A Maharatna Company
ISO 9001 Company
ISO 50001 Company

பாரத் ஹெவி இலெக்ட்ரிகல்ஸ் லிமிடெட்
भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Limited
(A Government of India Enterprise)
Tiruchirappalli – 620 014

MATERIALS MANAGEMENT
Phone: 0431 – 257 7872 E-mail: srija@bhel.com, duraip@bhel.in ; www.bhel.com

NOTICE INVITING e-TENDER

Dear Sir/ Ma'am,

Subject : Two-part **e-Tender** inviting techno-commercial and price bids for Supply of FURNACE MAINTENANCE PLATFORM required for ADANI PROJECTS. (Raigarh, Raipur, Kawai, Mahan Ph 1, Mahan Ph 3. Mirzapur and Korba projects)
Enq No: 1802500213 DATED 24.07.2025.

Kindly submit your competitive offer as per the tender terms and conditions given in the tender document through e-procurement portal **https://eprocurebhel.co.in/** only.

1.	Bid submission start date	25.07.2025, 12:00 Hrs.
2.	Bid submission end date	**05.08.2025, 12:00 Hrs.**
3.	Bid opening date (Part-I)	**05.08.2025**, **16:00 Hrs.**
4.	Date of price bid opening	The date/ time of price bid opening will be intimated to the techno-commercial qualified tenderer separately.

Note: Change of dates if any will be published as corrigendum. Bidder to check e-procurement portal regularly for updates.

- The tender will be operated on TWO PART BID basis and you are requested to submit your offer through e-procurement mode.

  a) Technical offer with commercial terms and unpriced bid and

  b) Price bid separately in enclosed price bid format.

- The tender will be evaluated on the total package basis as per the BOQ Format.
- General Terms and Conditions, Special Condition and Checklist Annexures enclosed shall be submitted along with the offer for evaluation.

Following list of documents are part of this tender and shall be deemed to form an integral part of contract:

1. GENERAL TERMS AND CONDITIONS OF ENQUIRY FOR SUPPLY OF FURNACE MAINTENANCE PLATFORM
2. SPECIAL TERMS AND CONDITIONS
3. PBG FORMAT WITH CONSORTIUM BANK
4. TECHNICAL SPECIFICATION ALONG WITH THE DRAWINGS
5. CHECKLIST AND ANNEXURES
6. ANNEXURE B – SCHDULE OF ITEMS

General Instructions

1. Clarifications required if any shall be send to email ID srija@bhel.in and duraip@bhel.in.
2. Please quote enquiry no date and due date in all correspondences.
3. This is only a request for quotation and not an order.
4. Bidder to submit the offer through e-procurement portal only. Offer submitted through any other mode will not be considered.

Thanking you,
For **Bharat Heavy Electricals Limited**

Annexure B Schedule of Items

PACKAGE DETAILS AND DELIVERY LOCATION	Item Code / Make	Item Description	Detailed Description	Qty	UOM
KAWAI /RAJASTHAN	L185019951401001	PLATFORM W/45 DEG.CHAMF.@RIGHT SIDE L9.0 DRAWING ITEM NO:01	ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM-4 WALL COVERAGE AS PER BHEL SPECIFICATION MHS-HEQ/071 REV.05, ANNEXURES - I TO SPECIFICATION AND DRAWING 0-99-514-40412.	2	Nos
	L185019951401002	PLATFORM W/45 DEG.CHAMF.@LEFT SIDE L9.0M DRAWING ITEM NO:02		2	Nos
	L185019951401003	PLATFORM WITH BOTH ENDS FLAT L 16.0 M DRAWING ITEM NO:03		2	Nos
KORBA/ Chhattisgarh	L185219951401001	PLATFORM W/45 DEG.CHAMF.@RIGHT SIDE L9.0 DRAWING ITEM NO:01	ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM-4 WALL COVERAGE AS PER BHEL SPECIFICATION MHS-HEQ/071 REV.05, ANNEXURES - I TO SPECIFICATION AND DRAWING 0-99-514-40414.	2	Nos
	L185219951401002	PLATFORM W/45 DEG.CHAMF.@LEFT SIDE L9.0M DRAWING ITEM NO:02		2	Nos
	L185219951401003	PLATFORM WITH BOTH ENDS FLAT L 16.0 M DRAWING ITEM NO:03		2	Nos
MAHAN / Madhya Pradesh	L183219951401001	PLATFORM W/45 DEG.CHAMF.@RIGHT SIDE L9.0 DRAWING ITEM NO:01	ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM-4 WALL COVERAGE AS PER BHEL SPECIFICATION MHS-HEQ/071 REV.05, ANNEXURES - I TO SPECIFICATION AND DRAWING 0-99-514-40396.	2	Nos
	L183219951401002	PLATFORM W/45 DEG.CHAMF.@LEFT SIDE L9.0M DRAWING ITEM NO:02		2	Nos
	L183219951401003	PLATFORM WITH BOTH ENDS FLAT L 16.0 M DRAWING ITEM NO:03		2	Nos
MAHAN PH 3/Madhya Pradesh	L185419951401001	PLATFORM W/45 DEG.CHAMF.@RIGHT SIDE L9.0 DRAWING ITEM NO:01	ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM-4 WALL COVERAGE AS PER BHEL SPECIFICATION MHS-HEQ/071 REV.05, ANNEXURES - I TO SPECIFICATION AND DRAWING 0-99-514-40416.	2	Nos
	L185419951401002	PLATFORM W/45 DEG.CHAMF.@LEFT SIDE L9.0M DRAWING ITEM NO:02		2	Nos
	L185419951401003	PLATFORM WITH BOTH ENDS FLAT L 16.0 M DRAWING ITEM NO:03		2	Nos
MIRZAPUR/Uttar Pradesh	L184619951401001	PLATFORM W/45 DEG.CHAMF.@RIGHT SIDE L9.0 DRAWING ITEM NO:01	ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM-4 WALL COVERAGE AS PER BHEL SPECIFICATION MHS-HEQ/071 REV.05, ANNEXURES - I TO SPECIFICATION AND DRAWING 0-99-514-40407.	2	Nos
	L184619951401002	PLATFORM W/45 DEG.CHAMF.@LEFT SIDE L9.0M DRAWING ITEM NO:02		2	Nos
	L184619951401003	PLATFORM WITH BOTH ENDS FLAT L 16.0 M DRAWING ITEM NO:03		2	Nos
RAIGARH/Chhattisgarh	L184219951401001	PLATFORM W/45 DEG.CHAMF.@RIGHT SIDE L9.0 DRAWING ITEM NO:01	ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM-4 WALL COVERAGE AS PER BHEL SPECIFICATION MHS-HEQ/071 REV.05, ANNEXURES - I TO SPECIFICATION AND DRAWING 0-99-514-40397.	2	Nos
	L184219951401002	PLATFORM W/45 DEG.CHAMF.@LEFT SIDE L9.0M DRAWING ITEM NO:02		2	Nos
	L184219951401003	PLATFORM WITH BOTH ENDS FLAT L 16.0 M DRAWING ITEM NO:03		2	Nos
APL RAIPUR/Chhattisgarh	L184419951401001	PLATFORM W/45 DEG.CHAMF.@RIGHT SIDE L9.0 DRAWING ITEM NO:01	ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM-4 WALL COVERAGE AS PER BHEL SPECIFICATION MHS-HEQ/071 REV.05, ANNEXURES - I TO SPECIFICATION AND DRAWING 0-99-514-40404 Rev 01.	2	Nos
	L184419951401002	PLATFORM W/45 DEG.CHAMF.@LEFT SIDE L9.0M DRAWING ITEM NO:02		2	Nos
	L184419951401003	PLATFORM WITH BOTH ENDS FLAT L 16.0 M DRAWING ITEM NO:03		2	Nos

Package -1

KAWAI PROJECT

FURNACE PLATFORM

BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI-620 014

Fuel Systems/PE(FB)

Title Sheet

General Specification for

ELECTRICALLY OPERATED
SUSPENDED SCAFFOLDING SYSTEM

Specification No.: MHS-HEQ/071 ***Revision No. : 05***

Rev. No.	Rev. Date	Clause	Description	Chd. & Appd.
05	16/08/18	-various-	Revisit & update of specification.	NF/GSK
04	10/12/07	2.6	Special tools included in the scope of supply	DVK
03	11/10/07	1.1 2.2 13.5.1	Scope clarity specified Access opening size referred in Annexure-I O&M- No. of copies was 25	SSR
02	26/09/07	2.6	Special tools included in the scope of supply	DVK
01	26/11/97	4.1 7.3 11.4 13.5.0 14.0, 15.0	Platforms Factor of safety Cable opening Operation & Maintenance manual Included	TKP
00	03/03/97		First issue	

	Name	Signature	Date
Prepared	T.K.Prabu	Sd.,	03/03/97
Checked	T.K.Prabu	Sd.,	03/03/97
Approved	A.Rajamohan	Sd.,	03/03/97

CONTENTS

1.0 SCOPE:

This specification covers design, manufacture, inspection, testing and supply of electrically operated suspended scaffolding system. The specification is for ensuring a safe and trouble free operation of Powered suspended scaffolding system used during shutdowns and overhauls, for inspection and maintenance of furnace internals of steam generator.

This is a general specification dealing with the technical Requirements of Suspended Scaffolding System. The specific Contract requirements and special requirements, if any, are specified in the enclosed annexures-1. If the scope of the Specification differs from Annexure-1, the scope of supply exclusively dealt in the contract specific requirement of Annexure-1 will be binding.

2.0 SPECIAL REQUIREMENTS OF THE SYSTEM

2.1 The suspended power scaffolding system shall consist of independently suspended platforms for the front / rear walls and sidewalls of boiler furnace as specified.

2.2 The scaffold platforms shall be modular and interchangeable construction made out of light weight material, easy for assembly inside the furnace, possible for taking inside the furnace, through an access door whose **overall opening size is furnished in the Annexure-I.** The platforms shall be easily assembled inside the furnace.

2.3 The suspension wire ropes will be introduced into the furnace through the furnace cable openings provided at the top of boiler and will be fastened to roof girders of boiler.

2.4 The suspension wire rope shall be capable to withstand temperature up to **250 Deg. C** which would be prevailing for longer duration after boiler shutdown.

2.5 The suspended platforms shall be operated by electric motor and climbing hoists.

2.6 The controls, safety devices, safety locks with necessary power supply cable, cable weight steel wire rope, secondary steel wire rope and special tools required for suspended platforms shall form part of the offer.

2.7 Vendor to provide suspension lugs (suitable to be welded at site) and other related items required for suspending the scaffolding at site. The lugs shall be capable of supporting four times the reaction forces imposed by the rated load on the scaffolding including scaffold self-weight.

3.0 GENERAL REQUIREMENTS

3.1 All materials, components and equipments used in the design, construction and installation of suspended powered scaffolds shall meet the requirements of its specified application in accordance with good engineering practice.

3.2 Scaffold platforms/ropes & other components of SAE shall be capable of supporting without failure under any scenario of usage.

3.3 The maximum rated speed at which the suspended powered scaffold moved in a vertical direction shall be in the range of 8.0 to 9.0 meters per minute.

3.4 An automatic overload/under load protection device shall be provided to cut power supply to the climbing machine for travel in the up/down direction when the load applied to the climbing machine exceeds 125% of its normal tension with rated load or under load.

3.5 Hoist shall never come down on its own.

3.6 Supplier shall provide suitable arrangement to prevent suspended power scaffolds from swaying. Suspended Scaffold platforms with rollers should always be engaged with water walls of boiler furnace. This should be ensured by providing extended wall rollers if necessary to prevent swaying of the platforms.

4.0 CODES & STANDARDS

4.1 The scaffolding system shall be designed to meet all the safety, design & sizing requirement defined by either of the codes - **EN-1808:2015 or ANSI A10.8-2011.**

4.2 Vendor shall follow either of the standards as mentioned above in total for designing the suspended scaffolding system.

4.3 Vendor should specify which code/standard is followed in their design of the offered system by **filling Sheet-A** of this specification.

5.0 PLATFORM OF SUSPENDED SCAFFOLD

5.1 The platform width shall not be less than 510 mm.

5.2 Platforms shall be provided with guard rails, mid rails and toe boards installed on all open sides and ends. The clear vertical distance between toe board, mid rails or guard rails shall be less that 500mm. The height of the guard rails shall be not less than 1000mm and not be more than 1100mm. All rails and posts shall be suitable for easy assembly & disassembly. Hoisting machines when located at not more than 450mm from ends of platforms hoist supporting stirrups, shall be considered as end guard rails. Else separate end guard rails shall be provided.

