-80-310	HRH FROM REHEATER TO INTERCEPTOR VALVE	111500
P1/7070	1-80-311	HRH FROM INTERCEPTOR VALVE TO TURBINE	11500

P1/7070	1-80-312	LPBP VALVE UPSTREAM AND DOWNSTREAM	32500
P1/7070	1-80-320	CRH FROM TURBINE TO REHEATER	49000
P1/7070	1-80-321	HPBP VALVE TO CRH PIPING	11500
P1/7070	1-80-324	CRH HEADER TO AUX.PRDS	1500
P1/7070	1-80-923	H AND S FOR STEAM BLOWING	49000
P1/7070	1-80-927	H AND S FOR TEMPORARY PIPING - STEAM BLO	6000
P1/7070	1-80-307	HP AND LP BYPASS WARM UP	1500
P1/7070	1-80-322	CRH PIPING TO DEAERATING HEATER	8500
P1/7070	1-80-330	EXTRACTION STEAM TO LP HEATER-1	6300
P1/7070	1-80-331	EXTRACTION STEAM TO LP HEATER-2	3500
P1/7070	1-80-332	EXTRACTION STEAM TO LP HEATER-3	3500
P1/7070	1-80-335	EXTRACTION STEAM TO DEAERATING HEATER	5000
P1/7070	1-80-336	EXTRACTION STEAM TO HP HEATER NO.1	3500
P1/7070	1-80-337	EXTRACTION STEAM TO HP HEATER-2	1500
P1/7070	1-80-348	AUX STEAM TO GLAND SEALS - SG SCOPE	1000
P1/7070	1-80-351	AUX STEAM TO UNLISTED USERS - SG SCOPE	5300
P1/7070	1-80-364	CBD TANK VENT TO SYSTEM	1400
P1/7070	1-80-365	CBD TANK VENT/SV EXHAUST TO ATMOSPHERE	1100
P1/7070	1-81-416	PERFORMANCE GUARANTEE TEST MATERIALS	1000
		TOTAL WEIGHT	789110

ANNEXURE-C, Rev.01

LIST OF T&P TO BE PROVIDED BY CONTRACTOR FOR EACH UNIT/PACKAGE

Contractors may please note that this list is not exhaustive & given for guidance purpose. The contractor may be required to deploy additional T&Ps not mentioned in this list at their own cost for proper execution of the job.

01	75T/80T Crawler Crane	01(One) To be deployed within 30 days from LOI.
02	Tyre mounted/ crawler cranes with telescopic boom/ lattice boom-40T	01 (One) nos To be deployed within 30 days from LOI.
03	Gantry Crane of capacity 40T & above for Structural Fabrication	01(One) To be deployed within 45 days from LOI.
04	Pick & Carry Cranes-18T/25T	2(two) nos 1no.to be deployed within 30 days from LOI 1no.to be deployed within 60 days from LOI
05	Crane 12 T Hydra	2 no
06	Passenger cum goods elevator (within 4 months of LOI)	1 no
07	Tractor-trailor 30T (with long bed)	1 no
08	Tractor-trailor 12T/15T (with long bed)	2 no
09	Truck 10T	1 no
10	Wheel barrows	1 no
11	Electrical winch 8T	2 no
12	Electrical winch 5T	3 no
13	Electrical winch 2T	5 no
14	Electrical winch 1T	5 no
15	3 Phase distribution board with complete set up for drawl of construction power-600Amp	As per reqmt.
16	Furnace maintenance platform	1(One)
17	Air compressor (electric) – 7 kg/cm ² /100 psi/ 80 cfm	As Reqd.
18	Chain pulley block 10T	As per requirement
19	Chain pulley block 5T, 3T, 2T	
20	Pull lift 6T, 5T, 3T, 1.5T	
21	Multipurpose pulling and lifting m/c 5T, 3T, 1.6T	
22	Hydraulic jack 100T, 50T, 20T, 10T, 5T	
23	Single sheave snatch pulley 10T, 5T	
24	Double sheave snatch pulley 10T, 5T	
25	D shackles 10T, 20T, 50T	
26	Turn buckles 3T, 5T, 8T, 10T, 15T, 20T	
27	Welding generator K320	
28	Oil cooled welding transformer 300 amp, 450 amp	
29	Air cooled welding transformer 300 amp	
30	Stress relieving transformer 600 amp	

31	TIG welding torch air cooled	
32	Tig welding torch water cooled	
33	High frequency unit	
34	Oxygen regulator	
35	Acetylene regulator	
36	Cutogen 5	
37	Oxygen hose 10 mm	
38	Acetylene hose 10 mm	
39	Electrode drying oven	
40	Portable electrode drying cabinet	
41	Copper welding cable 600 amp, 400 amp	
42	Aluminium cable 600 amp, 400 amp	
43	Temperature recorder	
44	Thermochalk 100 deg C to 800 deg C	
45	Air compressor 250 cfm, 80 cfm	
46	Stationery compressor 350 cfm	
47	Filling pump 80 M head, 15 ltr/sec (at least one month prior to Hydraulic test)	
48	Electrode baking oven	
49	Vernier theodolite – 1 sec accuracy	
50	Dumpy level	
51	Spirit level 12 inch, 0.1 mm accuracy	
52	Combination squares	
53	Micrometers of different sizes	
54	Vernier calipers of different size	
55	Dial guage	
56	Flood light with bulb	
57	Step down transformer	
58	Drilling m/c of different sizes	
59	Megger	
60	Tong tester	
61	Grinding m/c of different sizes	
62	Chamfering m/c of different sizes	
63	Trip torque wrench	
64	Aluminium telescopic ladder	
65	Manila ropes of different sizes	
66	Steel wire ropes of different sizes	
67	Drawing board	
68	Radiography equipment	
69	Moving platform	
70	Magnetic particle test equipment	
71	Ultrasonic flaw detector	
72	Dye Penetrant test kit	
73	Sheet grooving m/c for outer sheet casing	
74	Sheet bending m/c for outer sheet casing	As required
75	Recordable ultrasonic test equipment (UFD Krauff Kammer make USN-50 or higher version to meet the requirements)	1 Set.
76	Radiography arrangement including source- IR 192	1 Set.
77	Mechanized hydraulic pipe bending machine with die of various sizes	1 Set.
78	Gas burner arrangement	1 Set.

