

NTPC LTD.

(A Government of India Enterprise)

2X500 MW NTPC SIPAT TPS, STAGE-II FGD

TECHNICAL SPECIFICATION FOR ELEVATORS

SPECIFICATION NO.: PE-TS-491-502-A001



BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)

POWER SECTOR

PROJECT ENGINEERING MANAGEMENT

NOIDA, U.P

INDIA



**2X500 MW NTPC SIPAT TPS,
STAGE-II FGD
ELEVATORS
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SECTION – A: SPECIFIC TECHNICAL REQUIREMENT

1.0 Brief Description and Use of Equipment/System

Elevator(s) shall be provided for access to various operating floors / platforms for 2X500 MW NTPC Sipat TPS, Stage-II FGD to facilitate movement of goods and operation & maintenance (O&M) personnel.

2.0 Scope of Equipment Supply and Services

2.0.1 Brief Scope:

Design, Engineering, Manufacture, Inspection & Testing at manufacturer's works or at their sub-vendor's works, Painting, duly packed for transportation to site, delivery to site, storage and handling at site, Erection & Commissioning, carrying out trial run and Acceptance / functional tests at site & final painting and handling over of Passenger Elevators

2.0.2 Codes & Standards: IS: 14665 (Latest edition, all 5 parts).

2.0.3 Technical Data sheet of Elevators:

Sl. No.	Building	No. of Elevators	Capacity (Kg)	No. of Landings	Total Travel	Type of Service
1	FGD Control Room building	1	680	4 (including Ground)	13.50 m	Conventional (Passenger Elevator)
2	Gypsum De-Watering (GDW) Building	1	1000	4 (including Ground)	22.00 m	Passenger Cum Goods Elevator



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Further, Bidder's scope for the Elevators shall include the following:

SN.	Description	Requirement (to be complied by bidder)
1	Hoist way size	As per IS: 14665 (Latest edition, all 5 parts).
2	Car size	
3	Car opening	
4	Rated Speed	1 m/s
5	Car entrance	One (1) on each floor
6	Method of Control	AC VVVF Control with automatic level adjustment.
7	Elevator Pit	Size: As per IS: 14665 (Latest edition all 5 parts).
8		Bare pit (i.e. without any RCC block / pedestal for buffer for CAR & CWT). Accordingly, MS structure & buffer required for elevator resting shall be provided by bidders.
9	Motor speed control	Microprocessor based Control with automatic level adjustment.
10	Logic control	Selective Collective Controller with variable voltage variable frequency drive and Microprocessor based software-controlled logic system. The control system shall be of field proven design and having satisfactory track record.
11	Machine room and elevator shaft.	Bidder to provide split Air Conditioner as per machine room area (not less than 2T Capacity).
12	Position of Machine Room	Directly above the elevator shaft.
13	Method of operation of car and landing doors.	Power operated with automatic horizontal sliding center opening & closing car and landing doors.
14	Car enclosure, car door & landing door	SS 304, min 1.5 mm thick, hairline finish sheet.
15	Door construction	Hollow metal construction from min 16-gauge thick steel sheet with spray painted.
16	Car Flooring	Vitrified ceramic tiles of mat finish.
	Car roof	Car roof shall be covered with sheet metal and shall be provided with LED light fitting & a three pin plug 5/15A, socket with switch on top of lift car.
17	Car & landing door	Protected by central opening horizontal sliding stainless steel door (Horizontal bi-parting door). The door of car and landing shall be interlocked in such a way opening & closing of two doors shall be simultaneous and the doors will open when the lift is in lading zone.
18	Controller and type	Selective Collective Controller with variable voltage variable frequency drive and Microprocessor based software-controlled logic system
19	Operation of elevator	Automatic simplex collective with and without attendant with provision for locking control in "auto" or "Attendant" position. Key type lock switch shall be provided. Push

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			button shall be fixed in the car for holding the doors open for any length of the time required.	
20	Signal / Indicators		Car position indicator in car, hall position indicator at all floors, Up and down travel direction position indicator telltale lights at all floors, overload warning indicator, battery operated alarm bell and emergency light and fan and hands-free speaker telephone set with suitable battery, charger and controls. Remote alarm shall be provided.	
	(a) Type of construction		As per manufacturer's standard	
	(b) Type of display		7 segment LED display.	
21	Fan, Lighting at Machine room, Shaft & pit.		One cabin fan, two LED light fittings on car roof. Lux level: 100 min. LED lighting with a 5A, 3 pin socket & switches or as required by bidder during erection / maintenance purpose shall be provided at every 3 meters' interval in lift well/ hoist way. Light and fan in the Car enclosure shall be separate switch control.	
21	Trailing cables		FRLS type.	
22	Power supply: a) Power b) Lighting & fan		Two nos. 415 Volts, (+/- 10% variation), 3 Phase, 50 Hz (+3% to -5% variation), combined voltage variation 10%, 3 wire system supply at machine room will be provided by customer/ BHEL in the machine room. Other supply as required like control supply 110 V AC etc. need to be suitably derived by supplier. Power supply for motors Air conditioner, switch sockets, illumination of shaft etc. to be derived and distributed by elevator supplier with MCCB/ MCB & Cables.	
23	EPABX requirements		Internal telephone wiring and telephone hand set to be provided. The external connection shall be provided by Customer. Also, automatic rescue device shall be provided.	
24	Elevator Features			
a)	Isolating cushion b/w car and car frame		Type of cushion shall be rubber pad or spring, as per manufacturer's standard.	
b)	Three pin plugs with socket on car top		5/15A, 3 pin plug sockets with switch on top of lift car and inside shaft to take care maintenance requirement.	
c)	Car frame		Material: Mild Steel Type of construction: Bolted	
d)	Fire rating of Landing Door		Fire rated for min. 2 hours. (as per IS:14665)	
f)	Door hanger tracks		Yes, complete with accessories shall be provided.	
g)	Safety shoes		Yes, complete with accessories shall be provided.	
h)	Safety device for door operation		Full length Infrared light curtain along with pressure limiter as an extra mechanical safety to be provided.	
i)	Handrails on three		Mirror finish stainless steel at suitable height.	

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	sides of car			
j)	False ceiling	SS 304. (Thickness as per supplier's standard).		
k)	Emergency stop switch	To be provided		
l)	Braille switch	To be provided		
m)	Floor announcement cum music system	To be provided		
25	Control & Operation			
	(a)Type of control	Simplex / Duplex		
	(b)Type of drive	Variable Voltage Variable Frequency Drive		
25	Car operating panel	To be provided		
	(a) Type of construction	Partial Height Car Operating Panel (COP), removable type from Car with SS face plate.		
	(b) Push Buttons	Luminous type (IP 54).		
27	Car position indicator	To be provided (both visual and audio) combined with direction arrows, overload warning indicator, battery operated alarm bell and emergency light and fan and handsfree speaker telephone set with suitable battery, charger and controls.		
	(a) Type of construction	As per manufacturer's standard		
	(b) Type of display	Seven (7) segment LED display.		
28	Push button station and call registered tell-tale lights	Provided in each landing		
	(a) Type of construction	Box type with SS face plate		
	(b)Push Buttons	Luminous push buttons with IP 54		
29	Apron / Fascia Plate	Yes (To be provided by supplier) as per IS 14665		
30	Emergency Light	Required.		
31	Terminal buffers, type and number	Spring buffers for car and counterweight shall be provided as per IS 14665.		
32	Load plate	As per manufacturer's standard		
33	Counter weight	Frame: Fabricated Steel Construction Fillers: Cast Iron		
34	Guide rails	Guide rails complete with supporting brackets for the car and counter weights.		
35	Limit Switches	To be provided, as per requirement		
	a) Location	Bottom & top terminal		
	b) Type	Electro-mechanical		
	c) Operation	Cam Operated		
36	Reverse phase relay and other protective devices	To be provided		
37	Emergency safety devices	The lift shall be provided with safety device attached to the lift car frame and sustaining the lift car up at governor		



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		tripping speed with full rated load in car.
38	Car Safety & Governor	
	a) Stopping distance	As per IS:14665
	b) Type and mode of operation of Over speed Governor device	Centrifugal action
	c) Tripping speed and design code	Conforming to IS: 14665 (Latest addition)
	d) Location	At machine room.
	e) Brakes	DCEM brakes.
39	Motor details	
	(a) Type	3 phase AC squirrel Cage Induction motor
	(b) Type of Duty	Lift Duty
	(c) Duty	S4 / S5
	(d) Duty Cycle	40%
	(e) Applicable standard	IS: 325
	f) No. of Starts per Hour	Elevator Motor shall be suitable for minimum of 150 Starts per hour.
	g) Direction of rotation	Both Clockwise & Anti-clockwise
	h) Class of Insulation	F, temp rise limited to class B. Motor shall be provided with thermal class 130 (B) or better insulation.
	i) Method of Starting	AC Variable Voltage Variable Frequency Drive
40	Door Motor	
	a) Equipment driven by Motor	Door
	b) Direction of rotation	Both Clockwise & Anticlockwise
	c) Type of enclosures	IP 54
41	Metallic Wire Mesh between Car & Counter Weight	To be provided
42	Fire Man Switch	To be provided
43	Sound Reducing Material	Isolation Rubber / other arrangement in the Machine shall be provided
44	Automatic Rescue Device (Battery Drive)	Automatic Rescue Device (ARD) with battery drive - Modern advanced electronic drive system of rescuing passenger trapped in an elevator shall be provided.
45	Ropes for hoisting	To be provided. Factor of safety for rope shall be 12 (min) or as per IS: 14665, whichever is higher.
46	Design seismic coefficient	According to IS: 1893 (an additional information for elevator building only)

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47	Fire extinguisher	½ Kg CO ₂ / other suitable Fire extinguisher along with fixing arrangement to be provided.
48	Ladder in pits	To be provided
49	Fixing/ Fasteners/ Embedment	All fixing materials require fixing rails, brackets, equipment including nuts and bolts. All steel embedment for fixing landing doors / indicators etc. to the elevator well shaft and fascia plate shall be supplied by the bidder.
50	Statutory requirement	All prevailing requirement(s) of statutory and regulatory body shall be included by bidder in their scope. Bidder shall be responsible for obtaining all necessary approval from statutory and regulatory body and lift inspector. However, Purchaser will furnish required information, as and when required.

2.0.4 Commissioning and Start-up Spares:

Bidder to include in the main supply.

2.0.5 Exclusion

- 1) Complete civil works for hoist way, machine room, pit complete with the side enclosure (Brick / RCC), interconnecting platform (if any) and monorail beam.

Minor civil work including grouting for foundation bolts and supporting structure/ beams at RCC pedestals in the machine room, as required shall be taken care of by bidder during installation of elevator.

- 2) Trap door along with fixing arrangement and Electric hoist with travelling trolley of 3T capacity to facilitate handling of equipment in the machine room.
- 3) Power supply cable (AC 415 V, 3 Ph, 50 Hz) up to machine room level. Further cabling (all cables including power, control and instrumentation as per tender specification) shall be provided by the bidder.
- 4) Supply & fixing of Shaft reduction channel, if any.

2.0.6 Terminal Points & Other Requirements:

- 1) BHEL / Customer will provide the elevator shaft complete with foundation and brick walls around the elevator shaft together with overhead machine room. The machine room will be provided with RCC floor slab with necessary pockets for anchor bolts and slots.
- 2) Dummy landing/s, as required in case travel between two consecutive landings is more than 10 m, shall be considered by bidder in their offer.



