



Heavy Engineering Corporation  
Heavy Machine Building Plant  
(A Govt of India Enterprises)  
Ranchi- 834004 (INDIA)

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LIMITED TENDER

No.HMBP/PUR/09/961650/EL-2022

Dated : 04.12.2009

Dear Sir,

We request you to submit your most competitive offer for the following item as per the given schedule:

ENQUIRY SCHEDULE

Sl.No	Description of Stores	Remarks
1	Complete Control Panels for 200+50/15T EOT Cranes	Detailed Scope of Work Technical Specifications and bill of materials (Qty.) as per our DAP No.173/09M as per attachment.

Note Please submit your quotation strictly in two bid system i.e. Price Bid & Tecno-commercial Bid.

Purchase / HMBP during working hours from 2.00PM to 4.00PM

Schedule of Tender receipt by 21.12.2009 upto 1.00 PM. Opening of Tender on 21.12.2009, at 3.00PM TENDERS must be submitted in sealed cover with Tender No. and the Due date superscribed on it failing which Tenders may be ignored.

Offers to be submitted in two parts.

In case of Two part bids (as mentioned above, the technical and commercial aspects to be sealed in a separate envelope superscribing Part-1 on it., The Price bid to be superscribed as Part - 2)

Special condition if any :

- F.O.R. : The prices quoted shall be firm and the quoted price must be on F.O.R. Destination i.e. HMBP Stroes/HEC, Ranchi-834004.
- Un – Priced schedule( Blank price – format) of items considered in line with scope of supply of tender enquiry shall be furnished along with techno –commercial bid.
- L.D. Clause :For late delivery of goods, the L.D. @0.5% per week limited to 10% maximum shall be levied on the order value.
- PBG : The successful tenderer will have to deposit Performance Bank Guarantee for 10% of the basic order value at the time of supply of materials in the form of Bank Guarantee from any Nationlised Bank only. This PBG shall be valid for full guarantee period.
- Guarantee : The materials supplied shall be guaranteed for 18 months from the date of dispatch or 12 months from the date of commissioning which ever is earlier.

**NOTE:**

- The rate quoted shall be inclusive of all packing & forwarding. Freight charges to be mentioned separately.

2. The Price quoted by the tenderer should be exclusive of sales tax. The rate and nature of sales tax applicable should be shown separately. Sales tax will be paid to the seller at the rate at which it is liable to be assessed or has actually been assessed on the date of supply provided the transaction of sale is legally liable to sales tax and within the delivery period. Any change on the taxes & duty structure beyond the delivery period will not be considered by HEC.
3. The rates quoted must be firm and the offers made must remain open for acceptance for three months from the date of opening of the tender.
4. Quotations erased or over written are likely to be rejected unless all corrections are authenticated with the tenderer's signature.
5. Delivery date offered must be specified and guaranteed.
6. "100% of the total contract value along with hundred percent taxes & Duties shall be released through Cheque ,within 30 days of receipt of materials. Complete in all respect along with Guarantee Certificate, Test Certificate, Inspection Certificate to be issued by HEC, EDGP (if applicable), Original Invoice, 10% PBG to be valid till full guarantee period from any nationalized bank only in HEC's format and all the drawings and documents as per enquiry specifications. "
7. Full particulars i.e. specification, literature and / or drawing wherever applicable should be submitted alongwith the quotation. The brand and 'Make' name must be Indicated.
8. The Corporation does not pledge itself to accept the lowest or any tender and reserves to itself the right of accepting the whole or any part of tender or portion of the quantity offered and you shall supply the same at the rate quoted.
9. Supplies will be subject to Inspection by our Inspection wing / or inspection agencies prescribed by us.
10. Order placed as a result of this tender will be subject to the Corporation's General Terms and Conditions of contract which can be down loaded from our website (www.hecltd.com)
11. Corporation reserves the right to call for and examine at any time the books of accounts and other documents and papers of the firm for the purpose of ascertaining whether any excess payments has been made or the firm likely to be received / received undue benefit out of execution of the particular contract.
12. Earnest Money (if indicated above specifically) - Earnest money to the extent of 2% of the total value will have to be deposited by demand draft on the State Bank of India, Ranchi Hatia Branch, in favour of Heavy Engineering Corporation Ltd. Ranchi.- 4
13. Security Deposits -Successful tenderers will have to deposit security equal to 5 percent of the value of the contract within the desired period. Failing this, the contract will be cancelled at the risk and expenses of the suppliers.
14. Delivery: The time for and the date of delivery of the Stores stipulated in the acceptance of tender shall be deemed to be the essence of the contract and delivery must be completed not later than the dates specified therein. Otherwise:

The purchaser to recover from the contractor a sum of 0.5 % per week (completed week) of the price of the stores(upto maximum 10 %) as liquidated damages, which the contractor has failed to deliver as aforesaid or

- b) The purchaser may procure the undelivered stores / similar items from elsewhere, without notice to the contractor at the risk of the contractor without canceling the contract in respect of the consignment not yet due for delivery or,
- c) to cancel the contract or a portion thereof.
15. Income Tax Clearance Certificate - All tenderers shall submit along with their tender an Income Tax Clearance Certificate duly countersigned by the Income Tax Officer of the circle concerned under the seal of the office. Copy of Permanent Account No. (PAN) (of Income Tax) to be enclosed with the bid.
16. There is no obligation on our part to accept delayed / late tenders. Tenders received after the due date of opening are liable to be summarily rejected.
17. The rates quoted shall also be inclusive of embossing on the material. The Ownership namely HMBP / FFP / HMTP should be at a predominant place of the material to a size / thickness upon the volume of the material.

**Special .Note:**

While submitting tender pl. mentioned your Registration No. with HEC as a registered vendor with valid paper. If not pl. get registered your firm with HEC Limited immediately.

Signature of Purchase Executive

## Attachment for details of Scope of Supply

W.O. No.	Capacity of Crane
4131.002.150	200+50/15T X 15M E.O.T CRANE

### 1.0 OPERATING CONDITION :-

<b>Ambient</b>	<b>: 60 °C</b>
<b>Humidity</b>	<b>: 100 %, ( Max. temp &amp; max. humidity not occurring simultaneously ).</b>
<b>Atmosphere</b>	<b>: Hot &amp; dusty ( conductive dust ).</b>
<b>Vibration</b>	<b>: Severe shocks &amp; vibration as encountered by rail mounted EOT crane.</b>

### 2.0 POWER SUPPLY :-

<b>Main supply</b>	<b>: 415 V ± 10%, 50 Hz ± 5%, 3φ.</b>
<b>Control supply</b>	<b>: 240 V, 50 Hz, 1φ.</b>
<b>Fault level</b>	<b>: 40 KA for 1 sec.</b>

### 3.0 STANDARDS :-

The equipment shall be designed, assembled & tested in accordance with latest IS & IPSS.  
IPSS : 1-10-010-84, IPSS : 1-10-011-84, Indian Electricity Rules & Regulation

### 4.0 Constructional features for the panels:-

- 4.1 Free standing, floor mounting type, sheet steel enclosed, dust, moisture and vermin proof housing the associated power and control equipment. Minimum sheet thickness shall be 2 mm. Panels shall have lockable, hinged and gasketed lift off type doors. Cable entry to the panels shall be from bottom. The paint shade shall be communicated later.
- 4.2 Panels shall be front wired with readily accessible terminal blocks for making external connections. Panels shall be prewired up to the terminal blocks. Single core multi strand, HR PVC insulated copper conductor cables of minm. size 2.5 mm sq. shall be used for control circuit wiring in the panels. The bottom most equipment mounted inside the panel shall be at least 350 mm above the bottom cover of the panels so as to facilitate inspection and repair. Electrical clearance in air among all live parts of different polarity and voltage and between live parts and earth shall be min. 25 mm.
- 4.3 All power wiring below 200A shall be carried out with 1100V grade, Butyle / EPR insulated, PCP/CSP sheathed cables with stranded copper conductors conforming to IS:6380. All power wiring for 200A and above shall be carried out with PVC sleeve insulated copper bus-bar of size not less than 25X5 sq.mm.
- 4.4 All equipment inside the panel shall have permanent identification labels in accordance with the schematic diagram.
- 4.5 Schematic diagram shall be pasted on the inside door of the panel.
- 4.6 Power and control terminals shall be segregated. All power terminals shall be of stud type. All control terminals shall be of open type. Terminal blocks shall have 20% spare terminals.
- 4.7 All the foundation and other fixing bolts, nuts, washers and other hardware necessary for panel fixing shall be supplied as part of the panels and shall be cadmium plated or zinc passivated.
- 4.8 Panels shall have adequate no. of lifting lugs & plug and socket for maintenance purposes.
- 4.9 The panel shall have integral cable plinth of height 250mm height. The cable plinth shall be open at both sides for each of cable laying.
- 4.10 An earth bus-bar made of copper strip shall be provided near the bottom of the panel and shall run for its entire length. Earthing terminal studs as per IER shall be provided.

