General Note: **BHARAT HEAVY ELECTRICALS LIMITED**
(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

PHONE : 2577359
GRAMS : BHARATELEC
FAX NO: 2520719
E-mail :
Web :

429-002/A

OFFICE COPY

Collective No.	Enquiry Date	Due Date For Quotation
1701402331	19.12.2014	20.01.2015

Please quote Enquiry No, Date and due date in all correspondences.
This is only a request for quotation and not an order

Item	Description	Unit	Quantity	Delivery Schedule Quantity	Delivery Schedule Date
10	L068319759301001 PASSENGER CUM GOODS ELEVATOR OF CAPACITY :3000kg; SPEED: 0.55m/sec AS PER SPECIFICATION : CI:0683:ELEV/REV.00. 1) NUMBER OF LANDINGS SHALL BE 13 INCLUDING GROUND FLOOR. 2) LANDING LEVELS OF ELEVATOR SHALL BE AS FOLLOWS; 0.0mm, 11550mm, 19425mm, 29225mm, 38500mm, 45500mm, 56525mm, 64575mm, 74550mm, 86800mm, 99225mm, 105175mm & 112175mm. 3) FINISHED FLOOR LEVEL (FFL) = (-)200mm.	NO	2.000	2.00	24.11.15
20	L068519759301001 GOODS CUM PASSENGER ELEVATOR - CAPACITY :3000kg; SPEED: 0.55m/sec AS PER SPECIFICATION : TDC:TCI:263:RC/REV.02. 1) NUMBER OF LANDINGS SHALL BE 15 INCLUDING GROUND FLOOR. LANDING LEVELS OF ELEVATOR SHALL BE AS FOLLOWS; 0.0mm, 4240mm, 9350mm, 22500mm, 27450mm, 30350mm, 34310mm, 38550mm, 44700mm, 50700mm, 56650mm, 60450mm, 67250mm, 73530mm & 82350mm. 2) FINISHED FLOOR LEVEL (FFL) = (-)200mm 3) TRAP DOOR & ENTRANCE AT TG SIDE 4) DESIGN,CONSTRUCTION AND FINISH OF CAR: SS SHEET FABRICATED (ASTM 304 NO:4 HAIRLINE FINISH). 5) CAR DOOR : SS PANEL(ASTM 304 NO:4 HAIRLINE FINISH)CENTRE OPENING. 6) CAR ENCLOSURE : SS CONSTRUCTION (ASTM 304 NO:4 HAIRLINE FINISH)	NO	1.000	1.00	24.11.15
30	L068519759301002 PASSENGER ELEVATOR - CAPACITY :1088kg; SPEED: 1.00m/sec AS PER SPECIFICATION : TDC:TCI:263:RC/REV.02. 1) NUMBER OF LANDINGS SHALL BE 15 INCLUDING GROUND FLOOR. LANDING LEVELS OF ELEVATOR SHALL BE AS	NO	1.000	1.00	24.11.15

The offers should reach us 30 minutes before the time of opening of tenders.
The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening.Late and delayed offers are liable to be rejected.

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

K. MUTHUKUMARASAMY
Engineer
MANAGER / PURCHASE
(FOSSIL BOILERS)

BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

1701402331 / 19.12.2014 **23505**

FOLLOWS;
0.0mm, 4240mm, 9350mm, 22500mm, 27450mm, 30350mm, 34310mm, 38550mm, 44700mm, 50700mm, 56650mm, 60450mm, 67250mm, 73530mm & 82350mm.
2) FINISHED FLOOR LEVEL (FFL) = (-)200mm
3) TRAP DOOR & ENTRANCE AT TG SIDE
4) DESIGN,CONSTRUCTION AND FINISH OF CAR: SS SHEET FABRICATED (ASTM 304 NO:4 HAIRLINE FINISH).
5) CAR DOOR : SS PANEL(ASTM 304 NO:4 HAIRLINE FINISH)CENTRE OPENING.
6) CAR ENCLOSURE : SS CONSTRUCTION (ASTM 304 NO:4 HAIRLINE FINISH).

40	L171319759301001 PASSENGER CUM GOODS ELEVATOR - CAPACITY :2000kg; SPEED: 0.55m/sec AS PER SPECIFICATION : TDC:TCI:263:RC/REV.02. 1) NUMBER OF LANDINGS SHALL BE 13 INCLUDING GROUND FLOOR. LANDING LEVELS OF ELEVATOR SHALL BE AS FOLLOWS; 0.0mm, 8500mm, 17350mm, 21700mm, 24900mm, 28700mm, 32800mm, 36600mm, 45900mm, 58600mm, 61400mm, 69800mm & 80800mm. 2) FINISHED FLOOR LEVEL (FFL) = (-)200mm 3) TRAP DOOR & ENTRANCE AT BOILER SIDE 4) DESIGN,CONSTRUCTION AND FINISH OF THE CAR: SS SHEET FABRICATED (ASTM 304 NO:4 HAIRLINE FINISH). 5) CAR DOOR & LANDING DOOR - SS PANEL(ASTM 304 NO:4 HAIRLINE FINISH) CENTRE OPENING. 6) CAR ENCLOSURE - SS CONSTRUCTION (ASTM 304 NO:4 HAIRLINE FINISH). ENCLOSURE: 1) SPECIFICATION : TDC:TCI:263:RC/REV.02. REMARKS : 1) PACKING PROCEDURE : QA:CI:STD:PR:02/02 SHALL BE FOLLOWED. 2) VENDOR QP SHALL BE SUBMITTED AFTER PLACEMENT OF P.O. AND SUBJECTED TO CUSTOMER APPROVAL. 3) VALUE REFERENCE: PPO. 7000014206 DT 17/08/2012.	NO	2.000	2.00	24.11.15
50	L171519759302001 GOODS CUM PASSENGER ELEVATOR WITH CAPACITY - 3000 KG & SPEED - 0.55 MPS AS PER SPECIFICATION : TDC:TCI:263/RC/REV.02. NO. OF LANDINGS SHALL BE 16 INCLUDING GROUND FLOOR. LANDING LEVEL OF THE ELEVATOR SHALL BE AS FOLLOWS	NO	1.000	1.00	24.11.15

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Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

K. MUTHUKUMARASAMY
MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,

Materials Management / 901
BHEL. TIRUCHY 620 014.

BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

1701402331 / 19.12.2014 **23505**

	0.0mm, 4710mm, 9700mm, 21000mm, 25000mm, 29200mm, 32200mm, 35500mm, 42500mm, 48000mm, 52000mm, 58000mm, 65100mm, 74100mm, 83500mm, 89550mm. ENTRY OF THE ELEVATORS SHALL BE TOWARDS BOILER SIDE. FINISHED FLOOR LEVEL SHALL BE (-)200mm. SPECIAL REQUIREMENTS: 1. DESIGN , CONSTRUCTION AND FINISH OF CAR : CAR INSIDE ENCLOSURE INCLUDING INNER SIDE OF DOOR SHALL BE OF STAINLESS STEEL PLATE OF GRADE - SS 304 BRIGHT FINISH. 2. LANDING DOORS SHALL BE OF FIRE RESISTANT (TYPE-F DOORS) FOR ATLEAST ONE HOUR AND SMOKE TIGHT.				
60	L171519759302002 PASSENGER ELEVATOR WITH CAPACITY - 1088 KG & SPEED - 1.00 MPS AS PER SPECIFICATION : TDC:TCI:263/RC/REV.02. NO. OF LANDINGS SHALL BE 16 INCLUDING GROUND FLOOR. LANDING LEVEL OF THE ELEVATOR SHALL BE AS FOLLOWS 0.0mm, 4710mm, 9700mm, 21000mm, 25000mm, 29200mm, 32200mm, 35500mm, 42500mm, 48000mm, 52000mm, 58000mm, 65100mm, 74100mm, 83500mm, 89550mm. ENTRY OF THE ELEVATORS SHALL BE TOWARDS BOILER SIDE. FINISHED FLOOR LEVEL SHALL BE (-)200mm. SPECIAL REQUIREMENTS: 1. DESIGN , CONSTRUCTION AND FINISH OF CAR : CAR INSIDE ENCLOSURE INCLUDING INNER SIDE OF DOOR SHALL BE OF STAINLESS STEEL PLATE OF GRADE - SS 304 BRIGHT FINISH. 2. LANDING DOORS SHALL BE OF FIRE RESISTANT (TYPE-F DOORS) FOR ATLEAST ONE HOUR AND SMOKE TIGHT.	NO	1.000	1.00	24.11.15
70	L171619759302001 GOODS CUM PASSENGER ELEVATOR WITH CAPACITY - 3000 KG & SPEED - 0.55 MPS AS PER SPECIFICATION : TDC:TCI:263/RC/REV.02. NO. OF LANDINGS SHALL BE 16 INCLUDING GROUND FLOOR. LANDING LEVEL OF THE ELEVATOR SHALL BE AS FOLLOWS 0.0mm, 4710mm, 9700mm, 21000mm, 25000mm, 29200mm, 32200mm, 35500mm, 42500mm, 48000mm, 52000mm, 58000mm, 65100mm, 74100mm, 83500mm, 89550mm. ENTRY OF THE ELEVATORS SHALL BE TOWARDS BOILER SIDE. FINISHED FLOOR LEVEL SHALL BE (-)200mm. SPECIAL REQUIREMENTS:	NO	2.000	2.00	24.11.15

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The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening.Late and delayed offers are liable to be rejected.

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

24-12-14

MANAGER/PURCHASE
(FOSSIL BOILERS)
Yours faithfully,

K. MUTHUKUMARASAMY
Engineer
Materials Management / BOI
BHEL. TIRUCHY 620 014

BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

1701402331 / 19.12.2014 **23505**

	1. DESIGN , CONSTRUCTION AND FINISH OF CAR : CAR INSIDE ENCLOSURE INCLUDING INNER SIDE OF DOOR SHALL BE OF STAINLESS STEEL PLATE OF GRADE - SS 304 BRIGHT FINISH. 2. LANDING DOORS SHALL BE OF FIRE RESISTANT (TYPE-F DOORS) FOR ATLEAST ONE HOUR AND SMOKE TIGHT.				
80	L171619759302002 PASSENGER ELEVATOR WITH CAPACITY - 1088 KG & SPEED - 1.00 MPS AS PER SPECIFICATION : TDC:TCI:263/RC/REV.02. NO. OF LANDINGS SHALL BE 16 INCLUDING GROUND FLOOR. LANDING LEVEL OF THE ELEVATOR SHALL BE AS FOLLOWS 0.0mm, 4710mm, 9700mm, 21000mm, 25000mm, 29200mm, 32200mm, 35500mm, 42500mm, 48000mm, 52000mm, 58000mm, 65100mm, 74100mm, 83500mm, 89550mm. ENTRY OF THE ELEVATORS SHALL BE TOWARDS BOILER SIDE. FINISHED FLOOR LEVEL SHALL BE (-)200mm. SPECIAL REQUIREMENTS: 1. DESIGN , CONSTRUCTION AND FINISH OF CAR : CAR INSIDE ENCLOSURE INCLUDING INNER SIDE OF DOOR SHALL BE OF STAINLESS STEEL PLATE OF GRADE - SS 304 BRIGHT FINISH. 2. LANDING DOORS SHALL BE OF FIRE RESISTANT (TYPE-F DOORS) FOR ATLEAST ONE HOUR AND SMOKE TIGHT.	NO	2.000	2.00	24.11.15
90	L171819759301001 PASSENGER CUM GOODS ELEVATOR - CAPACITY :1360 kg; SPEED: 0.75 m/sec AS PER SPECIFICATION : TDC:TCI:263:RC/REV.02 WITH 14 LANDING LEVELS [0.00mm, 8500mm, 17350mm, 21700mm, 24900mm, 28700mm, 32800mm, 36600mm, 42800mm, 48800mm, 58600mm, 69800mm, 77200mm, 80800mm] [OPERATING HEIGHT: 80.8Mtr.] NOTE:- 1. FINISHED FLOOR LEVEL IS (-)200mm. 2. ENTRANCE & TRAP DOOR AT BOILER SIDE. REMARKS : 1. THE SPECIFICATION TDC:TCI:263:RC/REV.01 IS ALREADY AVAILABLE WITH MM/FB. 2. PACKING PROCEDURE : QA:CI:STD:PR:02/02 SHALL BE FOLLOWED. 3. REF: P.P.O VALUE 7000012619 DTD. 17/06/2011. IN ADDITION TO THAT ADDITIONAL TRAVEL HEIGHT AND SPEED (0.75m/sec) PRICE AS AVAILABLE IN THE LAST RATE CONTRACT IS INCLUDED.	NO	2.000	2.00	24.11.15

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The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening.Late and delayed offers are liable to be rejected.

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

19.12.14

MANAGER / PURCHASE
(FOSSIL BOILERS)

K. MUTHUKUMARASAMY
Engineer
Materials Management / BOI
BHEL, TIRUCHY - 620 014.

BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

1701402331 / 19.12.2014 **23505**

100	L180419759301001 GOODS CUM PASSENGER ELEVATOR - CAPACITY :3000kg; SPEED: 0.55m/sec AS PER SPECIFICATION : TDC:TCI:263:RC/REV.02. 1) NUMBER OF LANDINGS SHALL BE 23 INCLUDING GROUND FLOOR. LANDING LEVELS OF ELEVATOR SHALL BE AS FOLLOWS; 0.0mm, 5700mm, 9000mm, 13700mm, 18000mm, 25850mm, 28900mm, 31800mm, 35100mm, 38300mm, 41500mm, 44800mm, 48900mm, 51800mm, 55800mm, 60500mm, 68900mm, 75800mm, 78900mm, 82900mm, 90400mm, 97500mm & 100500mm. 2) FINISHED FLOOR LEVEL (FFL) = (-)200mm 3) TRAP DOOR & ENTRANCE AT BOILER SIDE 4) DESIGN,CONSTRUCTION AND FINISH OF CAR: SS SHEET FABRICATED (ASTM 304 NO:4 HAIRLINE FINISH). 5) CAR DOOR : SS PANEL(ASTM 304 NO:4 HAIRLINE FINISH)CENTRE OPENING. 6) CAR ENCLOSURE : SS CONSTRUCTION (ASTM 304 NO:4 HAIRLINE FINISH)	NO	2.000	2.00	24.10.15
110	L180419759301002 PASSENGER ELEVATOR - CAPACITY :1088kg; SPEED: 1.00m/sec AS PER SPECIFICATION : TDC:TCI:263:RC/REV.02. 1) NUMBER OF LANDINGS SHALL BE 23 INCLUDING GROUND FLOOR. LANDING LEVELS OF ELEVATOR SHALL BE AS FOLLOWS; 0.0mm, 5700mm, 9000mm, 13700mm, 18000mm, 25850mm, 28900mm, 31800mm, 35100mm, 38300mm, 41500mm, 44800mm, 48900mm, 51800mm, 55800mm, 60500mm, 68900mm, 75800mm, 78900mm, 82900mm, 90400mm, 97500mm & 100500mm. 2) FINISHED FLOOR LEVEL (FFL) = (-)200mm 3) TRAP DOOR & ENTRANCE AT BOILER SIDE 4) DESIGN,CONSTRUCTION AND FINISH OF CAR: SS SHEET FABRICATED (ASTM 304 NO:4 HAIRLINE FINISH). 5) CAR DOOR : SS PANEL(ASTM 304 NO:4 HAIRLINE FINISH)CENTRE OPENING. 6) CAR ENCLOSURE : SS CONSTRUCTION (ASTM 304 NO:4 HAIRLINE FINISH).	NO	2.000	2.00	24.10.15
120	L180619759301001 GOODS CUM PASSENGER ELEVATOR - CAPACITY :3000kg; SPEED: 0.55m/sec AS PER SPECIFICATION : TDC:TCI:263:RC/REV.02. 1) NUMBER OF LANDINGS SHALL BE 22 INCLUDING GROUND FLOOR.	NO	2.000	2.00	24.11.15

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The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening.Late and delayed offers are liable to be rejected.