79	Hardness tester	1 Set.
80	Spot welding machine	1 Set.
81	Special slings for unloading drum and lifting ceiling Girder	As Reqd.
82	DG Set -250MVA or of Required Capacity	As Reqd.
	Strand jacks with ropes, guides, anchors, hydraulic drive unit including control panel complete in all respect	One set for lifting of Boiler drum

NOTE:-

1. In case the bidder fails to mobilize the above T&P as per requirement and the work progress/safety is affected for non-mobilization of any required T&P, gadgets, equipment, system; BHEL shall inform the bidder writing that BHEL shall provide the required items and recover the actual cost of providing such item / system plus BHEL's overhead as per rule.
2. The Make of these items has to be approved either by BHEL and/or by AINL. The same has to be tested/calibrated/certified by statutory authorities as the case may be.
3. The above T&P list is common for Part-1 & Part-2 Job. Requirement of additional T&Ps required for Part-2 has been indicated elsewhere in the tender..

ANNEXURE – D.Rev.01
LIST OF T&P TO BE MADE AVAILABLE ON SHARING BASIS BY
BHEL FREE OF ANY CHARGES (for Pkg-A/Pkg-B)

Sl no	ITEM	Capacity	Quantity
1	Crawler crane	250 MT or equivalent/higher capacity	1 no
2	Crawler Crane	MID-RANGE	1 no
3	Crawler crane	75 T capacity	2 no
4	Induction Heating Equipment along with accessories with High Frequency cable between equipment to capacitor Panel with Annealing Cable.	As required	As required
5	EOT crane in TG hall (if required)	As installed	As installed
6	Hydro test pump	0-450 kg/sqcm	As required
7	Chemical circulating pumps	As required	As required
8	Air Blower	As required	1 no.
9	Huck Bolting Machine	As required	As required
10	LT Kiosk & 1.1KV Cables	As required	As required
Note:-			
01	The above T&Ps will be made available for the project. Contractor may make use of the T&Ps as per the provision of tender document.		
02	All other T&Ps required for proper execution of the job shall be provided by the contractor.		
03	All the T&P listed above shall be issued and used as per relevant clause in the contract.		
04	The T&Ps under sl. Nos. 1 & 2 shall be provided with fuel & operator as per relevant clause of the tender. The Package-A & Package-B contractor shall provide one operator each for the cranes at sl. No.-3.This operator shall be working exclusively at the direction of CM,BHEL.		

**VOLUME-II
PRICE/RATE SCHEDULE, REV-1**

Complete work of unloading & positioning of boiler drum, handling including receipt of materials from BHEL/client's stores/storage yard, arranging their issue, site transportation, temporary storage prior to erection, if required, cleaning, transportation to site, preservative painting, erection, alignment, welding, leveling, adjustment, chipping & leveling of foundation, all pre-commissioning tests, commissioning, start-up and trial operation and handing over of total boiler & its auxiliaries including all rotating machines & piping, insulation, painting etc along with Structural steel works of Mill & Bunker Bay including the interconnecting platforms, structures etc of Unit-1 & Unit-2, Phase-I, 2x270 MW Units at ANIL, 4x270 MW CHANDWA TPP, DIST-LATEHAR, JHARKHAND

TENDER NO :- PSER:SCT:ABJ-B1119:10

PREAMBLE

01	This preamble forms part of tender document and schedule of items. The tenderer should read this preamble carefully in rates for various items. Clauses under this preamble shall be read in conjunction with various volumes of tender as per NIT together with subsequent changes/ modifications etc thereto as applicable as on date of submission of price offer.
02	The work shall be carried out strictly as per specifications, description of the items in these schedule and / or engineer's instructions.
03	Items of work provided in this schedule but not covered in this specification shall be executed strictly as per instruction of the engineer.
04	Unless specifically mentioned otherwise in the tender document, the tenderer shall quote for the finished items and shall provide for the complete cost towards power, fuel, tools, tackles, equipment, constructional plants, temporary works, labour, dismantling of all temporary piping, structures, valves, pumps, tanks & other misc equipment, strengthening of roads/culverts/bridges etc including arranging all clearances etc required for carrying out different activities & tests, materials, levies, taxes, transport, layout, repairs, rectification, maintenance till handing over, supervisions, colonies, shops, establishments, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the work according to the tender document and this schedule.
05	The quantities of the various items mentioned in this schedule of items are approximate, based on the preliminary information and may vary to any extent or be deleted all together.
06	The rates quoted shall be inclusive of cleaning of site of any vegetation, dressing and leveling etc including fixing of grid pillars, benchmarks etc required for commencement of site activities. No separate payment will be made towards the same.
07	Rates shall be quoted in figures and in words in clear legible writing. No overwriting is allowed. All scoring and cancellations should be countersigned and in case of illegibility the interpretation of engineer shall be final. All entries shall be in English
08	The tender shall be deemed to have visited site and made himself aware of all the site conditions, studied the specifications and details of work to be done within the time schedule attached and to have acquainted himself of the conditions prevailing at site.
09	Engineer's decision shall be final and binding on the contractor regarding clarification of items in the schedule with respect to the other sections/volumes of the contract.
10	For each rate schedule, the quoted overall price only should be considered for bid evaluation purpose & groupwise rates are being obtained only for facilitating pro-rata billing.
11	All works item wise shall be measured upon completion and paid for at the rates quoted & accepted.