5.3 Toe boards shall extend to a minimum of **150mm** above the working surface.

5.4 Each platform shall bear a manufacturer's load rating plate stating the maximum rated load and stating the load rating when arranged in small modules. Load rating plates shall be made of non-corrosive material and shall

have letters and figures that are legible.

5.5 Suspended Platforms shall be designed to carry the rated load. Considering **800 Kg per hoist** capacity, vendor to indicate the rated load of platforms in their drawings and technical data sheet for our review. This shall be never be less than 3 persons loading requirement. Per person loading = 120Kg.

5.6 The minimum load capacity of deck of platform shall be 200 Kg/m^2 at worst case loading zone.

5.7 Fabricated platforms and scaffold decks shall be designed to support, in addition to their own weight, at least four times the maximum intended load.

6.0 HOISTING MACHINES

6.1 Each electrically operated hoist of minimum safe working load of 800 Kgs, shall be complying with applicable international codes. Each motor shall bear a name plate, indicating the operating voltage, current rating and power rating.

6.2 All gearing shall conform to the applicable standards with a service factor of not less than 1.0.

6.3 The hoist - Electrically operated rope climbing machine shall be supplied with top limit switch. There shall be common single power control for both hoists.

6.4 Lubrication where needed shall be provided to assure that all moving parts of hoists are lubricated at all times.

6.5 Speed Reducers

6.5.1 Each hoisting equipment shall be equipped with speed reducers or an equivalent to obtain mechanical advantage. Such speed reducers or other device shall contain positive type gearing such as worm gears, spur gears or bevel gears.

6.5.2 The speed reducer or other devices shall be directly connected to the traction sheave /drum of the hoisting equipment.

6.6 Primary Brakes

6.6.1 Each electrically operated hoisting equipment shall be provided with a primary brake that automatically engages whenever power supply is interrupted.

6.6.2 The primary brake shall be rated to stop and hold 125% of its rated load of hoisting equipment.

6.6.3 Each primary brake shall be directly connected to the drive of the hoisting machine.

6.7 Fall arrest device

6.7.1 Each hoisting equipment shall be provided with an automatic emergency type fall arrest device that will stop and hold at least 125% of the rated load of the hoisting machine. If such a fall arrest device is of instantaneous stopping type, then it should stop and hold its total load before the hoist travels a vertical distance of 450mm maximum.

6.7.2 The fall arrest safety device shall act directly on a **secondary safety wire rope** in case of failure of the hoist or the suspensions rope. The traction hoist works on the primary suspension rope. The actuating mechanism of the fall arrest device shall be separate from the primary brake.

6.7.3 The fall arrest safety device shall not be used to stop and hold the hoist except under emergency situations. In normal operation, such a device shall not engage before the hoist is stopped by primary brake.

6.7.4 The design, installation and maintenance of every fall arrest safety device shall be such that the device is prevented from being made defective or in-operative by outside contamination.

6.8 Hoisting Drum / Sheaves

All hoisting drums/sheaves shall be of proven design through tests to have no deleterious or serious effect on the suspension wire rope.

6.8.1 Traction Drum / sheaves

6.8.1.1 The traction drum/sheaves shall be designed in a manner to maintain correct wire rope reeving at all times to prevent scrubbing and cross overs. They shall have a means of applying pressure on the hoist rope against the drum/sheave to ensure constant tractive force to develop the rating of the hoist.

6.8.1.2 The diameter of any traction drum/sheave shall not be less than 20 times the diameter of the wire rope used. If lesser diameter be used, tests shall be performed by the wire rope manufacturer or a qualified testing laboratory to determine that no deleterious effect is caused on hoist wire for the usage intended.

6.8.2 Winding Drum (If Applicable)

Each winding drum hoist shall be provided with a positive means of attachment of the suspension rope. Such attachment should develop a minimum of 80% of the rated breaking strength of the suspension rope.

6.8.2.1 Single Wrap Winding Drum

a) Every single wrap winding drum hoisting machine shall be provided with a means of level winding of the suspension rope.

b) Every single wrap winding drum shall be so designed that the drum will contain a minimum of four wire ropes of the suspension rope at all times.

c) The minimum diameter of every single wrap winding drum shall not be less than 25 times of the diameter of the suspension rope used.

6.8.2.2 Multiple wrap Winding Drum

a) Every multiple wrap winding drum hoisting machine shall be provided with a means for level winding of the suspension rope.

b) Every multiple wrap winding drum shall contain not less than four wraps of suspension rope at all times.

c) The minimum diameter of every multiple wrap winding drum shall not be less than 10 times the diameter of the suspension rope used.

6.9 **Electrical Wiring And Equipment**

6.9.1 The electrical wiring and controls shall comply with governing codes, ordinances and regulation such as Low Voltage Directive 5006/95/EC, NFPA, NEC, National Electrical Manufacturers Association Regulations etc.

6.9.2 The power supply shall be 415 VOLTS, AC three phase 50Hz.

6.9.3 The power supply cable to any hoisting machine shall contain a separate conductor which will serve as a ground connection for the hoist.

6.9.4 Strain relief devices shall be provided for cables supplying power to hoisting machines. Such devices shall be located at the suitable places where the cables are plugged in at the cable connections on the hoists.

6.10 **Hoisting Machine Controls**

6.10.1 Hoisting machines shall have common control for each platform. If the control is of push button type, it shall be of the constant pressure. If it is fixed position type, it must have the provision for automatic locking when in the "OFF" position, or by means of guards against accidental actuation. The lever type control can be of the constant pressure type or of the fixed position type.

6.10.2 All hoist shall have a manually operated system that allows controlled descent of the scaffold in case of power failure. This **no-power decent** system shall be such that the controlled speed is lower than the tripping speed of the fall arrest device.

6.10.3 For a multi-point suspension, all the hoisting machines shall be synchronised and control shall be centralized with safety switch.

6.10.4 An **Anti-tilt device** shall be provided for the suspended platform with multi point suspensions.

7.0 SAFETY BELTS AND ANCHOR POINTS

7.1 Each workman on a suspended powered scaffold shall be provided with an approved safety belt with a lanyard of not more than 1.5 meters in length. The lanyard shall be attached to the safety belt with a self-closing safety hook. The scaffold needs to have anchor points for eventually attaching the other end of the lanyard.

7.2 The suspended powered scaffold shall be equipped with Overload Protection system and overload indicator.

8.0 ROPES

8.1 Suspended powered scaffolds shall be suspended by wire ropes. The minimum grade of the wire rope shall be of improved plough steel. (galvanized)

8.2 The suspension wire rope shall be covered with insulating material at least 1.2 Mtr above the hoist to prevent possibility of the welding current arcing through the suspension wire rope during the course of welding, scarfing, etc.

8.3 Reverse bends in rope arrangement shall be avoided.

8.4 The minimum factor of safety of the wire rope shall be 6. Each wire rope used for scaffold suspension shall be capable of supporting at least six times the rated capacity of the hoist.

8.5 Fastening:

8.5.1 Babbitted and zinc sockets for wire ropes are prohibited.

8.5.2 Swagged attachments or spliced eyes are acceptable for fastening of wires.

8.5.3 Wire rope clips with twin base type shall be used and shall be installed as per the wire rope clip manufacture's recommendation.

8.5.4 All fasteners shall have anti-corrosion protection and develop at least 80% of the wire rope rated breaking strength.

8.6 Ropes in Traction Drum /sheave Type

8.6.1 On traction drum /sheave applications, provisions shall be made to prevent the machine from running off the wire rope.

8.6.2 The wire rope shall be of such length that the operator can lower to the lowest point of travel with out end of the wire rope passing through the traction drum/sheave hoist.

8.7 Winding Drum Type (If applicable)

8.7.1 Winding drums shall have at least four turns of rope remaining when the platform has landed at the lowest possible point of its travel.

9.0 MULT POINT SUSPENDED POWERED PLATFORM

9.1 The scaffold shall be suspended by more than two (2) independent wire ropes.

9.2 The scaffold shall be provided with hoisting machines complying with clause 6.0

9.3 The stages shall be supported by galvanized steel stirrups.

9.4 Hoisting machine wire ropes shall conform to clause 8.0

9.5 Guard rails, mid rails and toe boards shall conform to clause 5.0

9.6 Anti-tilt device shall be included.

9.7 Both hoisting machines shall be operated from the center of platform in a centralized fashion.

10.0 INSPECTION

10.1 All test certificates shall be furnished for buyer's reference and records.

10.2 All suspended power scaffold installations shall, on their completion and before being placed in service, be subjected to inspection by BHEL inspector or BHEL nominated inspection authority during manufacture/testing stages, to determine

that the assembly conforms to applicable requirements. Hoist machines shall be inspected and tested in accordance with the manufacturer's recommendation.

10.3 Scaffolds (platform) & hoist machine shall be inspected and tested as per approved quality plan. The certificates and documents generated during inspection of above shall be furnished.

11.0 SPECIAL NOTES SUPPLEMENTED TO TECHNICAL SPECIFICATION

11.1 Supplier shall quote for recommended spares for three years trouble free operation separately.

11.2 Supplier shall furnish motor specification.

11.3 Sufficient number of packages of portable sizes to carry the components in fields shall be offered.

11.4 The size and locations of cable opening will be furnished for individual project by BHEL. Offer shall include the cable support details envisaged by supplier.

11.5 The procedure and support details of the false platform to be laid down before the assembly of suspended powered scaffolds shall be included in the offer with sketches.

11.6 The maximum temperature to which the rope shall be exposed for longer duration shall be specified.

11.7 Necessary provision shall be provided to keep the suspension ropes separate without twist.

11.8 Cable weights shall be provided suitably for secondary wire ropes.

12.0 GUARANTEE

12.1 The offered system shall be guaranteed for 18 months from the date on which the equipment / system is put into use (by the end user) or 24 months from the date of supply whichever is earlier against defective design, defective material usage, defective workmanship, defective packaging and forwarding.

13.0 DOCUMENTS TO BE SUBMITTED BY VENDOR

13.1 DOCUMENTS TO BE SUBMITTED ALONG WITH THE OFFER:

13.1.1 Product literature and drawings in support of the offer shall be submitted with the quotation to evaluate the offer.

13.1.2 Weight of individual major components as per the scope of supply shall be indicated in the drawing as bill of material (BOM).

13.1.3 The quality plan for the product under supply shall be furnished along with the offer.

13.1.4 General arrangement drawing with plan, elevation, and end view along with major dimensions and weight particulars.

13.1.5 Electric wiring diagram / circuit diagram as per clause 6.9 of this specification.

13.1.6 Filled in sheet-A of this Specification indicating the standards followed.

13.1.7 List of Initial spares (if any) to be supplied along with SAE.

13.1.8 Design calculations

13.1.8.1 Vendor to provide calculations to justify the following:

a) Minimum load capacity of each offered suspended platform.
b) Selection of Rated Load for each offered suspended platform.
c) No. of person loading.
d) Suspended platform structural calculation
e) Calculation of suspension lugs.

13.2 DOCUMENTS TO BE FURNISHED AFTER AWARD OF CONTRACT

13.2.1 Packaging procedure detailing the list of components shall be dispatched individually with identification and with preservation and storage.

13.2.2 SAE - Data sheet including drawings and design information shall be submitted to get approval from End user/owner of the boiler.

13.2.3 SAE – CERTIFICATES

13.2.3.1 Test certificates shall be furnished before dispatch of components.

13.2.3.2 A certificate for the components' safety from Safety Steward of the country of make shall be provided.

13.2.3.3 Test certificate for the following shall be furnished.

a) Material test certificate for all the major components.
b) Shop test certificates for safety devices.
c) Performance TC for the intended duty conditions.
d) Quality Control/Inspection documents generated during the stages of inspection, performance inspection, and final inspection.

13.2.3.4 Guarantee certificate shall be furnished by the vendor.

13.2.4 Operation & Maintenance (O & M) Manual

13.2.4.1 No of copies of manual:3Sets + 3 CD ROMS / USB drives.

13.2.4.2 The size of manuals should be in correct A4 size with drawings in A3 size. Large size drawings (greater than A3 size) shall be reduced to A3 size and inserted.