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2.0.7 List of Tools & tackles for Elevator (Bidder to include in Main Supply)

Sl. No.	Description	Qty.	Remarks
1	Spanner of all sizes required for maintenance	1 Set	
2	Adjustable Spanner	1 No.	
3	Allen Key set all sizes required for maintenance	1 Set	
4	Screw driver set	1 No.	
5	Cutting plier	1 No.	
6	Grease gun	1 No.	
7	Nose plier	1 No.	
8	Grip plier	1 No.	
9	Hook spanner	1 No.	
10	Box spanner	1 No.	
11	Oil can	1 No.	
12	Measurement Taps	1 No.	
13	Paint brush 1/4,1/2,3/4 inch	1 No. of each	
14	Line tester	1 No.	
15	Multimeter	1 No.	
16	Soldering iron	1 No.	
17	Torch Light	1 No.	
18	Knife cutter	1 No.	
19	Steel rule	1 No.	
20	Wire Striper	1 No.	
21	Tube Spanner Combination	1 No.	
22	Hammer 1/2 Kg	1 No.	
23	Dial wrench	1 No.	

2.0.8 List of Mandatory Spares for Elevator (Refer Price Schedule)

One (1) Set (as per list below) of Mandatory Spares each for Elevators of FGD Control Room Building and GDW Building. Bidder to supply total two (2) Sets.

SN.	Description	Unit of Measurement	Qty
1	Friction block	nos.	2
2	Guide roller of each type	20% of total population or 3 Nos. of each type whichever is high	
3	Contactors of each type	nos.	2
4	Control transformer of each type	no.	1
5	Time device of each type	nos.	2
6	Rectifiers of each type	nos.	4
7	Overcurrent relay of each type	nos.	2
8	Auxiliary relays of each type	nos.	3
9	Resistor of each type	nos.	3
10	Fuses of each rating	20% of the total population	
11	Limit switches of each type	nos.	3

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12	Push button of each type	nos.	3
13	Contact device (if applicable) of each type	nos.	3
14	Brake motor of each type	nos.	2
15	Transmitters of each type	nos.	2
16	Switches of each type	nos.	3
17	Receiver of each type	nos.	2
18	Bearings of each type & size	nos.	2
19	Roller of each type	nos.	3
20	Worm gear spares		
20.1	'O' rings	sets	3
20.2	Sealing ring of each type	sets	3
21	Spares for brake		
21.1	a) Fan of each type	nos.	2
21.2	b) Magnetic coil of each type	nos.	3
21.3	c) Brake disc	sets	2
21.4	d) Brake pad	sets	2
22	Bushing (for door front)	sets	2
23	Pinion of each type	nos.	2
24	Elevator Motor with VVVF drive of each type & rating	no.	1

* One set means one complete replacement for one equipment.

3.0 Painting / Details of Special Treatment of Elevator:

All the elevator components shall be given special corrosion resistant treatment. Painting of all equipment's / items within the battery limit.

SN.	Components description	Specified requirements
1	Machine	Anti- corrosive epoxy paint
2	Car & counter weight	Anti- corrosive epoxy paint
3	Car & counterweight buffers	Anti- corrosive epoxy paint
4	Fish plates	Anti- corrosive epoxy paint
5	Buffer pedestals (structural)	Anti- corrosive epoxy paint
6	Brackets & rail fasteners	Anti- corrosive epoxy paint
7	Brake adjusting screw & coupling fasteners	Zinc passivated
8	Brackets	Anti-corrosive epoxy paint.
9	Controller cabinet	Anti- corrosive epoxy paint as per industry standard
10	Hall buttons	Dust proof with SS hardware.
11	Car operating panels (COP)	Dust proof contact & button with aluminum face plate and SS hardware. Main face plate S.S.
12	Governor	Cover & casting epoxy painted. Other component zinc plated.
13	Governor tension frame	Hot dipped galvanized and anti-corrosive epoxy



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		paint with MS shaft for sheave.
14	Car frame, level brace rods and counter weight frame	Anti- corrosive epoxy paint
15	Safety equipment (Linkage)	Zinc plated
16	Safety switch & car gate switch	IP:65, Dust proof heavy zinc plated.
17	Guide shoe	Zinc plated
18	Filler weights	Anti- corrosive epoxy paint
19	Rope fasteners	Zinc passivated and chromate dipped.
20	Hoist/ Governor rope	Greased, Self-lubricating
21	Hall position and car position indicator.	Dust proof with stainless steel enclosure and face plate.

4.0 Degree of Protection (DOP) of various equipment:

Sl. No.	Equipment	Degree of Protection
1	Ac Motor	IP 54
2	Control Panel	IP 65
4	Hall Button Fixture	IP 54
5	Position Indicator	IP 54
6	Car Operating Panel (COP)	IP 54
7	Car Position Indicator	IP 54
8	Landing Operating Panel (LOP)	IP 54
9	Safety Operating Switch (Car)	IP 65
10	Brakes	IP 54

5.0 Input Drawings by BHEL:

Sl. No.	Drawing/ Document Title	Drawing No.
1.	Engg. Input Drawing for 680 KG Capacity Elevator for ESP Control Room	PE-DG-491-502-A001
2.	Engg. Input Drawing for 1000 KG Capacity Elevator for Gypsum Dewatering Building	PE-DG-491-502-A002

6.0 Master Drawing List (MDL) and Submission Schedule:

Preparation of all necessary drawings / data sheets / documents / calculations as required for obtaining necessary local administration permits / approval from statutory authority and make arrangement for inspection and tests required thereby for necessary approval on behalf of the customer. Fees (as required) for obtaining approval from statutory bodies shall also be included in the scope of work of the bidder.

All drawings shall be prepared as per BHEL's title block and bear BHEL's drawing No. and customer / consultant's drawing no; which will be forwarded to the successful bidder during detail engineering stage. Bidder to submit revised drawings complete in all respects incorporating all comments. Any incomplete drawing



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submitted shall be treated as non-submission with delays attributable to bidder's account.

Sl. No.	BHEL Doc No.	Drawing Title	Time**
1	PE-V0-491-502-A001	TECHNICAL DATA SHEET FOR FGD CONTROL ROOM BUILDING ELEVATOR	2
2	PE-V0-491-502-A002	GA, M/C ROOM LAYOUT, SCOPE & BOM AND DIMENSIONAL DETAILS OF FGD CONTROL ROOM BUILDING ELEVATOR	2
3	PE-V0-491-502-A003	TECHNICAL DATA SHEET OF GDW BUILDING ELEVATOR	2
4	PE-V0-491-502-A004	GA, M/C ROOM LAYOUT, SCOPE & BOM AND DIMENSIONAL DETAILS OF GDW BUILDING ELEVATOR	2
5	PE-V0-491-502-A005	O&M MANUAL FOR ELEVATOR (FOR CONTROL ROOM & GDW BUILDING)	10
6	PE-V0-491-502-A006	WIRING DIAGRAM & POWER DISTRIBUTION SCHEMATIC (FOR CONTROL ROOM & GDW BUILDING)	4
7	PE-V0-491-502-A007	QUALITY PLAN FOR ELEVATORS (FOR CONTROL ROOM & GDW BUILDING)	2

*Except Sl No. 5 & 6, other drawings will be in Approval category and considered in delay analysis.

** Schedule of Submission in No. of weeks from date of LOA/ PO.

Refer GCC for modalities of Engineering Documents Submission.

Every repeat submission by Supplier: Within one (1) week.


Response time by BHEL: Within three (3) weeks after receiving of drawing.

Delay beyond the stipulated duration shall be considered in delay analysis.

After final acceptance of individual equipment/ system by the BHEL/ Customer, the bidder will update all original drawings and documents for the equipment/ system to "as built" conditions and submit to BHEL/ Customer.

The number of copies/prints/CD-ROMs/manuals to be furnished for various types of document is given in the table below:

Sl. No.	Description of Drgs. / Docs.	No. of Prints	No. of Portable Hard Disk
1	Drawings/ Documents		
1.1	First submission and submission with major changes	4	-
1.2	Final (Directly to site)	6	2
1.3	"As Built" (Directly to site)	6	2
2	Operation & Maintenance manual		
	i) First Submission	1 set	
	ii) Final Submission (Directly to site)	4 sets	2

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7.0 Electrical Specification:

i) Electrical scope between BHEL and Bidder is enclosed as Annexure-1.

ii) Electric Motor

The driving motors shall be squirrel cage induction type conforming to IS: 325 and suitable for variable voltage variable frequency (VVVF) operation at 415 V (+/- 10% variation), 3 Phase, 3 wire, 50 Hz (+3% to -5% variation) supply. For the purpose of design of equipment/systems, an ambient temperature of 50 °C and relative humidity of 95% (at 40 deg C) shall be considered. The equipment shall operate in a highly polluted environment. Motors shall be provided with class F insulation & temp rise limited to class 130 (B). Protection class for motor shall be IP 54.

iii) Controls

The control shall be variable voltage and variable frequency type and shall provide smooth and constant acceleration and retardation under all conditions of operation. Suitable control panels shall be provided in the machine room. The lift will be automatically stopped by upper and lower terminal switches. The elevators will have an emergency stop switch, limit switches and other safety devices according to statutory rule.

iv) Cables and Wirings

The circular trailing cables shall be either in accordance with IS 4289 Part-I (elastomer insulated) or IS 4289 Part-II (PVC insulated). The flat type trailing cables if offered shall be in accordance with IEC 60227-6. The voltage grade shall be 1100V.

All the cables except trailing cables shall be as per IS:1554-1 or IS-7098-I. the PVC outer sheath of these cables shall be flame retardant, low smoke (FRLS) type with the following FRLS properties.

(i) Oxygen index of min. 29 (as per IS:10810 Part-58)
(ii) Acid gas emission of max. 20% (as per IEC-754-I)
(iii) Smoke density rating shall not be more than 60% (as per ASTM D 2843)

All wiring / cabling between the equipments in the lift machine room and that between the machine room and equipment in the lift well and at the landing shall be wired in HDP conduits / galvanised steel conduits to be supplied by the bidder. Alternatively, armoured cables may be used.

v) Earthing

The elevator structures and all electrical equipments, including metal conduits shall be effectively earthed with the earth conductors provided in the machine room as per IS: 3043.



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8.0 Performance/ Functional Guarantees / Tests:

Trial operation, commissioning, performance/ demonstration guarantee tests shall be carried out at site as follows:

- A. Rated capacity of the Elevator.
- B. Travel and hoist Speed of the Elevator.
- C. Accurate positioning of the Elevator.
- D. Over Load test of the Elevator as per IS:14665 (Latest edition)

9.0 Quality and Inspection:

Quality Plan has been provided in this specification for reference. Bidder shall submit the Quality Plan for BHEL/ Customer approval after award of the contract during detailed engineering stage without any commercial & delivery implication to BHEL.

10.0 Packing, Transportation and Site Handling:

The complete material shall be supplied in suitable lockable sealed container. All elevator material will be packed in wooden box except guide rail and the wooden box will be placed in the container for dispatch. Site handling is in bidder's scope and preservation of elevator components shall be taken care by bidder suitably.