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

16.12.14

K. MUTHUKUMARASAMY
Engineer
Materials Management / 601
BHEL TIRUCHY - 620 014.

MANAGER / PURCHASE
(FOSSIL BOILERS)

Yours faithfully,

BHARAT HEAVY ELECTRICALS LIMITED
(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

1701402331 / 19.12.2014 **23505**

	LANDING LEVELS OF ELEVATOR SHALL BE AS FOLLOWS; 0.0mm, 5700mm, 9000mm, 13700mm, 18000mm, 25850mm, 28900mm, 31800mm, 35100mm, 38300mm, 41500mm, 44800mm, 48900mm, 51800mm, 60500mm, 68900mm, 75800mm, 78900mm, 82900mm, 90400mm, 97500mm & 100500mm. 2) FINISHED FLOOR LEVEL (FFL) = (-)200mm 3) TRAP DOOR & ENTRANCE AT BOILER SIDE 4) DESIGN,CONSTRUCTION AND FINISH OF CAR: SS SHEET FABRICATED (ASTM 304 NO:4 HAIRLINE FINISH). 5) CAR DOOR : SS PANEL(ASTM 304 NO:4 HAIRLINE FINISH)CENTRE OPENING. 6) CAR ENCLOSURE : SS CONSTRUCTION (ASTM 304 NO:4 HAIRLINE FINISH).				
130	L180619759301002 PASSENGER ELEVATOR - CAPACITY :1088kg; SPEED: 1.00m/sec AS PER SPECIFICATION : TDC:TCI:263:RC/REV.02. 1) NUMBER OF LANDINGS SHALL BE 22 INCLUDING GROUND FLOOR. LANDING LEVELS OF ELEVATOR SHALL BE AS FOLLOWS; 0.0mm, 5700mm, 9000mm, 13700mm, 18000mm, 25850mm, 28900mm, 31800mm, 35100mm, 38300mm, 41500mm, 44800mm, 48900mm, 51800mm, 60500mm, 68900mm, 75800mm, 78900mm, 82900mm, 90400mm, 97500mm & 100500mm. 2) FINISHED FLOOR LEVEL (FFL) = (-)200mm 3) TRAP DOOR & ENTRANCE AT BOILER SIDE 4) DESIGN,CONSTRUCTION AND FINISH OF CAR: SS SHEET FABRICATED (ASTM 304 NO:4 HAIRLINE FINISH). 5) CAR DOOR : SS PANEL(ASTM 304 NO:4 HAIRLINE FINISH)CENTRE OPENING. 6) CAR ENCLOSURE : SS CONSTRUCTION (ASTM 304 NO:4 HAIRLINE FINISH).	NO	2.000	2.00	24.11.15

General Note:

1. PACKING PROCEDURE : QA:CI:STD:PR:02/02 SHALL BE FOLLOWED.
2. VENDOR QP SHALL BE SUBMITTED AFTER PLACEMENT OF P.O.
3. OFFER SHALL BE FORWARDED IN DUPLICATE ALONG WITH COMPLAINCE TO SPEC
4. OFFER SHALL BE FORWARDED IN TWO PART BID.(TECHNICAL & COMMERCIAL BID SEPERATELY
5. This is an open Tender enquiry and same has been published onwwww.bhel.com, and www.tenders.gov.in. A press advertisement will also be published in leading News papers.

Enclosures:

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The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening.Late and delayed offers are liable to be rejected.

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

K. MUTHUKUMARASAMY
Engineer
Materials Management / BQ
BHEL, TIRUCHY - 620 014.

MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,

BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

1701402331 / 19.12.2014 23505

1. Scope & spl. conditions
2. TDC NEYVELI - CI 0683 ELEV Rev 00
3. TDC TCI 263 RC REV 02
4. COM COND WITH LOADING
5. ENQ TERMS AND COND
6. SD ENQ DEVIATION
7. MANUFA QP
8. QA CI STD PR 02 REV 02

"LD clause has to be confirmed without fail."

PR Links

Material.	PR.No	PR.Item.	Quanity	Acc. Assign	Customer Number
L068319759301001	108481766	00010	1.000	U5/0683-SY-605-1-97-593	U5/0683
L068319759301001	108481767	00010	1.000	U5/0684-SY-605-1-97-593	U5/0684
L068519759301001	106048289	00010	1.000	U5/0685-SY-598-1-97-593	U5/0685
L068519759301002	106048289	00020	1.000	U5/0685-SY-598-1-97-593	U5/0685
L171319759301001	106048178	00010	1.000	U6/1713-SY-571-1-97-593	U6/1713
L171319759301001	106048179	00010	1.000	U6/1714-SY-571-1-97-593	U6/1714
L171519759302001	104732244	00010	1.000	U6/1715-SY-595-1-97-593	U6/1715
L171519759302002	104732244	00020	1.000	U6/1715-SY-595-1-97-593	U6/1715
L171619759302001	105130660	00010	1.000	U6/1716-SY-595-1-97-593	U6/1716
L171619759302001	105130661	00010	1.000	U6/1717-SY-595-1-97-593	U6/1717
L171619759302002	105130660	00020	1.000	U6/1716-SY-595-1-97-593	U6/1716
L171619759302002	105130661	00020	1.000	U6/1717-SY-595-1-97-593	U6/1717
L171819759301001	104035665	00010	1.000	U6/1718-SY-712-1-97-593	U6/1718
L171819759301001	104035666	00010	1.000	U6/1719-SY-712-1-97-593	U6/1719
L180419759301001	107507628	00010	1.000	U8/1804-SY-586-1-97-593	U8/1804
L180419759301001	107507629	00010	1.000	U8/1805-SY-586-1-97-593	U8/1805
L180419759301002	107507628	00020	1.000	U8/1804-SY-586-1-97-593	U8/1804
L180419759301002	107507629	00020	1.000	U8/1805-SY-586-1-97-593	U8/1805
L180619759301001	109056317	00010	1.000	U8/1806-SY-738-1-97-593	U8/1806
L180619759301001	109056318	00010	1.000	U8/1807-SY-738-1-97-593	U8/1807
L180619759301002	109056317	00020	1.000	U8/1806-SY-738-1-97-593	U8/1806
L180619759301002	109056318	00020	1.000	U8/1807-SY-738-1-97-593	U8/1807

list of suppliers

RFQ-5200003564
Open Tender Dummy Code

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Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED

MANAGER (PURCHASE
(FOSSIL Boilers)
Yours faithfully,

Materials Management / BOI
BHEL. TIRUCHY - 620 014.

BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

1701402331 / 19.12.2014	23505

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Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

K. BUTHUKUMARASAMY
Engineer
Materials Management / BQ
BHEL TIRUCHY 620 014.

MANAGER / PURCHASE
(FOSSIL BOILERS)

Yours faithfully,

Bharat Heavy Electricals Ltd

(A.Govt.of India Undertaking)

Materials Management/BOI - Trichy- 620 014. INDIA

Phone : 91- 0431-2577434 e-mail: npeswar@bheltry.co.in
Fax No: 91-0431-2520719

Scope of supply &
SPECIAL CONDITIONS OF ENQUIRY

97LIF/18 **Date:19.12.2014**

We require the Supply & Commissioning of Passenger cum Goods Elevator as per the technical delivery conditions at BHEL Project site NPGCL Nabinagar, Suratgarh, Unchahar, OPGCL, Gadarwara, Neyveli & Darlipali . Kindly send your competitive offer immediately for our consideration. The tender will be opened positively **on 20.01.2015 at 14.30 IST.**

1. Kindly go through the enclosed specification Nos: **TDC TCI 263 RC REV 02 & CI:683:ELEV REV 00**, and submit your competitive offer in duplicate indicating compliance or deviation for each point of the specification with a validity of 2 years for ordering.
You may have to submit the tender in two parts i.e. **Technical cum commercial bid in separate sealed cover and Price bid in another cover separately**. After technical conformance the price bid will be opened.

2. Your offer shall be supported by relevant technical documents like Quality plans, catalogues, leaflet, General arrangement drawings etc for technical evaluation and for getting customer approvals.

3. Operational spares required for Elevator may be offered

5. Kindly quote your rates on firm price basis with the offer validity of minimum 1-1/2 yeas (18 months). The same shall be per unit basis for each item and on FOR, BHEL, project sites as mentioned above.

6. Only Manufacturers are eligible to participate in this bid. Traders & Dealers are not eligible to participate in this bid. If authorized dealer of a manufacturer is participating in the bid they have to furnish the mutually signed Agency Agreement.

7. Prices shall be firm till entire Supply & Commissioning of Passenger cum Goods Elevator as per the Purchase Order. Price variation clause is not acceptable.

8.Lowest prices received against BHEL enquiries need not be the technically acceptable one and in that case, BHEL reserves the right not to consider the same.

9.Supplier's has to submit test reports for each sl nos as per our TDC conditions and packing also to be done for each item separately

10.**Payment terms:-**80% payment will be made after 45 days on acceptance of material at BHEL Project Site and submission PBG for 10% of the order value.20% payment will be made on handing over of the Elevator. No other Payment term is acceptable to BHEL.

11.Delivery schedule shall be strictly as per BHEL requirements only which is indicated in the Enquiry / Purchase Order sheet that will be issued. In case of delay in delivery, beyond the end delivery dates given in the Purchase Order sheet, Liquidated Damage clause will be applicable at the rate of 0.5 % of the total order value per week or part there of subject to a maximum of 10% of the total order value. For staggered delivery schedule , LD shall be 0.5% of the undelivered portion per week of the delay or part there of subject to a maximum of 10% of the tot6al order value.

12.The delivery of the item shall be strictly as per BHEL's enquiry/ Purchase orders. In case of urgency, the delivery period have to be altered to meet BHEL Project site's requirement.

13.Confirmation for compliance is to be given in the offer for all the conditions specified in the respective Technical Deliver Conditions.

14. Every dispatch of material shall accompany the packing list, detailing the Numbers of items. An advance Copy of dispatch details shall be furnished to MM/BOI/BHEL/Tiruchy-14.

15. The materials are to be dispatched with proper packing and binding.

16.The offers are invited in two parts.

a) Techno commercial bid covering Technical Conditions, Delivery conditions, acceptance of all our commercial conditions and a copy of un priced price bid. **(Please submit a separate envelope super scribing the enquiry no for techno commercial bid).**

b) **The vendors already under MOU (covered in our approved vendor list) have to submit the compliance of Specification and the commercial condition exclusively in this NIT separately.**

c) Price bid covering only unit price each case. **(Please submit a separate envelope super scribing the enquiry no for price bid.)**

17.Techno Commercial bid will be opened first. Price bid of technically suitable vendors only will be opened with prior intimation.

18.In addition to all the above conditions, BHEL standard terms & conditions given as a separate annexure shall also be applicable to the extent they are not superseded by the above conditions.

19.Non-adherence to these special conditions of enquiry and BHEL's standard terms and conditions will lead to disqualification of offer.

20. The tenders may be submitted in our office - Materials Management/BOI, Fouth floor, 24 Building, BHEL –Tiruchirappalli-620014

21. Signed Integrity Pact (IP) should be furnished along with the offer. IP should be signed by authorized official of the Bidder / Vendor/ Contractor.

22. This tender will be monitored by an Independent External Monitor (IEM) by name Shri. D.R.S. Chaudhary, IAS (Retd). Flat no. L-202 & 203, First Floor, Ansal Lake View Enclave, Shamla hills, Bhopal. 462 013 (M.P.). Ph: +91 755 4050495
E-mail: dilip.chaudhary@icloud.com

Note For vendors who are not in our list of approved vendors:-

Vendors who are not in our list of approved vendors are required to full fill the following conditions.

- The vendors should submit the offers along with duly filled vendor registration forms which can be down loaded from our website www.bhel.com. Vendors should also apply through the web and furnish the reference no in the hard copy also. Offer without the above forms & the relevant supporting documents will not be considered for technical evaluation.
- The vendor should submit credentials of supplying their products for a minimum of 3 years to 2 power plants

Along with the offer (Technical/Commercial bid and price bid in two separate sealed covers) you are requested to indicate from whom you are going to source the components also send a typical type Test Certificate for the components from that maker. Without the type Test Certificate, your offer may not be considered for further processing's.

Bharat Heavy Electricals Limited

HIGH PRESSURE BOILER PLANT, TIRUCHIRAPALLI-620014.

CONTROLS & INSTRUMENTATION

CI:0683:ELEV	PAGE 01 OF 08

SPECIFICATION FOR

GOODS CUM PASSENGER ELEVATOR

REV. NO	DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED.
00	22-10-2014	INITIAL RELEASE	S.Rajavelu		

CLAUSE NO.	TECHNICAL DELIVERY CONDITIONS		VENDOR COMPLIANCE (Refer Note: 1)
1.0	**SITE CONDITIONS**		
	Altitude above MSL	Less than 1000m.	
	Relative humidity	100%.	
	Design Ambient Temp.	50 deg.C	
	Atmosphere	Tropical, Dusty, Corrosive and highly polluted.	
	Wind loads @ 10 metres above sea level	As per IS-875(Part 3) / 1987	
2.0	**GENERAL**		
	This specification is intended to cover the design, engineering, manufacture, inspection, delivery, erection, commissioning, and maintenance & service before handing over to customer of 3 Tonne Goods cum Passenger Elevator for boiler applications. This specification shall be read along with Annexure-A and vendor to ensure all the requirements are met. Vendor shall ensure accurate, reliable and trouble-free operation in corrosive, dusty conditions and environments.		
3.0	**PRE QUALIFICATION REQUIREMENT (APPLICABLE IN CASE OF OPEN TENDER)**		
	The elevator offered shall be in satisfactory operation for similar applications in fossil fuel fired power plants of unit rating 250MW or above. Vendor shall submit a list of reference thermal plants (with elevator capacity, landing levels and travel) where their elevator is in satisfactory operation for more than one year. Commissioning and service support for the elevator shall be available in India. For Vendors already registered with BHEL and having a permanent vendor code, PRE QUALIFICATION REQUIREMENT is not applicable.		
4.0	**STATUTORY REQUIREMENTS**		
	All registration and statutory inspection fees if any, in respect of his work pursuant to this contract shall be to account of the elevator vendor. However any registration, statutory inspection fees lawfully payable under the provision of any statutory laws and its amendments from time to time, during erection in respect of the plant equipment ultimately to be owned by owner shall be to the account of the owner. Should any such inspection or registration need to be re-arranged due to the fault of the vendor or his sub-contractor, the additional fees for such inspection and / or registration shall be borne by the vendor. While the statutory payment shall be made by the owner for any registration, statutory inspection etc. during erection, the vendor shall be responsible for carrying out and co-ordinating various activities with the statutory authority as well as for obtaining the clearance and registration of the equipment.		
5.0	**REFERENCE STANDARDS**		
	The Elevators shall be designed in line with the recommendation contained in the latest editions of Standards **IS: 14665: 2000 (All Parts)**. The equipment shall comply with latest revision of Indian standard and wherever 'IS' is not available, it shall comply with the generally accepted international codes and practices.		
6.0	**SCOPE OF WORK**		
	i) Design, engineering, manufacture, inspection, delivery, erection, commissioning, successful handing over. ii) Maintenance & service during guarantee period**.** iii) Any necessary erection / commissioning spares and consumables shall be included in vendor scope. iv) Necessary tools and tackles required for maintenance or testing or inspection shall be covered in vendor scope. v) Mono-rail beam will be supplied by purchaser (BHEL) in machine room. vi) A steel ladder has to be provided for access to the pit by the Elevator vendor. vii) Guard to protect the hoist way including temporary barricades at hoist way openings by Elevator vendor. viii) Scaffolding as per erection requirement shall be provided by the Elevator vendor. After completion of handing over activities, the scaffolding materials may be taken back by the vendor. ix) All the electrical equipment including Lift well, Hoist way & machine room lighting with fittings, Power/control/trailing cables, MCCB/MCB & ELCB for 415 V AC 3ph supply and 240 V AC single phase supply (to receive the incoming feeders provided by customer) shall be included in the Elevator vendor scope. x) The vendor shall assume all responsibility in proper design and operation of each and every component of the elevator as well as the elevator as a whole. Complying with Indian electricity		