VOLUME-III A
PRICE/RATE SCHEDULE, REV-1

Complete work of unloading & positioning of boiler drum, handling including receipt of materials from BHEL/ client's stores/storage yard, arranging their issue, site transportation, temporary storage prior to erection, if required, cleaning, transportation to site preservative painting, erection, alignment, welding, leveling, adjustment, chipping & leveling of foundation, all pre-commissioning tests, commissioning, start-up and trial operation and handing over of total boiler & its auxiliaries including all rotating machines & piping, insulation, final painting etc of Unit-1 at 4x270 MW Unit at CHANDWA TPP, DIST-LATEHAR, JHARKHAND

TENDER NO :- PSER:SCT:ABJ-B1119:10

PRICE/RATE SCHEDULE

Bidders are requested to submit their price only as sought under price schedule below :-

GROUP	DESCRIPTION OF ITEM	UNIT OF MEASUREMENT	QTY	UNIT RATE (In Rs)	TOTAL AMOUNT (IN Rs) (In figures & In Words)
			A	B	A x B
I	PRESSURE PARTS	MT	3356.00		
II	TRIM PIPING	MT	230.00		
III	NON-PRESSURE PARTS	MT	6754.00		
IV	ROTATING MACHINES	MT	1890.00		
V	ELECTRO STATIC PRECIPITATOR	MT	3882.00		
VI	INSULATION	MT	735.00		
VII	PIPING (EXCEPT P-91 PIPING)	MT	701.00		
VII	PIPING -P-91	MT	88.00		
IX	UNLOADING OF BOILER DRUM	LUMPSUM	1		
X	PROVIDING PG TEST ASSISTANCE	LUMPSUM	1		
TOTAL					

NOTES	
1.0	FOR DETAILS OF PGs COVERED UNDER DIFFERENT GROUPS, PLEASE REFER TO ANNEXURE-I.
2.0	BESIDES ABOVE PRODUCT GROUP, THERE IS LIKELIHOOD OF ADDITION OF NEW PG UNDER THE ABOVE GROUP HEADS DUE TO RELEASE OF SOME ITEMS INTEGRAL TO BOILER. THE QUOTED RATES SHALL BE APPLICABLE FOR SUCH PGs ALSO WITHIN THE STIPULATED VARIATION LIMIT.
3.0	ANY WORK NOT COMING UNDER THE SPECIFIED PGs OF PRESSURE PARTS, WILL QUALIFY FOR PAYMENT AS PER THE PAYMENT TERMS OF NON-PRESSURE PARTS.