10.0 List of makes of components of Elevators:

SN.	Item	Name of Supplier	Place	Remarks
1.	WIRE ROPES	USHA MARTIN	RANCHI	
		BHARAT WIRE ROPE	MUMBAI.	
2.	TRAILING CABLE	GEBAUR & GRILLER- AUSTRIA		
		DAETWYLER (THELMA) CABLES	SWITZERLAND	
		LAPP	GERMANY	
		UNIVERSAL	-	
		INCABSTEP	-	
3.	BUFFER SPRINGS	INDUSTRIAL STEEL SPRING	-	
		ALL INDIA STEEL SPRING MANUFACTURING COMPANY	-	
		KOLKATA SHAW COMPANY	KOLKATA	
		SUPER INDIA SPRINGS	KOLKATA	
		MESCO SPRING.	MUMBAI.	
4.	GEAR INTERNALS	PREMIUM ENERGY TRANSMISSION LTD	PUNE	
		SICOR S.P.A.	ITALY	
		OEM		
5.	DRIVER MOTOR	SIEMENS	MUMBAI	
		ABB	FARIDABAD	
		BHARAT BIJILI	-	
		CGL	-	



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SN.	Item	Name of Supplier	Place	Remarks
		KIRLOSKER ELECTRIC CO LTD	-	
		OEM	-	
		NGEF		
		MARATHON		
		GE POWER		
		RAJINDRA ELECT INDUSTRIES		
		LAXMI HYDRAULICS PVT. LTD.		
6.	STAINLESS STEEL	SAIL	-	
		MINOX METAL	-	
		JINDAL	-	
7.	CR SHEET	ARCELOR MITTAL/ NIPPON STEEL	-	
		TATA STEEL BSL LIMITED	-	
8.	CABLES	DELTON	-	
		NICCO	-	
		UNIVERASL	-	
		FINOLEX	-	
		CCI	-	
		MACROTHREM	-	
		VARSHA CABLES	-	
		KEI.	-	
		PARAMOUNT	-	
		POLYCAB	-	
9.	RELAYS	SIEMENS	-	
		SCHNEIDER TELEMCHANIQUE	-	
		SALZER	-	
		SCHNIDER ELECTRIC	-	
10.	CONTACTORS	SIEMENS	-	
		L&T	-	
		GE	-	
		SCHNEIDER TELEMCHANIQUE	-	
11.	TRANSFORMERS	SHARP ELECTRONICS	-	
		MELCON CONTROLS	CHENNAI	
		LOGITECH	-	
		GUNHAWA ELECTRIC CO LTD.	-	
12.	INVERTOR (V3F)	YASKAWA	GERMANY	
		TOSHIBA	JAPAN.	
13.	T GUIDES	SAVERA	CHINA	
		D.D HITECH	-	
14.	CAR DOOR OPERATOR	WITTUR GMBH	AUSTRIA	
		FERMATOR	-	
		OEM	-	
15.	INFRARED DOOR CURTAIN	MEMCO	UK	
		WECO	-	
		TLJONES	-	



**2X500 MW NTPC SIPAT TPS
STAGE-II FGD
ELEVATORS
TECHNICAL SPECIFICATION**

SPECIFICATION No: PE-TS-491-502-A001

VOLUME - II

REV. 00

JAN 2024

SN.	Item	Name of Supplier	Place	Remarks
16.	BATTERY (LEAD ACID)	EXIDE		
		HBL POWER SYSTEM	HYDERABAD	
		AMAR RAJA	TIRUPATI	
		AMCO SAFT INDIA LTD	BANGALORE.	

Note:

1. The sub-vendor list above is indicative and is subject to BHEL/ Customer approval during detailed engineering stage without any commercial & delivery implication to BHEL.

Bidder to propose sub vendor within 4 weeks of placement of LOA. Thereafter, no request for additional sub-vendor shall be entertained.

2. In case of assembled imported elevator, makes of BOIs shall be subject to BHEL/ Customer approval during detail engineering stage without any commercial implication at contract stage.
3. Dealers are not acceptable for any item of the package. Bidder shall procure all items including plates, structural etc. from approved sub vendor only.



**2X500 MW NTPC SIPAT TPS
STAGE-II FGD
ELEVATORS
TECHNICAL SPECIFICATION**

SPECIFICATION No: PE-TS-491-502-A001

VOLUME - II

REV. 00

JAN 2024

SECTION – B

DRAWINGS / DOCUMENTS TO BE SUBMITTED WITH THE BID

Bidder shall submit the following drawings / documents along with their bid:

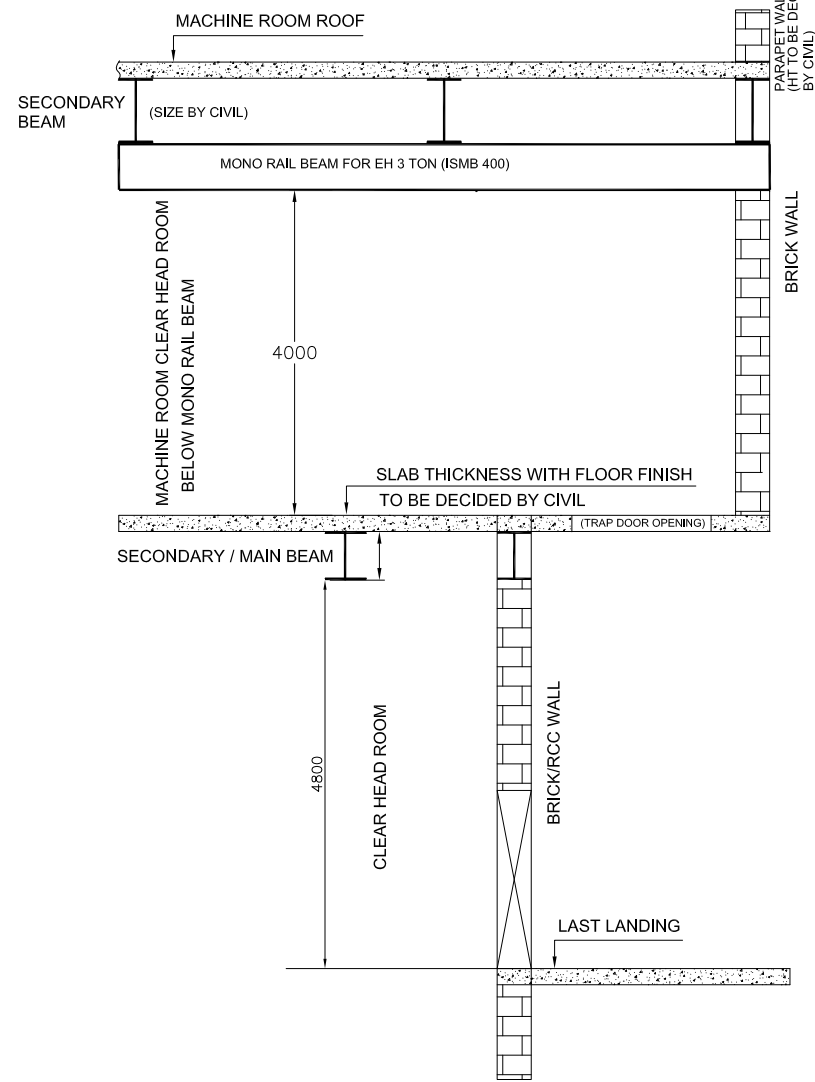
- a) Un-priced copy of price format indicating quoted/ not quoted against each row/column
- b) Signed/ Stamped copy of Compliance cum Confirmation Certificate
- c) Copy of pre-bid clarifications/ amendment/ corrigendum issued by BHEL, if any, duly signed & stamped.
- d) Deviation schedule with reference to specific clauses of the specification along with reason for such deviation in the 'Deviation Schedule' (Cost of withdrawal) format as attached in GCC.
- e) Electrical Load List

OFFER WILL BE CONSIDERED AS INCOMPLETE IN ABSENCE OF ANY OF ABOVE DOCUMENTS. DOCUMENT OTHER THAN ABOVE, IF ANY, SUBMITTED WITH THE OFFER WILL NOT FORM PART OF CONTRACT AND WILL NOT BE CONSIDERED FOR BID EVALUATION.

ANNEXURE-1: STANDARD ELECTRICAL SCOPE BETWEEN BHEL AND VENDOR
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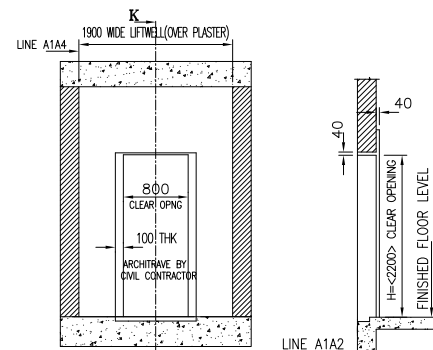
<u>S. NO</u>	<u>DETAILS</u>	<u>SCOPE SUPPLY</u>	<u>SCOPE E&C</u>	<u>REMARKS</u>
1	Isolating Switch	Vendor	Vendor	BHEL will provide two number 415 V (3ph, 4W) supply feeder only up to isolating switches for elevators. Any other voltage level (AC/DC) required will be derived by the vendor. Motor starter shall be part of elevator control panel.
2	Power cables, control cables, screened control cables and any special cables (if required) between equipment supplied by vendor.	Vendor	Vendor	Cable from supply feeder to isolating switch shall be in BHEL scope.
3	Cabling material (cable trays, accessories, cable tray supporting system, conduits etc).	Vendor	Vendor	Local cabling from nearby main route cable tray (BHEL scope) to equipment terminal (vendor's scope) shall be through 100/ 50 mm. cable trays/ conduits/ Galvanised steel cable troughs, as per approved layout drawing during contract stage.
4	Equipment Earthing	Vendor	Vendor	All equipment metallic enclosures / frames, metal structure etc. shall be grounded at two points each to the nearest grounding points / risers provided by BHEL.
5	Motors	Vendor	Vendor	Makes shall be subject to customer/ BHEL approval at contract stage.
6	Cable glands and lugs for equipment supplied by vendor	Vendor	Vendor	<ol style="list-style-type: none"> Double compression Ni-Cr plated brass cable glands Solder less crimping type heavy duty tinned copper lugs for power & control cables.
7	a) Input cable schedules (C & I) b) Cable interconnection details for above c) Cable block diagram	Vendor Vendor Vendor	- - -	Cable listing for Control and Instrumentation Cable in enclosed excel format shall be submitted by vendor during detailed engineering stage.
8	Equipment layout drawings	Vendor	-	
9	Electrical Equipment GA drawing	Vendor	-	For necessary interface review.

ELEVATION ON MACHINE ROOM



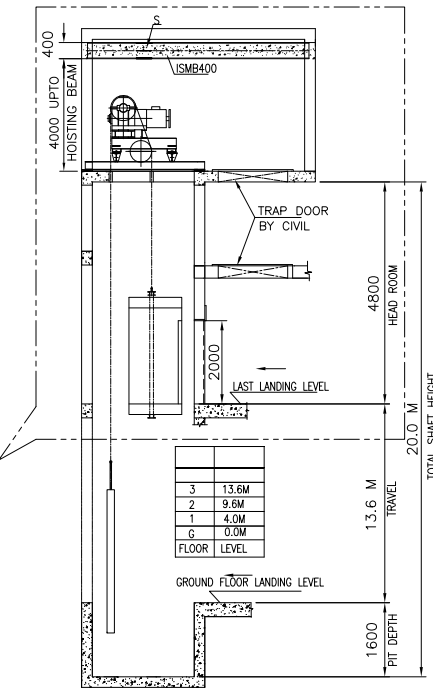
DETAIL-Y

STANDARD DETAILS OF SHAFT



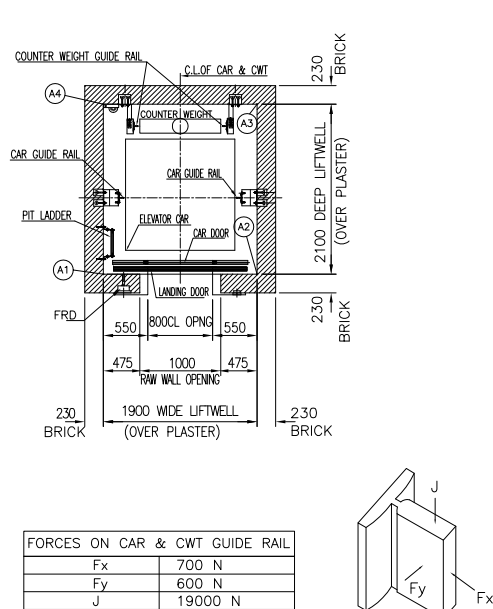
LANDING ENTRANCE DETAIL
(VIEW FROM LIFT WELL OUTSIDE)
(TYPICAL FOR ALL FLOORS)