CLAUSE NO.	TECHNICAL DELIVERY CONDITIONS			VENDOR COMPLIANCE (Refer Note: 1)
	rules & Indian electricity acts and applicable statutory requirements (of Government of India and applicable States) and design as well as procedural formalities also shall be taken care by the Elevator vendor.			
7.0	**EXCLUSIONS**			
	Works not included in elevator contract, but furnished by others in accordance with local codes and regulations and the approved drawing of the Elevator vendor. i) Civil works associated with the Elevator pit. ii) Furnishing and installation of steel beams (Hoisting beams) in the machine room to lift equipment during installation and to facilitate maintenance. iii) Machine room civil works including concrete flooring. iv) Steel structures for Columns and associated bracings and approach platforms up to landing doors at each level. v) Supporting steel material between hoist way & car will be provided by BHEL.			
8.0	**ELEVATOR PARTICULARS & DESIGN PARAMETERS**			
	i) Goods Cum Passenger Elevator shall be provided with 1 no. fireman's switch (Alarm Switch). ii) The Elevator shall be located on the side of the boiler as indicated in the plant layout drawing which will be provided during detailed engineering. iii) Entry to the Elevator shall be indicated in the enquiry. Foundation plan and elevation with landing levels shall be as per purchaser (BHEL) drawings.			
9.0	**Design Criteria and Equipment specification for Goods Cum Passenger Elevator**			
	i)	Type of service	Goods cum Passenger Elevator (as per enquiry)	
	ii)	Number required	As per Annexure-A	
	iii)	Load on the Elevator		
	iv)	Rated speed		
	v)	Total travel		
	vi)	No. of floors to be served (Landing levels)	As per enquiry	
	vii)	Entrances	One number in each floor	
	viii)	Entrances and Platform size	As per IS: 14665-2000.	
	ix)	Method of control Motor Speed Control & Logic Control:	As per Annexure-A	
	x)	Flooring of Car	As per Annexure-A	
	xi)	Position of Machine room		
	xii)	Design, construction and finish of car		
	xiii)	Car door		
	xiv)	Landing door		
	xv)	Car Enclosure		
	xvi)	Lighting and fan in the car	One cabin fan and two nos. of min 15 Watts, recessed fluorescent lamp fitting for operation on 240 V, 50 Hz, AC single phase power supply.	
	xvii)	Method of operation of car	As per Annexure-A	
	xviii)	Operation of Elevator		
	xix)	Signals / Indicator	As per Annexure –A & Battery operated alarm bell and emergency light with suitable battery and battery charger and controls. Audio annunciation for car position indication shall also be provided inside the car.	
	xx)	Shaft lighting	The Elevator shaft shall be illuminated by providing the fittings at every 3m (three metres) from bottom of Lift well. Industrial bulk head / industrial bulk head with integral mounted control gear – Shaft shall be adequately illuminated. Fittings type: The make of the fittings & accessories shall be indicated in the offer.	

CLAUSE NO.	TECHNICAL DELIVERY CONDITIONS			VENDOR COMPLIANCE (Refer Note: 1)
10.0	**DETAILS OF SPECIAL TREATMENT FOR ELEVATOR**			
	As the Elevators are to be installed in a heavily polluted and dusty area in a thermal power station, the Elevator components shall be given special corrosion treatment as indicated below.			
	Painting of Elevator and accessories shall be as per Annexure-A and as said below.			
	i)	Cars & Counter weight	Anti-corrosive epoxy paint	
	ii)	Fish plates	Anti-corrosive epoxy paint	
	iii)	Car & Counter weight buffer	Anti-corrosive epoxy paint	
	iv)	Supports(Buffer)	Anti-corrosive epoxy paint	
	v)	Rail Brackets	Anti-corrosive epoxy paint	
	vi)	Bracket & rail fasteners	Zinc-passivated with epoxy painted	
	vii)	Tie down bolts	Zinc-passivated with epoxy painted	
	viii)	Machine	Anti-corrosive epoxy paint	
	ix)	Brake adjusting screw & coupling fasteners	Zinc-passivated	
	x)	Bracket	Anti-corrosive epoxy paint	
	xi)	Controller cabinet	Anti-corrosive epoxy paint as per industry standard.	
	xii)	Hall buttons	Dust-proof with aluminium face plate or stainless steel hardware.	
	xiii)	Car operating panel	Dust proof stainless steel plate and hardware.	
	xiv)	Governor	Cover and casting epoxy painted. Other components zinc plated.	
	xv)	Governor Tension frame	Hot dip galvanised and anti-corrosive epoxy paint with M.S. shaft for sheave.	
	xvi)	Car frame, level brace rods and counter weight frame	Epoxy paint as per IS-1477 Part 1 & 2.	
	xvii)	Safety equipment (Linkages)	Zinc-plated	
	xviii)	Safety switch and car gate switch	IP-65. Dust proof heavily zinc plated arm, stainless steel shaft and housing as per vendor standard.	
	xix)	Guide shoe	Zinc-plated	
	xx)	Cam bar mountings and channels	Zinc-plated and anti-corrosive epoxy paint	
	xxi)	Counter weight frame	Anti-corrosive epoxy paint	
	xxii)	Guide shoe with Nylon ribs	Zinc-plated	
	xxiii)	Filter weights	Anti-corrosive epoxy paint	
	xxiv)	Rope fasteners	Zinc-passivated and chromate dipped	
	xxv)	Hoist rope	Greased after galvanising / self-lubricating	
	xxvi)	Governor rope	Greased after galvanising / self-lubricating	
	xxvii)	Car enclosure, interior gate, car door and landing door	Anti-corrosive two coats baked enamel paint	
	xxviii)	Alarm and door open bells (Electronic hooter)	Painted.	
	xxix)	Junction box	Metallic body - dust proof with Anti-corrosive epoxy paint	
	xxx)	Hall position indicator and car position indicator	Dust proof with stainless steel enclosure and Face plate.	
11.0	**MECHANICAL EQUIPMENT**			
11.1	**ELEVATOR CAR**			
	As per Annexure-A			
11.2	**CAR DOOR**			
	As per Annexure-A			
11.3	**LANDING DOORS**			
	As per Annexure-A			
11.4	**LOAD PLATE**			
	A load plate displaying the rated load of the Elevator in terms of persons and kilograms shall be fitted in the car in a conspicuous position.			
11.5	**SUSPENSION ROPES**			

CLAUSE NO.	TECHNICAL DELIVERY CONDITIONS	VENDOR COMPLIANCE (Refer Note: 1)
	As per Annexure-A	
11.6	**SHEAVES AND PULLEYS**	
	All driving sheaves and pulleys fixed to and revolving with the shaft shall be fixed by means of sunk keys of sufficient strength and quality. Sheaves and pulleys shall be made of cast steel to IS: 1030 and free from cracks, sand holes and other injurious defects. They shall have suitable flanges and smoothly machined rope grooves. The diameter of the sheave or pulley shall be as specified in the latest edition of IS 14655 or equivalent International Standards.	
11.7	**SHAFT**	
	Shafts and axles shall be forged steel. They shall have sufficient rigidity and bearing surface. Any shaft when stepped shall be turned to a reasonable radius at the point of reduction.	
11.8	**COUNTER WEIGHTS**	
	As per Annexure-A	
11.9	**GUIDE RAILS**	
	As per Annexure-A	
11.10	**BUFFERS**	
	As per Annexure-A	
11.11	**EMERGENCY SAFETY DEVICES AND BRAKES**	
	The Elevator shall be provided with safety device attached to the Elevator car frame and placed beneath the car. The safety device shall be capable of stopping and sustaining the Elevator car up to governor tripping speed with full rated load in car. The application of the safety device shall not cause the Elevator platform to become out of level in excess of 3 cm/m measured in any direction. Slack rope switches, if necessary, shall also be provided. The Elevator vendor shall also provide personnel evacuation system during the power failure to the Elevator. The Machine shall be provided with direct current spring set, solenoid release double shoe brakes of sufficient capacity to stop the car at any position with the design load. These brakes shall be designed in such a way that it gets applied automatically in the event of power failure.	
11.12	**AUTOMATIC RESCUE DEVICE (ARD)-(BATTERY DRIVE)**	
	Contractor shall provide a modern advanced electronic drive system of “RESCUING Passengers Trapped in an ELEVATOR” in case of power failure. In addition to the above, bell and cranking device to be provided with hand wheel connected with motor shaft for manual lowering of elevator to the nearest landing level. For all Elevators with ARD, an audio & visual indicator shall be provided inside the Elevator car to alert the person trapped inside that he/she is being rescued. Capacity of battery shall be such that minimum three rescue operations can be performed without recharging. ARD panel shall be suitable for floor mounting. Vendor shall indicate the size of ARD panel (Length x Depth x Height) in the offer.	
11.13	**OVERLOAD DEVICE**	
	Every passenger Elevator shall be provided with an overload device, which will prevent the Elevator from starting in case the Elevator car is loaded to 110 percent of the rated capacity of the Elevator or more. Elevator shall remain stationery with door open. Audio & visual warning device (Load weighing device) shall be provided to alert the passenger in case of overload.	
11.14	**OVER SPEED GOVERNOR AND GOVERNOR ROPES**	
	As per Annexure-A	
11.15	**LEVELLING DEVICE**	
	As per Annexure-A	
11.16	**MACHINE ROOM AND OVERHEAD STRUCTURES**	
	As per Annexure-A All the overhead machinery shall be supported on beam to be furnished by the contractor. The machinery support beam shall rest on top of or be designed to be framed into the contractor’s structural steel frame for the boiler house. The Elevator drive controller and all other apparatus and equipment of Elevator installation, except such apparatus and equipment which function in the machine room shall be located at the top of the Lift well. Adequate machine room and hoist way lighting shall be provided by the Elevator vendor. The maximum loads transmitted by the single heaviest equipment both during erection and maintenance of the Elevator to the machine room floor and other structures like guides etc. shall be furnished by the Elevator vendor within 15 days of placing the award letter. Sound reducing materials below machines in machine room shall be provided. Machine room shall be provided with Industrial type vitreous enamelled reflector - 2 X 40 W (for	

CLAUSE NO.	TECHNICAL DELIVERY CONDITIONS	VENDOR COMPLIANCE (Refer Note: 1)
	min. 200 Lux) Fluorescent Lamp.	
11.17	**TERMINAL STOPPING AND FINAL LIMIT SWITCHES**	
	As per Annexure-A	
12.0	**ELECTRICAL EQUIPMENT AND CONTROLS**	
12.1	**OPERATION AND INTERLOCKS**	
	The operation of the Elevator shall be simplex, selective, collective, and automatic, with or without operator. The Elevator operation shall conform to the following requirements. i) The operation of the Elevator shall be through a push button station located inside the car. ii) The Elevator shall not move unless the car door, landing door and all other protected openings connected with the control circuit are closed. iii) Two push buttons, one for upward and the other for downward movement at each intermediate landing and one push button at each terminal landing shall be shall be provided in the landing floors in order to call the car. iv) The landing doors shall be interlocked so that the landing door at any floor shall not open when the Elevator is not on that floor. v) Push button shall be fixed in the car for holding the doors open for any length of time required.	
12.2	**ELEVATOR DRIVE**	
	The Elevator drive shall be equipped with automatic electromagnetic coil type brakes. The Elevator shall be driven by a drive suitable for method of control offered by the Elevator vendor. No friction gearing or clutch mechanism shall be used for connecting the main driving gear to the sheaves.	
12.3	**ELECTRIC MOTORS**	
	Motors shall be energy efficient type, High efficiency (IE2) as per IEC-60034-30 suitable for frequent starting with S4 duty class, CDF 40% , Maximum 150 starts per hour at 50 Deg. C ambient and with IP 54 protection class. Motor pull out torque shall be at least 275% of rated torque. Motor shall be of TEFC type. Motor insulation shall be class F or superior with temperature rise limited to class B. Motor paint shade shall be RAL 5012 if called for in the enquiry. Motor datasheet prepared by OEM shall be submitted along with the offer.	
12.4	**CONTROLLERS**	
	The controllers shall be designed to start, accelerate, stop and reverse the Elevator when the appropriate push buttons are pressed. It shall be arranged so as to provide maximum convenience to the operator. Contact finger buttons shall be easy to adjust and replace. The speed control device shall be such as to give smooth, easy and accurate speed control. The Elevator controls shall be housed in dust and vermin proof enclosures. The controls shall be wired with stranded copper conductor cables. All equipments mounted shall be neatly labelled as per wiring diagram. Ventilating louvers are to be provided in the panels. Control panel shall be suitable for floor mounting.	
12.5	**CABLES AND INTERNAL WIRING**	
	All cables (both power and control) shall be armoured, XLPE insulated & FRLS PVC sheathed. Wiring shall be done as required to interconnect all Elevator electrical equipment including all power wiring from the main supply source in the machine room. Power cables shall be 1100 V grade multi core, stranded Cu conductor with XLPE insulation, FRLS type ST2 inner sheathed, galvanised steel wire armoured and overall extruded FRLS, Type ST2 PVC sheath. The trailing cables shall conform to IS 4289. All other cables shall conform to latest edition of IS: 7098, IS:1554 & IS:5831.	
12.6	**EARTHING**	
	Earthing shall be carried out as per IS 3043 and Indian Electricity Rules. The Elevator structures, motor, frames, metal cases and all electrical equipment including conduit, cable armouring and guards shall be properly bonded and earthed by two separate and distinct connection. The Elevator vendor shall provide 25 x 3 mm GI flat for control panel and 50 x 6 mm GI flat earth bus in the machine room and connect all earth points to the same. The earth bus will be connected to the station earth mat by the owner.	
12.7	**POWER SUPPLY**	
	One three phase 415V, AC, 50 Hz UPS Supply for Elevator main motor, and one single phase 240V, AC, 50Hz supply feeders for lighting, Air conditioner and control panels will be provided in the machine room by BHEL. The exact Power requirement in kVA of three phase supply and single phase power supply shall be indicated in the offer itself by the vendor. The junction box having MCCB/MCB Isolation of adequate rating shall be arranged by the vendor	

CLAUSE NO.	TECHNICAL DELIVERY CONDITIONS	VENDOR COMPLIANCE (Refer Note: 1)
	to receive the above supplies. The Elevator vendor shall also indicate the proposed location of junction box in the machine room. All further cabling and wiring from the junction box shall be carried out by the Elevator vendor. The vendor shall arrange to tap power supply required for constructional purposes from the point terminated by the owner.	
13.0	**OTHER REQUIREMENTS**	
	Electric high speed door operators for the opening and closing of the car doors and landing doors shall be furnished and installed. The car and landing doors shall be mechanically connected and shall move simultaneously in opening and closing. The car door and landing door shall be power closed and shall be controlled in opening and closing by oil cushioning mechanism built into the gear unit. Necessary lockable switches shall be provided in the Elevator machine room to control the operation of the door. Should the electric power fail, it must be possible for the doors to be manually opened from within the car. Overload relays shall be provided to protect the drive motor against overload or a power failure. Suitable protection shall be provided on the controller to protect the Elevator equipment from phase reversal, low voltage. Suitable arrangement shall be provided to intimate unit control room during emergency in the form of audio-visual alarm. Complete set of special tools and tackles required shall be supplied along with Elevator. Each tool and tackle shall be stamped so as to be identified easily for its use and size. Tools shall be supplied in a steel tool box. The list of tools and tackles shall be furnished along with the offer. One number Fire extinguisher (suitable for electrical fire) shall be provided along with each elevator. **MACHINE ROOM Air conditioning** Machine room shall be provided with 5 tonnes or with 1 No. of one tonne and 2 nos., of 1.5 tonne capacity A/C units (minimum) to make the machine room dust proof. If higher capacity of A/C is required for proper cooling, the same is to be indicated in the offer. Vendor to indicate the power consumption of A/C units in the offer.	
14.0	**SPARES**	
	The vendor shall furnish the List of commissioning, mandatory and recommended spare parts and indicate separately in the offer with item wise price under the title “Schedule of Spare Parts”.	
15.0	**DRAWINGS / DOCUMENTS**	
	The following preliminary documents / drawings should be enclosed along with the offer without fail. i) Detailed description of the system offered. ii) List of thermal power where the offered system is in operation. iii) Performance certificate of the system offered. iv) Write-up on interlocks, controls and safety devices provided. v) Typical General Arrangement of Elevator (including hoist way, pit well etc.) vi) Typical General Arrangement of machine room and equipment in machine room. vii) Electrical control scheme with legend and write-up. viii) Machine room Air-Conditioning details. ix) Foundation and loading details of machine room floor and the concrete structure. x) Filled in vendor data sheet for Elevator, Main motor and Door operator motor. xi) Filled in vendor quality plan. xii) The major components of Elevator with weight details to be indicated by the vendor in the offer itself. xiii) The make, type, capacity, range of all bought out items xiv) Any deviation from the enquiry specification shall be indicated in the “Sub-delivery Enquiry Deviation Format” attached along with the enquiry. No deviations, unless explicitly taken up by vendor in the enquiry stage itself in the said format and accepted by BHEL in writing, shall be considered after firm order. In case no deviations are there, vendor to indicate “No-deviation” in the fully filled up format. xv) Documents as per Annexure –A The following documents / drawings shall be submitted within 15 days from the firm order. i) Elevator General Arrangement drawings for BHEL/Customer approval. ii) Elevator Technical Datasheet	