VOLUME-II
PRICE/ BOQ CUM RATE SCHEDULE

SCOPE: Structural steel works of mill & bunker building, transfer points, conveyor galleries, connecting platforms etc. of Unit-1 at 4x270 MW CHANDWA TPP,DIST-LATEHAR,JHARKHAND		TITLE	BILL OF QUANTITIES CUM RATE SCHEDULE (STRUCTURAL STEEL WORKS)			
ST. NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT
				In figures	In words	
2300	Structural steel works. All items for fabrication should include supply , transportation of materials from stores and return of surplus/waste steel material to stores, fabrication drawings, including appointing an independant agency with the approval of BHEL for checking of fabrications drawings prepared by the bidder, joint design calculations, fabrication, surface preparation, painting with primer coat, delivery of fabricated structure to site, erection, labour and all other general & specific requirements, all other activities required for completion of work as per specifications and also inclusive of all necessary non destructive and special testing, rectification to the satisfaction of engineer/customer for the following					
2301A	<p>Fabrication, erection, alignment, welding, primer painting (primer coat consisting of 2 coats of redoxide zinc-chromate as per IS:2074 & IS:1477 (Parts I & II). One coat to be applied at shop and the other after erection) of structural steel made from mild steel conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052 and mild steel rounds, at all elevations involving rolled sections (including mild steel rounds), built up sections fabricated out of plates, rolled sections and combination of plates and rolled sections, in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, gratings, portals, laced purlins, space frames, shear connectors, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, chequered plate flooring, decking and seal plates, diaphragm, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails (G.I. & M.S.),</p> <p>toeplates, MS Rungs, insert plates, edge angles, embedments, lugs, posts, stays, louvers, lacings, gusset plates, safety chains for walkways adjacent to crane girders etc, collection of steel from stores, transportation, straightening, making cutting plan, cutting, bending, rolling, grinding, drilling, bolting, erection bolts & nuts (weight erection bolts & nuts not payable, Supply of permanent bolt of grade C mild steel bolts & nuts to be paid separately under ST NO. 2307 (a & b)), assembly, edge preparation, preheating(minimum preheat and interpass temperature of 66 degrees centigrade for welding over 40 mm and upto 63 mm & 110 degrees centigrade for thickness over 63 mm) & use of low hydrogen/ radiogenic electrodes as per specification, post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme,</p> <p>protection against damage in transit, stability of structures, installation of temporary structures (Scaffolding, Access ladders, Working Platforms etc.), setting column bases, surface preparation protection against damage in transit, stability of structures, installation of temporary structures (Scaffolding, Access ladders, Working Platforms etc.), setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, dismantling and removal of all temporary structures (weight of temporary structures not payable) complete with all labour, material, electrodes and other consumables, equipment, testing (mechanical and non- destructive), preparation of fabrication drawings, joint design calculations and all other general and special requirements including appointment of a seperate agency, approved by BHEL, for review and approval of fabrication drawings, in consultation with BHEL,</p> <p>prepared by the bidder and all other activities required for completion of the work including return of surplus/ waste steel materials to store etc. as per specification, drawings and instructions of the Engineer. Approval of fabrication drawings does not relieve the bidder from the responsibility of its correctness and accuracy. BHEL will supply plates, channels, angles, ISMB as per SCC free of cost.</p> <p>Payments terms - a). Fabrication - 65%; b) Erection - 25%; c) Alignment - 10%.</p>	MT	3363			
2301B	<p>Supply, fabrication, erection, alignment, welding, primer painting (primer coat consisting of 2 coats of redoxide zinc-chromate as per IS:2074 & IS:1477 (Parts I & II). One coat to be applied at shop and the other after erection) of structural steel made from mild steel conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052 and mild steel rounds, at all elevations involving rolled sections (including mild steel rounds), built up sections fabricated out of plates, rolled sections and combination of plates and rolled sections, in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, gratings, portals, laced purlins, space frames, shear connectors, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, chequered plate flooring, decking and seal plates, diaphragm, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails (G.I. & M.S.),</p> <p>toeplates, MS Rungs, insert plates, edge angles, embedments, lugs, posts, stays, louvers, lacings, gusset plates, safety chains for walkways adjacent to crane girders etc, collection of steel from stores, transportation, straightening, making cutting plan, cutting, bending, rolling, grinding, drilling, bolting, erection bolts & nuts (weight erection bolts & nuts not payable, Supply of permanent bolt of grade C mild steel bolts & nuts to be paid separately under ST NO. 2307 (a & b)), assembly, edge preparation, preheating(minimum preheat and interpass temperature of 66 degrees centigrade for welding over 40 mm and upto 63 mm & 110 degrees centigrade for thickness over 63 mm) & use of low hydrogen/ radiogenic electrodes as per specification, post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme,</p> <p>protection against damage in transit, stability of structures, installation of temporary structures (Scaffolding, Access ladders, Working Platforms etc.), setting column bases, surface preparation protection against damage in transit, stability of structures, installation of temporary structures (Scaffolding, Access ladders, Working Platforms etc.), setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, dismantling and removal of all temporary structures (weight of temporary structures not payable) complete with all labour, material, electrodes and other consumables, equipment, testing (mechanical and non- destructive), preparation of fabrication drawings, joint design calculations and all other general and special requirements including appointment of a seperate agency, approved by BHEL, for review and approval of fabrication drawings, in consultation with BHEL,</p> <p>prepared by the bidder and all other activities required for completion of the work including return of surplus/ waste steel materials to store etc. as per specification, drawings and instructions of the Engineer. Approval of fabrication drawings does not relieve the bidder from the responsibility of its correctness and accuracy.</p> <p>Payments terms - a). Fabrication - 65%; b) Erection - 25%; c) Alignment - 10%.</p>	MT	25			
2301A1	Extra over ST NO.2301A and 2301B for shot blast cleaning of steel structures to near white metal surface (Sa 2 1/2) for applying primer paint etc.complete as per specification.	MT	3377			