SECTION-KK



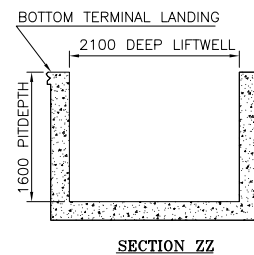
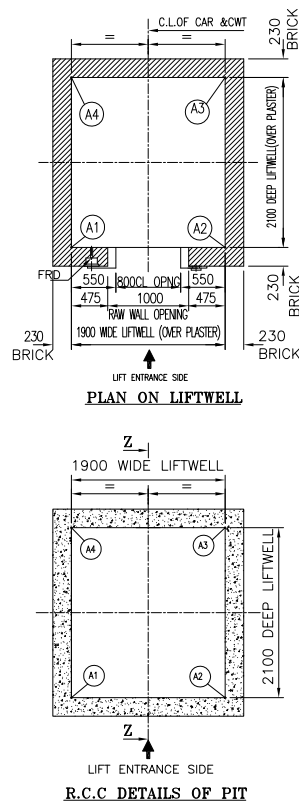
ELEVATIONAL DETAILS
(NOT FOR SCALE)

STANDARD DETAILS OF PIT

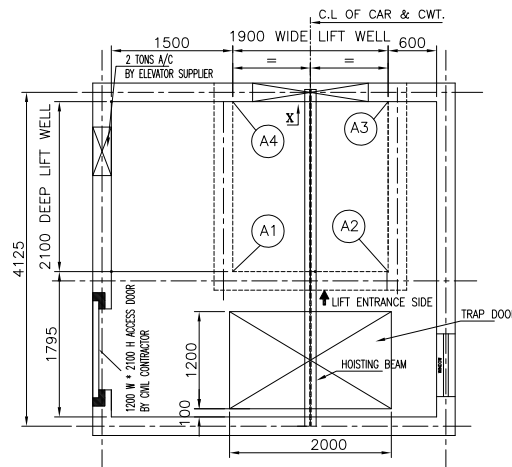


GUIDE RAIL FORCES

PLAN ON LIFTWELL- TYPICAL LOCATION OF GUIDERAILS FOR CAR & COUNTERWEIGHT

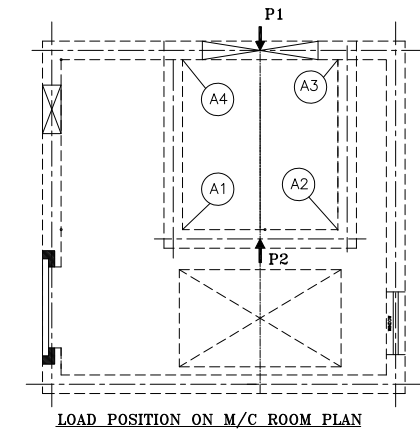


STANDARD DETAILS OF MACHINE ROOM



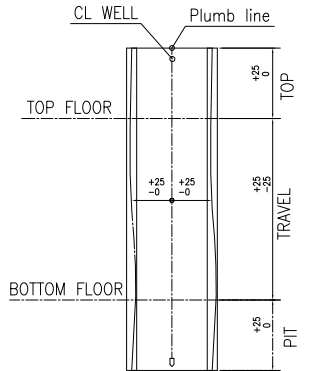
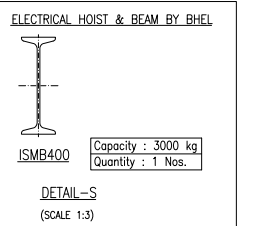
PLAN ON MACHINE ROOM

VIEW - X



LOAD POSITION ON M/C ROOM PLAN

Point	Dynamic Load (Kg)
P1	15000
P2	6000



WELL TOLERANCES
(NOT FOR SCALE)

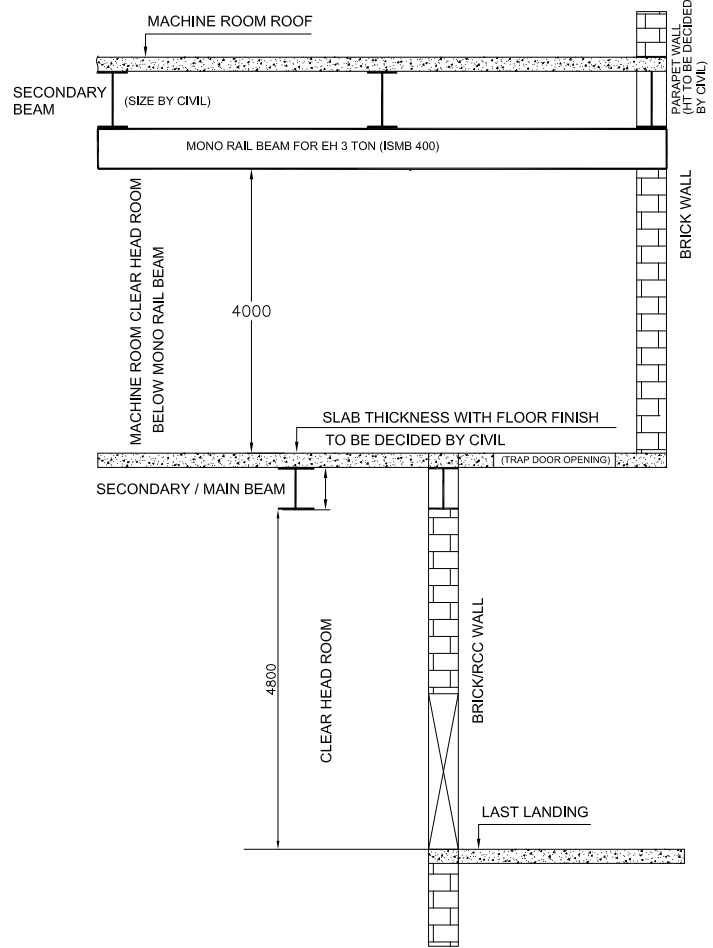
S.NO	AREA	SCOPE	DESCRIPTION OF WORK	AGENCY
1	PIT	CIVIL	PIT LADDER AND SCAFFOLDING IN ELEVATOR SHAFT.	BY VENDOR
2	PIT	CIVIL	PIT SHALL BE MADE DRY AND WATER PROOF.	BY CIVIL CONTRACTOR
3	PIT	CIVIL	BARE PIT SHALL BE PROVIDED. SUPPORTING MS STRUCTURE FOR CAR & CW BUFFER SHALL BE PROVIDED BY VENDOR.	BY VENDOR
4	PIT	CIVIL	PIT SLAB SHALL BE CASTED TO TAKE CARE OF CAR & COUNTERWEIGHT BUFFER LOADS (MAX. LOAD OF 21T) AS THE POSITION OF LOAD & STRUCTURED BUFFER IS NOT KNOWN. HENCE, CIVIL CONTRACTOR SHALL SIZE THE SLAB THICKNESS ACCORDINGLY WRT TOTAL LOAD OF 21T.	BY CIVIL CONTRACTOR
5	ELEVATOR CAR	ELECTRICAL	ELEVATOR CAR LIGHTING	BY VENDOR
6	ELEVATOR CAR	MECHANICAL	1/2 Kg CO / SUITABLE TYPE FIRE EXTINGUISHER ALONG WITH FIXING ARRANGEMENT.	BY VENDOR
7	AT EVERY LANDING	CIVIL	POCKET CUTTING / HOLES FOR LOP, FRD, LANDING DISPLAY & ANY OTHER FOR EVERY LANDING LEVEL SHALL BE DONE BY VENDOR. GROUTING FOR LOP, FRD, LANDING DISPLAY & ANY OTHER FOR FIXATION AT EVERY LANDING LEVEL SHALL BE DONE BY VENDOR.	BY VENDOR
8	AT EVERY LANDING	CIVIL	GROUTING FOR LOP, FRD, LANDING DISPLAY & ANY OTHER FOR FIXATION AT EVERY LANDING LEVEL SHALL BE DONE BY VENDOR.	BY VENDOR
9	ELEVATOR SHAFT	CIVIL	SHAFT WHITE WASHING.	BY CIVIL CONTRACTOR
10	ELEVATOR SHAFT	CIVIL	ALL ANCHOR BOLTS FOR FIXING GUIDE BRACKET AND BEAMS IN MACHINE ROOM.	BY VENDOR
11	ELEVATOR SHAFT	CIVIL	LIFT SHAFT HAS TO BE IN THE PLUMB LINE WITH A LIMIT OF -0 +25MM.	BY CIVIL CONTRACTOR
12	ELEVATOR SHAFT	ELECTRICAL	BULK HEAD FITTINGS OF MINIMUM 60 WATTS/ 18W CFL SHALL BE PROVIDED AT EVERY 3 METERS AND A PLUG POINT 15A/5A, 3 PIN AT EVERY 6 METERS- ADJACENT TO THE BULK HEAD FITTINGS. THE POSITION SHOULD BE AT ANY CORNER OF THE WALL OF COUNTER WEIGHT.	BY VENDOR
13	ELEVATOR SHAFT	ELECTRICAL	FIREMAN SWITCH & PIT SWITCHES.	BY VENDOR
14	ELEVATOR SHAFT	ELECTRICAL	ELEVATOR SHAFT LIGHTING.	BY VENDOR
15	ELEVATOR SHAFT	MECHANICAL	WIRE MESH BETWEEN CAR & COUNTER WEIGHT.	BY VENDOR
16	MACHINE ROOM	CIVIL	ELEVATOR MACHINE ROOM SHALL BE DESIGNED AS PER THE LOAD REQUIREMENTS GIVEN IN THE ENGG. INPUTS DRAWING FOR ELEVATOR.	BY CIVIL CONTRACTOR
17	MACHINE ROOM	CIVIL	PROVIDE THE REQUIRED HOLES/ POCKETS FOR MAIN ROPES / OSG ROPES/ SHAFT ELECTRIFICATION IN THE MACHINE ROOM FLOOR AS PER THE DIMENSIONS GIVEN IN THE ENGG. INPUTS DRAWING FOR ELEVATOR.	BY CIVIL CONTRACTOR
18	MACHINE ROOM	CIVIL	THE MONORAIL BEAM (3 TONS) FOR HOISTING THE MACHINE & HOIST TO BE PROVIDED AS PER THE ENGG. INPUTS DRAWING FOR ELEVATOR.	BY CIVIL CONTRACTOR (SUPPLY & ERECTION OF MONORAIL BEAM SHALL BE DONE BY CIVIL CONTRACTOR)
19	MACHINE ROOM	CIVIL	TRAP DOOR SHALL BE PROVIDED AS PER ENGG. INPUTS DRAWING FOR ELEVATOR.	BY CIVIL CONTRACTOR
20	MACHINE ROOM	CIVIL	SECONDARY BEAM ARRANGEMENT SHALL BE PERPENDICULAR TO MONORAIL BEAM.	BY CIVIL CONTRACTOR
21	MACHINE ROOM	CIVIL	STANDARD MACHINE ROOM DIMENSIONS AS REQUIRED ARE INDICATED IN THE DRAWING. TO SUIT CIVIL DESIGN WRT CIVIL STRUCTURE STABILITY. MACHINE ROOM SIZE CAN BE INCREASED (AS PER CIVIL REQUIREMENT) AND THEN SIZE OF MONORAIL BEAM (ISMB 400) AS MENTIONED IN DETAIL-Y VIEW SHALL BE FINALIZED BY CIVIL AGENCY.	BY CIVIL CONTRACTOR
22	MACHINE ROOM	CIVIL	PROPER ACCESS TO THE MACHINE ROOM SHALL BE PROVIDED AND IT SHOULD BE SAFE AND RIGID WITH HANDRAILS FOR ADEQUATE GRIP.	BY CIVIL CONTRACTOR
23	MACHINE ROOM	ELECTRICAL	THE MACHINE ROOM SHALL BE ADEQUATELY ILLUMINATED. THE MACHINE ROOM SHALL HAVE MINIMUM 200 LUX ILLUMINATION AT THE FLOOR LEVEL.	BY VENDOR
24	MACHINE ROOM	ELECTRICAL	CONVENIENT OUTLET (15A/5A) IN THE MACHINE ROOM TO BE PROVIDED FOR POWER TOOL USAGE.	BY VENDOR
25	MACHINE ROOM	ELECTRICAL	ONLY TWO (3 PHASE) SUPPLY FEEDERS PER ELEVATOR SHALL BE PROVIDED ONE FEEDER SHALL BE DEDICATED TO ELEVATOR MOTOR AND OTHER 3 PHASE SUPPLY FEEDER SHALL BE PROVIDED BY BHEL FOR AIR CONDITIONER, MACHINE ROOM AND SHAFT LIGHTING AND MAINTENANCE /INSTALLATION REQUIREMENT. VENDOR SHALL PROVIDE CT FOR STEPPING DOWN THE VOLTAGE AS PER THEIR REQUIREMENT.	BY ELECTRICAL CONTRACTOR (VENDOR TO CONSIDER CT IN THEIR SCOPE FOR STEPPING DOWN THE VOLTAGE AS PER THEIR REQUIREMENT)
26	MACHINE ROOM	ELECTRICAL	THE TERMINATION & TERMINATION BOX FOR THE FEEDERS SHALL BE PROVIDED.	BY VENDOR
27	MACHINE ROOM	ELECTRICAL	THE EARTHING LEADS / EARTH STRIPS SHALL BE PROVIDED NEAR ELEVATOR SHAFT AT GROUND FLOOR BY ELECTRICAL CONTRACTOR AND FROM GROUND FLOOR TO MACHINE ROOM SHALL BE ROUTED BY VENDOR.	BY ELECTRICAL CONTRACTOR & BY VENDOR
28	MACHINE ROOM	ELECTRICAL	EPABX CONNECTIVITY SHALL BE PROVIDED TILL MACHINE ROOM BY ELECTRICAL CONTRACTOR & FROM MACHINE ROOM TO ELEVATOR BY VENDOR	BY ELECTRICAL CONTRACTOR & BY VENDOR
29	MACHINE ROOM	MECHANICAL	SPLIT AC (MIN 2 TONS) TO BE PROVIDED IN THE EACH ELEVATOR MACHINE ROOM.	BY VENDOR
30	ELEVATOR SHAFT	CIVIL	ELEVATOR SHAFT SHALL BE OF CLAY BRICK (MIN. 230MM THK) OR R.C.C ONLY. (FLY ASH BRICKS NOT TO BE USED). LINTEL BEAM AT EVERY 2.3 M TO 2.5 M SHALL BE PROVIDED FOR COUNTER WEIGHT & CAR BRACKET FIXING.	BY CIVIL CONTRACTOR
31	ELEVATOR SHAFT	CIVIL	LIFT ENTRANCE SIDE WALL (ON ALL FLOORS) SHALL BE KEPT ON HOLD & SHALL BE CONSTRUCTED AFTER ORDERING/ RECEIVING INPUT FROM FINALLY SELECTED BIDDER. UPON LIFTING HOLD, FINAL WALL CONSTRUCTION SHALL BE DONE BY CIVIL CONTRACTOR ONLY.	BY CIVIL CONTRACTOR
32	ELEVATOR SHAFT	CIVIL	CLEAR HEADROOM OF 4.8M IS REQUIRED ABOVE LAST LANDING LEVEL OF ELEVATOR (EXCLUDING MACHINE ROOM SLAB THICKNESS & SECONDARY BEAM (IF ANY)). THE SAME IS TO BE ENSURED ACCORDINGLY BY CIVIL CONTRACTOR.	BY CIVIL CONTRACTOR
33	ELEVATOR SHAFT	CIVIL	IN CASE OF DUPLEX ARRANGEMENT OF ELEVATORS, WHERE ELEVATORS ARE PLACED SIDE BY SIDE, BRACKET OF GUIDE RAILS FOR BOTH THE ELEVATORS SHALL BE FIXED ON THE COMMON WALL BETWEEN BOTH LIFT SHAFTS. HENCE, THIS WALL MAY BE SUITABLY DESIGNED/ STRENGTHENED SO AS TO SUSTAIN REQUIRED GUIDE RAIL LOADS AS THIS WALL SHALL BE SUBJECT TO GUIDE RAIL FORCES FROM BOTH SIDES.	BY CIVIL CONTRACTOR
34	ELEVATOR SHAFT	CIVIL	DUMMY LANDINGS, ARE REQUIRED IN CASE TRAVEL BETWEEN TWO CONSECUTIVE LANDINGS IS MORE THAN 10 M, AS PER CODAL REQUIREMENT. HENCE, CORRESPONDING LANDING PLATFORMS & SUITABLE ACCESS LADDER/ STAIRS FOR DUMMY LANDING PLATFORMS ARE ALSO TO BE PROVIDED ACCORDINGLY.	BY CIVIL CONTRACTOR
35	ELEVATOR SHAFT	CIVIL	CIVIL LOADS SHALL BE TRANSFERRED TO WALLS (TYPICAL LOCATION AS SHOWN IN DRAWING). WALLS SHALL BE DESIGNED ACCORDINGLY.	BY CIVIL CONTRACTOR
35	MACHINE ROOM	CIVIL	CLEAR HEIGHT OF 4M IS REQUIRED IN THE ELEVATOR MACHINE ROOM BELOW MONORAIL BEAM (I.E. EXCLUDING MONORAIL BEAM (FOR ELECTRIC HOIST) SECONDARY BEAMS (IF ANY) & SLAB THICKNESS). HENCE, ELEVATION OF TOP OF MACHINE ROOM ROOF TO BE CALCULATED ACCORDINGLY BY CIVIL CONTRACTOR.	BY CIVIL CONTRACTOR
36	MACHINE ROOM	CIVIL	TRAP DOOR IS TO BE PLACED IN MACHINE ROOM TOWARDS ELEVATOR LANDING SIDE CONSIDERING THAT NO EQUIPMENTS/ OBJECTS SHALL BE LOCATED BELOW THE SAME AT LAST LANDING LEVEL FLOOR. ELSE IT WOULD CAUSE HINDRANCE IN MOVEMENT OF ELEVATOR MACHINERY OUT OF THE MACHINE ROOM DURING MAINTENANCE.	BY CIVIL CONTRACTOR
37	PIT, SHAFT & MACHINE ROOM	CIVIL	NO PROJECTIONS ARE ALLOWED INSIDE THE LIFT SHAFT / PIT AND MACHINE ROOM. HENCE PLEASE ENSURE THAT ANY COLUMN / COLUMN FOUNDATIONS/ PLINTH BEAMS/ FLOOR SUPPORTING BEAMS SHOULD NOT BE PROJECTED INSIDE THE LIFT SHAFT/ PIT & ELEVATOR MACHINE ROOM.	BY CIVIL CONTRACTOR
38	MACHINE ROOM	CIVIL	MINIMUM REQUIREMENT OF MACHINE ROOM ALONG WITH TRAP DOOR ARE INDICATED HERE. HOWEVER PROJECT SPECIFIC REQUIREMENTS SHALL BE DISCUSSED ON CASE TO CASE BASIS.	BY CIVIL CONTRACTOR

