

TCN-01 dated 06/11/2006 for IOCL, Haldia Electrical & C&I erection tender
(PSER:SCT:HLD-I703:06)

Following clarifications / changes (in the original tender dated 20/10/2006) may please be noted by all bidders for compliance. TCN-01 (all pages) shall be submitted duly signed and stamped on each page as a confirmation of its acceptance (alongwith techno-commercial offer). Rev-01 of Vol-III shall be used for submission of price bid and its un-priced part (mentioning as "quoted" against each item) shall also be submitted alongwith techno-commercial offer.

1. Painting of various items (required to be painted as per tender specifications) shall be as follows :

Surface preparation and painting to be done with one coat of self priming epoxy (DFT 100- 125 micron) + 2 cote of aliphatic polyurathan (DFT40-45 micron each contain) + one cote synthetic enamel DFT 20 micron. Surface preparation will have to be done manually with wire brush. However synthetic enamel paint of DFT 20 microns to be done to adhere to the colour coding system.

All such painting activities including supply of paints, varnishes, other consumables etc. shall be done by contractor at their cost.

2. Contractor (successful bidder of this package) shall arrange their own labour license at their cost for working at IOCL, Haldia site.
3. Impulse pipes / root valves welding (wherever required as per tender specifications and welding schedule) shall be as follows:
 - a. All impulse pipes/tubes (size 1/2" & below / Thickness 2.1 mm & below) – Full TIG / argon welding
 - b. All other pipes :- Root run argon & final arc /as per welding schedule.

All MTM pads / thermowells etc. also are to be welded with TIG welding process only.

4. Volume- ID, Page 13, clause 14.3, S. no. 17 is added to table. Fine for not wearing safety shoes :- Rs. 500/- per incidence per person.
5. Volume- ID, Page 16, clause no. 17.1.2, Phrase "free of cost" is replaced by "chargeable basis (as per IOCL norms)".
6. Volume- ID, Page 16, clause no. 17.1.3 – stands deleted.
7. Volume- II, Page 4, clause no. 1.2.2.5, complete existing clause is replaced as follows :

"Supply of miscellaneous items like ferrules, cable lugs, cable tag, nuts, bolts, PVC sleeve, thermal sleeve, welding electrode, hole saw cutter for drilling of gland plates, PVC tapes, Teflon tapes, silicon sealant etc. required for it."
8. Volume- II, Page 5, clause no. 1.5.0.2, phrase "and damage of cables" is added at the end of existing clause/sentence.
9. Volume- II, Page 5, new clause no. 1.6.0.4 is added :

1.6.0.4 -- All welded joints shall be grinded & proper painting to be done as per painting schedule/scheme.

10. Volume- II, Page 6, new clause no. 1.7.0.4 is added :
1.7.0.4 – Clearance of BHEL site engineer has to be obtained before commencement of cabling work in any area, to ensure that cabling is done only after completion of hot work (welding/cutting etc.).
11. Volume- II, Page 12, clause no. 1.17.0.3, phrase “isolation valve” is replaced by “isolation valve, MTM pads, clamps”.
12. Volume- II, Page 13, clause no. 1.19.0.9, phrase “consumables/fasteners” is replaced by “consumables/fasteners/insulated fasteners”.
13. Volume- II, Page 13, new clause no. 1.20.0.4 is added as follows:
1.20.0.4 -- Field commissioning, MCC commissioning & remote commissioning for all valves.
14. Volume- II, Page 14, annexure –IA, following items are added:
Cable lugs, sealant element, Teflon tapes, cable ties, insulated fasteners, PVC sleeve, Thermal sleeve, cement, insulating fasteners, argon gas etc.
15. Volume- II, Page 15-16, annexure –IIA, following items are added:
Electrode baking oven, portable oven, HT cable termination kit, Hydraulic jacks 30T capacity, hydraulic pipe bending machine, chain pulley blocks & max pullers as required.
16. Volume- II, Page 19, in clause no. 1.22, following activity is added:
Proper earthing of transformer.
17. Volume- II, Page 22, new clause no. 4.14 is added:
4.14 -- Proper earthing of HT switchgears to be done.
18. Volume- II, Page 26-27, in clause no. 7.7, following activity is added:
Proper earthing of equipments.
19. Volume- II, Page 28, in clause no. 10.4 A), following activity is added:
Proper earthing of switchboard/panels.
20. Volume- II, Page 29, new clause no. 10.4 E) is added:
10.4 E) -- All electrical and mechanical tests must be done as per IEC -34 / clause no. 14 & PG test as per PTC-4.4.
21. Volume- II, Page 35, annexure –III, EOT crane in TG hall – 1 no. is deleted.