13.2.4.3 Drawings shall be of printed or laser prints only.

13.2.4.4 Spiral of comb bound copies should be totally avoided.

13.2.4.5 If manuals are supplied in folders, the folder should have 3 hole punching system.

13.2.4.6 O & M manuals, should be submitted to BHEL/Tiruchirappalli prior to dispatch of the equipment.

13.2.4.7 Manual, generally should contain the following:

a) Data sheet
b) Brief description
c) Operation

d) Maintenance (including lubrication, where necessary) & service, recommended spares for 2/3 years trouble free service.
e) Bill of Materials
f) Assembly drawings with part list, dimensional drawings and other applicable drawings.
g) Manual should pertain only to the type or model supplied for this contract.
h) Drawings and catalogues
i) Sequence of erection and dismantling
j) Erection instruction
k) List of tools and tackles
l) Critical checks and permissible deviations/tolerances
m) Procedure/checklist for commissioning the system
n) Procedure for initial checking after erection
o) Trouble Shooting

14.0 GENERAL:

14.1 The language used shall be "English only" in offer, O & M manual, Labels, Drawings etc.

14.2 For equipment and other special requirements refer Annexure-I to this specification.

15.0 SHEET-A: STANDARD / CODE CHECKLIST

DESCRIPTION	CODE FOLLOWED (Vendor to fill and submit)
PLATFORM OF SUSPENDED SCAFFOLD	
RATED LOAD OF SUSPENDED PLATFORM	
HOISTING MACHINES	
POWER SYSTEM FOR HOISTS	
CONTROL SYSTEM FOR HOISTS	
SAFETY AND CONTROL OF SUSPENDED PLATFORM	
WIRING AND EQUIPMENT	
SUSPENSION ROPES	

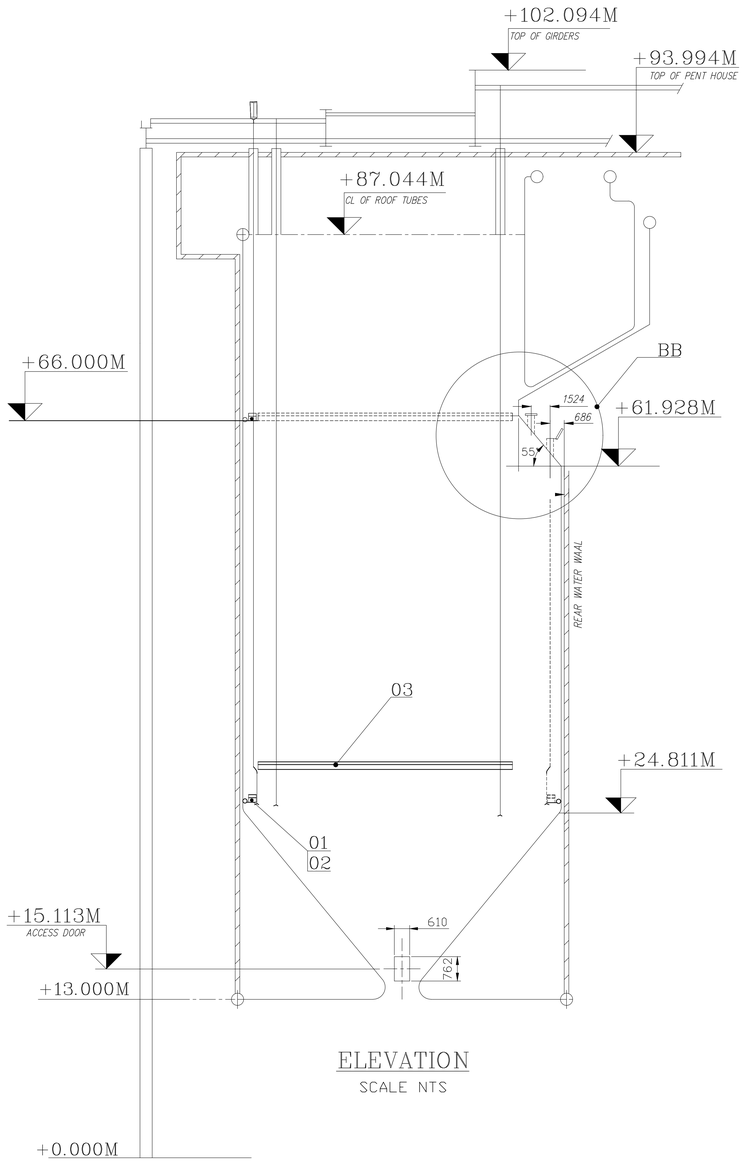
PROJECT : ADANI POWER LIMITED (APL) – KAWAI 2x800 MW Ph-II USTPP
CUSTOMER NO. : 1850-51
REFERENCE DRAWING N : 0-99-514-40412

1.0 Supplier to supply Furnace maintenance platforms as per specification no. **MHS-HEQ/071 Rev. 05**
2.0 Top of ceiling girder elevation : 102.094 M.
3.0 Access door elevation : 15.113 M.
4.0 SCOPE OF SUPPLY
4.1.0 PLATFORMS
4.1.1 Platform with 45° LH chamfer at one end and other with flat end for a length of 9.000M. - 2 Nos.
4.1.2 Platform with 45° RH chamfer at one end and other with flat end for a length of 9.000M. - 2 Nos.
4.1.3 Platform with both sides flat with length of 16.000M. - 2 Nos.
4.1.3 Platform wall roller assy & bracket complete with connecting fasteners. The rollers shall be designed suitably to move on the spiral water walls.
4.1.4 Complete guard rails with connecting fasteners.
4.1.5 Connecting block and tubes with connecting fasteners.
4.1.6 Lugs/Fixing assembly required for suspending the SAE to ceiling girder & goose neck area.
4.1.7 Each module shall be capable of mounting STIRRUP arrangements such that any module can be used for traversing between any two cable openings.
4.2.0 STIRRUPS
4.2.1 Suitable Hot galvanised stirrups & stirrup retainer complete with fasteners.
4.3.0 HOIST (ROPE CLIMBING MACHINE)
4.3.1 Hoist for safe working load of minimum 800 Kgs.
4.3.2 Electrically operated rope climbing machine with top limit switch.
4.3.3 Common single power control for both hoists.
4.4.0 SAFETY DEVICES
4.4.1 Safety braking system
4.4.2 Anti tilting device
4.4.3 Mercury level switches
4.4.4 Over speed safety device
4.4.5 Top limit switches
4.4.6 Overload/Under load safety device assembly
4.5.0 WIRE ROPE
4.5.1 Suitable length and quantity of steel wire rope with suitable size and construction of 6 X 36 for electrically operated hoist. Supplier to specify the size of the rope offered. Minimum length of wire rope shall be 100 M.
4.5.2 Secondary wire rope with cable weight.
4.5.3 Rope shall be of galvanised steel wire.

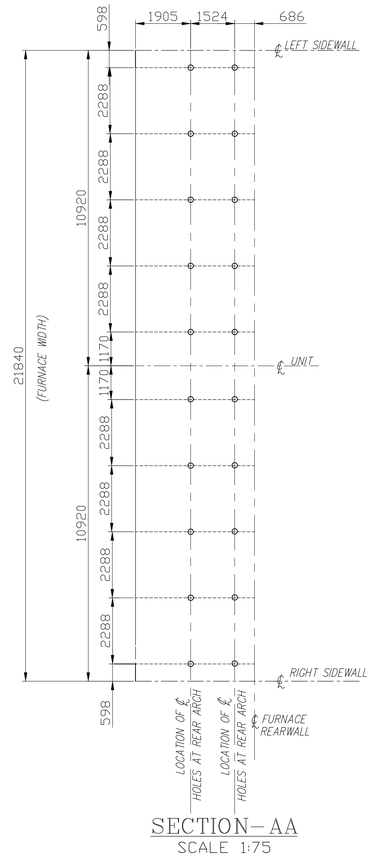
4.5.4 Rope shall have tensile strength of 240 Kg/Sq.mm. minimum.
4.5.5 Rope end fittings,'D'shakles, thimbles, rope clamps and other required items.
4.6.0 POWER SUPPLY
4.6.1 Power supply cable shall be provided for 3 Phase; 415V AC; 50 Hz.
4.6.2 Power supply cable shall be provided for suitable length as per BHEL arrangement drawing 0-99-514-40412
4.6.3 Power supply cable rating shall be furnished by vendor.
4.6.4 Power supply cable shall be provided with plug and cable retainer.
4.7.0 CONTROL SYSTEM
4.7.1 Centralised control box shall be provided for easy operation.
4.7.2 The hoisting machines shall be synchronised and control shall be centralized with safety switch
5.0 Vendor shall furnish other mechanical, electrical and control accessories required for safety, easy maintenance and easy operation.
5.0 DOCUMENTS NEEDED
5.1 Refer clause no 18.0 of specification.
5.2 O & M MANUALS
5.2.1 Operation and Maintenance manuals both as soft copy (CD) and hard copies (in A4-size) should be submitted to BHEL/Tiruchirappalli prior to despatch of the equipment.
5.3.0 Operation and maintenance manual should contain the following
5.3.1 Data sheet for the equipment & its bought out items.
5.3.2 Brief description of equipment under supply.
5.3.3 Operation, and Trouble shooting
5.3.4 Maintenance and service instructions including lubrication schedule wherever required.
5.3.5 Recommended spare parts for 3 years for trouble free operation.
5.3.6 Assembly drawing with parts list.
5.3.7 The manual shall pertain to the model or type supplied for the particular contract.
7.0 All the points in specification & annexure - I to the specification should be strictly adhered to.
8.0 Offers without the required documents along with the offer shall not be considered.

DRAWING NO 0-99-514-40412

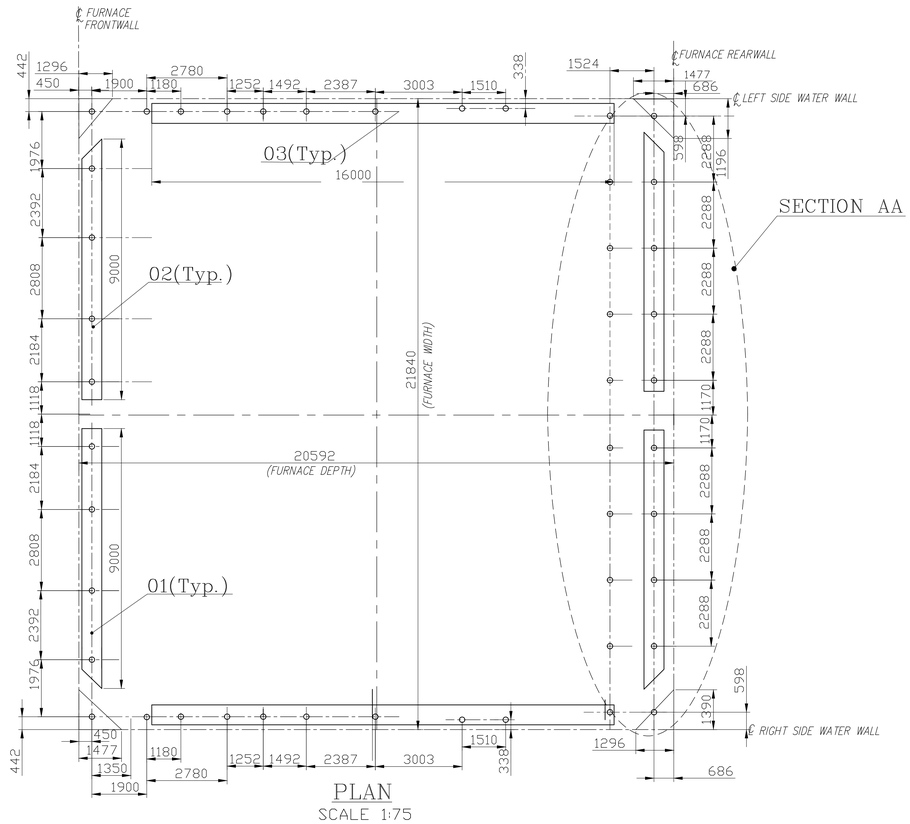
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