NOTE: ALL DIMENSIONS ARE IN MM

TOTAL NO. OF ELEVATOR = 01(ONE) NUMBER

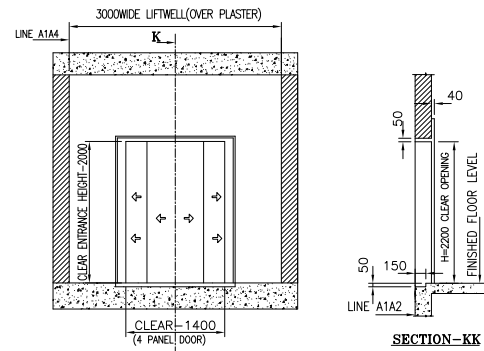
CUSTOMER	NTPC LTD.			
CONSULTANT				
PROJECT	2X500MW NTPC SIPAT-FGD (LOT 6)			
STATUS	CONTRACT			
DISTRIBUTION				
REV.	DATE	ALTD	CHD	APPD
The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED. It must not be used directly or indirectly in any way detrimental to the interest of the company.				
COPY RIGHT AND CONFIDENTIAL				
The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED. It must not be used directly or indirectly in any way detrimental to the interest of the company.				
TITLE ENGG. INPUTS DRAWING FOR 10 PASS.(680KG) ELEVATOR-ELECTRICAL AND CONTROL BUILDING				
DEPT. CODE				
NAME				
SIGN				
DATE				
DRAWING NO. PE-DG-491-502-A001				
SHEET 01 OF 01				
REV. 00				

ELEVATION ON MACHINE ROOM

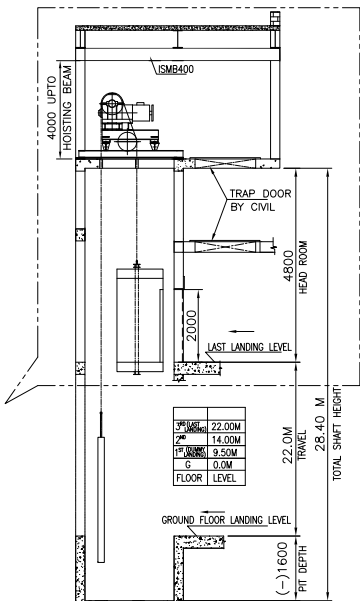


DETAIL-Y

STANDARD DETAILS OF SHAFT

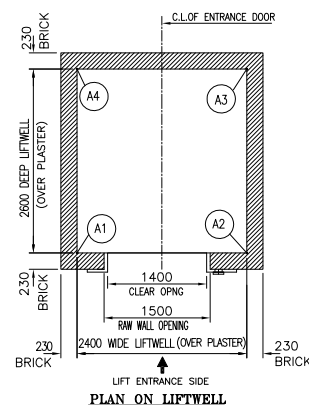
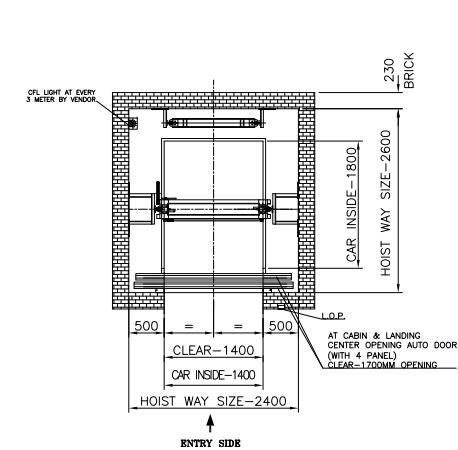


LANDING ENTRANCE DETAIL
(VIEW FROM LIFT WELL OUTSIDE)
(TYPICAL FOR ALL FLOORS)

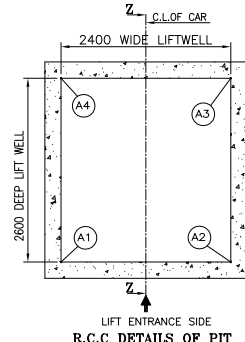


ELEVATIONAL DETAILS
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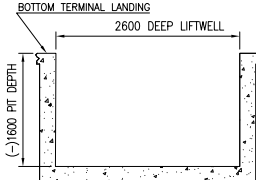
STANDARD DETAILS OF PIT