Important note:

- A. It shall be noted that, if any item is found to be repeated in various sections of Volume-III (Price Schedule), Rev-01 with same specification / nomenclature, bidder shall quote same rate throughout, else the minimum rate out of various quoted rates shall only be considered by BHEL for all contractual purposes and the same shall be binding on bidder.

- B. These clarifications (TCN-01) will form a part of the tender document and should be submitted (duly signed) along with bid as specified. Quoted price of bidders will be presumed on the basis of original tender & these clarifications (TCN-01). **Price shall be quoted in revised BOQ (vol-III), revision-01 only. Revision-01 of Vol-III (Boq cum rate schedule) is enclosed.** This BOQ supersedes earlier BOQ issued alongwith original tender (Rev-00).
- C. Based on the clarifications furnished above, all the bidders are requested to submit their offer without any deviation, within stipulated time i.e. by **13-11-2006 (Receipt date), 13:00 Hours**. No further queries/clarifications from bidders against this tender , shall be entertained.
- D. All the clauses of original tender document , which are not mentioned/covered in above clarifications (TCN-01), will remain unchanged.

(MANAGER/SCT)
BHEL/PSERHQ/KOLKATA

ENCLOSURE : [Revision-01 of BOQ cum rate schedule \(vol-III\)](#)

TENDER DOCUMENT NO - PSER:SCT:HLD-I703:06

VOLUME - III (Revision -01)

BOQ CUM SCHEDULE OF RATES

**RECEIPT FROM STORES, HANDLING/REHANDLING,
TRANSPORTATION TO PLACE OF ERECTION, ERECTION,
TESTING & COMMISSIONING OF ALL ELECTRICAL, CONTROL &
INSTRUMENTATION WORK OF HRSG, GTG, BOP, GT & THEIR
AUX. ETC. FOR 1 X FRAME-5, CO- GENERATION PLANT FOR
IOCL AT HALDIA , PHAE-II , WEST BENGAL**

**BHARAT HEAVY ELECTRICALS LIMITED
(A Govt Of India Undertaking)
POWER SECTOR – EASTERN REGION
PLOT – DJ 9/1, SECTOR II, SALT LAKE
KOLKATA – 700 091**

	<u>ELECTRICAL, C&I ERECTION WORK FOR 1 X FRAME-5, CO- GENERATION PLANT FOR IOCL AT HALDIA , PHAE-II , WEST BENGAL</u>
	<u>TENDER DOCUMENT NO: PSER:SCT:HLD-I703:06</u>
	<u>BOQ CUM SCHEDULE OF RATES</u>
	<u>VOLUME – III (Revision-01)</u>
	<u>PREAMBLE</u>
1	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 Volume-IB, ID, IE , Volume – II and other tender sections as applicable.
2	The work shall be carried out strictly as per specifications, description of the items in these schedule and / or engineer's instructions.
3	Items of work provided in this schedule but not covered in this specification shall be executed strictly as per instruction of the engineer.
4	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(except service tax), 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 complete tender document and this schedule.
5	The quantities of the various items mentioned in this schedule of items are approximate, based on very preliminary information and may vary to any extent or be deleted altogether. The quoted rates of each item will remain firm throughout the period of execution including extension, for reasons whatsoever, as long as variation in the total value of work executed under any part of this contract including extra items, if any but excluding any price variation remains, within thirty percent ($\pm 30\%$) of the awarded price as per LOI .
6	The rates quoted shall be inclusive of cleaning of site of any vegetation, dressing , clearing of old structures 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.
7	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 language.