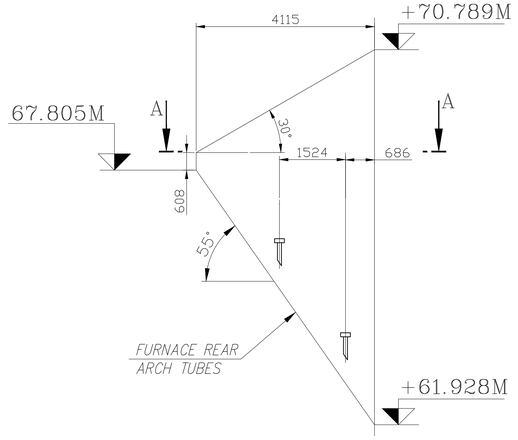
ELEVATION
SCALE NTS



SECTION–AA
SCALE 1:75



PLAN
SCALE 1:75



DETAIL BB
SIDE ELEVATION
DEFLECTION ARCH
SCALE 1:100

DRAWING NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER			M.R.	UNIT	UNIT WEIGHT	QS	ZONE
	03	PLATFORM WITH BOTH ENDS FLAT. LENGTH: 16,000 M.						KG	900.000		
						SUB-DELY		L	2		
	02	PLATFORM WITH 45 DEG. CHAMFER AT LEFT SIDE. LENGTH: 9,000 M.						KG	600.000		
						SUB-DELY		L	2		
	01	PLATFORM WITH 45 DEG. CHAMFER AT RIGHT SIDE. LENGTH: 9,000 M.						KG	600.000		
						SUB-DELY		L	2		
					ITEM NO	MATERIAL CODE		DI	QUANTITY		
					VAR NO	MATERIAL SPECN					

NOTES: –

1. *REFERENCE DRAWINGS :*
   - *A. 0–00–022–78175 –GENERAL ARRANGEMENT OF BOILER SECTIONAL SIDE ELEVATION.*
   - *B. 0–00–027–35899 –PPA – SECTIONAL SIDE ELEVATION BACKPASS.*
   - *C. 0–00–027–35900 –PPA – SECTIONAL SIDE ELEVATION LOWER FURNACE.*
   - *D. 0–00–027–35898 –PPA – SECTIONAL SIDE ELEVATION UPPER FURNACE.*
2. *CABLE OPENING WITH CAPS AND OTHER ACCESSORIES RELEASED UNDER PG–MA 18 – 001.*
3. *ALL THE ELEVATIONS ARE WITH RESPECT TO EL(+) 0.00M,FINISHED GROUND FLOOR LEVEL OF TG BUILDING, WHICH CORRERSPONDS TO RL.(+) 308.50 M. FINISHED GROOUND FLOOR LEVEL (PAVING LEVEL) OF THE BOILER AND ESP AREAS ARE AT (–) 0.150 M, WHICH CORRESPONDS TO RL.(+) 308.35 M. FINISHED GROUND FLOOR LEVEL (PAVING LEVEL) OF MILL BAY AT (+) 0.00 M, WHICH CORRESPONDS TO RL.(+) 308.50 M.*

SCOPE OF EQUIPMENT.

HOIST, TOP LIMIT SWITCH WITH COMMON CONTROL – ELECTRICALALLY OPERATED.

SUSPENSION SYSTEM – Suitable steel wire rope with suitable length, upto Access Door (Min.100 metres), Secondary wire rope with suitable length (Min.100 metres). Rope clamp,end fittings, "D" shackle and thimbles. Fixing arrangement in furnace roof and goose neck area.

PLATFORMS – Split–type platforms – suitable for 610mmx762mm access door with guardrails, suitable stirrups with retainers. Connection blocks & tubes with fasteners. Wall roller assembly with mounting bracket & fasteners.

POWER SUPPLY – All electrical items required for safe operation including rated SFU. Power supply cables

SAFETY DEVICES – All safety devices. [A sensing device (Sky lock safety device) that locks the wire as soon as it accelerates beyond a preset speed either gradual or instantaneous shall be provided.] Hoist capacity : 800 kg. Each platform is driven by two hoists in tandem operation There are 12 hoists for the six platforms common for one boiler.

REV.	DATE	ALTD	CHD	APPD

CUST NO: 1850,1851

BTG & AUXILIARIES

OWNER
ADANI POWER LIMITED (APL)–KAWAI, PHASE–II

OWNER'S ENGINEER
CONSULTING ENGINEERS LIMITED
MUMBAI

CONTRACTOR
BHARAT HEAVY ELECTRICALS LTD
HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI–620014

PROJECT
2X800MW ULTRA SUPERCRITICAL THERMAL POWER PROJECT
KAWAI, RAJASTHAN

DRAWING TITLE
FURNACE MAINTENANCE PLATFORM 4 WC–ELECTRICALLY OPERATED

DRAWN : ABHISHEK SINGH	CHECKED : SAURABH KR SINGH	SCALE NTS
REVIEWED : MANDADI VENKETESWARLU		DATE 24.03.2025
APPROVED : SRINIVASU ARUGULA		JOB NO. 1850–51

OWNER'S DRG. NO.: P30S–E–BTG–BOA–DM–G–V–0080

CONTRACTOR DRG. NO.: 0–99–514–40412 REV.00

Technical Pre-Qualification Requirement for

Furnace Maintenance Platform

1. The vendor shall be an established Furnace Maintenance Platform/ Furnace cradle of electric/ Pneumatic operation (henceforth referred as FMP) manufacturer having adequate Design, Engineering, Manufacturing, inspection and testing facilities and shall furnish technical backup documents for the proof of above requirements.

2. The FMP offered shall be of sizes as per enquiry with a minimum hoist capacity of 800 Kg and from the existing regular manufacturing range of the supplier. Vendor shall provide the manufacturing catalogue or general reference list for the offered FMP along with offer.

3. The supplier shall have experience of having supplied FMP and its accessories for dusty, corrosive & highly polluted atmospheric conditions or for the application of similar severity as specified in the enquiry. Supplier shall submit documents in proof of the same.

4. Proven track record is required. Minimum one end user certificate for the satisfactory operational performance of their supplied FMP with accessories as per enquiry in similar ambient conditions is required as a proof.

   (or)

   successfully executed two POs for same item meeting minimum requirements specified in enquiry specification. Purchase orders should not be more than ten (10) years old as on date of bid submission, for establishing continuity in business. Vendor to submit the corresponding datasheets / drawings / technical documents of supplied item as per POs / end user certificate.

5. In case of ordering, the vendor shall have the responsibility for the following and same to be confirmed point wise.
   i) Vendor should have the component replacement responsibility in case of defect / failure.
   ii) Vendor shall have capability to provide assistance in commissioning activities, if required.
   iii) Vendor should ensure the product performance during erection & commissioning.

6. Backup document checklist to meet PQR to the fullest satisfaction of BHEL. All documents shall be in English, if the original document is in other language, same shall be translated in English.

S. No	Document description	Check list
1	Documents to meet Clause(1)	☐
2	Product Catalogues to meet clause(2)	☐
3	Supply reference document to meet clause (3) (PO /Inspection Reports/supply reference list)	☐
4	Min. one end user certificate (or) Two POs to meet clause (4)	☐
5	Confirmation to clause (5)	☐

Package -2

KORBA PROJECT

FURNACE PLATFORM

BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI-620 014

Fuel Systems/PE(FB)

Title Sheet

General Specification for

ELECTRICALLY OPERATED
SUSPENDED SCAFFOLDING SYSTEM

Specification No.: MHS-HEQ/071 ***Revision No. : 05***

Rev. No.	Rev. Date	Clause	Description	Chd. & Appd.
05	16/08/18	-various-	Revisit & update of specification.	NF/GSK
04	10/12/07	2.6	Special tools included in the scope of supply	DVK
03	11/10/07	1.1 2.2 13.5.1	Scope clarity specified Access opening size referred in Annexure-I O&M- No. of copies was 25	SSR
02	26/09/07	2.6	Special tools included in the scope of supply	DVK
01	26/11/97	4.1 7.3 11.4 13.5.0 14.0, 15.0	Platforms Factor of safety Cable opening Operation & Maintenance manual Included	TKP
00	03/03/97		First issue	

	Name	Signature	Date
Prepared	T.K.Prabu	Sd.,	03/03/97
Checked	T.K.Prabu	Sd.,	03/03/97
Approved	A.Rajamohan	Sd.,	03/03/97

CONTENTS

1.0 SCOPE:

This specification covers design, manufacture, inspection, testing and supply of electrically operated suspended scaffolding system. The specification is for ensuring a safe and trouble free operation of Powered suspended scaffolding system used during shutdowns and overhauls, for inspection and maintenance of furnace internals of steam generator.

This is a general specification dealing with the technical Requirements of Suspended Scaffolding System. The specific Contract requirements and special requirements, if any, are specified in the enclosed annexures-1. If the scope of the Specification differs from Annexure-1, the scope of supply exclusively dealt in the contract specific requirement of Annexure-1 will be binding.

2.0 SPECIAL REQUIREMENTS OF THE SYSTEM

2.1 The suspended power scaffolding system shall consist of independently suspended platforms for the front / rear walls and sidewalls of boiler furnace as specified.

2.2 The scaffold platforms shall be modular and interchangeable construction made out of light weight material, easy for assembly inside the furnace, possible for taking inside the furnace, through an access door whose **overall opening size is furnished in the Annexure-I.** The platforms shall be easily assembled inside the furnace.

2.3 The suspension wire ropes will be introduced into the furnace through the furnace cable openings provided at the top of boiler and will be fastened to roof girders of boiler.

2.4 The suspension wire rope shall be capable to withstand temperature up to **250 Deg. C** which would be prevailing for longer duration after boiler shutdown.

2.5 The suspended platforms shall be operated by electric motor and climbing hoists.

2.6 The controls, safety devices, safety locks with necessary power supply cable, cable weight steel wire rope, secondary steel wire rope and special tools required for suspended platforms shall form part of the offer.

2.7 Vendor to provide suspension lugs (suitable to be welded at site) and other related items required for suspending the scaffolding at site. The lugs shall be capable of supporting four times the reaction forces imposed by the rated load on the scaffolding including scaffold self-weight.

3.0 GENERAL REQUIREMENTS

3.1 All materials, components and equipments used in the design, construction and installation of suspended powered scaffolds shall meet the requirements of its specified application in accordance with good engineering practice.

3.2 Scaffold platforms/ropes & other components of SAE shall be capable of supporting without failure under any scenario of usage.

3.3 The maximum rated speed at which the suspended powered scaffold moved in a vertical direction shall be in the range of 8.0 to 9.0 meters per minute.

3.4 An automatic overload/under load protection device shall be provided to cut power supply to the climbing machine for travel in the up/down direction when the load applied to the climbing machine exceeds 125% of its normal tension with rated load or under load.

3.5 Hoist shall never come down on its own.

3.6 Supplier shall provide suitable arrangement to prevent suspended power scaffolds from swaying. Suspended Scaffold platforms with rollers should always be engaged with water walls of boiler furnace. This should be ensured by providing extended wall rollers if necessary to prevent swaying of the platforms.

4.0 CODES & STANDARDS

4.1 The scaffolding system shall be designed to meet all the safety, design & sizing requirement defined by either of the codes - **EN-1808:2015 or ANSI A10.8-2011.**

4.2 Vendor shall follow either of the standards as mentioned above in total for designing the suspended scaffolding system.

4.3 Vendor should specify which code/standard is followed in their design of the offered system by **filling Sheet-A** of this specification.

5.0 PLATFORM OF SUSPENDED SCAFFOLD

5.1 The platform width shall not be less than 510 mm.

5.2 Platforms shall be provided with guard rails, mid rails and toe boards installed on all open sides and ends. The clear vertical distance between toe board, mid rails or guard rails shall be less that 500mm. The height of the guard rails shall be not less than 1000mm and not be more than 1100mm. All rails and posts shall be suitable for easy assembly & disassembly. Hoisting machines when located at not more than 450mm from ends of platforms hoist supporting stirrups, shall be considered as end guard rails. Else separate end guard rails shall be provided.

5.3 Toe boards shall extend to a minimum of **150mm** above the working surface.

5.4 Each platform shall bear a manufacturer's load rating plate stating the maximum rated load and stating the load rating when arranged in small modules. Load rating plates shall be made of non-corrosive material and shall

have letters and figures that are legible.

5.5 Suspended Platforms shall be designed to carry the rated load. Considering **800 Kg per hoist** capacity, vendor to indicate the rated load of platforms in their drawings and technical data sheet for our review. This shall be never be less than 3 persons loading requirement. Per person loading = 120Kg.

5.6 The minimum load capacity of deck of platform shall be 200 Kg/m^2 at worst case loading zone.

5.7 Fabricated platforms and scaffold decks shall be designed to support, in addition to their own weight, at least four times the maximum intended load.

6.0 HOISTING MACHINES

6.1 Each electrically operated hoist of minimum safe working load of 800 Kgs, shall be complying with applicable international codes. Each motor shall bear a name plate, indicating the operating voltage, current rating and power rating.

6.2 All gearing shall conform to the applicable standards with a service factor of not less than 1.0.

6.3 The hoist - Electrically operated rope climbing machine shall be supplied with top limit switch. There shall be common single power control for both hoists.