PLAN ON LIFTWELL



R.C.C. DETAILS OF PIT

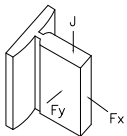


SECTION ZZ

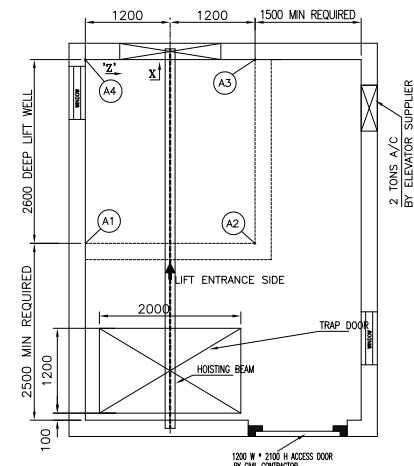
FORCES ON CAR & CWT GUIDE RAIL	
Fx	2000 N
Fy	2700 N
J	42000 N

GUIDE RAIL FORCES

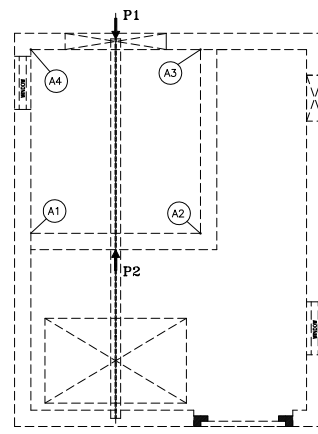
PLAN ON LIFTWELL- TYPICAL LOCATION OF GUIDERAILS FOR CAR & COUNTERWEIGHT



STANDARD DETAILS OF MACHINE ROOM

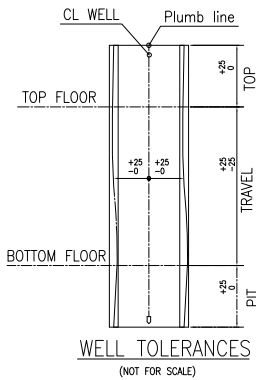
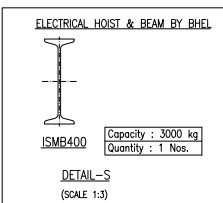


PLAN ON MACHINE ROOM



LOAD POSITION ON M/C ROOM PLAN

Point	Dynamic Load (Kg)
P1	16000
P2	8000




VIEW - X

S.NO	AREA	SCOPE	DESCRIPTION OF WORK	AGENCY
1	PIT	CIVIL	PIT LADDER AND SCAFFOLDING IN ELEVATOR SHAFT.	BY VENDOR
2	PIT	CIVIL	PIT SHALL BE MADE DRY AND WATER PROOF.	BY CIVIL CONTRACTOR
3	PIT	CIVIL	BARE PIT SHALL BE PROVIDED, SUPPORTING MS STRUCTURE FOR CAR & CW BUFFER SHALL BE PROVIDED BY VENDOR.	BY VENDOR
4	PIT	CIVIL	PIT SLAB SHALL BE CASTED TO TAKE CARE OF CAR & COUNTERWEIGHT BUFFER LOADS (MAX. LOAD OF 21T) AS THE POSITION OF LOAD & STRUCTURED BUFFER IS VENDOR SPECIFIC. HENCE, CIVIL CONTRACTOR SHALL SIZE THE SLAB THICKNESS ACCORDINGLY WRT TOTAL LOAD OF 21T.	BY CIVIL CONTRACTOR
5	ELEVATOR CAR	ELECTRICAL	ELEVATOR CAR LIGHTING	BY VENDOR
6	ELEVATOR CAR	MECHANICAL	1/2 Kg CO / SUITABLE TYPE FIRE EXTINGUISHER ALONG WITH FIXING ARRANGEMENT.	BY VENDOR
7	AT EVERY LANDING	CIVIL	POCKET CUTTING / HOLES FOR LOP, FRD, LANDING DISPLAY & ANY OTHER FOR EVERY LANDING LEVEL SHALL BE DONE BY VENDOR.	BY VENDOR
8	AT EVERY LANDING	CIVIL	GROUTING FOR LOP, FRD, LANDING DISPLAY & ANY OTHER FOR FIXATION AT EVERY LANDING LEVEL SHALL BE DONE BY VENDOR.	BY VENDOR
9	ELEVATOR SHAFT	CIVIL	SHAFT WHITE WASHING.	BY CIVIL CONTRACTOR
10	ELEVATOR SHAFT	CIVIL	ALL ANCHOR BOLTS FOR FIXING GUIDE BRACKET AND BEAMS IN MACHINE ROOM.	BY VENDOR
11	ELEVATOR SHAFT	CIVIL	LIFT SHAFT HAS TO BE IN THE PLUMB LINE WITH A LIMIT OF +/- 25MM.	BY CIVIL CONTRACTOR
12	ELEVATOR SHAFT	ELECTRICAL	BULK HEAD FITTINGS OF MINIMUM 60 WATTS/ 18W CFL SHALL BE PROVIDED AT EVERY 3 METERS AND A PLUG POINT 15A/5A, 3 PIN AT EVERY 6 METERS- ADJACENT TO THE BULK HEAD FITTINGS, THE POSITION SHOULD BE AT ANY CORNER OF THE WALL OF COUNTER WEIGHT.	BY VENDOR
13	ELEVATOR SHAFT	ELECTRICAL	FIREMAN SWITCH & PIT SWITCHES.	BY VENDOR
14	ELEVATOR SHAFT	MECHANICAL	WIRE MESH BETWEEN CAR & COUNTER WEIGHT.	BY VENDOR
15	MACHINE ROOM	CIVIL	ELEVATOR MACHINE ROOM SHALL BE DESIGNED AS PER THE LOAD REQUIREMENTS GIVEN IN THE ENGG. INPUTS DRAWING FOR ELEVATOR.	BY CIVIL CONTRACTOR
16	MACHINE ROOM	CIVIL	PROVIDE THE REQUIRED HOLES/ POCKETS FOR MAIN ROPES / OSG ROPES/ SHAFT ELECTRIFICATION IN THE MACHINE ROOM FLOOR AS PER THE DIMENSIONS GIVEN IN THE ENGG. INPUTS DRAWING FOR ELEVATOR.	BY CIVIL CONTRACTOR
17	MACHINE ROOM	CIVIL	THE MONORAIL BEAM (3 TONS) FOR HOISTING THE MACHINE & HOIST TO BE PROVIDED AS PER THE ENGG. INPUTS DRAWING FOR ELEVATOR.	BY CIVIL CONTRACTOR (SUPPLY & ERECTION OF MONORAIL BEAM SHALL BE DONE BY CIVIL CONTRACTOR)
18	MACHINE ROOM	CIVIL	TRAP DOOR SHALL BE PROVIDED AS PER ENGG. INPUTS DRAWING FOR ELEVATOR.	BY CIVIL CONTRACTOR
19	MACHINE ROOM	CIVIL	SECONDARY BEAM ARRANGEMENT SHALL BE PERPENDICULAR TO MONORAIL BEAM.	BY CIVIL CONTRACTOR
20	MACHINE ROOM	CIVIL	STANDARD MACHINE ROOM DIMENSIONS AS REQUIRED ARE INDICATED IN THE DRAWING. TO SUIT CIVIL DESIGN WRT CIVIL STRUCTURE STABILITY. MACHINE ROOM SIZE CAN BE INCREASED (AS PER CIVIL REQUIREMENT) AND THEN SIZE OF MONORAIL BEAM (ISMB 400) AS MENTIONED IN DETAIL-Y VIEW SHALL BE FINALIZED BY CIVIL AGENCY.	BY CIVIL CONTRACTOR
21	MACHINE ROOM	CIVIL	PROPER ACCESS TO THE MACHINE ROOM SHALL BE PROVIDED AND IT SHOULD BE SAFE AND RIGID WITH HANDRAILS FOR ADEQUATE GRIP.	BY CIVIL CONTRACTOR
22	MACHINE ROOM	ELECTRICAL	THE MACHINE ROOM SHALL BE ADEQUATELY ILLUMINATED, THE MACHINE ROOM SHALL HAVE MINIMUM 200 LUX ILLUMINATION AT THE FLOOR LEVEL.	BY VENDOR
23	MACHINE ROOM	ELECTRICAL	CONVENIENT OUTLET (15A/5A) IN THE MACHINE ROOM TO BE PROVIDED FOR POWER TOOL USAGE.	BY VENDOR
24	MACHINE ROOM	ELECTRICAL	ONLY TWO (3 PHASE) SUPPLY FEEDERS PER ELEVATOR SHALL BE PROVIDED ONE FEEDER SHALL BE DEDICATED TO ELEVATOR MOTOR AND OTHER 3 PHASE SUPPLY FEEDER SHALL BE PROVIDED BY BHEL FOR AIR CONDITIONER, MACHINE ROOM AND SHAFT LIGHTING AND MAINTENANCE /INSTALLATION REQUIREMENT. VENDOR SHALL PROVIDE CT FOR STEPPING DOWN THE VOLTAGE AS PER THEIR REQUIREMENT.	BY ELECTRICAL CONTRACTOR (VENDOR TO CONSIDER CT IN THEIR SCOPE FOR STEPPING DOWN THE VOLTAGE AS PER THEIR REQUIREMENT)
25	MACHINE ROOM	ELECTRICAL	THE TERMINATION & TERMINATION BOX FOR THE FEEDERS SHALL BE PROVIDED.	BY VENDOR
26	MACHINE ROOM	ELECTRICAL	THE EARTHING LEADS / EARTH STRIPS SHALL BE PROVIDED NEAR ELEVATOR SHAFT AT GROUND FLOOR BY ELECTRICAL CONTRACTOR AND FROM GROUND FLOOR TO MACHINE ROOM SHALL BE ROUTED BY VENDOR.	BY ELECTRICAL CONTRACTOR & BY VENDOR
27	MACHINE ROOM	ELECTRICAL	EPABX CONNECTIVITY SHALL BE PROVIDED TILL MACHINE ROOM BY ELECTRICAL CONTRACTOR & FROM MACHINE ROOM TO ELEVATOR BY VENDOR	BY ELECTRICAL CONTRACTOR & BY VENDOR
28	MACHINE ROOM	MECHANICAL	SPLIT AC (MIN 2 TONS) TO BE PROVIDED IN THE EACH ELEVATOR MACHINE ROOM.	BY VENDOR
29	ELEVATOR SHAFT	CIVIL	ELEVATOR SHAFT SHALL BE OF CLAY BRICK (MIN. 230MM THK) OR R.C.C ONLY. (FLY ASH BRICKS NOT TO BE USED). LINTEL BEAM AT EVERY 2.3 M TO 2.5 M SHALL BE PROVIDED FOR COUNTER WEIGHT & CAR BRACKET FIXING.	BY CIVIL CONTRACTOR
30	ELEVATOR SHAFT	CIVIL	LIFT ENTRANCE SIDE WALL (ON ALL FLOORS) SHALL BE KEPT ON HOLD & SHALL BE CONSTRUCTED AFTER ORDERING/ RECEIVING INPUT FROM FINALLY SELECTED BIDDER. UPON LIFTING HOLD, FINAL WALL CONSTRUCTION SHALL BE DONE BY CIVIL CONTRACTOR ONLY.	BY CIVIL CONTRACTOR
31	ELEVATOR SHAFT	CIVIL	CLEAR HEADROOM OF 4.8M IS REQUIRED ABOVE LAST LANDING LEVEL OF ELEVATOR (EXCLUDING MACHINE ROOM SLAB THICKNESS & SECONDARY BEAM (IF ANY)). THE SAME IS TO BE ENSURED ACCORDINGLY BY CIVIL CONTRACTOR.	BY CIVIL CONTRACTOR
32	ELEVATOR SHAFT	CIVIL	IN CASE OF DUPLEX ARRANGEMENT OF ELEVATORS, WHERE ELEVATORS ARE PLACED SIDE BY SIDE, BRACKET OF GUIDE RAILS FOR BOTH THE ELEVATORS SHALL BE FIXED ON THE COMMON WALL BETWEEN BOTH LIFT SHAFTS. HENCE, THIS WALL MAY BE SUITABLY DESIGNED/ STRENGTHENED SO AS TO SUSTAIN REQUIRED GUIDE RAIL LOADS AS THIS WALL SHALL BE SUBJECT TO GUIDE RAIL FORCES FROM BOTH SIDES.	BY CIVIL CONTRACTOR
33	ELEVATOR SHAFT	CIVIL	DUMMY LANDINGS ARE REQUIRED IN CASE TRAVEL BETWEEN TWO CONSECUTIVE LANDINGS IS MORE THAN 10 M, AS PER CODAL REQUIREMENT. HENCE, CORRESPONDING LANDING PLATFORMS & SUITABLE ACCESS LADDER/ STAIRS FOR DUMMY LANDING PLATFORMS ARE ALSO TO BE PROVIDED ACCORDINGLY.	BY CIVIL CONTRACTOR
34	ELEVATOR SHAFT	CIVIL	CIVIL LOADS SHALL BE TRANSFERRED TO WALLS (TYPICAL LOCATION AS SHOWN IN DRAWING). WALLS SHALL BE DESIGNED ACCORDINGLY.	BY CIVIL CONTRACTOR
35	MACHINE ROOM	CIVIL	CLEAR HEIGHT OF 4M IS REQUIRED IN THE ELEVATOR MACHINE ROOM BELOW MONORAIL BEAM (I.E. EXCLUDING MONORAIL BEAM (FOR ELECTRIC HOIST), SECONDARY BEAMS (IF ANY) & SLAB THICKNESS). HENCE, ELEVATION OF TOP OF MACHINE ROOM ROOF TO BE CALCULATED ACCORDINGLY.	BY CIVIL CONTRACTOR
36	MACHINE ROOM	CIVIL	TRAP DOOR IS TO BE PLACED IN MACHINE ROOM TOWARDS ELEVATOR LANDING SIDE CONSIDERING THAT NO EQUIPMENTS/ OBJECTS SHALL BE LOCATED BELOW THE SAME AT LAST LANDING LEVEL FLOOR. ELSE IT WOULD CAUSE HINDRANCE IN MOVEMENT OF ELEVATOR MACHINERY OUT OF THE MACHINE ROOM DURING MAINTENANCE.	BY CIVIL CONTRACTOR
37	PIT, SHAFT & MACHINE ROOM	CIVIL	NO PROJECTIONS ARE ALLOWED INSIDE THE LIFT SHAFT / PIT AND MACHINE ROOM. HENCE PLEASE ENSURE THAT ANY COLUMN / COLUMN FOUNDATIONS/ PLINTH BEAMS/ FLOOR SUPPORTING BEAMS SHOULD NOT BE PROJECTED INSIDE THE LIFT SHAFT/ PIT & ELEVATOR MACHINE ROOM.	BY CIVIL CONTRACTOR
38	MACHINE ROOM	CIVIL	MINIMUM REQUIREMENT OF MACHINE ROOM ALONG WITH TRAP DOOR ARE INDICATED HERE, HOWEVER PROJECT SPECIFIC REQUIREMENTS SHALL BE DISCUSSED ON CASE TO CASE BASIS.	BY CIVIL CONTRACTOR