8	All works item wise shall be measured upon completion and paid for at the rates quoted and accepted as per BHEL approved payment schedule/billing break-up.
9	The tenderer shall be deemed to have visited site and made himself aware of all the site conditions, studied the specifications, details of instruments/panels/equipments to be dismantled/reuse etc. and details of work to be done within the time schedule as per tender conditions and to have acquainted himself of the conditions prevailing at site.
10	No splitting of the job is envisaged. Decision of BHEL in this regard shall be final and binding to the bidders.
11	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.
12	Size and weights of various items are mentioned in the attached BOQ cum rate/price schedule for reference purpose. These shall be utilised as per relevant sections of tender. Bidders shall quote for each item in the rate column. Rates shall be filled in both figures and words. Amount shall be calculated based upon these rates multiplied by the mentioned quantity for the respective items.
	Note : Bidders to note the following for quoting their rates.
	A) Only authorised persons of bidder having power should sign in the price bid. All the pages must be signed.
	B) For bid evaluation purpose (deciding L1), grand total price of all the items of rate schedule shall be considered.
	C) Quoted rates shall be inclusive of all taxes, duties etc., except service tax as per tender terms. Service tax(as applicable) shall be payable/reimbursable extra as per tender terms.

VOLUME - III, Rev-01							
Tender specification no. PSER:SCT:HLD-I703:06							
Title of the Job : Erection, Testing, Commissioning of all electrical and Control & instrumentaion work of HRSG, GTG, BOP, Generator Transformer and their auxilliaries etc. for 1xFR-5 cogeneration plant for IOCL at Haldia (PH-II) P.O. –Haldia DIST –East Midnapore, West Bengal							
SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx-IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
1.00	Generator Transformer (32 MVA,11.7KV/11KV), Transport weight : 35 MT, Untanking weight : 26 MT	No.	1	I			
2.00	Cubicles/Cabinets/Panels :						
2.01	Control Panel and Metering Panel (2000X915X2295)	No.	1	F			
2.02	Relay and Protection Panel (2400X915X2295)	No.	3	F			
2.03	Phase side cubicle - 2000Kg	No.	1	F			
2.04	NGE Cubicle - 600Kg	No.	1	F			
2.05	Segregated Bus Duct (SPB) 15metre - 1200Kg	Lot	1	F			
2.06	GT DCDB 125 Volt DC (3260X600X2430) -1700Kg	No.	1	F			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
2.07	GT MCC 415V,3ph,50Hz.(7580X90X2430) - 6500Kg	No.	1	F			
2.08	GT Battery Charger Dual (main & standby) Dual FCBC (1700X1000X2000)	No.	1	F			
2.09	GT Aux. Panel (1000X 910X2400) -200Kg	No.	1	F			
2.10	GT Battery 125 Volt DC 300AH (5000X410X1400)-1835 kg	set	1	F			
2.11	Microprocessor based CO ₂ Fire Fighting Panel 600X500X1800) -200 kg	No.	1	F			
2.12	Hazzardous Gas monitor 240AC (2.5 Kg)	No.	2	F			
2.13	Inlet air Filter Panel (660X255X1015)	No.	1	F			
2.14	Mark VI Turbine Control Panel (2257X910x2400)-suit of two panels	set	1	F			
2.15	Mark VI work Station and accessories: Contains <I station> CPU-2no, Monitor-2no,Printer-1no, Line driver-1no.	set	1	F			
2.16	Bently Nevada 3500 system work station	No.	1	F			
2.17	NGR(apprx wt. -1200 Kg)(2000X800X1500)	No.	1	F			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
2.18	Digital AVR panel (1200X1200X2295)	No.	1	F			
2.19	Digital Control System Panel(Yokagawa make)	No.	25	F			
2.20	Control Desk	No	4	F			
2.21	Working Station : SET Contains CPU,Monitor,Printer & Accessories	set	4	F			
2.22	CCTV Panel	No.	2	F			
2.23	PLC Interlock panel	No.	5	F			
2.24	CCTV Camera	No.	4	F			
2.25	LTMCC Panel ,Double front Draw-out type (4860X600X2400)	No.	1	F			
2.26	D.C. starter Panel (600X400X1420)	No.	1	F			
3.00	L.T. Switch Boards (Extension & Modification) :						
3.01	PMCC(extension) (2400X1400X2400) -3000 Kg in 2 TU	Set	1	F			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
3.02	PMCC(modification)-feeders	No.	2	F			
3.03	BOPMCC(extension) (6400X800X2400) - 4000 Kg in 4 TU	Set	1	F			
3.04	ASB(extension) (800X800X2400) - 600 Kg in 1 TU	Set	1	F			
3.05	UPSDB(extension) (3200X800X2400) -1800 Kg in 1 TU	Set	1	F			
3.06	UPSDB(modification) -feeders	No.	2	F			
3.07	110VDCDB(modification) - feeders	No.	4	F			
3.08	220V DCDB(modification) - feeders	No.	4	F			
3.09	ACELDB(modification) -feeders	No.	2	F			
3.10	AC&Vent MCC(modification) - feeders	No.	3	F			
3.11	ECS Marshalling Panel (800X800X2400) - 600Kg in 1 TU	No.	1	F			
3.12	GT Hall vent fans DB(wall mount) (1000X400X600)- 100 kg	No.	1	F			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
4.00	Erection of Cable Trays with proper support :						
4.01	600 mm GI Ladder tray	Metre	500	A			
4.02	150 mm GI perforated tray	Metre	125	A			
4.03	300 mm Al Ladder tray	Metre	550	A			
4.04	300 mm Al perforated tray	Metre	550	A			
4.05	100 mm Al perforated tray	Metre	800	A			
4.06	50 mm Al perforated tray	Metre	2000	A			
4.07	50 mm Al perforated tray (with cover)	Metre	2500	A			
5.00	Laying ,glanding,Termination of cables :						
5.01	2C X 0.75 sq.mm	Metre	150	B			
5.02	10T X 0.5 Sq.mm	Metre	1000	B			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx-IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
5.03	3C X 4 Sq..mm	Metre	1000	B			
5.04	3C X 6 Sq.mm	Metre	500	B			
5.05	5C X 2.5 Sq.mm	Metre	2000	B			
5.06	10C X 2.5 Sq.mm	Metre	1000	B			
	HT Cables:						
5.07	1C X 630 mm ² 11KV Cu XLPE	Metre	2250	L			
5.08	3C X 300 mm ² 6.6KV AI XLPE	Metre	250	L			
	LT cables:						
5.09	3.5C x 300 mm ² 1.1KV AI PVC/FRLS	Metre	500	B			
5.10	3.5C x 185 mm ² 1.1 KV AI PVC/FRLS:	Metre	500	B			
5.11	3.5C X 95 mm ² 1.1 KV AI PVC/FRLS	Metre	250	B			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx-IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
5.12	3.5C x 50 mm ² 1.1 KV Al PVC/FRLS	Metre	500	B			
5.13	3.5C x 35 mm ² 1.1 KV Al PVC/FRLS	Metre	1500	B			
5.14	3.5C x 25 mm ² 1.1 KV Al PVC/FRLS	Metre	1500	B			
5.15	4C x 16 mm ² 1.1 KV Al PVC/FRLS	Metre	5500	B			
	Control cables:						
5.16	3C x 2.5 mm ² 1.1 KV Cu PVC/FRLS :	Metre	10000	B			
5.17	5C x 2.5 mm ² 1.1 KV Cu PVC/FRLS	Metre	7000	B			
5.18	7C x 2.5 mm ² 1.1 KV Cu PVC/FRLS	Metre	7000	B			
5.19	12C x 2.5 mm ² 1.1 KV Cu PVC/FRLS:	Metre	5000	B			
5.20	10C x 2.5 mm ² 1.1 KV Cu PVC/FRLS :	Metre	3000	B			
5.21	19cx2.5 mm ² 1.1 Kv Cu PVC/FRLS	Metre	3000	B			