6.4 Lubrication where needed shall be provided to assure that all moving parts of hoists are lubricated at all times.

6.5 Speed Reducers

6.5.1 Each hoisting equipment shall be equipped with speed reducers or an equivalent to obtain mechanical advantage. Such speed reducers or other device shall contain positive type gearing such as worm gears, spur gears or bevel gears.

6.5.2 The speed reducer or other devices shall be directly connected to the traction sheave /drum of the hoisting equipment.

6.6 Primary Brakes

6.6.1 Each electrically operated hoisting equipment shall be provided with a primary brake that automatically engages whenever power supply is interrupted.

6.6.2 The primary brake shall be rated to stop and hold 125% of its rated load of hoisting equipment.

6.6.3 Each primary brake shall be directly connected to the drive of the hoisting machine.

6.7 Fall arrest device

6.7.1 Each hoisting equipment shall be provided with an automatic emergency type fall arrest device that will stop and hold at least 125% of the rated load of the hoisting machine. If such a fall arrest device is of instantaneous stopping type, then it should stop and hold its total load before the hoist travels a vertical distance of 450mm maximum.

6.7.2 The fall arrest safety device shall act directly on a **secondary safety wire rope** in case of failure of the hoist or the suspensions rope. The traction hoist works on the primary suspension rope. The actuating mechanism of the fall arrest device shall be separate from the primary brake.

6.7.3 The fall arrest safety device shall not be used to stop and hold the hoist except under emergency situations. In normal operation, such a device shall not engage before the hoist is stopped by primary brake.

6.7.4 The design, installation and maintenance of every fall arrest safety device shall be such that the device is prevented from being made defective or in-operative by outside contamination.

6.8 Hoisting Drum / Sheaves

All hoisting drums/sheaves shall be of proven design through tests to have no deleterious or serious effect on the suspension wire rope.

6.8.1 Traction Drum / sheaves

6.8.1.1 The traction drum/sheaves shall be designed in a manner to maintain correct wire rope reeving at all times to prevent scrubbing and cross overs. They shall have a means of applying pressure on the hoist rope against the drum/sheave to ensure constant tractive force to develop the rating of the hoist.

6.8.1.2 The diameter of any traction drum/sheave shall not be less than 20 times the diameter of the wire rope used. If lesser diameter be used, tests shall be performed by the wire rope manufacturer or a qualified testing laboratory to determine that no deleterious effect is caused on hoist wire for the usage intended.

6.8.2 Winding Drum (If Applicable)

Each winding drum hoist shall be provided with a positive means of attachment of the suspension rope. Such attachment should develop a minimum of 80% of the rated breaking strength of the suspension rope.

6.8.2.1 Single Wrap Winding Drum

a) Every single wrap winding drum hoisting machine shall be provided with a means of level winding of the suspension rope.

b) Every single wrap winding drum shall be so designed that the drum will contain a minimum of four wire ropes of the suspension rope at all times.

c) The minimum diameter of every single wrap winding drum shall not be less than 25 times of the diameter of the suspension rope used.

6.8.2.2 Multiple wrap Winding Drum

a) Every multiple wrap winding drum hoisting machine shall be provided with a means for level winding of the suspension rope.

b) Every multiple wrap winding drum shall contain not less than four wraps of suspension rope at all times.

c) The minimum diameter of every multiple wrap winding drum shall not be less than 10 times the diameter of the suspension rope used.

6.9 **Electrical Wiring And Equipment**

6.9.1 The electrical wiring and controls shall comply with governing codes, ordinances and regulation such as Low Voltage Directive 5006/95/EC, NFPA, NEC, National Electrical Manufacturers Association Regulations etc.

6.9.2 The power supply shall be 415 VOLTS, AC three phase 50Hz.

6.9.3 The power supply cable to any hoisting machine shall contain a separate conductor which will serve as a ground connection for the hoist.

6.9.4 Strain relief devices shall be provided for cables supplying power to hoisting machines. Such devices shall be located at the suitable places where the cables are plugged in at the cable connections on the hoists.

6.10 **Hoisting Machine Controls**

6.10.1 Hoisting machines shall have common control for each platform. If the control is of push button type, it shall be of the constant pressure. If it is fixed position type, it must have the provision for automatic locking when in the "OFF" position, or by means of guards against accidental actuation. The lever type control can be of the constant pressure type or of the fixed position type.

6.10.2 All hoist shall have a manually operated system that allows controlled descent of the scaffold in case of power failure. This **no-power decent** system shall be such that the controlled speed is lower than the tripping speed of the fall arrest device.

6.10.3 For a multi-point suspension, all the hoisting machines shall be synchronised and control shall be centralized with safety switch.

6.10.4 An **Anti-tilt device** shall be provided for the suspended platform with multi point suspensions.

7.0 SAFETY BELTS AND ANCHOR POINTS

7.1 Each workman on a suspended powered scaffold shall be provided with an approved safety belt with a lanyard of not more than 1.5 meters in length. The lanyard shall be attached to the safety belt with a self-closing safety hook. The scaffold needs to have anchor points for eventually attaching the other end of the lanyard.

7.2 The suspended powered scaffold shall be equipped with Overload Protection system and overload indicator.

8.0 ROPES

8.1 Suspended powered scaffolds shall be suspended by wire ropes. The minimum grade of the wire rope shall be of improved plough steel. (galvanized)

8.2 The suspension wire rope shall be covered with insulating material at least 1.2 Mtr above the hoist to prevent possibility of the welding current arcing through the suspension wire rope during the course of welding, scarfing, etc.

8.3 Reverse bends in rope arrangement shall be avoided.

8.4 The minimum factor of safety of the wire rope shall be 6. Each wire rope used for scaffold suspension shall be capable of supporting at least six times the rated capacity of the hoist.

8.5 Fastening:

8.5.1 Babbitted and zinc sockets for wire ropes are prohibited.

8.5.2 Swagged attachments or spliced eyes are acceptable for fastening of wires.

8.5.3 Wire rope clips with twin base type shall be used and shall be installed as per the wire rope clip manufacture's recommendation.

8.5.4 All fasteners shall have anti-corrosion protection and develop at least 80% of the wire rope rated breaking strength.

8.6 Ropes in Traction Drum /sheave Type

8.6.1 On traction drum /sheave applications, provisions shall be made to prevent the machine from running off the wire rope.

8.6.2 The wire rope shall be of such length that the operator can lower to the lowest point of travel with out end of the wire rope passing through the traction drum/sheave hoist.

8.7 Winding Drum Type (If applicable)

8.7.1 Winding drums shall have at least four turns of rope remaining when the platform has landed at the lowest possible point of its travel.

9.0 MULT POINT SUSPENDED POWERED PLATFORM

9.1 The scaffold shall be suspended by more than two (2) independent wire ropes.

9.2 The scaffold shall be provided with hoisting machines complying with clause 6.0

9.3 The stages shall be supported by galvanized steel stirrups.

9.4 Hoisting machine wire ropes shall conform to clause 8.0

9.5 Guard rails, mid rails and toe boards shall conform to clause 5.0

9.6 Anti-tilt device shall be included.

9.7 Both hoisting machines shall be operated from the center of platform in a centralized fashion.

10.0 INSPECTION

10.1 All test certificates shall be furnished for buyer's reference and records.

10.2 All suspended power scaffold installations shall, on their completion and before being placed in service, be subjected to inspection by BHEL inspector or BHEL nominated inspection authority during manufacture/testing stages, to determine

that the assembly conforms to applicable requirements. Hoist machines shall be inspected and tested in accordance with the manufacturer's recommendation.

10.3 Scaffolds (platform) & hoist machine shall be inspected and tested as per approved quality plan. The certificates and documents generated during inspection of above shall be furnished.

11.0 SPECIAL NOTES SUPPLEMENTED TO TECHNICAL SPECIFICATION

11.1 Supplier shall quote for recommended spares for three years trouble free operation separately.

11.2 Supplier shall furnish motor specification.

11.3 Sufficient number of packages of portable sizes to carry the components in fields shall be offered.

11.4 The size and locations of cable opening will be furnished for individual project by BHEL. Offer shall include the cable support details envisaged by supplier.

11.5 The procedure and support details of the false platform to be laid down before the assembly of suspended powered scaffolds shall be included in the offer with sketches.

11.6 The maximum temperature to which the rope shall be exposed for longer duration shall be specified.

11.7 Necessary provision shall be provided to keep the suspension ropes separate without twist.

11.8 Cable weights shall be provided suitably for secondary wire ropes.

12.0 GUARANTEE

12.1 The offered system shall be guaranteed for 18 months from the date on which the equipment / system is put into use (by the end user) or 24 months from the date of supply whichever is earlier against defective design, defective material usage, defective workmanship, defective packaging and forwarding.

13.0 DOCUMENTS TO BE SUBMITTED BY VENDOR

13.1 DOCUMENTS TO BE SUBMITTED ALONG WITH THE OFFER:

13.1.1 Product literature and drawings in support of the offer shall be submitted with the quotation to evaluate the offer.

13.1.2 Weight of individual major components as per the scope of supply shall be indicated in the drawing as bill of material (BOM).

13.1.3 The quality plan for the product under supply shall be furnished along with the offer.

13.1.4 General arrangement drawing with plan, elevation, and end view along with major dimensions and weight particulars.

13.1.5 Electric wiring diagram / circuit diagram as per clause 6.9 of this specification.

13.1.6 Filled in sheet-A of this Specification indicating the standards followed.

13.1.7 List of Initial spares (if any) to be supplied along with SAE.

13.1.8 Design calculations

13.1.8.1 Vendor to provide calculations to justify the following:

a) Minimum load capacity of each offered suspended platform.
b) Selection of Rated Load for each offered suspended platform.
c) No. of person loading.
d) Suspended platform structural calculation
e) Calculation of suspension lugs.

13.2 DOCUMENTS TO BE FURNISHED AFTER AWARD OF CONTRACT

13.2.1 Packaging procedure detailing the list of components shall be dispatched individually with identification and with preservation and storage.

13.2.2 SAE - Data sheet including drawings and design information shall be submitted to get approval from End user/owner of the boiler.

13.2.3 SAE – CERTIFICATES

13.2.3.1 Test certificates shall be furnished before dispatch of components.

13.2.3.2 A certificate for the components' safety from Safety Steward of the country of make shall be provided.

13.2.3.3 Test certificate for the following shall be furnished.

a) Material test certificate for all the major components.
b) Shop test certificates for safety devices.
c) Performance TC for the intended duty conditions.
d) Quality Control/Inspection documents generated during the stages of inspection, performance inspection, and final inspection.

13.2.3.4 Guarantee certificate shall be furnished by the vendor.

13.2.4 Operation & Maintenance (O & M) Manual

13.2.4.1 No of copies of manual:3Sets + 3 CD ROMS / USB drives.

13.2.4.2 The size of manuals should be in correct A4 size with drawings in A3 size. Large size drawings (greater than A3 size) shall be reduced to A3 size and inserted.