SCOPE: Structural steel works of mill & bunker building, transfer points, conveyor galleries, connecting platforms etc. of Unit-1 at 4x270 MW CHANDWA TPP,DIST-LATEHAR,JHARKHAND		TITLE	BILL OF QUANTITIES CUM RATE SCHEDULE (STRUCTURAL STEEL WORKS)			
ST. NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT
				In figures	In words	
2301B1	Extra over ST NO.2301A & 2301B for providing and application of two coats of Primer consisting of chemical resistant epoxy resin and hardener(Minimum 1 Kg of primer mix shall be consumed for priming of 4 to 5 m2 area of surface) instead of primer coat of red oxide zinc-chromate,including touch up painting as per specification and instruction of the Engineer.	MT	100			
2301C1	Providing and application of finishing coat of acrylic polyurethane paint of each 30 microns over top coat of epoxy paint suitably pigmented of approved shade and colour with glossy finish and DFT of 75 microns over intermediate coat of epoxy resin based paint pigmented with titanium dioxide with min. DFT of 100 microns over steel sections already having primer coats (as per ST NO. 2301A) at all elevations to achieve an even shade with all materials, labour, equipment, handling, including protection and cleaning, scaffolding etc. complete as per specification, drawings and instructions of the Engineer. (Note: Intermediate, top and finishing coat paints shall be from same manufacturer and the paints shall have compatibility with one another).	MT	100			
2301D1	Providing and application of two final coats of chlorinated rubber paint each 40 microns thick over steel sections already having primer coats (as per ST NO. 2301A and 2301B) at all elevations to achieve an even shade with all materials, labour, equipment, handling, including protection and cleaning, scaffolding etc. complete as per specification, drawings and instructions of the Engineer. (Note: Intermediate, top and finishing coat paints shall be from same manufacturer and the paints shall have compatibility with one another).	MT	3363			
2301D2	Supply and application of 2 coats of synthetic enamel paint of Berger or equivalent make, approved colour over primer coat at all heights and levels for all steel structures including chequered plates and gratings. Total DFT of finished paint shall be minimum 100 microns complete as per specifications.	MT	3363			
2302	Supply, fabrication, testing and delivery at site, transportation, loading/unloading, erection and alignment in position of factory made electro forged type grating conforming to IS:2062 at all elevations including preparation of design drawings and fabrication drawings in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads,kick plate, fixing clamps etc. complete with other fittings and fixtures including all taxes, duties, transportation, packing, grinding, drilling, bolting ,all welding, edge preparation, blast cleaning of steel surfaces to near white metal surface (Sa 2 1/2) followed by two coats of red oxide zinc-chromate primer and two coats of approved colour, enamel finish paint, testing, complete as per specifications, drawings and instructions of the Engineer.Grating shall be of minimum thickness 32 mm including cutting @ shop and necessary fixtures, main bearing bar shall be minimum 5 mm. One coat to be applied at shop and the other after erection and two coats of approved colour, enamel finish paint, testing, complete as per specifications, drawings and instructions of the Engineer. Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.	MT	10			
2302a	Supply, fabrication, testing and delivery at site, transportation, loading/unloading, erection and alignment in position of factory made electro forged type grating of minimum thickness 32 mm including cutting @ shop and necessary fixtures as per specifications complete. Main bearing bar shall be minimum 5 mm. Grating shall be hot dipped galvanized @ 610 g/sqm including blast clean to Sa 2 1/2 finish of swedish standard SIS-05-5900.Finishing the fabricated grating unit with hot dipped galvanisation over blast cleaned steel surfaces, as per specifications, drawings and instructions of Engineer instead of painting with 2 coats of red oxide primer followed by two coats of enamel finish paint. One coat to be applied at shop and the other after erection and two coats of approved colour, enamel finish paint, testing, complete as per specifications, drawings and instructions of the Engineer. Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.	MT	2			
2306	Fabrication and erection of 3.15mm thick stainless steel liner of grade AISI-304; Finish Grade 2B (Cold rolled, Annealed & Pickled and Skin passed) on M.S. plate for inside surfaces of hopper & mouth of hopper of bunkers as directed by the Engineer including fixing with stainless steel studs, bolting (including countersunk), welding etc. complete as per specifications and IS standards. Electrode classification shall be E308L for welding of stainless steel to stainless steel and E309 for stainless steel to mild steel etc. complete including collection of materials from stores, transportation, straightening, making cutting plan, cutting, bending, rolling, grinding, drilling, bolting, assembly, edge preparation, preheating & postheating as reqd. as per specifications , drawings and instructions of the Engineer. BHEL will supply plates, channels, angles, ISMB as per SCC free of cost.	MT	14			
2307	Supply, fabrication and transportation, delivery at site and erection, supply of MS foundation bolts along with nuts, locknuts, washers etc. up to & inclusive of 63mm diameter and up to 2000mm long for columns etc. complete as per specifications including pipe sleeves wherever necessary.		3			
2307a	i) Supplying and fixing in position of permanent mild steel bolts (class 4.6 as per IS : 1367 and grade 'C' as per IS: 1363) and nuts, washers etc up to and inclusive of 39mm diameter and upto 300mm long for structural steel work complete as per specification, drawings and instructions of the Engineer. Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.	QTL	5			
2307b	ii) Supply and fixing in positing of high strength structural bolts (of property class 8.8 and product grade 'C' as per IS: 1367) and conforming to IS: 3757 and high strength structural hardened and tempered nuts (of property class '8' as per IS:1367) conforming to IS:6623 with hardened and tempered washers as per IS:6649 etc up to and inclusive of 39mm diameter and upto 300 mm long for structural steel work complete as per specification, drawings and instructions of the Engineer. Payment terms - a) On receipt of materials at site - 70% , b) On completion of erection & fixing - 30%.	QTL	5			
2307c	Supplying, fabrication , transportation, erection and alignment of factory made electroforged galvanised gratings of steel (40Thick & having minimum galvanisation of 610 g/sqm) conforming to IS:2062 at all elevations including preparation of design drawings and fabrication drawings in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads, fixing clamps etc. complete with other fittings and fixtures including all taxes, duties, transportation, packing, grinding, drilling, bolting (supply of permanent grade 'C' mild steel bolts and nuts to be paid separately under ST NO. 2309 (i), all welding, edge preparation, blast cleaning of steel surfaces to near white metal surface (Sa 2 1/2) followed by two coats of red oxide zinc-chromate primer and two coats of approved colour, enamel finish paint, testing, complete as per specifications, drawings and instructions of the Engineer. (Vendor to supply all materials). Payment terms - a. On receipt of materials at site - 70%; b. On completion of erection & fixing - 30%.	MT	12			

SCOPE: Structural steel works of mill & bunker building, transfer points, conveyor galleries, connecting platforms etc. of Unit-1 at 4x270 MW CHANDWA TPP, DIST-LATEHAR, JHARKHAND		TITLE	BILL OF QUANTITIES CUM RATE SCHEDULE (STRUCTURAL STEEL WORKS)			
ST. NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT
				In figures	In words	
2308	Conducting radiography test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications).	RM	30			
2309	Conducting ultrasonic test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications).	RM	30			
2310	Conducting magnetic particle test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications).	RM	30			
2311	Dismantling of existing steel structures at any elevations including lowering of material and carriage of materials to fabrication shop as per specifications and instructions of engineer, including temporary dismantling , cutting, rewelding, supporting, restoring to correct position and alignment.	MT	15			
2312	Re erection of dismantled fabricated structural steel members requiring modifications including carriage from field fabrication shop complete as per specification and instructions of the engineer.	MT	8			
2313	Grouting of pocket holes , pipe sleeves of any shape and size under base plate with non-shrink flowable grout (Conbextra GP-1), after erection and alignment if necessary, structural steel work, machinery at any elevations including roughening surface, cleaning, ramming, curing, etc., complete as directed by engineer. (Cost of cement(if any) shall be in the scope of the contractor and cleaning the pocket by compressed air before placement of concrete).	CUM	2			
2314	Supply, fixing and placing of poly tetra floro ethylene bearings of reputed manufacturer for loading as specified below and displacement of (+)50mm, complete with fixtures as per specification.					
	i) Vertical Load of 20 Tons	Nos.	3			
	ii) Vertical Load of 30 Tons	Nos.	3			
	iii) Vertical Load of 50 Tons	Nos.	1			