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					Figures	Words	
5.22	24C x 2.5 mm ² 1.1 KV Cu PVC/FRLS:	Metre	3000	B			
	HT Jointing kits:						
5.23	1C x 630 mm ² 11KV Cu XLPE	No	40	M			
5.24	3C x 300 mm ² 6.6KV Al XLPE	No	2	M			
6.00	Local control Stations:						
6.01	Weather Proof start/stop PB	No	15	C			
6.02	Exp. Proof start/stop PB	No	10	C			
7.00	Earthing/Lightning :						
	Plant/Equipt Earthing:						
7.01	75x10 GI strip	Metre	1500	C			
7.02	50x6 GI strip	Metre	500	C			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx-IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
7.03	35x6 GI strip	Metre	300	C			
7.04	25x3 GI strip	Metre	250	C			
7.05	8SWG GI wire	Metre	1000	C			
7.06	Pipe Electrode GI	Metre	90	C			
7.07	(A) Earth pit preparations as per specifications -- Electrical earthing (supply of all materials, including electrodes in bidders scope)	Nos.	25	C			
7.07	(B) -- DO --- but excluding supply of electrodes	Nos.	25	C			
	Electronic Earthing:						
7.08	Pipe Electrode Copper	Metre	25	C			
7.09	Single core earthing cables(35sqmm)	Metre	350	B			
7.10	Single core earthing cable(6 sqmm) :	Metre	200	B			
7.11	(A) Earth pit preparations as per specifications -- Electronic earthing (supply of all materials, including electrodes in bidders scope)	Nos.	15	C			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
7.11	(B) -- DO --- but excluding supply of electrodes	Nos.	15	C			
8.00	Illumination:						
	Fixtures:						
8.01	FLP 100 W GLS	No	20	C			
8.02	FLP125W HPMV	No	65	C			
8.03	FLP 250W HPMV	No	10	C			
8.04	FLP 400W HPMV	No	25	C			
8.05	2 X 40W Florescent	No	12	C			
8.06	150 Watt HPSV	No	8	C			
8.07	Aviation lighting in the chimney	Lot	8	C			
	Panels:						

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					Figures	Words	
8.08	12 way Haz. Ltg Pnl	No	4	C			
8.09	6 way Haz Ltg Pnl	No	2	C			
	Accessories:						
8.10	1C X 2.5 mm ² Cu Flexible wires	Metre	5000	B			
8.11	3 mtrs Pole	No	30	C			
8.12	JBs(88mm)	No	50	C			
8.13	Welding receptacles	No	5	C			
8.14	20A sockets	No	8	C			
9.00	Structural Steel for support	MT	20	E			
9.01	Segregated Bus Duct (SPB) supporting Structure	MT	1	E			
10.00	Field Instruments / Equipment :						