13.2.4.3 Drawings shall be of printed or laser prints only.

13.2.4.4 Spiral of comb bound copies should be totally avoided.

13.2.4.5 If manuals are supplied in folders, the folder should have 3 hole punching system.

13.2.4.6 O & M manuals, should be submitted to BHEL/Tiruchirappalli prior to dispatch of the equipment.

13.2.4.7 Manual, generally should contain the following:

a) Data sheet
b) Brief description
c) Operation

d) Maintenance (including lubrication, where necessary) & service, recommended spares for 2/3 years trouble free service.
e) Bill of Materials
f) Assembly drawings with part list, dimensional drawings and other applicable drawings.
g) Manual should pertain only to the type or model supplied for this contract.
h) Drawings and catalogues
i) Sequence of erection and dismantling
j) Erection instruction
k) List of tools and tackles
l) Critical checks and permissible deviations/tolerances
m) Procedure/checklist for commissioning the system
n) Procedure for initial checking after erection
o) Trouble Shooting

14.0 GENERAL:

14.1 The language used shall be "English only" in offer, O & M manual, Labels, Drawings etc.

14.2 For equipment and other special requirements refer Annexure-I to this specification.

15.0 SHEET-A: STANDARD / CODE CHECKLIST

DESCRIPTION	CODE FOLLOWED (Vendor to fill and submit)
PLATFORM OF SUSPENDED SCAFFOLD	
RATED LOAD OF SUSPENDED PLATFORM	
HOISTING MACHINES	
POWER SYSTEM FOR HOISTS	
CONTROL SYSTEM FOR HOISTS	
SAFETY AND CONTROL OF SUSPENDED PLATFORM	
WIRING AND EQUIPMENT	
SUSPENSION ROPES	

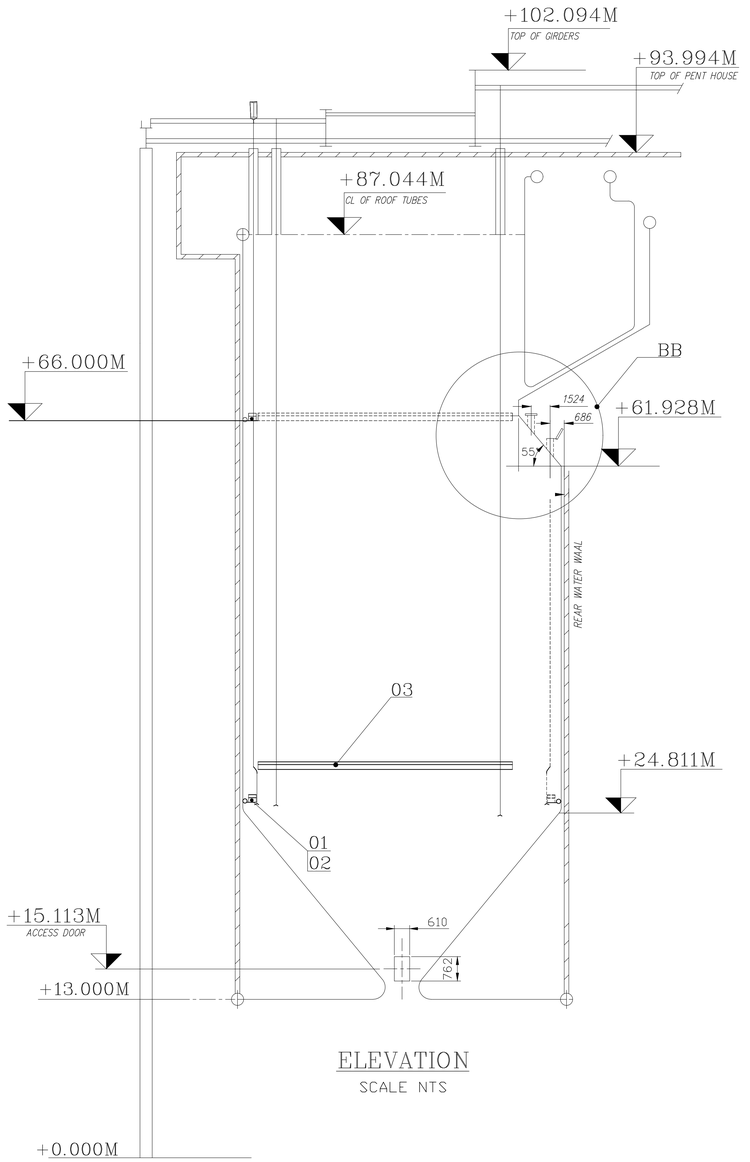
PROJECT : ADANI POWER LIMITED (APL) – KAWAI 2x800 MW Ph-III USTPP
CUSTOMER NO. : 1852-53
REFERENCE DRAWING N : 0-99-514-40414

1.0 Supplier to supply Furnace maintenance platforms as per specification no. **MHS-HEQ/071 Rev. 05**
2.0 Top of ceiling girder elevation : 102.094 M.
3.0 Access door elevation : 15.113 M.
4.0 SCOPE OF SUPPLY
4.1.0 PLATFORMS
4.1.1 Platform with 45° LH chamfer at one end and other with flat end for a length of 9.000M. - 2 Nos.
4.1.2 Platform with 45° RH chamfer at one end and other with flat end for a length of 9.000M. - 2 Nos.
4.1.3 Platform with both sides flat with length of 16.000M. - 2 Nos.
4.1.3 Platform wall roller assy & bracket complete with connecting fasteners. The rollers shall be designed suitably to move on the spiral water walls.
4.1.4 Complete guard rails with connecting fasteners.
4.1.5 Connecting block and tubes with connecting fasteners.
4.1.6 Lugs/Fixing assembly required for suspending the SAE to ceiling girder & goose neck area.
4.1.7 Each module shall be capable of mounting STIRRUP arrangements such that any module can be used for traversing between any two cable openings.
4.2.0 STIRRUPS
4.2.1 Suitable Hot galvanised stirrups & stirrup retainer complete with fasteners.
4.3.0 HOIST (ROPE CLIMBING MACHINE)
4.3.1 Hoist for safe working load of minimum 800 Kgs.
4.3.2 Electrically operated rope climbing machine with top limit switch.
4.3.3 Common single power control for both hoists.
4.4.0 SAFETY DEVICES
4.4.1 Safety braking system
4.4.2 Anti tilting device
4.4.3 Mercury level switches
4.4.4 Over speed safety device
4.4.5 Top limit switches
4.4.6 Overload/Under load safety device assembly
4.5.0 WIRE ROPE
4.5.1 Suitable length and quantity of steel wire rope with suitable size and construction of 6 X 36 for electrically operated hoist. Supplier to specify the size of the rope offered. Minimum length of wire rope shall be 100 M.
4.5.2 Secondary wire rope with cable weight.
4.5.3 Rope shall be of galvanised steel wire.

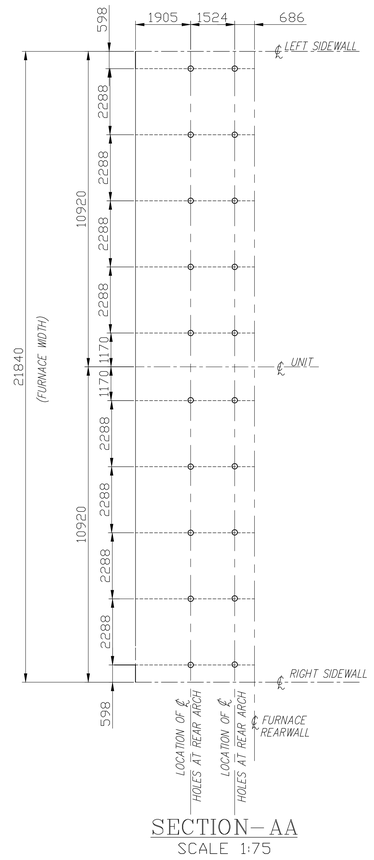
4.5.4 Rope shall have tensile strength of 240 Kg/Sq.mm. minimum.
4.5.5 Rope end fittings,'D'shakles, thimbles, rope clamps and other required items.
4.6.0 POWER SUPPLY
4.6.1 Power supply cable shall be provided for 3 Phase; 415V AC; 50 Hz.
4.6.2 Power supply cable shall be provided for suitable length as per BHEL arrangement drawing 0-99-514-40414
4.6.3 Power supply cable rating shall be furnished by vendor.
4.6.4 Power supply cable shall be provided with plug and cable retainer.
4.7.0 CONTROL SYSTEM
4.7.1 Centralised control box shall be provided for easy operation.
4.7.2 The hoisting machines shall be synchronised and control shall be centralized with safety switch
5.0 Vendor shall furnish other mechanical, electrical and control accessories required for safety, easy maintenance and easy operation.
5.0 DOCUMENTS NEEDED
5.1 Refer clause no 18.0 of specification.
5.2 O & M MANUALS
5.2.1 Operation and Maintenance manuals both as soft copy (CD) and hard copies (in A4-size) should be submitted to BHEL/Tiruchirappalli prior to despatch of the equipment.
5.3.0 Operation and maintenance manual should contain the following
5.3.1 Data sheet for the equipment & its bought out items.
5.3.2 Brief description of equipment under supply.
5.3.3 Operation, and Trouble shooting
5.3.4 Maintenance and service instructions including lubrication schedule wherever required.
5.3.5 Recommended spare parts for 3 years for trouble free operation.
5.3.6 Assembly drawing with parts list.
5.3.7 The manual shall pertain to the model or type supplied for the particular contract.
7.0 All the points in specification & annexure - I to the specification should be strictly adhered to.
8.0 Offers without the required documents along with the offer shall not be considered.

DRAWING NO 0-99-514-40414

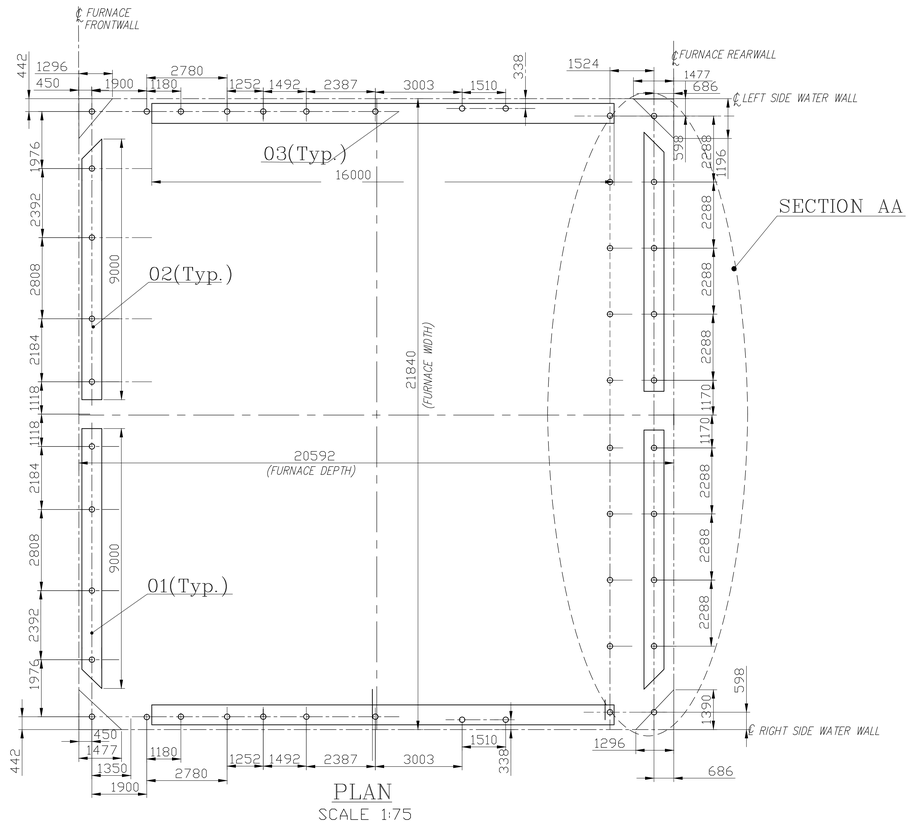
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



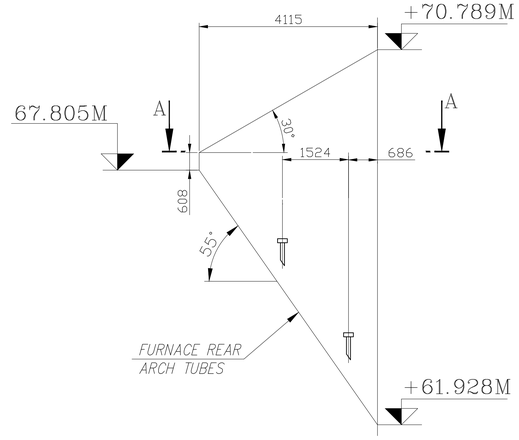
ELEVATION
SCALE NTS



SECTION–AA
SCALE 1:75



PLAN
SCALE 1:75



DETAIL BB
SIDE ELEVATION
DEFLECTION ARCH
SCALE 1:100

	03	PLATFORM WITH BOTH ENDS FLAT. LENGTH- 16,000 M.					KG	900.000		
						SUB-DELY	L	2		
	02	PLATFORM WITH 45 DEG. CHAMFER AT LEFT SIDE. LENGTH- 9,000 M.					KG	600.000		
						SUB-DELY	L	2		
	01	PLATFORM WITH 45 DEG. CHAMFER AT RIGHT SIDE. LENGTH- 9,000 M.					KG	600.000		
						SUB-DELY	L	2		
DRAWING NUMBER / ITEM NUMBER		DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/S/P	UNIT	UNIT WEIGHT	GS ZONE
					VAR NO	MATERIAL SPECN		DI	QUANTITY	

NOTES: –

1. *REFERENCE DRAWINGS :*
   - *A. 0–00–022–78224 –GENERAL ARRANGEMENT OF BOILER SECTIONAL SIDE ELEVATION.*
   - *B. 0–00–027–35969 –PPA – SECTIONAL SIDE ELEVATION BACKPASS.*
   - *C. 0–00–027–35970 –PPA – SECTIONAL SIDE ELEVATION LOWER FURNACE.*
   - *D. 0–00–027–35968 –PPA – SECTIONAL SIDE ELEVATION UPPER FURNACE.*
2. *CABLE OPENING WITH CAPS AND OTHER ACCESSORIES RELEASED UNDER PG–MA 18 – 001.*
3. *ALL THE ELEVATIONS ARE WITH RESPECT TO EL(+) 0.00M,FINISHED GROUND FLOOR LEVEL OF TG BUILDING, WHICH CORRERSPONDS TO RL.(+) XXXX M. FINISHED GROUND FLOOR LEVEL (PAVING LEVEL) OF THE BOILER AND ESP AREAS ARE AT (–) 0.150 M, WHICH CORRESPONDS TO RL.(+) XXXX M. FINISHED GROUND FLOOR LEVEL (PAVING LEVEL) OF MILL BAY AT (+) 0.00 M, WHICH CORRESPONDS TO RL.(+) XXXX M.*

SCOPE OF EQUIPMENT.