4.11 Long travel panel shall be in two shipping section.

4.12 SPECIFICATION OF ARM CHAIR CONTROL UNIT & MASTER CONTROLLER -

The sheet steel enclosed arm chair control unit shall consists master controller and other control devices as mentioned in the B.O.M indicated below. The arm chair unit shall be located in the Operator's cabin. The disposition and orientation of the master controller shall be given to the successful tenderer.

Cam type master controller with joystick type lever shall be provided for control of different motion of the crane. The contact shall be double break type. The master controller shall conform to IPSS:1-10-005-81.

Each controller shall be provided "OFF" position interlock contacts. The operating handle shall be capable of being latched firm in "OFF" position. The lever shall not remain in between two consecutive notch position and shall locate exactly and remain positively at each notch unless moved to the other position. The air gap between the fixed and moving contacts of the controller shall be maintained to avoid undue spacing between them when the controller is on the other notches. During operation of the mechanisms, the relevant contacts of the operating notches shall be secured with proper pressure to withstand the vibrating service of the crane.

5.0 MAXIMUM OVERALL DIMENSIONS OF THE OF CONTROL PANELS:-

Sl.No.	Panel	Overall dimensions
1	Isolator panel	800(W) X 600(D) X 1800(H)
2	Protective panel	800(W) X 600(D) X 1800(H)
3	Distribution panel	800(W) X 600(D) X 1800(H)
4	Aux. Hoist-2 control panel	1600(W) X 400(D) X 1800(H)
5	LT control panel	1600(W) X 400(D) X 1800(H) + 1600(W) X 400(D) X 1800(H)
6	Lighting distribution board	500(W) X 250(D) X 600(H)
7	Arm chair control unit	1200(W)X 1000(D) X 600(H)
8	Emergency Switch	200(W) X 200(D) X 200(H)
9	Power JB-1 (TBB & TBMT )	750(W) X 350(D) X 1250(H)
10	Power JB-2 (TBAG & TBAT )	750(W) X 350(D) X 1000(H)
11	Control JB-1 ( 12 Terminals )	250(W) X 200(D) X 300(H)
12	Control JB-2 ( 6 Terminals )	200(W) X 200(D) X 200(H)

6.0 B.O.M OF CONTROL PANELS:-

6.1 B.O.M OF ISOLATOR PANEL:-

Sheet steel enclosed, IP-54, free standing type, housing following components.		
Symbol	Description	Qty.
IS	Off-load Isolator, 3 pole with neutral, 3200A, complete with phase barrier protection guard, front on door operating handle & padlock.	1
CB	MCCB, 3 Pole, 100 A at 415 VAC, 50KA breaking capacity.	1
Q1 to Q3	MCB, 3 pole, 32A at 415 VAC, 9KA breaking capacity.	3
Q4	MCB, 3 pole, 25A at 415 VAC, 9KA breaking capacity.	1
Q5	MCB, 3 pole, 16A at 415 VAC, 9KA breaking capacity.	1
LK	Copper link, 1000A	1
-	Panel illuminations, door limit switch & panel accessories.	1 set.

6.2 B.O.M OF PROTECTIVE PANEL:-

Sheet steel enclosed, IP-54, free standing type, housing following components.		
Symbol	Description	Qty.
ACB	Air circuit breaker, 3 pole, 2500 A, 50KA breaking capacity with 3NO + 3NC aux. contact, 240 VAC u/v release, O/L, E/F & S/C release. Complete with front on door operating handle & padlock.	1
Q1.1	MCB, 3 pole, 6A at 415 VAC, 9KA breaking capacity.	1
Q1.2, Q1.3	MCB, 3 pole, 16A at 415 VAC, 9KA breaking capacity.	2