CLAUSE NO.	TECHNICAL DELIVERY CONDITIONS	VENDOR COMPLIANCE (Refer Note: 1)
	Separate contract-wise drawing approvals shall be obtained by vendor before manufacture of elevators.	
16.0	**GUARANTEE**	
	The Elevator Vendor shall guarantee that the materials, workmanship and performance of the apparatus installed under this specification is perfect in every respect and that they will make good of any defects (not due to careless operation) which may develop within 18 months from the date of formal handing over of the equipment.	
17.0	**MAINTENANCE**	
	After the completion of the installation, maintenance and service for the equipment furnished under this specification shall be provided by the vendor for a period of eighteen months. This service shall include monthly inspections of the installation during regular working hours by trained employees and shall include all necessary adjustments, greasing, oiling, cleaning, supply of genuine standard parts to keep the equipment in proper operation except any part made necessary by misuse, accidents or negligence caused by others.	
18.0	**ACCEPTANCE**	
	After erection, the performance of the Elevator shall be tested for ascertaining the conformity with the specification and upon satisfactory completion of the tests, the Elevator will be taken over. The responsibility for obtaining commissioning and handing over protocol signed by the customer lies with the Elevator vendor.	
19.0	**QUALITY ASSURANCE AND TESTING**	
19.1	**BHEL Inspection**	
	i) Vendor shall prepare Quality plan in the BHEL standard Quality Plan format (copy enclosed) along with enquiry. Such a QP shall contain all the required quality checks right from the raw material stage through in process, Assembly, Testing & Final inspection. Any comments given by BHEL shall be incorporated by vendor. ii) In case of order receipt, this QP will be approved by BHEL. iii) Elevators are subject to inspection by BHEL and inspection call shall be given 15 days in advance.	
20.0	**O&M MANUALS**	
	Vendor to furnish standard O&M manuals for each capacity of elevator, immediately after the release of first purchase order for BHEL's further use (Two copies of CD-ROM). The O&M manual prepared shall be such that the same shall be usable along with the relevant drawing for each project. Project wise O&M manuals along with project-wise details, if any, has to be updated by vendor and handed over to site (Customer & BHEL/Site, after commissioning of elevator) in necessary format as desired by customer.	
21.0	**LIST OF ELEVATOR OPTIONAL PRICES**	
	The following optional prices to be indicated along with offer for arriving at the base price of elevator. i) Rate for addition / deletion of 1 number landing. ii) Rate for addition / deletion of 1Mtr. in travel height. iii) Extra price for having 0.75mps & 1mps speed of goods elevator instead of 0.55 mps for 3 Tonne elevator iv) Extra price for Car with SS (ASTM 304 No: 4 Hairline finish) for 1) 3 Tonne elevator v) Extra price for Landing door with SS (ASTM 304 No: 4 Hairline finish) for 1) 3 Tonne elevator vi) Additional price of Automatic Rescue Device (ARD) for increased height of 15 Mtrs. vii) Auto annunciation in the form of metres viii) Extra price for fire resistant landing doors (1 hour as per BS:476 (Part 20 & 22))	

NOTE 1:

In 'Vendor Compliance' column vendor to indicate 'YES', 'NO' or 'NOT APPLICABLE. IS latest version shall be referred.

ANNEXURE-A

- The elevator cage will be of welded steel construction with floor made of suitably braced chequered plates for 3000 kg Freight cum passenger elevator.
- Automatic centre opening horizontally sliding doors will be provided suitable for the purpose intended. Necessary interlocking between the doors and car movement during normal operation will be provided. Complete car body with fan on top will be provided. The landing doors will be provided with arrangement for opening it during emergency.
- The driving mechanism for the elevator will be installed in a machine room located and designed suitably for easy maintenance. Machine room will be provided with suitable access and adequate ventilation facilities.
- The elevator will be suitable to operate without any operator. Every floor will be provided with call push button and indication about movement and its direction. The elevator cage will be provided with necessary switches including limit switches, landing stop switches, door contacts, counter weight buffers, car buffers, emergency light, emergency bell, switch and floor indicator. It will also be provided with overload alarm and protection.
- An over speed safety device to stop the car whenever the car achieves runway speed limit resulting from high speed descending of the car will be in the scope of Contractor. The actuation of safety device will cut off the power supply to the motor and apply the brake immediately.
- Necessary light points in the hoist way and pit for the proper illumination of shaft and pit.
- Necessary test weight for carrying out the test.
- Commissioning spares required for the Elevators will be included in the scope of Contractor.
- Safe access for maintenance and removal of all mechanical and electrical parts will be ensured, without additional scaffolding.
- All parts requiring replacement or inspections or lubrication will be easily accessible without the need for dismantling of other parts/equipment.
- All machinery or equipment included under this specification will be equipped with safety devices and clearances to comply with recognized standards and purchaser's requirement.
- Minor civil works and equipment grouting of all bolts, sills, support members, indicator and button box etc.
- Suitable lubrication system will be provided for guide rails as well as for other items.
- The hoist rope will have adjustable self-aligning hitches.
- Steel T-Guides will be provided for the car and counter weight. The counter weight will be guarded/ protested by means of wire mesh cage for safe operation.

- Spring buffers will be provided as a means of stopping the car and counter weight at the extreme limits of travel. Buffers in the pit will be mounted on steel channels which extend between both the car and counter weight guide rails.

a) General

- The elevators will conform to the following stipulations, in general:
- The elevator will be designed in accordance with IS: 14665 (Part I) Part – 2/Sec – 1, Part – 3/Sec – 1)2000 and IS: 14665 (Part 4/ Sec 1 to 9) 2001 and other relevant IS specifications and subject to any modifications and requirements specified herein after.
- Elevators will be installed inside the building to facilitate movement of man and material to various floor levels and will operate from lower most level to top most level and will be located at identified location.
- The elevator will be operated electrically with fittings as indicated in technical parameters.
- The elevator will be equipped with all standard safety systems such as Bell and cranking in case of power failure, emergency rescue battery back-up, hand wheel connected with motor shaft for manual lowering of elevator to the nearest landing level in case of power failure, limit switches, indicators, over speed safety governor for car, emergency light fittings, etc.
- Elevator shaft is to be provided with adequate lighting.
- The elevator will be suitable for continuous 24 hours round-the-clock operation.
- The motor for the elevator will be squirrel cage induction motor with VVVF control for controlling the speed during starting and stopping at landings
- Trouble-free performance of the elevator incorporating the operational, controlling and safety requirements, as specified, is to be guaranteed.
- The Contractor under this specification will assume all responsibility in proper design and operation of each and every component of the elevator as well as the elevator as a whole.
- Complete drive, electrical and mechanical control equipment, & control panel etc., will be installed in the machine room.
- A selector switch and a set of push buttons will be provided on the top above the ceiling of the car to operate the elevator locally for inspection and maintenance. The selector switch when set to position "Inspection" will exclude control from other places and movement of the car in the desired direction will be effected by the push buttons.

- For normal operation of the elevator, the selector switch will be set to the position working. It will be possible to operate the elevator only when the appropriate button is kept in pressed condition.
- Provision will be made for a safety gear, which will operate in case of free fall or over speeding of elevator car or counter weight in the descending direction. This safety gear, while freezing the cabin mechanically to the guides, will also interrupt the control supply through a limit switch.
- The particular landing door will open only after the elevator car has stopped at the landing. Additional provision will be made for opening of the landing door in case of emergency by means of a special key. The landing doors will be so designed that their closing and opening is not likely to injure a person.
- Provision will be made to prevent the opening of any landing door when the car is passing that zone in response to a call from another landing.
- At all the intermediate levels "Up" & "Down" call buttons with indicators will be provided. Car position indicator will also be provided at all levels. At ground level, "Up" call button with indicator & at top most level "Down" call button with indicator will be provided.
- The circuit which supplies current to the motor will not be included in any twin or multi-core trailing cable used in connection with the control safety devices /signaling equipment.
- All electrical cables will be so laid that they are not liable to damage and can be easily inspected and maintained.
- For other details relevant IS standards will be followed.

a) **Design construction and performance requirement**

i) **Load:**

The elevator will be designed to elevator the pay –load in addition to weight of the car itself and other accessories.

ii) **Speed**

The elevator will travel at a speed mentioned in the technical characteristics (Table)

iii) **Size**

The inside dimensions of the platform of the car (clear inside) will be as furnished in the table. The inside clear height of elevator will be 2300 mm.

iv) **Travel and landings**

The elevator car will travel from ground floor at reference elevation to top landing as specified in the technical parameters table. In between these two levels the car will stop at every intermediate platform level.

v) **Wire Rope**

The car and counter weight will be suspended by steel wire ropes. The number of wire ropes and size of wire rope will be so chosen that highest factor of safety is achieved as per standard. Not less than three independent suspension ropes will be used. The minimum diameter of rope will be 12mm and factor of safety 12.

vi) Car

- Car frame
  - Every elevator car will be carried in a complete frame of steel which will be sufficiently rigid to withstand the operation of the safety gear without permanent deformation to the car frame. The car structure will be of steel with special painting or of stainless steel.
  - At least four renewable guide shoes with renewable linings or set of roller guides will be provided, two at the top and two at the bottom of the car frame.
- Car enclosure
  - The car will be enclosed on all sides by means of car body and door. The sides of the car will be lined with heavy gauge stainless steel sheet plate properly braced and reinforced.
  - The enclosure will be flush on the inside and securely fastened to the platform. The car body floor will be of M.S steel construction with chequered plate top. Side panels will be of stainless steel grade 304 and roof of stainless steel over MS frame.
  - The car will be equipped with handrails on three sides, fan with grills and suitable lighting with fittings. The light will be left on during the whole time of use.
  - Necessary provisions will be made for adequate ventilation of the car. Ventilation opening will be provided in the enclosure roof as per requirement of IS: 14665 (Part 3/Sec 1 & 2)-2000. A separate switch will be provided in the car for the fan.
  - The enclosure of the elevator car will withstand a thrust of 35 kg applied normally at any point, excepting any vision panel, without permanent deformation.
- Car platform
  - Car platform will be constructed of structural steel shapes or securely fastened with steel flooring covered with PVC tiles flooring. The platform will be designed on the basis of rated loads evenly distributed. The car floor will comprise a smooth non-slip surface.
  - Since the car leveling device will be used, subsequent aprons of sufficient depth will be fitted to the car floor to ensure that no

space is permitted between the threshold and the landing while the car is being leveled to a floor.

- Car roof
  - Car roof will be covered with sheet metal to prevent dripping of lubricants from ropes-sheave bearings. The top flooring will be of steel with decorative false ceiling. A three pin plug socket with a switch for head lamp will be fitted on the top of the car for use during maintenance. The roof will be strong enough to support atleast two persons.
  - Provision for slow speed (1/2 of rated speed) operation from car top in up and down directions in independent mode will be made to facilitate maintenance of devices in the hoist way. Necessary fittings will be provided for this purpose.
  - Difference in levels of the car floor and landing will not exceed the figures indicated in IS 14665 (Para 3/Sec 1 & 2)-2000 under heading "Leveling Accuracy ".
  - Suitable lubrication system will be provided for guide rails as well as for other items.
- Car Door
  - The elevator car will be provided with horizontally sliding doors. (Wherever vertically bi-parting type sliding doors are indicated/ this may read as horizontally sliding doors)
  - The door of elevator will open at all the platform levels.
  - Car door will have a clear opening of 1600 mm wide X 2000 mm high for 3000 kg elevators. The door operation will be automatic.
- Hoist way door
  - Vertically bi-parting type Horizontally sliding doors having a clear opening (as per IS) will be provided at each of the landing for elevator door
- Door hangers & tracks
  - Hangers and tracks for car door and each having a clear hoist way door will be provided. Suitable material will be used to minimize the noise. Ball bearing rollers or equivalent arrangement will be provided to take upward thrust of the doors. Suitable devices will be provided for transmitting from one door panel to the other.
  - All required material for landing entrance e.g. extruded aluminum or equipment sills, structure angles, headers etc. will be provided.
- Door operation for car door and hoist way doors

- The doors operation will be automatic. The necessary door cushioning device will be provided.
- Necessary safety devices will be provided to prevent the movement of the car until the car door and hoist way doors are closed properly.

7. Car Self-Leveling Device

   The elevator will be equipped with automatic self-leveling devices to bring the car to the floor landings. These self leveling will be correct for over travel or under-travel and rope stretch.

8. Control and operation

   The elevator control i.e. the system governing starting or stopping the elevator machine, determine the direction of the travel, regulating the rate of travel, regulating the rate of acceleration and deceleration and controlling running speed of the moving member will be through 3 phase two speed squirrel cage induction motor. The AC drive motor for the elevator will be accelerate or decelerate the elevator according to requirement. Reversal in direction of movement of the elevator will be achieved by reversing the motor 3phase supply.

   The operation of the elevator i.e. method of actuating the control will be "Selective Collective Automatic Operation" as per clause 3.41.3 of IS 14665 (Part2/Sec1): 2000 with and without attendant. All accessories required for the "collective operation as outlined therein, namely selector and its driving will be furnished complete.

   The controller will be preferably microprocessor based.

9. Car Operation Panel

   In the car the Contractor will provide an operation panel containing push buttons numbered to the landing served; two position switch marked to indicate " with attendant" and "without attendant" an emergency call button connected to alarm bell to serve as an emergency signal; push buttons or switches for fans and other facilities provided in the elevator as required.

10. Car Position Indicator in Car

    A signal indication will be provided by the appropriate numeral (which will be floor no./ level of respective floor) being illuminated when the car is passing the corresponding floor. The indication will remain illuminated when the car is stopped at a floor. Up & Down direction jewel lights will also be provided. The car position indicators are needed to be provided at all landings.

    Provision to indicate elevator capacity in Kg as well as in terms of person will be made available in the car. Other signals like "over load" "Elevator is under maintenance" etc. will also be provided.

11. Push Button Station and Call- Registered Tell-tale Lights at Hoist way

A single "Up" and "Down" push button at terminal landings and "Up" "Down" each push intermediate landing including call register light for each push button will be provided. These will remain illuminated till the call is answered.

12. Emergency Exit

The elevator car will be provided with an emergency exit / automatic rescue device of adequate dimension.

13. Terminal Buffers

The terminal buffers will be provided for stopping the car and the counter weight at the extreme ends of travel. All structural steel members required to install the buffers will be supplied by the elevator supplier.

14. Counter-Weights and Counter-weight Frames.

Counter weight sections will be mounted on structural metal frames so designed to retain the weights securely in its place.