HOIST, TOP LIMIT SWITCH WITH COMMON CONTROL – ELECTRICALALLY OPERATED.

SUSPENSION SYSTEM – Suitable steel wire rope with suitable length, upto Access Door (Min.100 metres), Secondary wire rope with suitable length (Min.100 metres). Rope clamp,end fittings, "D" shackle and thimbles. Fixing arrangement in furnace roof and goose neck area.

PLATFORMS – Split–type platforms – suitable for 610mmx762mm access door with guardrails, suitable stirrups with retainers. Connection blocks & tubes with fasteners. Wall roller assembly with mounting bracket & fasteners.

POWER SUPPLY – All electrical items required for safe operation including rated SFU. Power supply cables

SAFETY DEVICES – All safety devices. [A sensing device (Sky lock safety device) that locks the wire as soon as it accelerates beyond a preset speed either gradual or instantaneous shall be provided.] Hoist capacity : 800 kg. Each platform is driven by two hoists in tandem operation There are 12 hoists for the six platforms common for one boiler.

REV.	DATE	ALTD	CHD	APPD

CUST NO: 1852,1853

BTG & AUXILIARIES

OWNER
ADANI POWER LIMITED (APL)–KAWAI, PHASE–III

OWNER'S ENGINEER
CONSULTING ENGINEERS LIMITED
MUMBAI

CONTRACTOR
BHARAT HEAVY ELECTRICALS LTD
HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI–620014

PROJECT
2X800MW ULTRA SUPERCRITICAL THERMAL POWER PROJECT
KAWAI, RAJASTHAN

DRAWING TITLE
FURNACE MAINTENANCE PLATFORM 4 WC–ELECTRICALLY OPERATED

DRAWN : ABHISHEK SINGH	CHECKED : SAURABH KR SINGH	SCALE	NTS
REVIEWED : MANDADI VENKETESWARLU		DATE	24.03.2025
APPROVED : SRINIVASU ARUGULA		JOB NO.	1852–53

OWNER'S DRG. NO.: 55F4–E–BTG–BOA–DM–G–V–0080

CONTRACTOR DRG. NO.: 0–99–514–40414 REV.00

Technical Pre-Qualification Requirement for

Furnace Maintenance Platform

1. The vendor shall be an established Furnace Maintenance Platform/ Furnace cradle of electric/ Pneumatic operation (henceforth referred as FMP) manufacturer having adequate Design, Engineering, Manufacturing, inspection and testing facilities and shall furnish technical backup documents for the proof of above requirements.

2. The FMP offered shall be of sizes as per enquiry with a minimum hoist capacity of 800 Kg and from the existing regular manufacturing range of the supplier. Vendor shall provide the manufacturing catalogue or general reference list for the offered FMP along with offer.

3. The supplier shall have experience of having supplied FMP and its accessories for dusty, corrosive & highly polluted atmospheric conditions or for the application of similar severity as specified in the enquiry. Supplier shall submit documents in proof of the same.

4. Proven track record is required. Minimum one end user certificate for the satisfactory operational performance of their supplied FMP with accessories as per enquiry in similar ambient conditions is required as a proof.

   (or)

   successfully executed two POs for same item meeting minimum requirements specified in enquiry specification. Purchase orders should not be more than ten (10) years old as on date of bid submission, for establishing continuity in business. Vendor to submit the corresponding datasheets / drawings / technical documents of supplied item as per POs / end user certificate.

5. In case of ordering, the vendor shall have the responsibility for the following and same to be confirmed point wise.
   i) Vendor should have the component replacement responsibility in case of defect / failure.
   ii) Vendor shall have capability to provide assistance in commissioning activities, if required.
   iii) Vendor should ensure the product performance during erection & commissioning.

6. Backup document checklist to meet PQR to the fullest satisfaction of BHEL. All documents shall be in English, if the original document is in other language, same shall be translated in English.

S. No	Document description	Check list
1	Documents to meet Clause(1)	☐
2	Product Catalogues to meet clause(2)	☐
3	Supply reference document to meet clause (3) (PO /Inspection Reports/supply reference list)	☐
4	Min. one end user certificate (or) Two POs to meet clause (4)	☐
5	Confirmation to clause (5)	☐