AR1.1 to AR1.5	Aux. contactor, 4NO+4NC contacts, 10A at AC11 duty, coil-240 VAC.	5
T1.1	Pneumatic timer, 2NO+2NC off-delay (0.5-60 sec.) contact, coil-240 VAC.	1
F1.1 to F1.6	LTHRC fuse, 2A	6
SL1.1, SL1.2, SL1.3	Phase indication signal lamp ( cluster LED type ), 5W, 240 VAC.	3
CT-1, CT-2, CT-3	CT, 2000 / 1A, class-1, 5 VA.	3
VSS	4 position, voltmeter selector switch.	1
V	AC voltmeter, range 0-500 VAC, size-96X96 mm, class-1, 90° scale.	1
ASS	4 position, ammeter selector switch.	1
A	AC ammeter, range 0-2000 A, suitable for 1A CT secondary, size-96X96 mm, class-1, 90° scale.	1
SL1.4	Signal lamp, cluster LED type, red visor, 6W, 240VAC	1
SL1.5	Signal lamp, cluster LED type, green visor, 6W, 240VAC	1
SL1.6	Signal lamp, cluster LED type, amber visor, 6W, 240VAC	1
PB1.2	Push button, red mushroom head, 2NC contacts, 6A at AC11 duty, 240VAC.	1
PB1.3	Push button, green normal head, 2NO contacts, 6A at AC11 duty, 240VAC.	1
-	Panel illuminations, door limit switch & panel accessories.	1 set.

6.3 B.O.M OF DISTRIBUTION PANEL:-

Sheet steel enclosed, IP-54, free standing type, housing following components.		
Symbol	Description	Qty.
CB2.1	MCCB, 3 Pole, 25 A at 415 VAC, 50KA breaking capacity.	1
TR1	Control transformer, 7.5 KVA, 415 / 240 V, 1 $\phi$ , 50 Hz, with $\pm$ 5% & $\pm$ 10% tapings at the primary & secondary.	1
Q2.1	MCB, 2 pole, 32A at 415 VAC, 9KA breaking capacity.	1
Q2.2	MCB, 2 pole, 10A at 240 VAC, 9KA breaking capacity.	1
Q2.3	MCB, 2 pole, 6A at 240 VAC, 9KA breaking capacity.	1
Q2.4 to Q2.11	MCB, 2 pole, 16A at 240 VAC, 9KA breaking capacity.	8
-	Copper busbar of size 100X10 for distribution of power to various panel.	1 set
-	Panel illuminations, door limit switch & panel accessories.	1 set.

6.4 B.O.M OF AUX. HOIST- 2 CONTROL PANEL:-

Sheet steel enclosed, IP-54, wall mounting type, housing following components.		
Symbol	Description	Qty.
3MCCB	MCCB, 3 Pole, 400 A at 415 VAC, 50KA breaking capacity.	1
3HC, 3LC	Power contactor, 3 pole, 630A, AC3 duty, 3NO+3NC aux. contact, Coil - 240 VAC. with mechanical interlock	2
3SC	Power contactor, 3 pole, 630A, AC3 duty, 3NO+3NC aux. contact, Coil - 240 VAC.	1
3OLR	Triple pole, electromagnetic overload relay, self reset type, 1NO+1NC contact, setting range-216A to 500A	1
3AC1 to 3AC5	Power contactor, 3 pole, 400A, AC3 duty, 4NO+4NC add on aux. contact, Coil - 240 VAC.	5
3NVC	Power contactor, 3 pole, 40A, AC3 duty, 3NO+3NC aux. contact, Coil - 240 VAC.	1
3AT1 to 3AT3	Pneumatic timer, 2NO+2NC on-delay (0.5-60 sec.) contact, coil-240 VAC.	3
3BKT	Pneumatic timer, 2NO+2NC off-delay (0.5-60 sec.) contact, coil-240 VAC.	1
3BRC, 3CD,	Aux. contactor, 4NO+4NC contacts, 10A at AC11 duty, coil-240 VAC.	5

3HCX, 3LCX, 3SCX.		
3Q2	MCB, 2 pole, 10A at 240 VAC, 9KA breaking capacity.	1
3TIR	Thermistor relay, suitable for PT-100, 1 change over contact, supply-240VAC.	1
-	Panel illuminations, door limit switch & panel accessories.	1 set.