**VOLUME-III
PRICE/RATE SCHEDULE, REV-1**

Complete work of unloading & positioning of boiler drum, handling including receipt of materials from BHEL/client's stores/storage yard, arranging their issue, site transportation, temporary storage prior to erection, if required, cleaning, transportation to site preservative painting, erection, alignment, welding, leveling, adjustment, chipping & leveling of foundation, all pre-commissioning tests, commissioning, start-up and trial operation and handing over of total boiler & its auxiliaries including all rotating machines & piping, insulation, final painting painting etc of Unit-2 at 4x270 MW Unit at CHANDWA TPP, DIST-LATEHAR, JHARKHAND

TENDER NO :-PSER:SCT:ABJ-B1119:10

PRICE/RATE SCHEDULE

Bidders are requested to submit their price only as sought under price schedule below :-

GROUP	DESCRIPTION OF ITEM	UNIT OF MEASUREMENT	QTY	UNIT RATE (In Rs)	TOTAL AMOUNT (IN Rs) (In figures & In Words)
			A	B	A x B
I	PRESSURE PARTS	MT	3356.00		
II	TRIM PIPING	MT	230.00		
III	NON-PRESSURE PARTS	MT	6754.00		
IV	ROTATING MACHINES	MT	1890.00		
V	ELECTRO STATIC PRECIPITATOR	MT	3882.00		
VI	INSULATION	MT	735.00		
VII	PIPING (EXCEPT P-91 PIPING)	MT	701.00		
VIII	PIPING -P-91	MT	88.00		
IX	UNLOADING OF BOILER DRUM	LUMPSUM	1		
X	PROVIDING PG TEST ASSISTANCE	LUMPSUM	1		
TOTAL					

NOTES	
1.0	FOR DETAILS OF PGs COVERED UNDER DIFFERENT GROUPS, PLEASE REFER TO ANNEXURE-I.
2.0	BESIDES ABOVE PRODUCT GROUP, THERE IS LIKELIHOOD OF ADDITION OF NEW PG UNDER THE ABOVE GROUP HEADS DUE TO RELEASE OF SOME ITEMS INTEGRAL TO BOILER. THE QUOTED RATES SHALL BE APPLICABLE FOR SUCH PGs ALSO WITHIN THE STIPULATED VARIATION LIMIT.
3.0	ANY WORK NOT COMING UNDER THE SPECIFIED PGs OF PRESSURE PARTS, WILL QUALIFY FOR PAYMENT AS PER THE PAYMENT TERMS OF NON-PRESSURE PARTS.

VOLUME-II PRICE/RATE SCHEDULE, REV-1						
SCOPE: Structural steel works of mill & bunker building, transfer points, conveyor galleries, connecting platforms etc. of Unit-2 & The interconnecting bridges between unit-1 & unit-2 bunker building at 4x270 MW CHANDWA TPP,DIST-LATEHAR, JHARKHAND		TITLE	BILL OF QUANTITIES CUM RATE SCHEDULE (STRUCTURAL STEEL WORKS)			
ST. NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT
				In figures	In words	
2300	Structural steel works. All items for fabrication should include supply , transportation of materials from stores and return of surplus/waste steel material to stores, fabrication drawings, including appointing an independent agency with the approval of BHEL for checking of fabrications drawings prepared by the bidder, joint design calculations, fabrication, surface preparation, painting with primer coat, delivery of fabricated structure to site, erection, labour and all other general & specific requirements, all other activities required for completion of work as per specifications and also inclusive of all necessary non destructive and special testing, rectification to the satisfaction of engineer/customer for the following					
2301A	<p>Fabrication, erection, alignment, welding, primer painting (primer coat consisting of 2 coats of redoxide zinc-chromate as per IS:2074 & IS:1477 (Parts I & II). One coat to be applied at shop and the other after erection) of structural steel made from mild steel conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052 and mild steel rounds, at all elevations involving rolled sections (including mild steel rounds), built up sections fabricated out of plates, rolled sections and combination of plates and rolled sections, in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, gratings, portals, laced purlins, space frames, shear connectors, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, chequered plate flooring, decking and seal plates, diaphragm, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails (G.I. & M.S.),</p> <p>toeplates, MS Rungs, insert plates, edge angles, embedments, lugs, posts, stays, louvers, lacings, gusset plates, safety chains for walkways adjacent to crane girders etc, collection of steel from stores, transportation, straightening, making cutting plan, cutting, bending, rolling, grinding, drilling, bolting, erection bolts & nuts (weight erection bolts & nuts not payable, Supply of permanent bolt of grade C mild steel bolts & nuts to be paid separately under ST NO. 2307 (a & b)), assembly, edge preparation, preheating(minimum preheat and interpass temperature of 66 degrees centigrade for welding over 40 mm and upto 63 mm & 110 degrees centigrade for thickness over 63 mm) & use of low hydrogen/ radiogenic electrodes as per specification, post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme,</p> <p>protection against damage in transit, stability of structures, installation of temporary structures (Scaffolding, Access ladders, Working Platforms etc.), setting column bases, surface preparation protection against damage in transit, stability of structures, installation of temporary structures (Scaffolding, Access ladders, Working Platforms etc.), setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, dismantling and removal of all temporary structures (weight of temporary structures not payable) complete with all labour, material, electrodes and other consumables, equipment, testing (mechanical and non- destructive), preparation of fabrication drawings, joint design calculations and all other general and special requirements including appointment of a seperate agency, approved by BHEL, for review and approval of fabrication drawings, in consultation with BHEL, prepared by the bidder and all other activities required for completion of the work including return of surplus/ waste steel materials to store etc. as per specification, drawings and instructions of the Engineer. Approval of fabrication drawings does not relieve the bidder from the responsibility of its correctness and accuracy. BHEL will supply plates, channels, angles, ISMB as per SCC free of cost.</p> <p><small>Payments terms - a). Fabrication - 65%; b) Erection - 25%; c) Alignment - 10%.</small></p>	MT	4623			
2301B	<p>Supply, fabrication, erection, alignment, welding, primer painting (primer coat consisting of 2 coats of redoxide zinc-chromate as per IS:2074 & IS:1477 (Parts I & II). One coat to be applied at shop and the other after erection) of structural steel made from mild steel conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052 and mild steel rounds, at all elevations involving rolled sections (including mild steel rounds), built up sections fabricated out of plates, rolled sections and combination of plates and rolled sections, in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, gratings, portals, laced purlins, space frames, shear connectors, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, chequered plate flooring, decking and seal plates, diaphragm, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails (G.I. & M.S.),</p> <p>toeplates, MS Rungs, insert plates, edge angles, embedments, lugs, posts, stays, louvers, lacings, gusset plates, safety chains for walkways adjacent to crane girders etc, collection of steel from stores, transportation, straightening, making cutting plan, cutting, bending, rolling, grinding, drilling, bolting, erection bolts & nuts (weight erection bolts & nuts not payable, Supply of permanent bolt of grade C mild steel bolts & nuts to be paid separately under ST NO. 2307 (a & b)), assembly, edge preparation, preheating(minimum preheat and interpass temperature of 66 degrees centigrade for welding over 40 mm and upto 63 mm & 110 degrees centigrade for thickness over 63 mm) & use of low hydrogen/ radiogenic electrodes as per specification, post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme,</p> <p>protection against damage in transit, stability of structures, installation of temporary structures (Scaffolding, Access ladders, Working Platforms etc.), setting column bases, surface preparation protection against damage in transit, stability of structures, installation of temporary structures (Scaffolding, Access ladders, Working Platforms etc.), setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, dismantling and removal of all temporary structures (weight of temporary structures not payable) complete with all labour, material, electrodes and other consumables, equipment, testing (mechanical and non- destructive), preparation of fabrication drawings, joint design calculations and all other general and special requirements including appointment of a seperate agency, approved by BHEL, for review and approval of fabrication drawings, in consultation with BHEL, prepared by the bidder and all other activities required for completion of the work including return of surplus/ waste steel materials to store etc. as per specification, drawings and instructions of the Engineer. Approval of fabrication drawings does not relieve the bidder from the responsibility of its correctness and accuracy. <small>Payments terms - a). Fabrication - 65%; b) Erection - 25%; c) Alignment - 10%.</small></p>	MT	25			