Counter –weight frame will be guided on each guide rail by upper and lower guiding members attached to the frame

A substantial metal counter- guard of required length will be provided at the bottom of the hoist way.

A compensating chain of adequate strength connecting car bottom and counter weight frame will be provided for balancing the car and counter-weight while running with minimum load condition.

15. Guides for Car and Counter- weight.

Car and counter- weight guides will be of rigid steel and will be continuous throughout the entire length and will be provided with adequate steel bracings and stiffeners. Guide for both car and counter weight will meet the requirement of IS: 4666-1980. The necessary lubrication device for guide rail will be provided.

16. Terminal Limit Switches and Final Limit Switches

Terminal limit switches for normal operation will be provided to slow -down and stop the car automatically at terminal landings and final limit switches will be provided to automatically cut off the power and apply the brake, when the car travel beyond the terminal landing.

17. Traction Machine

The design ambient temperature for this equipment will be taken, as 50° C. The motor insulation will be class F or superior. The motor should be S5 duty in case of regenerative or dynamic braking is applied.

Space heater with thermostat will be provided where necessary.

Protective relays will be furnished on the controller to protect against phase reversal, low voltage and phase failure. Overload and other protective relays will also be furnished for traction motor.

18. The elevator after erection will be tested as follows:

a) Test with 100% and 110% of rated load as per IS: 14665 - 2000.
b) A static load test with 125% of rated load as per IS: 14665 – 2000 to check that the brake will sustain the car.
c) All other tests on electrical system as mentioned in IS: 14665 - 2000.
d) Any other test felt necessary by Owner and supplier to ensure proper functioning and installation of the elevator.
e) Demonstration of the functioning of all safety provisions made available in the elevator.
f) The Contractor will arrange for weights, slings, wire ropes, stop watches and other necessary equipment/ instrument to carryout the test.

19. Technical characteristics

S. No	Description	Freight cum Passenger Elevators
1	Capacity	3000 kg
2	Location	Boiler House of each Steam Generator
3	Quantity	2 Nos. (1No. per boiler)
4	Type	Electrically operated
5	Car speed	0.55 m/s for boiler elevator. 1 m/s for ESP building elevator
6	Total Car travel	To be decided by the Contractor
7	No. of landings	12Nos. (Approx) However, exact number of landings to be decided by the Contractor. Final no. of landings will be approved by the purchaser. Following will be covered essentially in the above landings. i) Ground floor ii) All burner operating floors/ Coal feeder floor iii) Any one of the soot blower floors. iv) Boiler Drum/ Tripper floor v) Main operating floor of STG Hall vi) Coal gallery vii) Laboratory Floor viii) Any other landings where access is required.
8	Location of machine room	Directly above the Lift.
9	Power Supply	Power supply will be at 415V AC 3 -Phase, 4wire, 50 Hz from the emergency MCC.
10	Signals	Landing calls registered indicators, UP / DOWN (visual) Digital position indicator in car and at all Floors

S. No	Description	Freight cum Passenger Elevators
11	Car gate & landing gate	Sliding type vertical biparting doors
12	Elevator	Selective collective automatic control operation
13	Car size (Clear inside)	2000x3000x2300mm Ht.
14	Elevator well size (Clear inside)	2900x3300mm.
15	Hoist way construction	Structural Steel Bldg.
16	Special feature	Car lighting and Fan automatic sleep

20. Additional features

a). Power supply to elevators will be from emergency MCC, which will be fed from the purchaser's N/E switch gear.

b). Elevator will be provided with telephone set and mounting bracket in side the car and necessary communication facilities which will be hooked up with plant telephones.

c). Suitable arrangement will be provided to intimate control room during emergency in the form of audio-visual alarm. Cable supply, laying and termination from Elevator to respective control room will be in the scope of Contractor.

d). Automatic rescue device.

e). Adequate capacity of reputed make Elect. Hoist along with monorail will be provided in the machine room for maintenance of the equipment.

Monorail will be provided by BHEL.

13.2 Painting

The exposed surface of all items of equipment will be thoroughly cleaned and painted as indicated below:

i) One primer coat of 30-40 microns (Dry film thickness- DFT) of PVC co-polymer- alkyd resin with red oxide/zinc chromate.

ii) For corrosive atmosphere, all exposed surfaces will be coated with two primer coats of epoxy zinc based on zinc duct.

iii) An intermediate coat of PVC co-polymer alkyd resin of 70-80 micron (DFT) will be applied after re touching of damaged part of paint surface during erection.

iv) The intermediate coat will be of PVC co-polymer alkyd resin with micaceous iron oxide (MIO) for installation in corrosive atmosphere.

v) A final coat of paint of 40-50 micron (DFT) PVC co-polymer alkyd with weather resistant pigment of approved colour and glossy finish will be applied

vi) Interior of all gear housing will be painted with oil resistant paints.

vii) All parts inaccessible after assembly will be painted with and assembled while paint is still wet.

viii) Parts exposed to atmosphere beyond 800 C will be painted with zinc ethyl silicate primer followed by a coat of high build epoxy polyamide enamel.

13.3 Quality System, Inspection & Testing

13.3.1 General

1. Inspection & testing of plant & equipment will be carried out by Purchaser/Consultant at the works of Contractor /Sub-Contractor during

manufacturing and on final product to ensure conformity of the same with the acceptable criteria of technical specifications, approved drawings, authenticated manufacturing drawings and reference national / international standards.

2. This specification is in addition to provisions laid-down in Purchaser's General Condition (GCC) of the Contract.

13.3.2 Quality System Requirements

Contractor must recognize the importance of quality and follow defined quality programme in all manufacturing and quality control activities of the product. Contractor must define and implement the tasks and controls the will provide needed assurance in case manufacturing of product is sub-contracted either partly or fully and/or for the procured components of the product.

Purchaser / Consultant reserves the right to verify the quality programme and entire product characteristics to assure the intended and specified quality of the product.

13.3.3 Quality Assurance Plan (QAP)

Contractor will furnish Quality Assurance Plan (QAP) for respective equipment for Purchaser/Consultant's approval at least two months prior to start of manufacturing.

13.3.4 Test Certificates and Documents

For each of the items being manufactured, relevant test certificates and documents, as applicable for each of the equipment, in requisite copies including original will be submitted to Inspection Agency. All test certificates must be endorsed by the manufacturer and Contractor with linkage to project, purchase order and acceptance criteria.

13.3.5 Inspection of assemblies or their sub-assemblies

- Winding unit consisting of motor, gear, traction sheaves, brake mounted on complete base plate, no load test run, part load and full load at Contractor's works.
- Car body and doors.
- Governor and guide rails.
- Deflector pulleys, counter weight and its frame.

13.4 Performance Parameters

The Contractor will ensure the following performance.

- Rated capacity of the elevator
- Speed of the elevator
- Accurate positioning of the elevator

13.5 Documentation

1. **Information to be furnished by the Contractor during detailed engineering:**

   The Contractor will submit adequate sets of following technical drawings & technical data/ information during detailed engineering for elevator.

   a) General Arrangement of the Elevator indicating load data, details of various openings in machine room floor as well as elevator well shaft, buffers etc.

   b) Filled in questionnaire.

   c) List of tools & tackles.

2. **List of drawings/ documents to be furnished by the Contractor for approval**

   a) General arrangement drawing of elevator showing full details in plan and sections.

   b) Quality Assurance Plan for inspection.

   c) Test and inspection certificate.

   d) List of tools & tackles.

3. **List of drawings/documents to be submitted along with equipment by the Contractor**

   a) GA drawings, complete assembly and sub assembly drawings of the equipment.

   b) Drawings of all equipment/component received from sub supplier.

   c) Motor data sheets/ characteristics

   d) Electrical schematic diagrams

   e) Test and warranty certificate for each item of equipment.

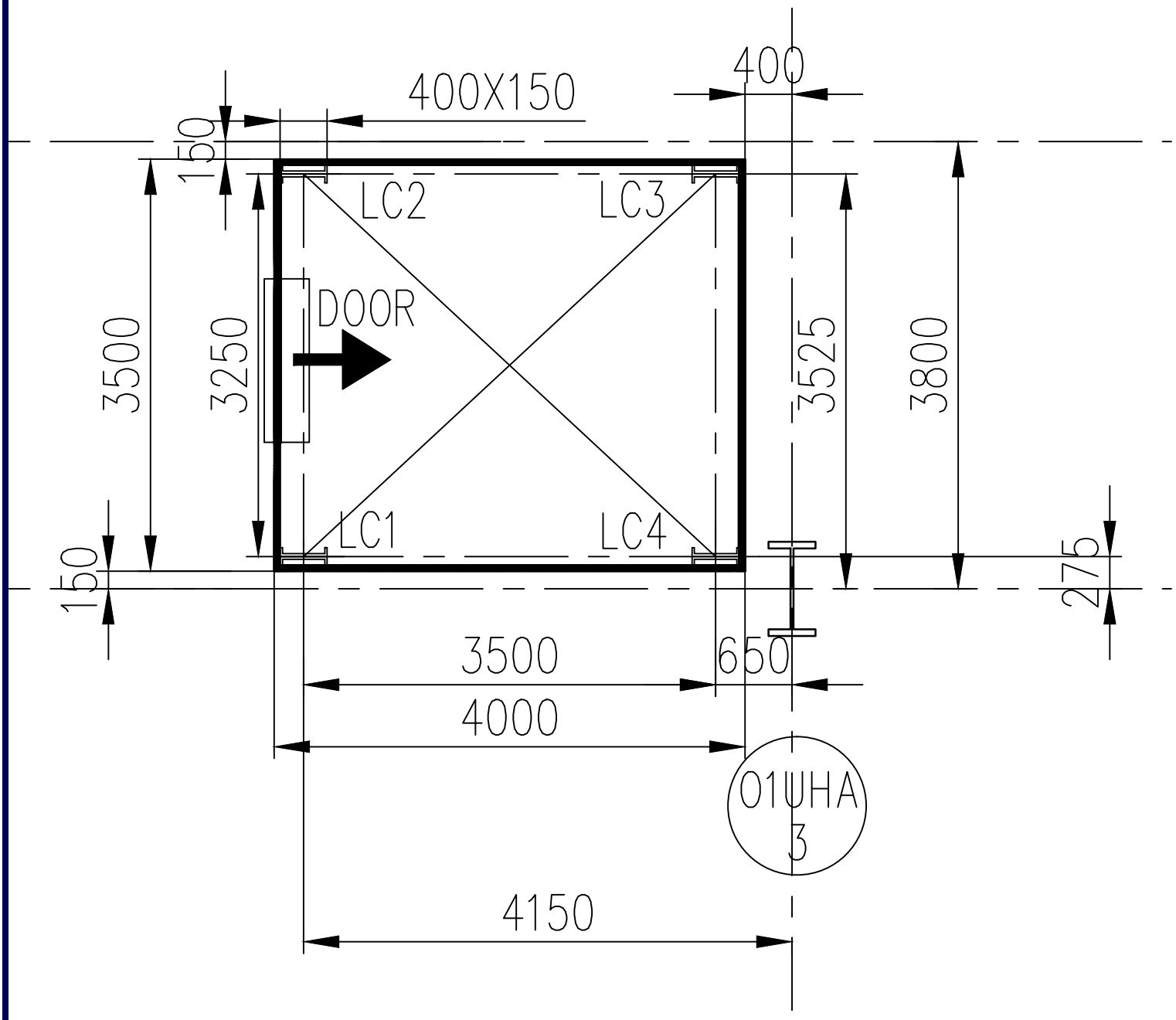
   f) Test reports and inspection reports.

   g) Instruction manuals for testing and commissioning.

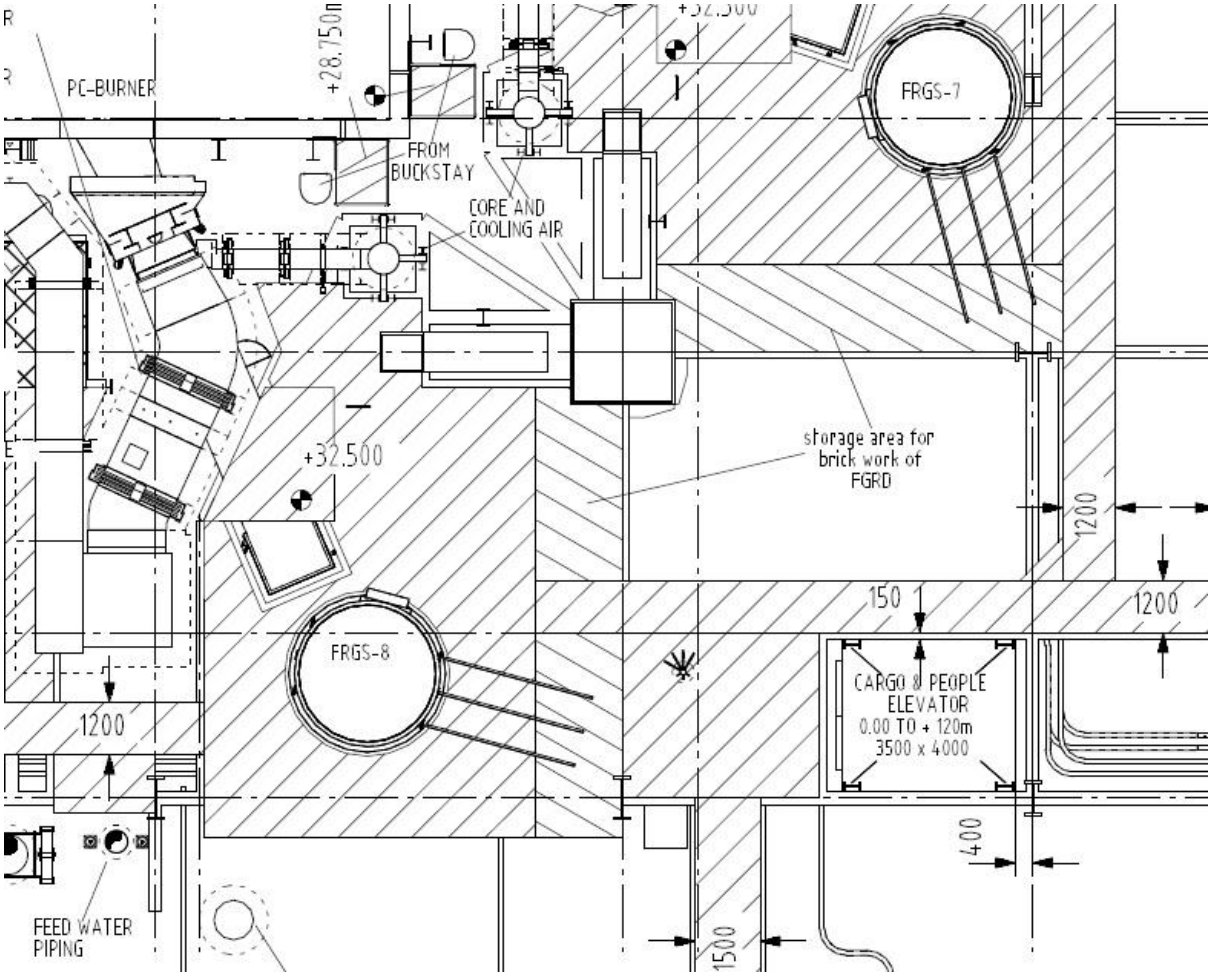
   h) Operation, maintenance and safety manuals.

   i) Requirement of special tools and tackles, if any, for subsequent maintenance.

ELEVATOR - MACHINE ROOM



BOILER PLAN


PC-BURNER
+28.750m
FROM BUCKSTAY
CORE AND COOLING AIR
FRGS-7
+32.500
storage area for brick work of FGRD
1200
150
1200
FRGS-8
CARGO & PEOPLE ELEVATOR
0.00 TO + 120m
3500 x 4000
1200
400
1500
FEED WATER PIPING

Bharat Heavy Electricals Limited

HIGH PRESSURE BOILER PLANT, TIRUCHIRAPALLI-620014.