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
10.01	Mass flow meters	No	3	G			
10.02	Pressure gauges	No	50	G			
10.03	Pressure transmitters	No	30	G			
10.04	Pressure switches	No	10	G			
10.05	Diff. pressure gauges	No	10	G			
10.06	Diff. pressure transmitters	No	10	G			
10.07	Diff. pressure switches	No	8	G			
10.08	Temperature gauges	No	60	G			
10.09	RTDs	No	25	G			
10.10	Thermo couples	No	20	G			
10.11	Level gauges	No	5	G			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
10.12	Level transmitters	No	8	G			
10.13	Level switches	No	5	G			
10.14	I/P converters	No	25	G			
10.15	Needle/ globe valve	No	350	G			
10.16	Condensing chambers and syphons	No	20	G			
10.17	5 way manifolds	No	50	G			
10.18	Air filter regulators	No	25	G			
10.19	Thermowells	No	90	G			
11.00	Impulse pipes & tubes						
11.01	SS tube 12.7 x 2.1 mm	Metre	1000	D			
11.02	SS pipe 21.3 x 4.78 mm	Metre	3000	D			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
11.03	SS tube 6 x 1 mm	Metre	2500	D			
12.00	Laying,Glanding,Termination of Signal Cables						
12.01	1P x 0.5 sq.mm (Intrinsic Safe), Individual & Overall shielded	Metre	2000	B			
12.02	6P x 0.5 sq.mm (Intrinsic Safe), Individual & Overall shielded	Metre	2000	B			
12.03	12P x 0.5 sq.mm (Intrinsic Safe), Individual & Overall shielded	Metre	500	B			
12.04	1P x 0.5 sq.mm, Individual & Overall shielded	Metre	3000	B			
12.05	6P x 0.5 sq.mm, Individual & Overall shielded	Metre	4000	B			
12.06	12P x 0.5 sq.mm, Individual & Overall shielded	Metre	1500	B			
12.07	1P x 0.5 sq.mm, Overall shielded	Metre	1000	B			
12.08	6P x 0.5 sq.mm, Overall shielded	Metre	4000	B			
12.09	12P x 0.5 sq.mm, Overall shielded	Metre	2000	B			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
12.10	2T x 0.5 sq.mm (Intrinsic Safe), Individual & Overall shielded	Metre	2000	B			
12.11	2T x 0.5 sq.mm, Individual & Overall shielded	Metre	1500	B			
12.12	8T x 0.5 sq.mm, Individual & Overall shielded	Metre	2500	B			
12.13	2P x 20 AWG Cr-Al Extension	Metre	1000	B			
12.14	6P x 20 AWG Cr-Al Extension	Metre	2000	B			
12.15	12P x 20 AWG Cr-Al Extension	Metre	2000	B			
13.00	Junction Boxes						
13.01	44 terminals, weather proof	No	60	C			
13.02	44 terminals, explosion proof	No	10	C			
14.00	Field Instruments / Equipment :						
14.01	Solenoid valve	No	75	G			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
14.02	Temperature Switch	No	15	G			
14.03	Vibration sensor	No	10	G			
14.04	Gas Naptha Detector	No	8	G			
14.05	Temperature Rise Fire Detector	No	7	G			
14.06	Pressure/D.P.Switch	No	50	G			
14.07	Level Switch	No	3	G			
14.08	Magnetic Pick-up	No	10	G			
14.09	Pressure Transmitter/D.P.transmitter	No	10	G			
14.10	Linear variable Differential transformer	No	8	G			
14.11	Control valves	No	12	G			
14.12	Thermometer	No	12	G			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
14.13	Pressure Gauge	No	30	G			
14.14	Differential Pressure gauge	No	15	G			
14.15	BNC Vibration Monitoring system	No	1	G			
14.16	Hazardous gas Monitoring System	No	1	G			
14.17	Napha Monitoring System	No	1	G			
14.18	Thermocouples including exhaust T/Cs	No	50	G			
14.19	Limit switches	No	10	G			
	Fire Detection system						
14.20	manual call point (BGU)	No	6	G			
14.21	Horns	No	3	G			
14.22	Pressure switches	No	4	G			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
14.23	Solenoid valve	No	4	G			
15.00	Cables:						
15.01	5CoreX2.5 Sq.mm Copper Cable	Metre	4500	B			