**VOLUME-II
PRICE/RATE SCHEDULE, REV-1**

SCOPE: Structural steel works of mill & bunker building, transfer points, conveyor galleries, connecting platforms etc. of Unit-2 & The interconnecting bridges between unit-1 & unit-2 bunker building at 4x270 MW CHANDWA TPP,DIST-LATEHAR, JHARKHAND		TITLE	BILL OF QUANTITIES CUM RATE SCHEDULE (STRUCTURAL STEEL WORKS)			
ST. NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT
				In figures	In words	
2301A1	Extra over ST NO.2301A and 2301B for shot blast cleaning of steel structures to near white metal surface (Sa 2 1/2) for applying primer paint etc.complete as per specification.	MT	4577			
2301B1	Extra over ST NO.2301A & 2301B for providing and application of two coats of Primer consisting of chemical resistant epoxy resin and hardener(Minimum 1 Kg of primer mix shall be consumed for priming of 4 to 5 m2 area of surface) instead of primer coat of red oxide zinc-chromate,including touch up painting as per specification and instruction of the Engineer.	MT	100			
2301C1	Providing and application of finishing coat of acrylic polyurethane paint of each 30 microns over top coat of epoxy paint suitably pigmented of approved shade and colour with glossy finish and DFT of 75 microns over intermediate coat of epoxy resin based paint pigmented with titanium dioxide with min. DFT of 100 microns over steel sections already having primer coats (as per ST NO. 2301A) at all elevations to achieve an even shade with all materials, labour, equipment, handling, including protection and cleaning, scaffolding etc. complete as per specification, drawings and instructions of the Engineer. (Note: Intermediate, top and finishing coat paints shall be from same manufacturer and the paints shall have compatibility with one another).	MT	100			
2301D1	Providing and application of two final coats of chlorinated rubber paint each 40 microns thick over steel sections already having primer coats (as per ST NO. 2301A and 2301B) at all elevations to achieve an even shade with all materials, labour, equipment, handling, including protection and cleaning, scaffolding etc. complete as per specification, drawings and instructions of the Engineer. (Note: Intermediate, top and finishing coat paints shall be from same manufacturer and the paints shall have compatibility with one another).	MT	4602			
2301D2	Supply and application of 2 coats of synthetic enamel paint of Berger or equivalent make, approved colour over primer coat at all heights and levels for all steel structures including chequered plates and gratings. Total DFT of finished paint shall be minimum 100 microns complete as per specifications.	MT	4602			
2302	Supply, fabrication, testing and delivery at site, transportation, loading/unloading, erection and alignment in position of factory made electro forged type grating ,conforming to IS:2062 at all elevations including preparation of design drawings and fabrication drawings in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads,kick plate, fixing clamps etc. complete with other fittings and fixtures including all taxes, duties, transportation, packing, grinding, drilling, bolting ,all welding, edge preparation, blast cleaning of steel surfaces to near white metal surface (Sa 2 1/2) followed by two coats of red oxide zinc-chromate primer and two coats of approved colour, enamel finish paint, testing, complete as per specifications, drawings and instructions of the Engineer.Grating shall be of minimum thickness 32 mm including cutting @ shop and necessary fixtures, main bearing bar shall be minimum 5 mm. One coat to be applied at shop and the other after erection and two coats of approved colour, enamel finish paint, testing, complete as per specifications, drawings and instructions of the Engineer. Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.	MT	10			
2302a	Supply, fabrication, testing and delivery at site, transportation, loading/unloading, erection and alignment in position of factory made electro forged type grating of minimum thickness 32 mm including cutting @ shop and necessary fixtures as per specifications complete. Main bearing bar shall be minimum 5 mm. Grating shall be hot dipped galvanized @ 610 g/sqm including blast clean to Sa 2 1/2 finish of swedish standard SIS-05-5900.Finishing the fabricated grating unit with hot dipped galvanisation over blast cleaned steel surfaces, as per specifications, drawings and instructions of Engineer instead of painting with 2 coats of red oxide primer followed by two coats of enamel finish paint. One coat to be applied at shop and the other after erection and two coats of approved colour, enamel finish paint, testing, complete as per specifications, drawings and instructions of the Engineer. Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.	MT	2			
2306	Fabrication and erection of 3.15mm thick stainless steel liner of grade AISI-304; Finish Grade 2B (Cold rolled, Annealed & Pickled and Skin passed) on M.S. plate for inside surfaces of hopper & mouth of hopper of bunkers as directed by the Engineer including fixing with stainless steel studs, bolting (including countersunk), welding etc. complete as per specifications and IS standards. Electrode classification shall be E308L for welding of stainless steel to stainless steel and E309 for stainless steel to mild steel etc. complete including collection of materials from stores, transportation, straightening, making cutting plan, cutting, bending, rolling, grinding, drilling, bolting, assembly, edge preparation, preheating & postheating as reqd. as per specifications , drawings and instructions of the Engineer. BHEL will supply plates, channels, angles, ISMB as per SCC free of cost.	MT	14			
2307	Supply, fabrication and transportation, delivery at site and erection, supply of MS foundation bolts along with nuts, locknuts, washers etc. up to & inclusive of 63mm diameter and up to 2000mm long for columns etc. complete as per specifications including pipe sleeves wherever necessary.		3			
2307a	i) Supplying and fixing in position of permanent mild steel bolts (class 4.6 as per IS : 1367 and grade 'C' as per IS: 1363) and nuts, washers etc up to and inclusive of 39mm diameter and upto 300mm long for structural steel work complete as per specification, drawings and instructions of the Engineer. Payment terms - a) On receipt of materials at site - 70%; b) On completion of erection & fixing - 30%.	QTL	5			
2307b	ii) Supply and fixing in position of high strength structural bolts (of property class 8.8 and product grade 'C' as per IS: 1367) and conforming to IS: 3757 and high strength structural hardened and tempered nuts (of property class '8' as per IS:1367) conforming to IS:6623 with hardened and tempered washers as per IS:6649 etc: up to and inclusive of 39mm diameter and upto 300 mm long for structural steel work complete as per specification, drawings and instructions of the Engineer. Payment terms - a) On receipt of materials at site - 70% , b) On completion of erection & fixing - 30%.	QTL	5			