CLIENT	NTPC LTD.		
PROJECT	2X500MW NTPC SIPAT-PGD (LOT 6)		
DESIGNER	BHARAT HEAVY ELECTRICALS LTD (A Govt. of India Undertaking)		
POWER SECTION	PROJECT ENGINEERING MANAGEMENT		
NO.	NTPC		
The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED. It must not be used directly or indirectly in any way detrimental to the interest of the company.			
DEPT	DRN	NAME	DATE
CODE	DRN	SA	20.12.23
CHK	DRN	SA	20.12.23
APPRO	DRN	SA	20.12.23
TITLE			
ENGG. INPUTS DRAWING FOR GOODS ELEVATOR FOR GDS BUILDING (CAPACITY 1000 KG)			
DEPT	SCALE	DRAWING NO.	
SIGN		PE-DG-491-502-A002	
SHEET	01 OF 01	REV.	00

QUALITY ASSURANCE PLAN

		MANUFACTURING QUALITY PLAN M/S ()	PROJECT: 2X500 MW NTPC SIPAT TPS, STAGE-II FGD PACKAGE: ITEM: ELEVATOR BHEL REF. NO.:					Q.P/FQP. NO & REV: DATE: PAGE: 1 of 4 JOB NO:					
1	2	3	4	5	6	7	8	9	10				11
Sr. No.	COMPONENT& OPERATION	CHARATERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMATE OF RECORD	AGENCY				REMARKS
									D	VE	M	B	
A. Boughtout Items :													
1	Raw materials, Round Hexagon & Structurals. Type : EN-8/EN-8D to EN-9,B and En-24	A: Chemical Composition	Major	Analysis	Sample	IS/BS : 970	IS/BS : 970	O.S.L/ T.C		V	V	V	
		B: Mechanical Properties	Major	Hardness	Sample	IS/BS : 970	IS/BS : 970	QA REG.		V	V	V	
		C: Dimensional Checks	Major	Measurement	100%	DRG.	DRG.	D.I.R/Q.C.R		V	w	V	
This is part of Doc No. PE-TS-491-502-A001	Raw material Rounds, En-8, EN-9, EN-24	Crack Detection	Major	Ultrasonic testing	100%	ASTM-388	ASTM -388	QA/FMT/03		V	W	V	
	Casting : a. C.I. Graded Castings	A: Chemical Composition	Major	Analysis	Sample	IS-vendor DRG	AS PER DRG.	S.T.C	√	V	V	V	
		B: Mechanical Properties	Major	Hardness on traction sheave	Sample	vendor-DRG IS : 210	vendor-DRG IS : 210	S.T.C	√	V	V	V	
		C: Dimensional Checks	Major	Measurement	Sample	vendor-DRG	vendor-DRG	QA/FMT/02		-	W	-	
	D: Blow Holes	Major	Visual	100%	—	-	QA/REG		-	W	-		
This is part of Doc No. PE-TS-491-502-A001	Suppliers Item :												
	a. Manufactured Items	Dimensional Check	Major	Measurement	100%	vendor/DRG.	vendor/DRG.	D.I.R		-	W	-	
	b. Moldings Rubber Items (ABSORBER)	A: Dimensional Checks	Major	Measurement	100%	vendor-DRG.	vendor/DRG.	QA/FMT/02		-	W	-	
		B: Hardness	Major	Compression Test	Sample	vendor-DRG.	vendor-DRG.	QA/FMT/02		-	W	-	
	c. Springs (Buffer)	A: Dimensional Check	Major	Measurement	100%	vendor-DRG.	vendor-DRG.	QA/FMT/02		-	W	-	
		B: Spring Constant compression.	Major	Compression	Sample	vendor-DRG.	vendor-DRG.	S.T.C	√	V	V	V	
	d. Guide Rail.	A.Chemical Test.	Major	Analysis	Sample	vendor- DRG	vendor -DRG	S. T.C	√	V	V	V	
		B. Dimension check.	Major	Measurement	Sample	vendor-DRG.	vendor-DRG.	QA/FMT/02		V	W	V	
	e. Wire rope	A: Dimensional Check	Major	Measurement of O.D/ Const.	Sample	IS/2365 &	IS/2365 &	QA/FMT/02		-	W	-	
		B: Mechanical Properties.	Major	Measurement	Correlate S.T.C	IS : 2266	IS : 2266	S.T.C	√	V	V	V	
*V= Verification as appropriat. *M= Manufacturer/Sub contractor. *W=Witness , *VE= Manufacturer/ sub contractor Vendor. *S.T.C= Supplier Test Certificate, *B =BHEL/Nominated inspection agency. *O.S.L = Out Side Lab, *D.I.R=Daily inspection register. *R.Q.C = Rvendedoript Quality Control (vendor) . *P =Perform. *Q.C.R = Qua;ity Control Register (vendor) . *T.C. = Test Certificate, *D.I.R = Daily inspection register. * D = Documents. *U.E.R. =Ultra Sonic Examination Record .			MANUFACTURER SEAL AND SIGN		CONTRACTOR SIGN AND SEAL .		NAME & SIGN OF APPROVING AUTHORITY & SEAL						
1	2	3	4	5	6	7	8	9	10				11


Sr. No.	COMPONENT& OPERATION	CHARATERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMATE OF RECORD	AGENCY				RMARKS
									D	VE	M	B	
	f. Power & control (PVC)cable	a- FRLS , b- Insulation resistance.	Major do	Electrical do	Sampling do	IS - 694 do	IS - 694 do	S.T.C do	√ √	V V	V V	V V	
5	Raw material for motor. (1) Enameled wire.	a) Dimension Check b) High voltage test	Major Major	Measurement Elect.	Sample One Sample each roll	vendor -STD IS:4800	vendor -STD IS:4800	D.I.R D.I.R		V V	W W	V V	
	(2) Copper base (Flat)	Chemical check	Major	Analysis	Sample	Cu=min 99.5%	Cu=min 99.5%	O.S.L / T.C		V	V	V	
6	Finished Manufactured Components	Plating thickness control	Major	Measurement	Sample	vendor-STD.	vendor-STD.	vendor-STD		V	W	V	
B. Inspection During mfg.													
of Doc No. PE TS-491-502-A01	Machine Shop :	A: Dimensional Check	Major	Measurement	100%	vendor-DRG.	vendor-DRG.	QA/FMT/01		-	W	-	
		B: Crack detection Motor bodies	Major	D.P. Test	100%	vendor-STD.	vendor-STD.	-		-	W	-	
		C: Surface check	Major	Visual	100%	vendor-STD.	vendor-STD.	-		-	W	-	
	Fabrication Shop :	Dimensional Checks of critical items Welding	Major minor	Measurement Visual	100% Sampling	vendor-DRG. do	vendor-DRG. do	Q.C.R .		- .	W W	- .	Welding by approved welder
C. Assembly Inspection.													
of Doc No. PE TS-491-502-A01	Winding gear.	A- Back lash of gears& Maching contact.	Major	Measurement	100%	vendor INSP NORMS	vendor INSP NORMS	QA/FMT/11		V	W	-	
		B- Vibration .	Major	Measurement	100%	vendor INSP NORMS	vendor INSP NORMS	do		V	W	-	
		C- Noise level.	Major	Measurement	100%	vendor INSP NORMS	vendor INSP NORMS	do		V	W	-	
		D- Visual .	Oil leakage	Visual	100%	vendor INSP NORMS	vendor INSP NORMS	do		V	W	-	
*V=Verification as appropriat. *M= Manufacturer/Sub contractor. *W=Witness , *VE= Manufacturer/ sub contractor Vendor. *S.T.C= Supplier Test Certificate, *B =BHEL/Nominated inspection agency. *O.S.L = Out Side Lab, *D.I.R=Daily inspection register. *R.Q.C = Rvendoript Quality Control (vendor) . *Q.C.R = Qua;ity Control Register (vendor) . *T.C. = Test Certificate, Daily inspection register. *D = Documents. *U.E.R. =Ultra Sonic Examination Record .			MANUFACTURER SEAL AND SIGN		CONTRACTOR SIGN AND SEAL .		NAME & SIGN OF APPROVING AUTHORITY & SEAL /HPGCIL						