6.5 B.O.M OF LONG TRAVEL CONTROL PANEL:-

Sheet steel enclosed, IP-54, wall mounting type, housing following components.		
Symbol	Description	Qty.
6MCCB	MCCB, 3 Pole, 630 A at 415 VAC, 50KA breaking capacity.	1
6CF1- 6CR1, 6CF2- 6CR2	Power contactor, 3 pole, 400A, AC3 duty, 2NO+2NC aux. contact, Coil - 240 VAC. with mechanical interlock	4
6OL1 to 6OL4	Triple pole, electromagnetic overload relay, self reset type, 1NO+1NC contact, setting range- 100A to 180A	4
6R1 to 6R16	Power contactor, 3 pole, 200A, AC3 duty, 2NO+2NC aux. contact, Coil - 240 VAC.	16
6TR1 to 6TR3	Pneumatic timer, 2NO+2NC on-delay (0.5-60 sec.) contact, coil-240 VAC.	3
6TR4 to 6TR6	Pneumatic timer, 2NO+2NC offdelay (0.5-60 sec.) contact, coil-240 VAC.	3
6B1, 6B2, 6VU	Power contactor, 3 pole, 40A, AC3 duty, 4NO+4NC add on aux. contact, Coil - 240 VAC.	3
6d1 to 6d14, 6SR1 to 6SR3, 6AF! To 6AF2, 6AR1 to 6AR2	Aux. contactor, 6NO+2NC contacts, 10A at AC11 duty, coil-240 VAC.	23
6CS1	Double pole on-off switch, 25A rated at 415VAC with ball handle	1
6MCB	MCB, 2 pole, 16A at 240 VAC, 9KA breaking capacity.	1
6TH1 to 6TH4	Thermistor relay, suitable for PT-100, 1 change over contact, supply-240VAC.	4
6F1 to 6F4	LTHRC fuse, 6A	4
6F5	LTHRC fuse, 2A	1
6H1 to 6H4	Signal lamp, cluster LED type, amber visor, 6W, 240VAC	4
-	Door limit switch & panel lighting accessories	1 set
-	Panel accessories	1 set

6.6 B.O.M OF LIGHTING DISTRIBUTION BOARD:-

Sheet steel enclosed, IP-54, wall mounting type, housing following components.		
Symbol	Description	Qty.
Q8.1	MCB, 2 pole, 32A at 240 VAC, 9KA breaking capacity.	1
Q8.2 to Q8.9.	MCB, 2 pole, 6A at 240 VAC, 9KA breaking capacity.	8
Q8.10 to Q8.14.	MCB, 2 pole, 10A at 240 VAC, 9KA breaking capacity.	5
8T2	Transformer, double wound, 240/24 V, 1 Ph	1
TS8.1, TS8.2	ON-OFF toggle switch, rated 5A at 240VAC.	2
SC8.1	Metal clad, 2 pin socket with scrapping earth, 5A, 24 VAC.	1
SC8.6	Metal clad, 3 pin socket, 5A, 240 VAC.	1

6.7 B.O.M OF ARM CHAIR CONTROL UNIT:-

<b>Sheet steel enclosed, IP-54, wall mounting type, housing following components.</b>		
<b>Symbol</b>	<b>Description</b>	<b>Qty.</b>
PB1.1	Push button, red mushroom head, 2NC contacts, 6A at AC11 duty, 240VAC.	1
BNS	Selector switch, 2 position, 4 section, rated 16A at AC11 duty.	1
SL1.7	Signal lamp, cluster LED type, green visor, 6W, 240VAC	1
SL1.8	Signal lamp, cluster LED type, red visor, 6W, 240VAC	1
1MC	Master controller, 5-0-5 position, 8 section, rated 16A at AC11 duty, joy stick type.	1
1SS	Selector switch, 3 position, 4 section, rated 16A at AC11 duty.	1
1SL1, 1SL2, 1SL3	Signal lamp, cluster LED type, clear visor, 6W, 240VAC	3
2MC	Master controller, 5-0-5 position, 8 section, rated 16A at AC11 duty, joy stick type.	1
3MC	Master controller, 5-0-5 position, 17 section, rated 16A at AC11 duty, joy stick type.	1
4MC	Master controller, 5-0-5 position, 8 section, rated 16A at AC11 duty, joy stick type.	1
5MC	Master controller, 5-0-5 position, 8 section, rated 16A at AC11 duty, joy stick type.	1
6MC	Master controller, 5-0-5 position, 12 section, rated 16A at AC11 duty, joy stick type.	1
6CS2	Selector switch, 3 position, 4 section, rated 16A at AC11 duty.	1
6H8, 6H9, 6H10	Signal lamp, cluster LED type, clear visor, 6W, 240VAC	3
-	Signal lamp, cluster LED type, clear visor, 6W, 240VAC	6