**VOLUME-II
PRICE/RATE SCHEDULE, REV-1**

SCOPE: Structural steel works of mill & bunker building, transfer points, conveyor galleries, connecting platforms etc. of Unit-2 & The interconnecting bridges between unit-1 & unit-2 bunker building at 4x270 MW CHANDWA TPP,DIST-LATEHAR, JHARKHAND

**TITLE BILL OF QUANTITIES CUM RATE SCHEDULE
(STRUCTURAL STEEL WORKS)**

ST. NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT
				In figures	In words	
23007c	Supplying, fabrication , transportation, erection and alignment of factory made electroforged galvanised gratings of steel (40Thick & having minimum galvanisation of 610 g/sqm) conforming to IS:2062 at all elevations including preparation of design drawings and fabrication drawings in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads, fixing clamps etc. complete with other fittings and fixtures including all taxes, duties, transportation, packing, grinding, drilling, bolting (supply of permanent grade 'C' mild steel bolts and nuts to be paid separately under ST NO. 2309 (i), all welding, edge preparation, blast cleaning of steel surfaces to near white metal surface (Sa 2 1/2) followed by two coats of red oxide zinc-chromate primer and two coats of approved colour, enamel finish paint, testing, complete as per specifications, drawings and instructions of the Engineer. (Vendor to supply all materials). Payment terms - a. On receipt of materials at site - 70%; b. On completion of erection & fixing - 30%.	MT	12			
2308	Conducting radiography test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications.	RM	30			
2309	Conducting ultrasonic test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications.	RM	30			
2310	Conducting magnetic particle test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications.	RM	30			
2311	Dismantling of existing steel structures at any elevations including lowering of material and carriage of materials to fabrication shop as per specifications and instructions of engineer, including temporary dismantling, cutting , rewelding, supporting, restoring to correct position and alignment.	MT	15			
2312	Re erection of dismantled fabricated structural steel members requiring modifications including carriage from field fabrication shop complete as per specification and instructions of the engineer.	MT	8			
2313	Grouting of pocket holes , pipe sleeves of any shape and size under base plate with non-shrink flowable grout (Conbextra GP-1), after erection and alignment if necessary, structural steel work, machinery at any elevations including roughening surface, cleaning, ramming, curing, etc., complete as directed by engineer. (Cost of cement(if any) shall be in the scope of the contractor and cleaning the pocket by compressed air before placement of concrete).	CUM	2			
2314	Supply, fixing and placing of poly tetra floro ethylene bearings of reputed manufacturer for loading as specified below and displacement of (+)50mm, complete with fixtures as per specification.					
	i) Vertical Load of 20 Tons	Nos.	3			
	ii) Vertical Load of 30 Tons	Nos.	3			
	iii) Vertical Load of 50 Tons	Nos.	1			