15.02	3and1/2 core X 25 Sq.mm	Metre	2500	B			
15.03	3and1/2 core X 95 Sq.mm	Metre	600	B			
15.04	1Core X120 Sq.mm	Metre	1100	B			
15.05	1Pair X 1.5 Sq.mm	Metre	1500	B			
15.06	1Pair X 2.5 Sq.mm	Metre	500	B			
15.07	6 Pair X 1.5 Sq.mm	Metre	5500	B			
15.08	6 Pair X 2.5 Sq.mm	Metre	3000	B			
15.09	12 Pair X 1.5 Sq.mm control cable	Metre	2000	B			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx-IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
15.10	13 Pair X 1.5 Sq.mm signal cable	Metre	500	B			
15.11	1 Pair X 1.5 Sq.mm signal cable	Metre	1500	B			
15.12	6 Pair X 1.5 Sq.mm signal cable	Metre	1000	B			
15.13	9 Core X 0.5 sq.mm signal cable	Metre	500	B			
15.14	6 Pair X 1.5 T/C cable	Metre	500	B			
15.15	12 Pair X 1.5 T/C cable	Metre	1000	B			
15.16	6 Triad X 1.5 sq. mm	Metre	1000	B			
16.00	Trichy supplied items :						
16.01	Pressure Gauge 150mm dial type	No	41	G			
16.02	Temperature Gauge 150mm dial	No	3	G			
16.03	DP Gauge	No	2	G			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
16.04	Temperature Transmitter Smart type	No	6	G			
16.05	Pressure Transmitter Smarttype	No	20	G			
16.06	Diff. Pressure TransmitterSmart Type	No	17	G			
16.07	Thermocouple- K Type	No	13	G			
16.08	MTM Thermocouple	No	40	G			
16.09	Oil Flow Meter (Mass flow meter)	No	1	G			
16.10	Condensing Pot (Carbon Steel)	No	13	G			
16.11	Oxygen Analyser	No	1	G			
16.12	SO2 & NOX Analyser	No	1	G			
16.13	PH & Conductivity Analyser	No	6	G			
16.14	FLAME SCANNER & CABLE (UV &IR Type with swivel etc.)	set	18	G			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
16.15	LOCAL PUSH BUTTON BOX (flame Proof) with Canopy	No	9	C			
16.16	LOCAL JUNCTION BOX (flame proof) with canopy	No	110	C			
16.17	CS TUBING AND FITTING	Metre	200	D			
16.18	SS TUBING AND FITTING	Metre	150	D			
16.19	GI TUBING AND FITTING	Metre	300	D			
17.00	Earthing						
17.01	40 X 6 GI FLAT for earthing	Metre	1300	A			
17.02	80 SWG GI WIRE For earthing	Metre	9000	A			
18.00	Cables						
18.01	1 PAIR X 1.5 SQ mm screened cable	Metre	6000	B			
18.02	2 PAIR X 0.5 SQ mm screened cable	Metre	6000	B			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
18.03	2 PAIR X 20 AWG Thermocouple extension cable	Metre	500	B			
18.04	2C X 2.5MM ² Control Cable	Metre	5000	B			
18.05	3C X 10MM ² POWER CABLE	Metre	600	B			
18.06	3C X 25MM ² POWER CABLE	Metre	400	B			
18.07	3C X 4MM ² POWER CABLE	Metre	3000	B			
18.08	3C X 6MM ² POWER CABLE	Metre	100	B			
18.09	3C X 70MM ² POWER CABLE	Metre	400M	B			
18.10	7C X 2.5MM ² Control CABLE	Metre	2000M	B			
19.00	Erection Material - Angles & Channels	MT	3MT	E			
20.00	Cable Trays						
20.01	300MM(W) X 50MM MS Ladder	Metre	190	A			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx-IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
20.02	100MM(W) X 50MM MS Ladder	Metre	190	A			
20.03	300MM(W) X 50MM Anodised AL. Perforated Type	Metre	300	A			
20.04	100MM(W) X 50MM Anodised AL. Perforated Type	Metre	250	A			
21.00	PG TEST ITEMS :						
21.01	1/2" Impulse Pipe	mtr.	300	D			
21.02	Compensating Cable (2C, Core size upto 2.5 sqmm) laying & termination	mtr.	700	B			
21.03	2C, Core size upto 2.5 sqmm cable laying & termination	mtr.	1500	B			
21.04	4C, Core size upto 2.5 sqmm cable laying & termination	mtr.	1000	B			
21.05	Pre-fab cable from Data logger to computer	mtr.	50	B			
21.06	Junction Box	No.	30	C			
21.07	Thermocouple	No.	25	G			