6.8 SPECIFICATION OF EMERGENCY SWITCH :-

Sheet steel enclosed, IP-54, wall mounting type, emergency switch unit housing 1 no. rotary switch with ball handle, 2 positions, 2 sections, rated 10A at 415 VAC

6.9 SPECIFICATION OF POWER JB-1 (TBB & TBMT) :-

Sheet steel enclosed, IP-54, free standing type, junction box complete with stud type power and control terminals. The junction box shall have suitable cable gland plate at top, bottom and two sides. The terminals shall be laid in four horizontal rows with 250mm spacing between the rows.

<b>Row no. from top</b>	<b>Type of terminals &amp; qty. (Elmex or eqvt.)</b>
1	CTB-250 ( 15 nos. )
2	CTB-250 ( 15 nos. )
3	CTB-170 ( 10 nos. ) + CTB-110 ( 10 nos )
4	CAT-M4 ( 50 nos )

6.10 SPECIFICATION OF POWER JB-2 (TBAG & TBAT) :-

Sheet steel enclosed, IP-54, free standing type, junction box complete with stud type power and control terminals. The junction box shall have suitable cable gland plate at top, bottom and two sides. The terminals shall be laid in three horizontal rows with 250mm spacing between the rows.

Row no. from top	Type of terminals & qty. (Elmex or eqvt. )
1	CTB-250 ( 15 nos. )
2	CTB-170 ( 10 nos. ) + CTB-110 ( 10 nos )
3	CAT-M4 ( 50 nos )

**6.11 SPECIFICATION OF CONTROL JUNCTION BOX ( 12 terminals) :-**  
**Sheet steel enclosed, IP-54, wall mounting type, junction box complete with 10 nos. of stud type control terminals (CAT-M4).**

**6.12 SPECIFICATION OF CONTROL JUNCTION BOX ( 6 terminals) :-**  
**Sheet steel enclosed, IP-54, wall mounting type, junction box complete with 6 nos. of stud type control terminals (CAT-M4).**

## 7.0 SCOPE OF SUPPLY

### 7.1 SCOPE OF SUPPLY OF PANELS :-

Sl.No.	Description	Item code	Qty. per crane	Total Qty.
7.1.1	Isolator panel		1	1
7.1.2	Protective panel		1	1
7.1.3	Distribution panel		1	1
7.1.4	Aux. Hoist-2 control panel		1	1
7.1.5	LT control panel		1 set	1 set
7.1.6	Lighting distribution board		1	1
7.1.7	Arm chair control unit		1	1
7.1.8	Emergency Switch		4	4
7.1.9	Power JB-1 (TBB & TBMT )		2	2
7.1.10	Power JB-2 (TBAG & TBAT )		2	2
7.1.11	Control JB-1 ( 12 Terminals )		6	6
7.1.12	Control JB-2 ( 6 Terminals )		10	10

### 7.2 SUPPLY OF COMMISSIONING SPARES :-

Sl.No.	Description	Qty.
7.2.1	HRC fuse of each rating	3
7.2.2	Push buttons each type	2
7.2.3	Signal lamp of each type	2

### 7.3 COMMISSIONING :-

**Supervision of commissioning of the panels at DSP, Durgapur is in the scope of the tenderer.**

## 8.0 INFORMATION ALONG WITH THE OFFER :-

### 8.3 INFORMATION ALONG WITH THE OFFER FOR CONTROL PANELS & ACCESSORIES :-

The following information shall be given with the offer :-

- 8.3.1 Pointwise confirmation of the enquiry specification, clearly indicating deviations, if any.
- 8.3.2 Overall dimensions and mounting dimensions of the Panels.
- 8.3.3 B.O.M of the panels indicating rating, type & make of devices.
- 8.3.4 Degree of protection for the enclosure
- 8.3.5 List of commissioning spares.
- 8.3.6 List of 2 year's operational spares with item wise prices.