CONTROLS & INSTRUMENTATION

SPECIFICATION FOR

PASSENGER & GOODS CUM PASSENGER ELEVATOR

REV. NO	DATE	DESCRIPTION	PREPARED SRR	CHECKED RD	APPROVED ENGG. PMV	APPROVED QAC SD
00	17-07-2003	INITIAL RELEASE	Sd./SRR	Sd./RD	Sd./ PMV	Sd./ SSM
01	25-05-2010	GENERAL REVISION	Sd./SRR	Sd./RD	Sd./ SRC	
02	01-03-2014	GENERAL REVISION				

CLAUSE NO.	TECHNICAL DELIVERY CONDITIONS		VENDOR COMPLIANCE (Refer Note: 1)
1.0	**SITE CONDITIONS**		
	Altitude above MSL	Less than 1000m.	
	Relative humidity	100%.	
	Design Ambient Temp.	50 deg.C	
	Atmosphere	Tropical, Dusty, Corrosive and highly polluted.	
	Wind loads @ 10 metres above sea level	As per IS-875(Part 3) / 1987	
2.0	**GENERAL**		
	This specification is intended to cover the design, engineering, manufacture, inspection, delivery, erection, commissioning of Passenger Elevator and Goods cum Passenger Elevator for boiler applications and handing over to customer. Vendor shall ensure accurate, reliable and trouble-free operation in corrosive, dusty conditions and environments.		
3.0	**PRE QUALIFICATION REQUIREMENT (APPLICABLE IN CASE OF OPEN TENDER)**		
	The elevator offered shall be in satisfactory operation for similar applications in fossil fuel fired power plants of unit rating 250MW or above. Vendor shall submit a list of reference thermal plants (with elevator capacity, landing levels and travel) where their elevator is in satisfactory operation for more than one year. Commissioning and service support for the elevator shall be available in India. For Vendors already registered with BHEL and having a permanent vendor code PQR is not applicable.		
4.0	**STATUTORY REQUIREMENTS**		
	All registration and statutory inspection fees if any, in respect of his work pursuant to this contract shall be to account of the elevator vendor. However any registration, statutory inspection fees lawfully payable under the provision of any statutory laws and its amendments from time to time, during erection in respect of the plant equipment ultimately to be owned by owner shall be to the account of the owner. Should any such inspection or registration need to be re-arranged due to the fault of the vendor or his sub-contractor, the additional fees for such inspection and / or registration shall be borne by the vendor. While the statutory payment shall be made by the owner for any registration, statutory inspection etc. during erection, the vendor shall be responsible for carrying out and co-ordinating various activities with the statutory authority as well as for obtaining the clearance and registration of the equipment.		
5.0	**REFERENCE STANDARDS**		
	The Elevators shall be designed in line with the recommendation contained in the latest editions of Standards **IS: 14665: 2000 (All Parts)**. The equipment shall comply with latest revision of Indian standard and wherever 'IS' is not available, it shall comply with the generally accepted international codes and practices.		
6.0	**SCOPE OF WORK**		
	i) Design, engineering, manufacture, inspection, delivery, erection, commissioning, successful handing over. ii) Maintenance & services during guarantee period. iii) Any necessary erection / commissioning spares and consumables shall be included in vendor scope. iv) Necessary tools and tackles required for maintenance or testing or inspection shall be covered in vendor scope. v) Necessary chain and pulley block along with hand operated geared trolley arrangement for horizontal movement across the monorail, hoist, rope and hook arrangements at the machine room ceiling to carry out the maintenance and erection of equipment shall be supplied by Elevator vendor. The necessary mono-rail beam will be supplied by purchaser (BHEL). vi) A steel ladder has to be provided for access to the pit by the Elevator vendor. Any necessary erection / commissioning spares and consumables shall be included in vendor scope. Necessary tools and tackles required for maintenance or testing or inspection shall be covered in vendor scope. vii) Guard to protect the hoist way including temporary barricades at hoist way openings by Elevator vendor. viii) Scaffolding as per erection requirement shall be provided by the Elevator vendor. After completion of handing over activities, the scaffolding materials may be taken back by the vendor. ix) All the electrical equipment including Lift well, Hoist way & machine room lighting with fittings,		

CLAUSE NO.	TECHNICAL DELIVERY CONDITIONS	VENDOR COMPLIANCE (Refer Note: 1)
	Power/control/trailing cables, MCCB/MCB & ELCB for 415 V AC 3ph supply and 240 V AC single phase supply (to receive the incoming feeders provided by customer) shall be included in the Elevator vendor scope. x) The vendor shall assume all responsibility in proper design and operation of each and every component of the elevator as well as the elevator as a whole. Complying with Indian electricity rules & Indian electricity acts and applicable statutory requirements (of Government of India and applicable States) and design as well as procedural formalities also shall be taken care by vendor.	
7.0	**EXCLUSIONS**	
	Works not included in elevator contract, but furnished by others in accordance with local codes and regulations and the approved drawing of the Elevator vendor. i) Civil works associated with the Elevator pit. ii) Furnishing and installation of steel beams (Hoisting beams) in the machine room to lift equipment during installation and to facilitate maintenance. iii) Machine room civil works including concrete flooring. iv) Steel structures for Columns and associated bracings and approach platforms up to landing doors at each level. v) Supporting steel material between hoist way & car will be provided by BHEL.	
8.0	**ELEVATOR PARTICULARS & DESIGN PARAMETERS**	
	Passenger & Goods Cum Passenger Elevator shall be provided with 1 no. fireman's switch (Alarm Switch). The Elevator shall be located on the side of the boiler as indicated in the plant layout drawing which will be provided during detailed engineering. Entry to the Elevator shall be indicated in the enquiry. Foundation plan and elevation with landing levels shall be as per purchaser (BHEL) drawings.	
9.0	**Design Criteria and Equipment specification for Passenger Elevator & Goods Cum Passenger Elevator.**	

	i)	Type of service	Passenger Elevator/Goods cum Passenger Elevator (as per enquiry)
	ii)	Number required	As per enquiry
	iii)	Load on the Elevator	As per enquiry
	iv)	Rated speed	As per enquiry
	v)	Total travel	As per enquiry
	vi)	No. of floors to be served (Landing levels)	As per enquiry
	vii)	Entrances	One number in each floor
	viii)	Entrances and Platform size	As per IS: 14665-2000.
	ix)	Method of control Motor Speed Control: Logic Control:	 Variable Voltage variable frequency (VVVF) control. Microprocessor based Control with automatic level adjustment. The control system shall be of field proven design and having satisfactory track record.
	x)	Flooring of Car	Chequered plate (6 mm thick). Car floor shall comprise of a smooth non-slip surface.
	xi)	Position of Machine room	Directly above the Lift shaft
	xii)	Design, construction and finish of car	MS sheet fabricated, smooth finish, spray painted to approved shade. If SS (ASTM-304 No: 4 Hairline finish) is required as per enquiry vendor to consider the same in their offer.
	xiii)	Car door	MS sheet fabricated, smooth finish, spray painted to approved shade. If SS (ASTM-304 No: 4 Hairline finish) is required as per enquiry vendor to consider the same in their offer.

CLAUSE NO.	TECHNICAL DELIVERY CONDITIONS			VENDOR COMPLIANCE (Refer Note: 1)
	xiv)	Landing door	MS sheet fabricated, smooth finish, spray painted to approved shade. If SS (ASTM-304 No: 4 Hairline finish) is required as per enquiry vendor to consider the same in their offer.	
	xv)	Car Enclosure	MS sheet fabricated, smooth finish, spray painted to approved shade. If SS (ASTM-304 No: 4 Hairline finish) is required as per enquiry vendor to consider the same in their offer.	
	xvi)	Lighting and fan in the car	One cabin fan and two nos. of 20 Watts, recessed fluorescent lamp fitting for operation on 240 V, 50 Hz, AC single phase power supply.	
	xvii)	Method of operation of car	Power operated type – automatic, Horizontal Centre opening / closing car and landing doors. If vertical bi-parting doors are required as per enquiry, vendor to consider the same in their offer.	
	xviii)	Operation of Elevator	Automatic, simplex, selective, collective with and without attendant, through illuminated pushbutton station located inside the car with provision for locking control in Auto or attendant position.	
	xix)	Signals / Indicator	Car position indicator in car, hall position indicator at all floors, Up & down travel direction position indicator, tell-tale lights at all floors, battery operated alarm bell and emergency light with suitable battery and battery charger and controls. Audio annunciation for car position indication shall also be provided inside the car also. Overload warning indicator with visual & audio annunciation.	
	xx)	Shaft lighting	The Elevator shaft shall be suitably illuminated by providing the fittings at every 3m (three metres) from bottom of Lift well. Industrial bulk head / industrial bulk head with integral mounted control gear - 1X100 W incandescent lamp / 1X 70 W HPSV Fittings type: 60 W Bulk head fitting with bulb (or) CFL with fibre covering, conduit pull boxes, wiring, switches, other components / accessories and necessary switches. The make of the fittings & accessories shall be indicated in the offer.	
10.0	**DETAILS OF SPECIAL TREATMENT FOR ELEVATOR**			
	As the Elevators are to be installed in a heavily polluted and dusty area in a thermal power station, the Elevator components shall be given special corrosion treatment as indicated below.			
	i)	Cars & Counter weight	Anti-corrosive epoxy paint	
	ii)	Fish plates	Anti-corrosive epoxy paint	
	iii)	Car & Counter weight buffer	Anti-corrosive epoxy paint	
	iv)	Supports(Buffer)	Anti-corrosive epoxy paint	
	v)	Rail Brackets	Anti-corrosive epoxy paint	
	vi)	Bracket & rail fasteners	Zinc-passivated with epoxy painted	
	vii)	Tie down bolts	Zinc-passivated with epoxy painted	
	viii)	Machine	Anti-corrosive epoxy paint	
	ix)	Brake adjusting screw & coupling fasteners	Zinc-passivated	
	x)	Bracket	Anti-corrosive epoxy paint	
	xi)	Controller cabinet	Anti-corrosive epoxy paint as per industry standard.	
	xii)	Hall buttons	Dust-proof with aluminium face plate or stainless steel hardware.	

CLAUSE NO.	TECHNICAL DELIVERY CONDITIONS			VENDOR COMPLIANCE (Refer Note: 1)
	xiii)	Car operating panel	Dust proof stainless steel plate and hardware.	
	xiv)	Governor	Cover and casting epoxy painted. Other components zinc plated.	
	xv)	Governor Tension frame	Hot dip galvanised and anti-corrosive epoxy paint with M.S. shaft for sheave.	
	xvi)	Car frame, level brace rods and counter weight frame	Epoxy paint as per IS-1477 Part 1 & 2.	
	xvii)	Safety equipment (Linkages)	Zinc-plated	
	xviii)	Safety switch and car gate switch	IP-65. Dust proof heavily zinc plated arm, stainless steel shaft and housing as per vendor standard.	
	xix)	Guide shoe	Zinc-plated	
	xx)	Cam bar mountings and channels	Zinc-plated and anti-corrosive epoxy paint	
	xxi)	Counter weight frame	Anti-corrosive epoxy paint	
	xxii)	Guide shoe with Nylon ribs	Zinc-plated	
	xxiii)	Filter weights	Anti-corrosive epoxy paint	
	xxiv)	Rope fasteners	Zinc-passivated and chromate dipped	
	xxv)	Hoist rope	Greased after galvanising / self-lubricating	
	xxvi)	Governor rope	Greased after galvanising / self-lubricating	
	xxvii)	Car enclosure, interior gate, car door and landing door	Anti-corrosive two coats baked enamel paint	
	xxviii)	Alarm and door open bells (Electronic hooter)	Painted.	
	xxix)	Junction box	Metallic body - dust proof with Anti-corrosive epoxy paint	
	xxx)	Hall position indicator and car position indicator	Dust proof with stainless steel enclosure and Face plate.	
11.0	**MECHANICAL EQUIPMENT**			
11.1	**ELEVATOR CAR**			
	The car platform frame and sling shall be of steel construction. The platform shall be suitably isolated from its sling. The car shall be enclosed with suitably braced and reinforced sheet metal panel. The sheet metal panel shall have ventilation slots at the base. The car interior, the car doors and the landing doors shall be finished with two coats of baked enamel. All other exposed steel or cast surfaces shall be painted with one coat of suitable metal primer and two coats of machinery enamel paint. The car shall be provided with the following accessories: i) Car control station with position indicator inside the car and at landing platforms. ii) An emergency stop switch (shall have two sets of potential free contact. Second one shall be taken and terminated in machine room for further connection by owner) iii) A three pin plug & socket with switch on top of Elevator car for use by persons working there on. iv) Telephone instrument shall be provided inside the car. Connection from the same shall be brought up to the machine room for further connection to plant network by customer. Telephone instrument provided inside the car shall have provision for hands free operation also, i.e. Speaker phone shall be provided for hands free operation. v) For better safety, elevator vendor to provide car top barricade on car top to ensure that service personnel stay inside the car region. A selector switch and a set of push buttons shall be provided on the top above the ceiling of the car to operate the elevator locally for inspection and maintenance. The selector switch when set to position "inspection" shall exclude control from other places and movement of the car in the desired direction shall be effected by the push buttons. For normal operation of the elevator, the selector switch shall be set to the position working. It shall be possible to operate the elevator only when the appropriate button is kept in pressed condition. The roof shall be strong enough to support at least two persons. vi) Adequate lighting and ventilation shall be provided in the Elevator car. The car shall be fitted			

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	with fan of adequate capacity and lighting with decorative fittings. The car platform shall be robust in construction and elegant in appearance. vii) The car shall be provided with an emergency alarm push button inside the Elevator car which shall be clearly marked. The alarm shall be clearly audible outside the Lift way in order to obtain assistance in case of breakdown or failure between the floors. viii) Car shall be equipped with handrails on three sides.	
11.2	**CAR DOOR**	
	The car door shall be of hollow metal construction 16 gauge thick sheet steel. Sides of the door shall be flush with all seams continuously welded. Guide shoes shall be rubber or roller type designed for operation on un-lubricated guides. The car door shall be provided with locking gear of heavy and robust construction, so arranged mechanically and interlocked that the doors cannot under any circumstance be opened unless the Elevator car is within a particular landing zone. Conversely the Elevator shall not move until all the landing doors are closed and interlocked properly. Width of Car Entrance shall conform to IS:14665. The live load coming into play shall be taken into consideration while designing doors, door frame and hanger tracks. The car doors shall be designed such that their closing and opening is not likely to injure a person. A retractable safety shoe shall extend the full height and project beyond the front edge of the car, to open the closing door if and when it touches a person or an object. Alternatively opening of car by means of optical sensing shall also be provided.	
11.3	**LANDING DOORS**	
	All landing openings in the Lift well enclosure shall be protected with doors which shall extend the full height and width of the landing opening. The type of door provided shall be similar to the Elevator car door. Every landing door shall be fitted with a locking device. The door shall be suitably interlocked so that they cannot open unless the car is within a particular landing zone. The locking device is closed until the door is closed. The levers operating the locking devices shall not interfere with the landing side or Elevator enclosures. Landing doors of the elevators shall have fire resistance of at least one hour. These doors shall also be smoke tight as far as possible.	
11.4	**LOAD PLATE**	
	A load plate displaying the rated load of the Elevator in terms of persons and kilograms shall be fitted in the car in a conspicuous position.	
11.5	**SUSPENSION ROPES**	
	The car and the counter weights shall be suspended by steel wire ropes. Chain shall not be used for suspension. Not less than four independent stranded steel wire suspension ropes shall be used for car or counter weights of the Elevator with traction drive. The minimum diameter of the stranded rope shall not be less than 12.5 mm and minimum factor of safety shall not be less than 12. The suspension ropes shall conform to latest edition of IS 2365 – "Specification for steel wire suspension ropes for Lifts and hoists" or equivalent International Standards.	
11.6	**SHEAVES AND PULLEYS**	
	All driving sheaves and pulleys fixed to and revolving with the shaft shall be fixed by means of sunk keys of sufficient strength and quality. Sheaves and pulleys shall be made of cast steel to IS: 1030 and free from cracks, sand holes and other injurious defects. They shall have suitable flanges and smoothly machined rope grooves. The diameter of the sheave or pulley shall be as specified in the latest edition of IS 14655 or equivalent International Standards.	
11.7	**SHAFT**	
	Shafts and axles shall be forged steel. They shall have sufficient rigidity and bearing surface. Any shaft when stepped shall be tumed to a reasonable radius at the point of reduction.	
11.8	**COUNTER WEIGHTS**	
	The Elevator shall be provided with suitable counter weights located in the Lift shaft. The counter weight shall be designed for smooth and easy operation of the Elevator and shall be in accordance with Indian Standard (or) equivalent International Standard. Suitable counter weight screen shall be provided in the Elevator shaft. The counter weights shall consist of cast iron weight contained in structural steel frame. It should preferably be equal to that of the car weight plus 40 % of the rated load. The traction should be such that no appreciable slip may occur but that slip shall be free to take place upon the landing of either the car or the counter weights.	
11.9	**GUIDE RAILS**	
	Guide rails for the car and counter weights shall be machined 'T' sections and continuous	