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					Figures	Words	
21.08	Pr. / vacuum / DP Transmitters	No.	35	G			
21.09	Data logger	No.	1	G			
21.10	Manometer	No.	5	G			
21.11	Thermowell	No.	60	G			
21.12	PRT (Pt. Resistance thermometer)	No.	35	G			
21.13	Barometer	No.	1	G			
21.14	Power meter / transducer	No.	10	G			
	Note : 1. All the above mentioned PG Test items are to be installed and dismantled after the test.Bidder has to take into consideration while quoting.						
22.00	CALIBRATION/ COMISSIONING (Erection excluded)						
	Power cylinder for scoop	No.	1	H			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
	Power cylinder (on-off type)	No.	15	H			
	Power cylinder (regulating type)	No.	10	H			
	Control valves (ON-OFF)	No.	10	H			
	Control valves (Regulating)	No.	25	H			
	Limit Switch	No.	30	H			
	Removal, calibration, re-mounting and commissioning of instruments for Skid. Each skid will have minimum of 05 no. instruments e.g. PG/PS/TG/DPI /DPS/TS/RPM meter with probe/LS/LG /FS/FI etc. Dressing of capillary & cables if any, repair of Cu-tube/impulse pipe, if any, changing of terminals of JB. if any, is also included.	No.	8	H			
23.00	(A) Fabrication and erection of canopy (considering total weight of canopy including support structure & sheets). All structural materials including sheets shall be SUPPLIED BY BIDDER.	MT	1	E			