## 9.0 DRGS. AND DOCUMENTS :-

- 9.1 Within 2 weeks of order placement the successful tenderer shall submit the following drawings in 10 set for approval by CET/DSP. HEC will submit these drawings to CET/DSP. The tenderer has to get these drawings approved by DSP/CET. Any minor comments given by CET/DSP during drawing approval stage is to be incorporated by the tenderer without any price implication.

- i) GA Drg. of Panels indicating bracing arrangement.



- ii) Schematic drg. and B.O.M. (Typical schematic drawing shall be given to the successful tenderer. )
- iii) Wiring diagram of panels.

9.2 The first sheet of each drg. shall have name plate as given in the annexure.

9.3 Weight of the individual electrical panel shall be indicated in the drg.

9.4 The following information shall be supplied prior to commissioning.

- 10 sets of all the approved drawings.
- 10 sets of as built drawings.
- 1 set of soft copy of the drgs. in AUTOCAD package on CD.
- 5 sets of operation and maintenance manual containing:
  - i) Instructions for erection.
  - ii) Instructions for pre commissioning check up.
  - iii) Operation abnormal conditions.
  - iv) Write up on controls and interlocks
  - v) Recommended inspection point
  - vi) Schedule of preventive maintenance.
  - vii) Ordering information for all replaceable parts.
  - viii) Electrical schematics
  - ix) Consolidated list of electrical equipment, indicating make, type, rating, settings etc.
  - x) 5 sets of inspection reports and test certificates in the form of a book.
  - xi) Any other special feature.

#### 10.0 INSPECTION & TESTING :-

Inspection and testing shall be carried out by authorized representative of HEC as per inspection procedure and approved QAP.

#### 11.0 LIST OF PREFERRED MAKE OF COMPONENTS :-

Sl.No.	Item	Recommended Makes
1.	Air circuit breaker	Siemens/ EE / Alstom / NGEF / Groupe Schneider / L&T
2.	Isolator	Siemens / C&S / L&T / Tele-mechanique / Groupe Schneider
3.	Moulded case circuit breaker	CGL / EE / L&T / HAVELLS
4.	H.R.C fuses	Siemens / L&T / EE / Standard
5.	AC power contactors	Siemens / L&T / AY / BCH / TM / CGL
6.	DC power contactors	BCH / TM / BHEL
7.	Bimetalic relays (Electronic)	Siemens / L&T / C&S / TM / CGL
8.	Electromagnetic overload relays	KILBURN / BCH / BHEL
9.	Single phase preventer	L&T / MINILEC
10.	Control switches	Siemens / Kaycee / EE / L&T / BCH / EPCC
11.	Push buttons	Siemens / L&T / BCH / Vaishno / EE / C&S
12.	Timer	BCH / L&T / Siemens / TM
13.	Control contactor	Siemens / L&T / AY / BCH / C&S(TM) / CGL
14.	Control transformers	Indcoil / Siemens / AEP / BCH
15.	Cluster LED type indicating lamps	Binay / Essen / Vaishno
16.	Hooter / Buzzer / Bell	GETCO / KHARAJ / EDISON
17.	Master controller	BCH / EPCC / Strom krafts / IS
18.	Protection and auxiliary relays	EE / EASUN / ALSTHOM
19.	Ammeter / Voltmeter	AEP / IMP / MECO
20.	Light fittings	Philips / GEC / Bajaj / Crompton Greaves
21.	Switch socket	CGL / B&C / BCH / GEC
22.	Miniature circuit breaker	MDS / Standard
23.	Fuse switch unit	ALSTHOM / INDO ASIAN / ELCON /

		<b>Siemens / L&amp;T / C&amp;S / EE / CGL</b>
<b>24.</b>	<b>Cables</b>	<b>CCI / UNIVERSAL / INCAB / NICCO / FGI / RPG</b>
<b>25.</b>	<b>Cable gland</b>	<b>ELECTROMAG / CCI</b>
<b>26.</b>	<b>Cable lug</b>	<b>Dowells/ Forward / Lupco</b>
<b>27.</b>	<b>Terminal block</b>	<b>Essen / Elmex / Tosha / Connectwell / C&amp;S</b>
<b>Note :- In case of items not appearing in the preferred make list, makes shall be subjected to approval by CET/DSP.</b>		