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	throughout the entire length and shall be provided with adequate steel brackets or equivalent fixing of such design and spacing between brackets shall be such that to avoid any deflection during the normal operation. Guide rails section shall be adequate to withstand the forces resulting from the application of the safety gear when stopping the counter weights or fully loaded car. The guide shoes or their lining shall be easily renewable, adjustable and self-lubricated. Guides shall be of such length that it shall not be possible for any of the car or the counter weight shoes to run off the guides.	
11.10	**BUFFERS**	
	Sufficient number of buffers of spring loaded type shall be fitted below the Elevator car and counter weights. The buffers shall be capable of stopping the car or counter-weights without permanent damage or deformation to itself or any part of the Elevator equipment. The number of buffers shall be so fixed as to ensure proper sharing of the impact loads by all of them.	
11.11	**EMERGENCY SAFETY DEVICES AND BRAKES**	
	The Elevator shall be provided with safety device attached to the Elevator car frame and placed beneath the car. The safety device shall be capable of stopping and sustaining the Elevator car up to governor tripping speed with full rated load in car. The application of the safety device shall not cause the Elevator platform to become out of level in excess of 3 cm/m measured in any direction. Slack rope switches, if necessary, shall also be provided. The Elevator vendor shall also provide personnel evacuation system during the power failure to the Elevator. The Machine shall be provided with direct current spring set, solenoid release double shoe brakes of sufficient capacity to stop the car at any position with the design load. These brakes shall be designed in such a way that it gets applied automatically in the event of power failure.	
11.12	**AUTOMATIC RESCUE DEVICE (ARD)-(BATTERY DRIVE)**	
	Contractor shall provide a modern advanced electronic drive system of "RESCUING Passengers Trapped in an ELEVATOR" in case of power failure. In addition to the above, bell and cranking device to be provided with hand wheel connected with motor shaft for manual lowering of elevator to the nearest landing level. For all Elevators with ARD, an audio & visual indicator shall be provided inside the Elevator car to alert the person trapped inside that he/she is being rescued. Capacity of battery shall be such that minimum three rescue operations can be performed without recharging. ARD panel shall be suitable for floor mounting. Vendor shall indicate the size of ARD panel (Length x Depth x Height) in the offer.	
11.13	**OVERLOAD DEVICE**	
	Every passenger Elevator shall be provided with an overload device, which will prevent the Elevator from starting in case the Elevator car is loaded to 110 percent of the rated capacity of the Elevator or more. Elevator shall remain stationery with door open. Audio & visual warning device (Load weighing device) shall be provided to alert the passenger in case of overload.	
11.14	**OVER SPEED GOVERNOR AND GOVERNOR ROPES**	
	Governor shall be located where there is sufficient room for their proper operation and where they cannot be struck by the Elevator car or counter weight in the event of over run. Each governor shall be marked with tripping speed in terms of car speed in m/sec and the motor control and brake control circuit shall be opened before or at the time the governor trips. Governor ropes shall not be less than 8 mm in diameter and shall be of steel or phosphor bronze and of suitable construction. The ropes shall run clear of the governor jaws during normal operation of the Elevator. The Governor has to be compatible for operation with microprocessor based control system.	
11.15	**LEVELLING DEVICE**	
	The Elevator shall be provided with a two way automatic levelling device. The levelling device shall take care of overrun and under run of the car and rope stretch, such that car floor is within 6.0 mm from the landing level at all floors while in operation. Aprons of sufficient depth shall be fitted to the car floor to ensure that no space is permitted between the threshold and the landing while the care is being levelled to floor.	
11.16	**MACHINE ROOM AND OVERHEAD STRUCTURES**	
	All the overhead machinery shall be supported on beam to be furnished by the contractor. The machinery support beam shall rest on top of or be designed to be framed into the contractor's structural steel frame for the boiler house. The Elevator drive controller and all other apparatus and equipment of Elevator installation, except such apparatus and equipment which function in the machine room shall be located at the top of the Lift well. Adequate machine room and hoist way lighting shall be provided by the Elevator	

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	vendor. The maximum loads transmitted by the single heaviest equipment both during erection and maintenance of the Elevator to the machine room floor and other structures like guides etc. shall be furnished by the Elevator vendor within 15 days of placing the award letter. Sound reducing materials below machines in machine room shall be provided. Machine room shall be provided with Industrial type vitreous enamelled reflector - 2 X 40 W (for min. 200 Lux) Fluorescent Lamp.	
11.17	**TERMINAL STOPPING AND FINAL LIMIT SWITCHES:**	
	The Elevator shall be equipped with an automatic stopping device arrangement to bring the car to a stop at the terminal landings independent of the regular operating device in the car. Such stopping device shall act independently of the operating device, the final limit switches and buffer. Final limit switches shall be provided to stop the car automatically within the top and bottom clearance independent of normal operating device and the terminal stopping device. The final limit switch shall act to prevent movement of the car under power in both directions of travel and shall after operating, remain open until the Elevator car has been moved by a hand operating mechanism within the limits of normal travel. Elevator shall be suitable for continuous 24 hours round the clock operation.	
12.0	**ELECTRICAL EQUIPMENT AND CONTROLS:**	
12.1	**OPERATION AND INTERLOCKS:**	
	The operation of the Elevator shall be simplex, selective, collective, and automatic, with or without operator. The Elevator operation shall conform to the following requirements. i) The operation of the Elevator shall be through a push button station located inside the car. ii) The Elevator shall not move unless the car door, landing door and all other protected openings connected with the control circuit are closed. iii) Two push buttons, one for upward and the other for downward movement at each intermediate landing and one push button at each terminal landing shall be shall be provided in the landing floors in order to call the car. iv) The landing doors shall be interlocked so that the landing door at any floor shall not open when the Elevator is not on that floor. v) Push button shall be fixed in the car for holding the doors open for any length of time required.	
12.2	**ELEVATOR DRIVE:**	
	The Elevator drive shall be equipped with automatic electromagnetic coil type brakes. The Elevator shall be driven by a drive suitable for method of control offered by the Elevator vendor. No friction gearing or clutch mechanism shall be used for connecting the main driving gear to the sheaves.	
12.3	**ELECTRIC MOTORS:**	
	Motors shall be energy efficient type, High efficiency (IE2) as per IEC-60034-30 suitable for frequent starting with S4 duty class, CDF 40% , Maximum 150 starts per hour at 50 Deg. C ambient and with IP 54 protection class. Motor pull out torque shall be at least 275% of rated torque. Motor shall be of TEFC type. Motor insulation shall be class F or superior with temperature rise limited to class B. Motor paint shade shall be RAL 5012 if called for in the enquiry. Motor datasheet prepared by OEM shall be submitted along with the offer.	
12.4	**CONTROLLERS:**	
	The controllers shall be designed to start, accelerate, stop and reverse the Elevator when the appropriate push buttons are pressed. It shall be arranged so as to provide maximum convenience to the operator. Contact finger buttons shall be easy to adjust and replace. The speed control device shall be such as to give smooth, easy and accurate speed control. The Elevator controls shall be housed in dust and vermin proof enclosures. The controls shall be wired with stranded copper conductor cables. All equipments mounted shall be neatly labelled as per wiring diagram. Ventilating louvers are to be provided in the panels. Control panel shall be suitable for floor mounting.	
12.5	**CABLES AND INTERNAL WIRING:**	
	All cables (both power and control) shall be armoured, XLPE insulated & FRLS PVC sheathed.	

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	Wiring shall be done as required to interconnect all Elevator electrical equipment including all power wiring from the main supply source in the machine room. Power cables shall be 1100 V grade multi core, stranded Cu conductor with XLPE insulation, FRLS type ST2 inner sheathed, galvanised steel wire armoured and overall extruded FRLS, Type ST2 PVC sheath. The trailing cables shall conform to IS 4289. All other cables shall conform to latest edition of IS: 7098, IS:1554 & IS:5831.	
12.6	**CABLING AND EARTHING**	
	Earthing shall be carried out as per IS 3043 and Indian Electricity Rules. The Elevator structures, motor, frames, metal cases and all electrical equipment including conduit, cable armouring and guards shall be properly bonded and earthed by two separate and distinct connection. The Elevator vendor shall provide 25 x 3 mm GI flat for control panel and 50 x 6 mm GI flat earth bus in the machine room and connect all earth points to the same. The earth bus will be connected to the station earth mat by the owner.	
12.7	**POWER SUPPLY**	
	One three phase 415V, AC, 50 Hz UPS Supply for Elevator main motor, and one single phase 240V, AC, 50Hz supply feeders for lighting, Air conditioner and control panels will be provided in the machine room by BHEL. The exact Power requirement in kVA of three phase supply and single phase power supply shall be indicated in the offer itself by the vendor. The junction box having MCCB/MCB Isolation of adequate rating shall be arranged by the vendor to receive the above supplies. The Elevator vendor shall also indicate the proposed location of junction box in the machine room. All further cabling and wiring from the junction box shall be carried out by the Elevator vendor. The vendor shall arrange to tap power supply required for constructional purposes from the point terminated by the owner.	
13.0	**OTHER REQUIREMENTS**	
	Electric high speed door operators for the opening and closing of the car doors and landing doors shall be furnished and installed. The car and landing doors shall be mechanically connected and shall move simultaneously in opening and closing. The car door and landing door shall be power closed and shall be controlled in opening and closing by oil cushioning mechanism built into the gear unit. Necessary lockable switches shall be provided in the Elevator machine room to control the operation of the door. Should the electric power fail, it must be possible for the doors to be manually opened from within the car. Overload relays shall be provided to protect the drive motor against overload or a power failure. Suitable protection shall be provided on the controller to protect the Elevator equipment from phase reversal, low voltage. Suitable arrangement shall be provided to intimate unit control room during emergency in the form of audio-visual alarm. Complete set of special tools and tackles required shall be supplied along with Elevator. Each tool and tackle shall be stamped so as to be identified easily for its use and size. Tools shall be supplied in a steel tool box. The list of tools and tackles shall be furnished along with the offer. One number Fire extinguisher (suitable for electrical fire) shall be provided along with each elevator. Machine room shall be provided with 5 tonnes or with 1 No. of one tonne and 2 nos., of 1.5 tonne capacity A/C units (minimum) to make the machine room dust proof. If higher capacity of A/C is required for proper cooling, the same is to be indicated in the offer. Vendor to indicate the power consumption of A/C units in the offer.	
14.0	**SPARES**	
	The vendor shall furnish the List of start-up, mandatory and recommended spare parts and indicate separately in the offer with item wise price under the title "Schedule of Spare Parts".	

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	The spares recommended above with unit prices shall be valid for at least for three years of normal consumption for operation of the plant. The vendor shall also indicate the service expectancy for these spare parts under normal operating conditions before the replacement is necessary. All the spares offered shall be strictly interchangeable with the parts for which they are intended for replacement. The spares shall be treated and packed for long storage under the climatic conditions prevailing at site. Each spare part shall clearly be marked or labelled on the outside of the packing in single case. The general description of the contents shall be shown on the outside of such cases. All cases, containers and other packages shall be marked suitably and numbered for the purpose of identification. All cases, containers and other packages are liable to be opened for such examination as may be felt reasonable by the purchaser. The vendor shall bear in mind the shipment of the plant having ball or roller type bearings for which the following special provisions shall apply: i) If temporary transit bearings are fitted to such plant, then, additionally, two complete sets of service bearings shall be included and shipped with such plant. ii) If the item of the plant is shipped with service bearings in position, then additionally one complete set of service bearings shall be included and shipped with such plants. In either or both of the above provisions, the cost of the additional sets of bearings shall be included in the offer. iii) If replacement of any bearing is required due to damages during shipment or other causes, the spare bearings shall be used to replace at free of charge.	
15.0	**DRAWINGS / DOCUMENTS**	
	The following preliminary documents / drawings should be enclosed along with the offer without fail. i) Detailed description of the system offered. ii) List of thermal power where the offered system is in operation. iii) Performance certificate of the system offered. iv) Write-up on interlocks, controls and safety devices provided. v) Typical General Arrangement of Elevator (including hoist way, pit well etc.) vi) Typical General Arrangement of machine room and equipment in machine room. vii) Electrical control scheme with legend and write-up. viii) Machine room Air-Conditioning details. ix) Foundation and loading details of machine room floor and the concrete structure. x) Filled in vendor data sheet for Elevator, Main motor and Door operator motor. xi) Filled in vendor quality plan. xii) The major components of Elevator with weight details to be indicated by the vendor in the offer itself. xiii) The make, type, capacity, range of all bought out items xiv) Any deviation from the enquiry specification shall be indicated in the "Sub-delivery Enquiry Deviation Format" attached along with the enquiry. No deviations, unless explicitly taken up by vendor in the enquiry stage itself in the said format and accepted by BHEL in writing, shall be considered after firm order. In case no deviations are there, vendor to indicate "No-deviation" in the fully filled up format. The following documents / drawings shall be submitted within 15 days from the firm order. i) Elevator General Arrangement drawings for BHEL/Customer approval. ii) Elevator Technical Datasheet Separate contract-wise drawing approvals shall be obtained by vendor before manufacture of elevators.	
16.0	**GUARANTEE**	
	The Elevator Vendor shall guarantee that the materials, workmanship and performance of the apparatus installed under this specification is perfect in every respect and that they will make good	

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	of any defects (not due to careless operation) which may develop within 18 months from the date of formal handing over of the equipment.	
17.0	**MAINTENANCE**	
	After the completion of the installation, maintenance and service for the equipment furnished under this specification shall be provided by the vendor for a period of eighteen months. This service shall include monthly inspections of the installation during regular working hours by trained employees and shall include all necessary adjustments, greasing, oiling, cleaning, supply of genuine standard parts to keep the equipment in proper operation except any part made necessary by misuse, accidents or negligence caused by others.	
18.0	**ACCEPTANCE**	
	After erection, the performance of the Elevator shall be tested for ascertaining the conformity with the specification and upon satisfactory completion of the tests, the Elevator will be taken over. The responsibility for obtaining commissioning and handing over protocol signed by the customer lies with the Elevator vendor.	
19.0	**QUALITY ASSURANCE AND TESTING**	
19.1	**For NTPC Contracts :**	
	i) Vendor shall prepare Quality plan in NTPC format (copy enclosed) along with enquiry. This QP will be reviewed by BHEL and if any comments given by BHEL shall be incorporated by vendor. ii) In case of order receipt, this QP will be submitted for NTPC approval. Any comments given by NTPC shall be incorporated by vendor for further approval by NTPC. iii) In case of vendor having NTPC approved Reference Quality Plan (RQP), Endorsement sheet shall be submitted by vendor for getting NTPC approval. iv) Elevators are subject to inspection by BHEL & NTPC and inspection call shall be given 15 days in advance. v) Materials can be despatched only after obtaining CHP clearance & MDCC clearance from NTPC.	
19.2	**For Non-NTPC Contracts with BHEL Inspection :**	
	i) Vendor shall prepare Quality plan in the BHEL standard Quality Plan format (copy enclosed) along with enquiry. Such a QP shall contain all the required quality checks right from the raw material stage through in process, Assembly, Testing & Final inspection. Any comments given by BHEL shall be incorporated by vendor. ii) In case of order receipt, this QP will be approved by BHEL. iii) Elevators are subject to inspection by BHEL and inspection call shall be given 15 days in advance.	
19.3	**For Non-NTPC Contracts with BHEL & Customer Inspection:**	
	i) All the points covered under Clause no. 19.2 are applicable for this category. ii) The QP will be approved by customer & elevator will be subject to inspection by customer. Any additional points indicated by customer have to be carried out by the vendor.	
20.0	**O&M MANUALS**	
	Vendor to furnish standard O&M manuals for each capacity of elevator, immediately after the release of first purchase order for BHEL's further use (Two copies of CD-ROM). The O&M manual prepared shall be such that the same shall be usable along with the relevant drawing for each project. Project wise O&M manuals along with project-wise details, if any, has to be updated by vendor and handed over to site (Customer & BHEL/Site, after commissioning of elevator) in necessary format as desired by customer.	
21.0	**PACKING PROCEDURE**	
	Proper packing of all the items shall be done as per vendor standard and dispatched to site. The packing shall be suitable for outside storage at site.	