1	2	3	4	5	6	7	8	9	10				11
Sr. No.	COMPONENT& OPERATION	CHARATERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMATE OF RECORD	D	AGENCY			REMARKS
										VE	M	B	
2	Motor Assembly :	A-Winding Insulation test.	Major	High Volt. Test	100%	I S :325-96 1.5 KV for 5 SEC	I S :325-96 1.5 KV for 5 SEC.	D.I.R QA/FMT/13		V	W	V	
		B-Insulation Resistance	Major	Measurement	100%	> 10 mega ohms	> 10 mega ohms	Test report		V	W	V	
		C-Motor testing for elect. Pmt.	Major	Elect.	100%	IS : 325	IS : 325	Test report		V	W	V	
		D-Vibration measurement & noise level	Major	Measurement	100%	vendor - Norms	vendor -Norms	Test report		V	W	.	
3	Speed Governor Assembly :	Tripping speed Easy Run test	Major	Function Check	100%	I S : 9878 LCH -112	I S : 9878 LCH - 112	T.C IN Pant.		V	W	V	
	Controller Assembly / VVVF Unit.	1. Visual Inspection 2. Electrical Checks (Routine Test). 3. Functional Checks 4. Pretreatment in seven tank for sheet & paint thickness.	Major do do Major	Visual Electrical Function Measurement + Visual	100% 100% 100% Sampling	vendor Norms do do do	vendor Norms do do do	T.C do do vendor - FMT.		V V V V	W W W W	V V V V	
*V= Verification as appropriat. *M= Manufacturer/Sub contractor. contractor Vendor. *W=Witness , *VE= Manufacturer/ sub Supplier Test Certificate, *B =BHEL/Nominated inspection agency. *S.T.C= *O.S.L = Out Side Lab, *D.I.R=Daily inspection register. *R.Q.C = Rvendoriprt Quality Control (vendor) . *P =Perform. *Q.C.R = Qua;ity Control Register (vendor) . *T.C. = Test Certificate, *D.I.R = Daily inspection register. *D = Documents. *Ultr. =Ultra Sonic Examination Record .			MANUFACTURER SEAL AND SIGN		CONTRACTOR SIGN AND SEAL.		NAME & SIGN OF APPROVING AUTHIRITY & SEAL.						

This is part of Doc No PE-TS-491-502-A001

This is part of Doc No. DE-TS-41-502-A001

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Sr. No.	COMPONENT& OPERATION	CHARATERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMATE OF RECORD		AGENCY			REMARKS
									D	VE	M	B	
5	Mechanical assembly :	Cage assembly .	Major	Measurement	100%	Appd. L/o DRG. vendor-INSP. Norms	Appd. L/o DRG. vendor-INSP. Norms	QA/FMT/15		V	W	V	
6	Painting	Parts & Components	Major	Cross Hatch Test	Sampling	vendor-INSP. Norms	vendor-INSP. Norms	QA / REG.		V	W	V	
			Major	Powder Coating Thickness Test	Sampling	vendor-INSP. Norms	vendor-INSP. Norms	QA / REG.		V	W	V	
6	Electrical Assembly	1- Break assembly .	Minor	Function check	Sampling	vendor- NORMS	vendor - NORMS	TC		V	W	V	
*V=Verification as appropriat. *M= Manufacturer/Sub contractor. contractor Vendor. *W=Witness , *VE= Manufacturer/ sub Supplier Test Certificate, *B =BHEL/Nominated inspection agency. *S.T.C= *O.S.L = Out Side Lab, *D.I.R=Daily inspection register. =Perform. *R.Q.C = Rvendoript Quality Control (vendor) . Register (vendor) . *T.C. = Test Certificate, *D.I.R = Daily inspection register. *D = Documents. *U.S.R. =Ultra Sonic Examination Record .			MANUFACTURER SEAL AND SIGN		CONTRACTOR SIGN AND SEAL.		NAME & SIGN OF APPROVING AUTHORITY & SEAL						

	2X500 MW NTPC SIPAT TPS STAGE-II FGD ELEVATORS TECHNICAL SPECIFICATION	SPECIFICATION No: PE-TS-491-502-A001	
		VOLUME - II	
		REV. 00	JAN 2024


COMPLIANCE CUM CONFIRMATION CERTIFICATE

The bidder shall confirm compliance with following by signing / stamping this compliance certificate (every sheet) and furnish same with the offer.

- a) The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusions, other than those mentioned under “exclusion and those resolved as per ‘Schedule of Deviations’, with regard to same.
- b) There are no other deviations w.r.t. specifications other than those furnished in the ‘Schedule of Deviations’. Any other deviation, stated or implied, taken elsewhere in the offer stands withdrawn unless specifically brought out in the ‘Schedule of Deviations’
- c) Bidder shall submit QP in the event of order based on the guidelines given in the specification & QP enclosed therein. QP will be subject to BHEL / CUSTOMER approval & customer hold points for inspection / testing shall be marked in the QP at the contract stage. Inspection / testing shall be witnessed as per same apart from review of various test certificates/ Inspection records etc. This is within the contracted price without any extra implications to BHEL after award of the contract.
- d) All drawings/ data-sheets / calculations etc. submitted along with the offer shall not be taken cognizance off.
- e) The offered materials shall be either equivalent or superior to those specified in the specification & shall meet the specified / intended duty requirements. In case the material specified in the specifications is not compatible for intended duty requirements then same shall be resolved by the bidder with BHEL during the pre-bid discussions, otherwise BHEL / Customer’s decision shall be binding on the bidder whenever the deficiency is pointed out.

For components where materials are not specified, same shall be suitable for intended duty, all materials shall be subject to approval in the event of order.

- f) The commissioning spares shall be supplied on ‘As Required Basis’ & prices for same included in the base price itself.
- g) All sub vendors shall be subject to BHEL / CUSTOMER approval in the event of order.
- h) Guarantee for plant/equipment shall be as per relevant clause of GCC / SCC / Other Commercial Terms & Conditions
- i) In the event of order, all the material required for completing the job at site shall be supplied by the bidder within the ordered price even if the same are additional

	2X500 MW NTPC SIPAT TPS		SPECIFICATION No: PE-TS-491-502-A001	
	STAGE-II FGD			
	ELEVATORS		VOLUME - II	
	TECHNICAL SPECIFICATION		REV. 00	JAN 2024

to approved billing break up, approved drawing or approved Bill of quantities within the scope of work as tender specification. This clause will apply in case during site commissioning, additional requirements emerges due to customer and / or consultant’s comments. No extra claims shall be put on this account

j) Schedule of drawings submissions, comment incorporations & approval shall be as stipulated in the specifications. The successful bidder shall depute his design personnel to BHEL’s / Customer’s / Consultant’s office for across the table resolution of issues and to get documents approved in the stipulated time.


k) As built drawings shall be submitted as and when required during the project execution.

l) The bidder has not tempered with this compliance cum confirmation certificate and if at any stage any tempering in the signed copy of this document is noticed then same shall be treated as breach of contract and suitable actions shall be taken against the bidder.

m) Successful bidder shall furnish detailed erection manual for each of the equipment supplied under this contract at least 3 months before the scheduled erection of the concerned equipment / component or along with supply of concerned equipment / component whichever is earlier.

n) Document approval by customer under Approval category or information category shall not absolve the vendor of their contractual obligations of completing the work as per specification requirement. Any deviation from specified requirement shall be reported by the vendor in writing and require written approval. Unless any change in specified requirement has been brought out by the vendor during detail engineering in writing while submitting the document to customer for approval, approved document (with implicit deviation) will not be cited as a reason for not following the specification requirement.

o) In case vendor submits revised drawing after approval of the corresponding drawing, any delay in approval of revised drawing shall be to vendor’s account and shall not be used as a reason for extension in contract completion.

LOAD TITLE	RATING (KW)		UNIT (U)/STN (S)	Nos.		VOLTAGE CODE*	FEEDER CODE**	EMER. LOAD (Y)	CONT.(C)/INTT.(I)	STARTING TIME >5 SEC (Y)	LOCATION	BOARD NO.	CABLE		BLOCK CABLE DRG. No.	CONTROL CODE	REMARKS	LOAD No.
	NAME PLATE	MAX. CONT. DEMAND (MCR)		SIZE CODE	NOs													
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
FGD CONTROL ROOM BUILDING ELEVATOR																		
ELEVATOR MOTOR	16.5		S	1	0	D	S	-	C		FGD Control Room Elevator Machine Room							
SPLIT AIR-CONDITIONER FOR FGD CONTROL ROOM ELEVATOR M/C ROOM AND LIGHTING FOR ELEVATOR M/C ROOM & SHAFT AND MAINTENANCE AND INSTALLATION REQUIREMENT.	7		S	1	0	D	S	-	C		FGD Control Room Elevator Machine Room							
GYPSUM DEWATERING BUILDING ELEVATOR																		
ELEVATOR MOTOR	16.5		S	1	0	D	S	-	C		Gypsum Dewatering Building Elevator Machine Room							
SPLIT AIR-CONDITIONER FOR GYPSUM DEWATERING BUILDING ELEVATOR M/C ROOM AND LIGHTING FOR ELEVATOR M/C ROOM & SHAFT AND MAINTENANCE AND INSTALLATION REQUIREMENT	7		S	1	0	D	S	-	C		Gypsum Dewatering Building Elevator Machine Room							
<p>Note:</p> <p>1) No other single phase or 3 phase supply shall be provided for elevator erection / operation etc.</p> <p>2) Only two (3 phase) supply feeders per elevator shall be provided one feeder shall be dedicated to elevator motor and other 3 phase supply feeder shall be provided by BHEL for air conditioner, machine room and shaft lighting and maintenance / installation requirement. Bidder to consider CT in their scope for stepping down the voltage as per their requirement.</p> <p>Bidder to note: Feeder of indicated rating shall be provided by BHEL. If motor rating is lesser than the provided feeder rating, bidder shall provide protection against over current</p>																		
<p>NOTES:</p> <p>1. COLUMN 1 TO 12 & 18 SHALL BE FILLED BY THE REQUISITIONER (ORIGINATING AGENCY); REMAINING COLUMNS ARE TO BE FILLED UP BY PEM (ELECTRICAL)</p> <p>2. ABBREVIATIONS : * VOLTAGE CODE (7):- (ac) A=11 KV, B=6.6 KV, C=3.3 KV, D=415 V, E=240 V (1 PH), F=110 V (DC): G=220 V, H=110 V, J=48 V, K=+24V, L=-24 V</p> <p>: ** FEEDER CODE (8):- U=UNIDIRECTIONAL STARTER, B=BI-DIRECTIONAL STARTER, S=SUPPLY FEEDER, D=SUPPLY FEEDER (CONTACTOR CONTROLLED)</p>																		
	LOAD DATA (ELECTRICAL)	JOB NO.		491		ORIGINATING AGENCY		PEM (ELECTRICAL)										
		PROJECT TITLE		2X500 MW NTPC SIPAT-II FGD		NAME		DATA FILLED UP ON										
		SYSTEM / S		ELEVATORS		SIGN.		DATA ENTERED ON										
		DEPTT. / SECTION		MAUX / MH		SHEET 1 OF 1		REV. 00										



LOAD DATA (ELECTRICAL)

JOB NO.

491

ORIGINATING AGENCY

PEM (ELECTRICAL)

PROJECT TITLE

2X500 MW NTPC SIPAT-II FGD

NAME

DATA FILLED UP ON

SYSTEM / S

ELEVATORS

SIGN.

DATA ENTERED ON

DEPTT. / SECTION

MAUX / MH

SHEET 1 OF 1

REV. 00

DE'S SIGN. & DATE