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx-IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
23.00	(B) Fabrication and erection of canopy (considering total weight of canopy including support structure & sheets). All structural materials including sheets shall be issued free by BHEL.	MT	1	E			
	GRAND TOTAL PRICE OF ALL THE ITEMS (SNO. 1 TO 23 ABOVE) ; TO BE QUOTED in Rupees BOTH IN FIGURES AS WELL AS WORDS.						
	Note :						
	1. The following items are to be provided and supplied by the bidder at their cost for the erection,testing and commissioning of the Electrical package. Bidders to take a note while quoting rates above (s.no. 1 to 23)						
	Rubber Mat(20mm thick,1mx2m size sheet)	12 nos					
	Cable clamps for 3cx2.5 Sqmm cable	7000 nos					
	Cable clamps for 4cx16 Sqmm cable	25 nos					
	50mm dia GI conduit	50 mtrs					
	65mm dia GI conduit	15 mtrs					

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					Figures	Words	
	25mm PVC conduit	50 mtrs					
	25mm GI conduit	50 mtrs					
	20mm GI conduit	60 mtrs					
	25mm GI bends	20 nos					
	20mm PVC bends	20 nos					
	Check nuts& metal bushing	72 nos					
	JB metal 88mm	36 nos					
	Ball & socket	36 nos					
	Wooden box 88 mm	36 nos					
	Flash Mounted Board with 5 switch & 1 socket	10 nots					
	Hardware for erection of illumination items	Lot					

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx- IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
	Pipe clamps with plate for 50mm pole support for HRSG area	50 nos					
	Fire proof sealing materials for cable sealing	Lot					
	Trefoil Clamps for 630 sqmm cable	200 nos					
	Safety eqpts like shock chats,buckets etc	lot					

SL. NO.	DESCRIPTION	UNIT	QUANTITY	Billing schdl. Ref. (Anx-IV)	Unit rate (Rs) (Unit to be taken from UNIT column)		Amount (Rs.) = Unit rate (x) Quantity (Quantity column)
					Figures	Words	
	<p>2. The existing cable trenches are filled with river sand. The existing trenches are extended for GT2. During cable laying the sand from the existing trenches are to be removed and refilled if any make up sand is required to fill the existing trenches same shall also be included in the part of executing contractor. The extended portions of the trenches are also to be sand filled with fresh river sand.</p> <p>3. In the extended portion of the LT swgr the erection part shall be in the erection contractor scope. The integration of the panel shall be in the panel supplier scope.</p> <p>4. In the modification portion of the LT swgr the erection assistance shall be extended to panel supplier by the erection contractor and the modification work shall be carried out by the panel supplier.</p> <p>5. The cable laying includes glanding,dressing and termination of cables.</p> <p>6. Insulated coper lugs (upto 2.5Sq.mm) of std. quality,No.Ferrules,Tags,ties are to be supplied by the bidder. Glands will be supplied by BHEL free of cost. Lugs above 2.5 sq. mm will be supplied by BHEL free of cost.</p>						