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22.0	**LIST OF ELEVATOR OPTIONAL PRICES**	
	The following optional prices to be indicated along with offer for arriving at the base price of elevator. i) Rate for addition / deletion of 1 number landing. ii) Rate for addition / deletion of 1Mtr. in travel height. iii) Extra price for having 0.75mps & 1mps speed of goods elevator instead of 0.55 mps for 3 Ton elevator iv) Extra price for having 0.75mps & 1mps speed of goods elevator instead of 0.55 mps for 2 Ton elevator v) Extra price for Car, Car Enclosure and Car Door with SS (ASTM 304 No: 4 Hairline finish) for 1) 3 Ton elevator 2) 2 Ton elevator 3) 1 Ton elevator 4) 1088 Kg Passenger Elevator vi) Extra price for Landing door with SS (ASTM 304 No: 4 Hairline finish) for 1) 3 Ton elevator 2) 2 Ton elevator 3) 1 Ton elevator 4) 1088 Kg Passenger Elevator vii) Additional price of Automatic Rescue Device (ARD) for increased height of 15 Mtrs. viii) Audio annunciation in the form of metres. ix) Extra price for 1500mm car door clear opening for 2Ton & 3Ton goods elevator x) Extra price for 1800mm car door clear opening for 2Ton & 3Ton goods elevator xi) Extra price for 1500mm landing door clear opening for 2Ton & 3Ton goods elevator xii) Extra price for 1800mm landing door clear opening for 2Ton & 3Ton goods elevator xiii) Extra price for fire resistant landing doors (1 hour as per BS:476 (Part 20 & 22)) xiv) Emergency exit of adequate dimensions on the top of car. xv) Extra price for providing vertical bi-parting doors instead of horizontal centre opening door.	

NOTE:

1) In 'Vendor Compliance' column vendor to indicate 'YES', 'NO' or 'NOT APPLICABLE. Any deviation from this specification shall be clearly brought out in the sub delivery enquiry deviation format provided along with the enquiry. No deviations will stand in case of firm order unless otherwise accepted in writing by BHEL.

COMMERCIAL TERMS TO BE SUBMITTED BY VENDOR ALONGWITH OFFER

Enq no: 1701402331 dt.19.12.2014

S.No.	CONDITIONS	BHEL TERMS	Vedor's confirmation
1	Delivery terms	FOR- Project sites	
2	Delivery Required	Quote (From PO date)	
3	Payment terms	75% direct payment after 45days from the date of dispatch against site ack LR copy	
4	Packing & forwarding	Inclusive	
5	Freight & Insurance	Inclusive	
6	ED + Cess	As applicable / For Exempted projects Req Documents will be forwarded	
7	CST/VAT	As applicable	
8	LD clause	0.5 per week to a max of 10%	
9	Risk Purchase	Applicable	
10	Offer Validity	90 days from the date of Techno commercial bid opening	
11	Firm Price	Prices shall be firm till execution of supplies	
12	Guarantee/Warranty	18 months from the date of supply or 12 months from the date of commissioning whichever is earlier	

Vendor Signature with seal

TERMS AND CONDITIONS

1. a) **QUOTATIONS** : Each tender should be sent in double cover, inner cover should be sealed with tenderer's distinctive seal and superscribed with correct tender No. item of supply and due date of opening. The outer cover should only bear the address of this office and should not have any indication that a tender is within. Two or more quotation should not be sent in one cover but the quotation against each tender should be sent separately to avoid confusion. Tender should not be addressed to any individual's name but only by designation.

b) Tenders should be free from CORRECTION AND ERASURES. Corrections if any, must be attested. All amounts shall be indicated both in words as well as in figures. Where there is difference between amount quoted in words and figures, amount quoted in words shall prevail.

c) Price should be nett F.O.R despatching station inclusive of risk in transit and remain valid for 60 days from the due date.

d) If any Sales Tax is payable as extra to the quoted price it should be specifically stated in quotations alongwith CST & TNGST No failing which the purchaser will not be liable for payment of Sales Tax. Our T.N.G.S.T No 3560005 Dt. 01-04-1995 CST No. 239383 Dt. 11.6.1991.

e) No revision of prices will be entertained after tenders are opened.

f) Manufacturer's Name, Trade Mark or Patent No. if any should be specified. Illustrative leaflets giving technical particulars are required alongwith quotation wherever necessary.

g) Products with I.S.I Certification marks will be preferred.

h) The purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept or reject any tender in part or full without assigning any reason whatsoever.

2. **SAMPLES** : Wherever possible, sample should be submitted separately whether specifically requested or not so as to reach the purchaser on or before the due date of the enquiry. They should be clearly marked with the enquiry No and the date on the outside cover to facilitate identification.

3. **PACKING AND MARKING:** The supplier shall arrange for securely protecting and packing the stores to avoid loss or damages during transit.

4. **TERMS OF PAYMENT** : Payment will be made within 45 days of satisfactory receipt of materials at site. Wherever required by the purchaser, the successful tenderer must send the operation and mainten ce manuals, test certificates, drawings, etc., for the materials ordered. These should be sent immediately after despatch of the materials and a statement to that effect should be made in the invoice. Failure to comply with this provision will result in delay in payment of the bills. Goods despatched either by V.P.P or by the document presented through bank will not be accepted unless agreed to by the Purchaser.

The duplicate copy of the invoice meant for the transporters should accompany the material as stipulated under C.E. Rules 52A and 173C (or) 57GG. A photostat copy of the above invoice for each delivery challan should be submitted alongwith the original bills routed through bank or submitted directly to BHEL Finance Department.

5. **SECURITY DEPOSIT** : For purchases over Rs. 5,000/- the successful tenderer/s may be requested to furnish a Bank Guarantee. Security Deposit for an appropriate value as may be determined by BHEL.

6. **LIQUIDATED DAMAGES/ PENALTY AND INTEREST ON ADVANCES FOR DELAY IN DELIVERY:**

If the supplier fails to deliver the raw material / equipment / components within the period specified in the contract the purchaser shall deduct Liquidated Damages a sum equivalent to 0.5 % of the price for each week of delay upto a maximum of 10% of the price of the delayed / undelivered goods. In addition to the recovery of interest at normal cash credit rate plus 2% for the unadjusted portion of the advances. If the delay in delivery of a part contributes to delay in execution of total system, LD and interest on advances will be recovered on the total contract price / total advance paid .

7. **RISK PURCHASE** : Alternatively the purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or despatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitute therefor. The supplier shall be liable for any loss which the Purchaser may sustain by reason of such risk purchases in addition to penalty at the rate mentioned in clause 6 above.

8. **PREFERENTIAL DELIVERY** : It should be noted if a contract is placed on a higher tenderer as a result of this invitation to tender in preference to the lowest acceptable offer in consideration of the earlier delivery, the seller will be liable to pay to the purchaser the difference between the contract rate and that of the lowest acceptable tender on the basis of final price F.O.R. destination, including all elements of freights, sales tax, duties and other incidents, incidental in case of failure to complete supplies in terms of such contract within the date of delivery specified in the tender and incorporated in the contract.

9. **MODVAT CREDIT** : If any Excise Duty is payable, the chapter head/sub-head reference and the rate of the duty should be quoted. If the tender is availing MODVAT credit for this inputs materials, the effect of proforma credit should be passed on to the purchaser. Tenderer under "MODVAT" shall be preferred.

10. **Purchase** : Preference will be given to CPSUs as per. Government Guidelines.

11. **GENERAL** : The purchaser reserves the right to split up the tender and place order for individual terms with different tenderers and also increase or decrease the quantity.

Any Other conditions which might have been quoted by the Seller and are in contravention to the terms prescribed in the order and which have not been spefcifically accepted in by Purchaser will not be applicable to the contract.

429-024

PURCHASE / MM / FB
SUB DELIVERY - ENQUIRY - DEVIATION

Page	OF

SCHEDULE OF DEVIATION TO SUB - DELIVERY ENQUIRY No.		DATE	

DESCRIPTION			
SPECIFICATION		DRG. No.	
QUALITY PLAN			

DOCUMENT REFERENCE	BHEL ENQ. CALLED FOR	FIRM'S ALTERNATE OFFER

CERTIFIED THAT OTHER THAN THE ABOVE DEVIATIONS, WE ARE ACCEPTING ALL THE OTHER SPECIFICATIONS AND REQUIREMENTS IN FULL TO YOUR ENQUIRY

STATION :

DATE : SIGNATURE OF FIRM'S REPRESENTETIVE FIRM SEAL

NOTE: 1. Deviations should be taken only in the extreme case.
2. If necessary, use additional sheets with page control number.

	Manufacturer Address	QUALITY PLAN FOR Xxxx	QP No.: Rev: yy Date: zz/zz/zz Page 1 of 1	Project: P.O.No.: Date:

Sl. No	Component & Operation	Characteristics	Class	Type of Check	Quantum of check		Ref Doc. & Acceptance STD	Format of record	AGENCY			REMARKS
					M	B/C			M	B	C	
A	**RAW MATERIAL & BOUGHT OUT ITEMS INSPECTION**											

Signature of Manufacturer/Sub-Vendor	**M**- Manufacturer/Sub-Vendor; **B** - BHEL / TPI ; C - Customer / TPI **P** - Perform; **W** - Witness **V** - Verification;	Name & Signature of Customer approving authority	Name & Signature of BHEL approving authority

BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI

CONTROLS AND INSTRUMENTATION / FB
QUALITY ASSURANCE

STANDARD PACKING PROCEDURE
FOR
ELECTRICAL AND ELECTRONIC PANELS
(INCLUDING BOXES, CABINETS, CUBICLES, SYSTEMS AND CHASSIS)

Rev	Date	Prepared	Checked	Approved	Revision History
00	01.01.96	Sd/-	Sd/-	Sd/-	Initial History
01	28.03.02	A.J.OMPRAKASH Sd/-	R.VARADARAJAN Sd/-	G.MATHIYALAGAN Sd/-	Department name changed
02	26.02.07	RM.VAIRAVAN	N.SRIDHAR	S.SOMASUNDARAM	Revised after discussion with Shipping Dept.

1.0 SCOPE

1.1 This procedure gives minimum guidelines to be complied with for packing of Electrical, Electronics and Instrumentation panels. This packing shall be suitable for different handling operations and for the adverse conditions during transportation and during indoor / outdoor storage for periods more than one year.

2.0 WOOD SPECIFICATION FOR PACKING

2.1 Rubber wood as per manufacturer standard.

2.2 Silver Oak as per procedure PR: CHEM:017 or as per relevant International Standards.

3.0 PACKING

3.1 For Inland packing, rubber wood and export packing Silver Oak wood shall be used. The wood used shall be seasoned and treated. It shall be free from knots, etc. and any kind of decay caused by insects and fungus.

3.2 The required wood case for the equipment to be packed shall be made out of individual planks of single length and no joint is permissible. Using such planks, the required wood case for the panel shall be made,

3.3 Sufficient number horizontal, vertical and diagonal planks (dimension depending upon case size) shall be used for binding and strengthening. Runners have to be provided with metallic sling plates for handling.

3.4 Support planks are to be provided such that, no force is acting on the parts of equipment or its parts.

3.5 Panels above 1.5 metre shall be bolted at the bottom.

3.6 The equipments covered with a polythene sheet shall be kept inside the box, followed by coir, wooden bottoms, thermo coal, etc to prevent vibration effect during loading, transportation, etc.

3.7 The gap between job and the box shall be filled with suitable material like jute, coir, thermo coal, etc.

3.8 On all sides of the inner case, black polythene sheet shall be nailed.

3.9 Loose items of the equipment, if any, shall be packed separately.

3.10 Delicate components likely to be damaged, example PCB – Electronic modules, instrument, etc are to be covered individually in anti-static bags and packed in cartons and filled with fillers like thermo coal, paper cuttings, etc.

3.11 Such cartons shall be packed with overall polythene rapping and packed in wooden cases. Mark prominently as "ELECTRONIC COMPONENTS".

3.12 Each case must have sufficient quantity of silica gel, packed in cotton cloth bags, shall be kept at different places as required.
The bags used shall have the following information marked on it.

Silica Gel activator type:
Blue: Active
Rose: Reduced active
White: No activity. To be replaced with fresh Silica gel.

4.0 MARKING

4.1 After completing the packing, Stencil marking, as per dispatch instructions and symbol marking as per Annexure – I shall be made. Please ensure the box is stenciled with "FRAGILE ITEM", "HANDLE WITH CARE"

5.0 PACKING SLIP

5.1 A copy of the packing slip, kept in a polythene cover shall be kept inside the box. Another copy of the packing slip, kept in a polythene cover shall be kept out side the box and covered with a metallic plate to the case.

6.0 CAUTION

Do not pack any other Mechanical items with this case.

7.0 GENERAL

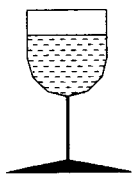
7.1 These packing procedures are the minimum requirements in addition to the standard instructions mentioned in the Purchase Order and Specification.

7.2 Deviation to meet the packing procedure requirements / non-clarity in packing approach in any quotation will be liable for rejection of offer.

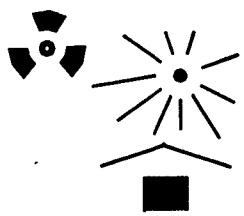
ANNEXURE – 1

TO

PROCEDURE NO:CI:QAC:PR:02/00 ; PR:03/00 ; PR:04/00



FRAGILE, HANDLE WITH CARE



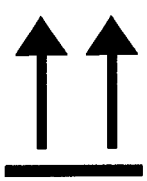
PROTECT FROM HEAT AND RADIOACTIVE SOURCES

USE NO HOOKS

NOTE: The design of heavy goods packages cannot always resist top lifting by grabhooks.

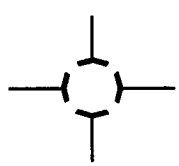
KEEP DRY

NOTE: Not all cases have waterproof internal linears: plywood used in the construction may not have a waterproof glueline.



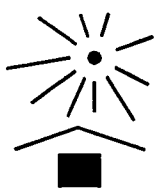
THIS WAY UP

NOTE: Certain designs of small cases make it difficult to distinguish top from bottom.



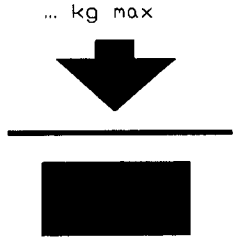
CENTRE OF GRAVITY

NOTE: This should be stancilled as a minimum on the two longest case sides (this information will normally be supplied by the manufacturer of the item(s) packed).



KEEP AWAY FROM HEAT

... kg max



STACKING LIMITATION

NOTE: The maximum load in kilograms should be marked above the arrow.

INTERNATIONAL "SLING HERE" SYMBOL