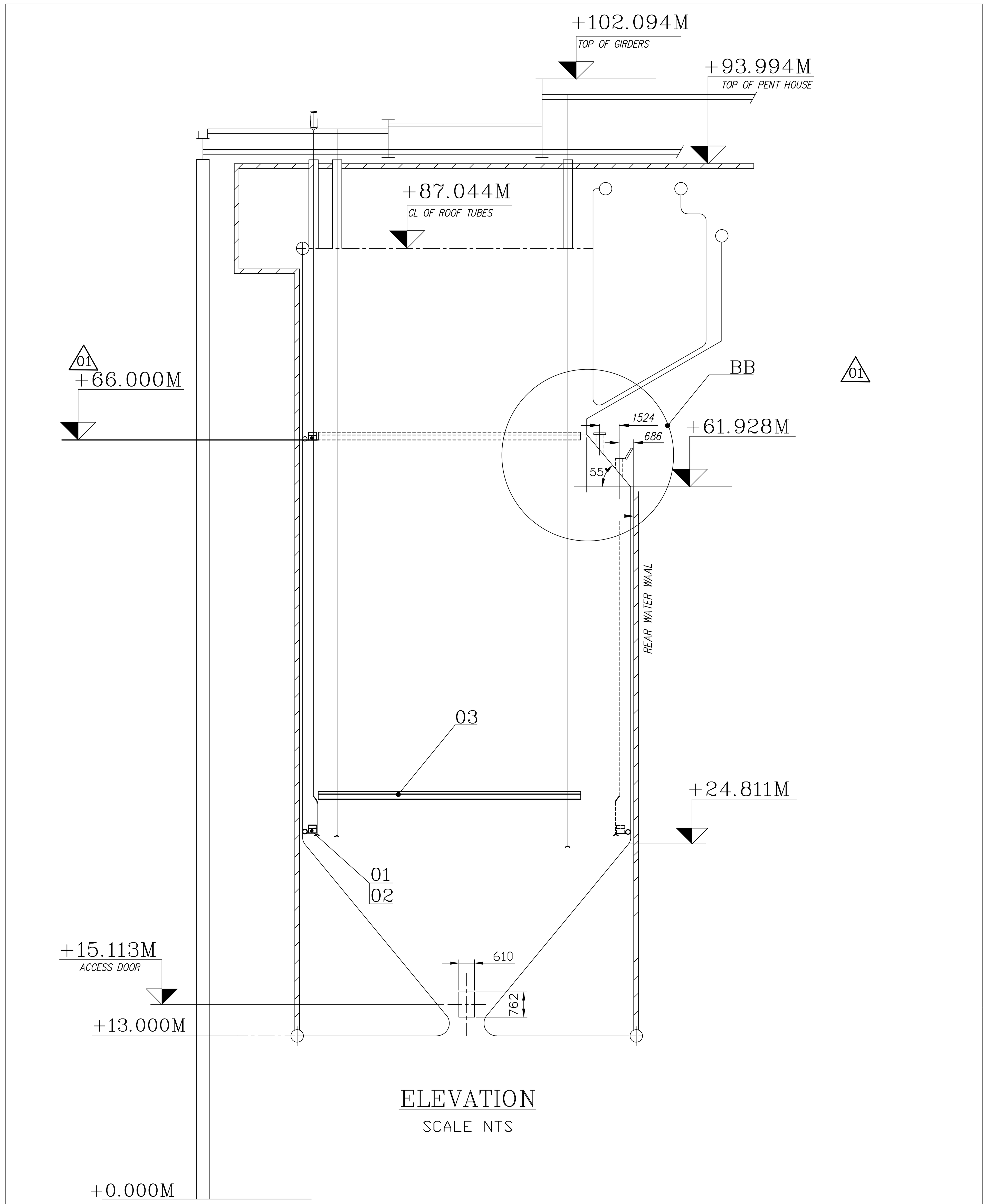
Package -3

MAHAN PROJECT

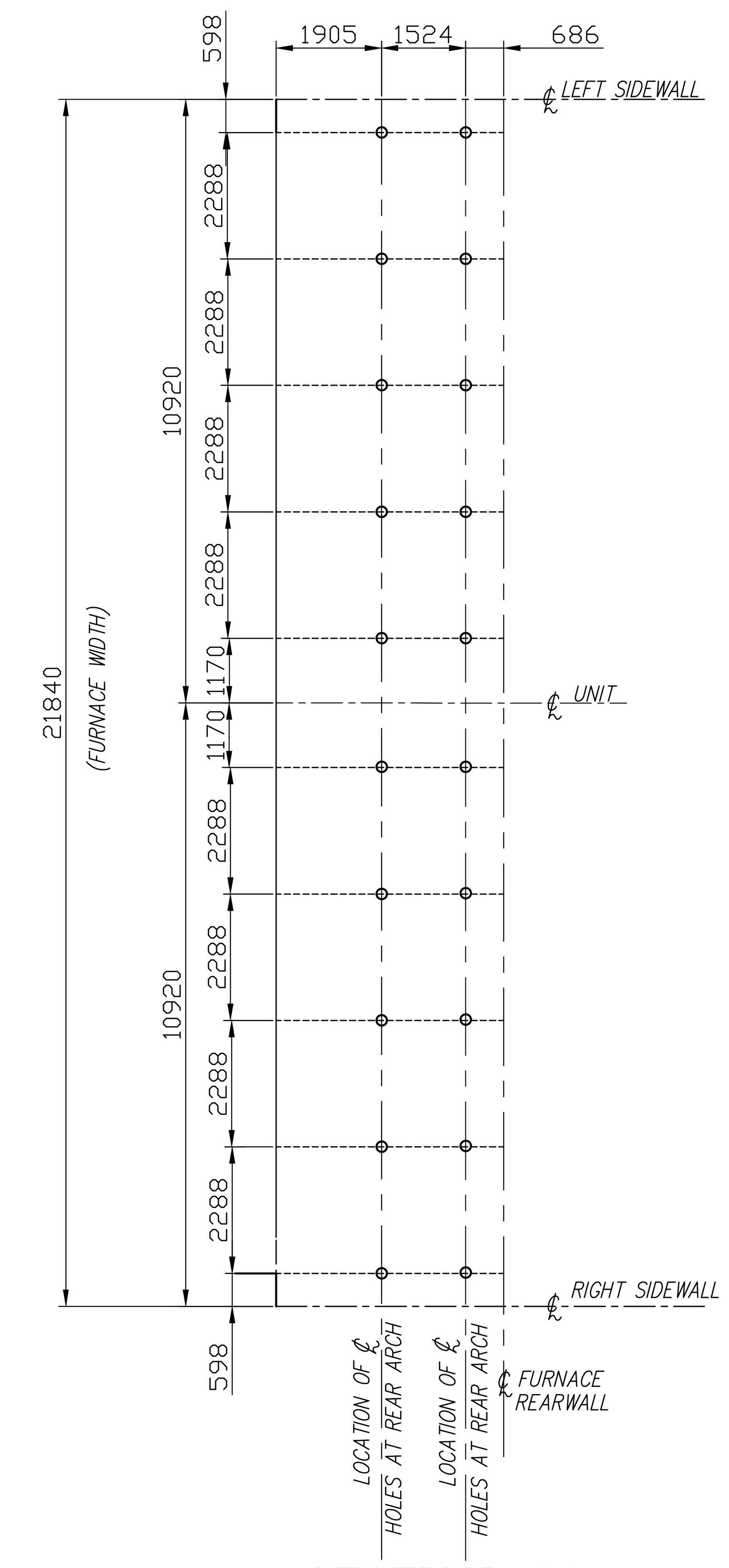
FURNACE PLATFORM

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299

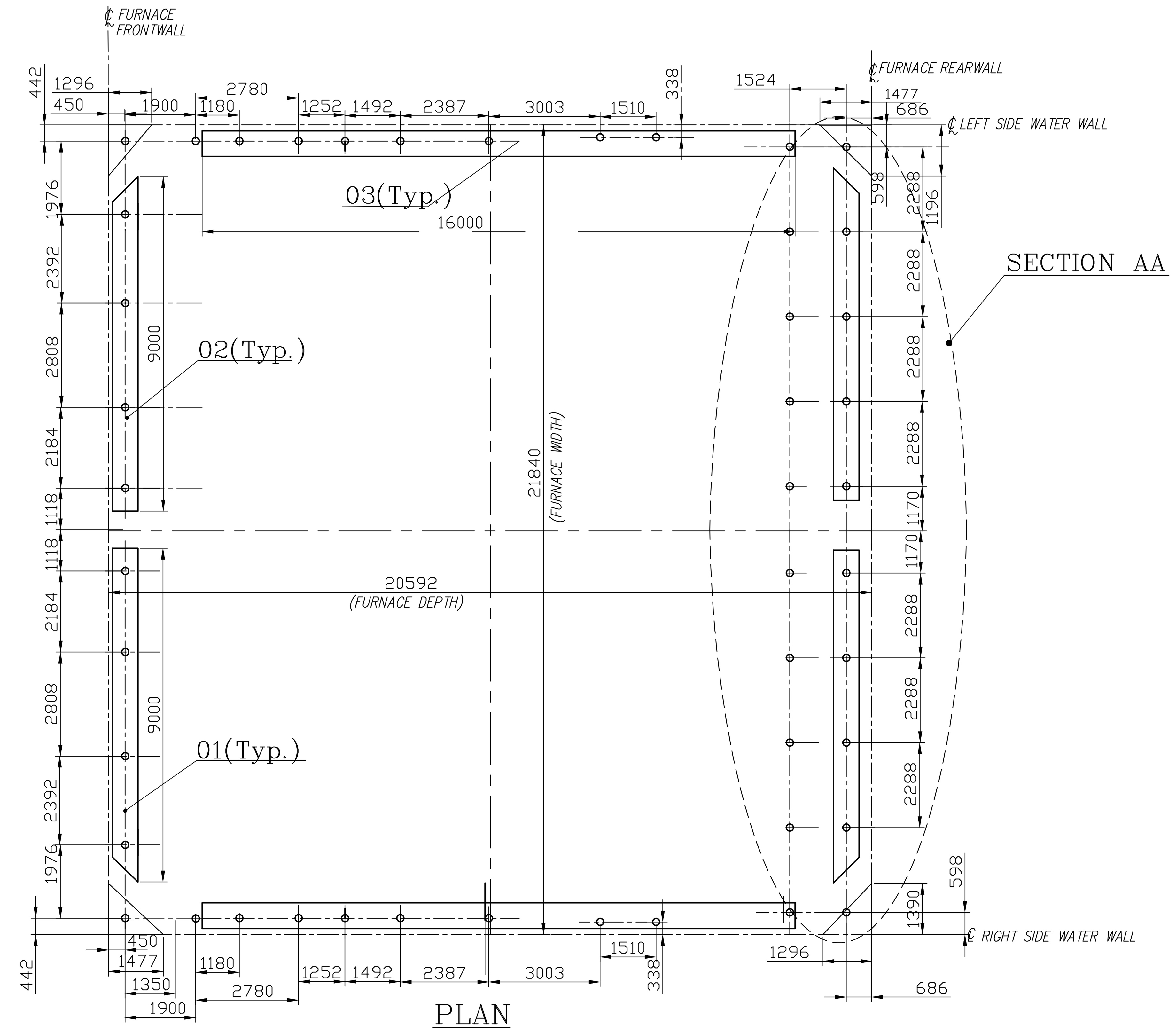
DRAWING NO 0-99-514-40396



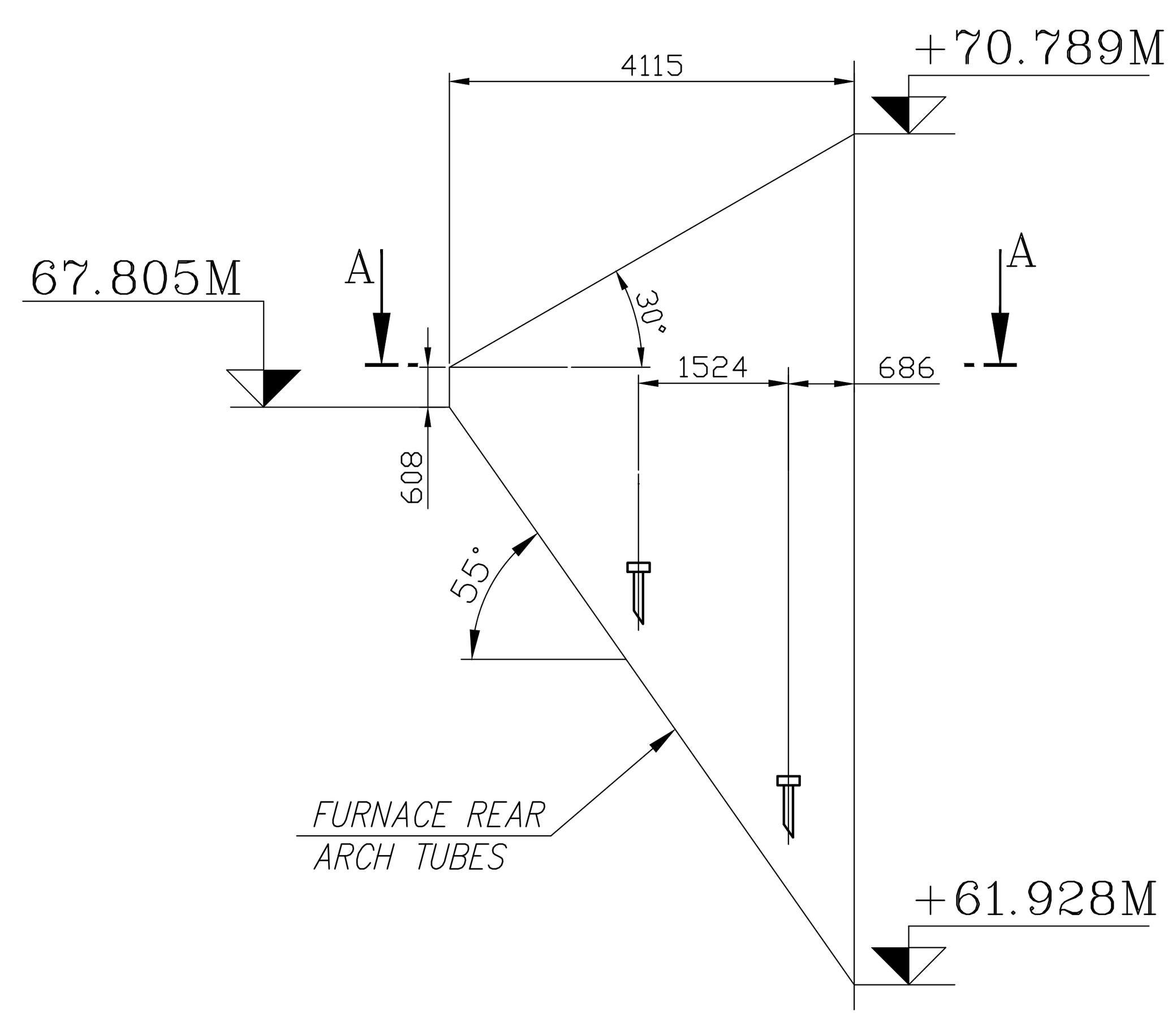
ELEVATION
SCALE NTS



SECTION—AA
SCALE 1:75



PLAN
SCALE 1:75



DETAIL BB
SIDE ELEVATION
DEFLECTION ARCH
SCALE 1:100

NOTES:-

1. REFERENCE DRAWINGS :
   A. 0-00-022-77732 -GENERAL ARRANGEMENT OF BOILER SECTIONAL SIDE ELEVATION.
   B. 0-00-027-35403 -PPA - SECTIONAL SIDE ELEVATION BACKPASS.
   C. 0-00-027-35404 -PPA - SECTIONAL SIDE ELEVATION LOWER FURNACE.
   D. 0-00-027-35402 -PPA - SECTIONAL SIDE ELEVATION UPPER FURNACE.
2. CABLE OPENING WITH CAPS AND OTHER ACCESSORIES RELEASED UNDER PG-MA 18 - 001.
3. ALL THE ELEVATIONS ARE WITH RESPECT TO EL(+) 0.00M,FINISHED GROUND FLOOR LEVEL OF TG BUILDING, WHICH CORRERSPONDS TO RL.(+) 338.3 M.
   FINISHED GROOUND FLOOR LEVEL (PAVING LEVEL) OF THE BOILER AND ESP AREAS ARE AT (-) 0.150 M, WHICH CORRESPONDS TO RL.(+) 338.15 M.
   FINISHED GROOUND FLOOR LEVEL (PAVING LEVEL) OF MILL BAY AT (-) 0.00 M, WHICH CORRESPONDS TO RL.(+) 338.15 M.

SCOPE OF EQUIPMENT.

HOIST, TOP LIMIT SWITCH WITH COMMON CONTROL - ELECTRICALALLY OPERATED.

SUSPENSION SYSTEM - Suitable steel wire rope with suitable length, upto Access Door (Min.100 metres),
Secondary wire rope with suitable length (Min.100 metres).
Rope clamp,end fittings, "D" shackle and thimbles.
Fixing arrangement in furnace roof and goose neck area.

PLATFORMS - Split-type platforms - suitable for 610mmx762mm access door with guardrails, suitable stirrups with retainers.
Connection blocks & tubes with fasteners.
Wall roller assembly with mounting bracket & fasteners.

POWER SUPPLY - All electrical items required for safe operation including rated SFU. Power supply cables

SAFETY DEVICES - All safety devices.
[A sensing device (Sky lock safety device) that locks the wire as soon as it accelerates beyond a preset speed either gradual or instantaneous shall be provided.]
Hoist capacity : 800 kg.
Each platform is driven by two hoists in tandem operation
There are 12 hoists for the six platforms common for one boiler.

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO / VAR NO	MATERIAL CODE / MATERIAL SPECN	A/C/P	UNIT / DI	UNIT WEIGHT / QUANTITY	GS	ZONE
	03	PLATFORM WITH BOTH ENDS FLAT LENGTH: 16.000 M.				SUB-DELY		KG / L	900.000 / 2		
	02	PLATFORM WITH 45 DEG. CHAMFER AT LEFT SIDE. LENGTH: 9.000 M.				SUB-DELY		KG / L	600.000 / 2		
	01	PLATFORM WITH 45 DEG. CHAMFER AT RIGHT SIDE. LENGTH: 9.000 M.				SUB-DELY		KG / L	600.000 / 2		

CUST. NO.:1832,1833

PROJECT:	2x800MW ULTRA SUPER CRITICAL THERMAL POWER PROJECT MAHAN (PH-II) SINGRAULI, MP
CUSTOMER: adani	MAHAN ENERGEN LTD. (MEL)
CONSULTANT: TATA	TATA CONSULTING ENGINEERS LIMITED MUMBAI INDIA
BHEL	BHARAT HEAVY ELECTRICALS LTD HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI-620014

DEPT CODE 129

	NAME	SIGN	DATE
DRN	SAURABH KR	Sd/-	15.07.2024
DESN	SAURABH KR	Sd/-	16.07.2024
CHD	M. VENKETESWARLU	Sd/-	16.07.2024
APPD	SRINIVASU A.	Sd/-	16.07.2024

REV.	DATE	ALTD	CHD	APPD
01	27.08.24	SAURABH KUMAR	MANDADI VENKETESWARLU	MANDADI VENKETESWARLU
	DRAWING IS REVISED TO INCORPORATE CUSTOMER COMMENTS			

TITLE FURNACE MAINTENANC PLATFORM 4 WC -ELECTRICALLY OPERATED

DEPT. SCALE NTS
SIGN

MEL DRG. NO. 552H-E-BTG-BOA-DM-G-V-0040
BHEL DRG. NO. 0-99-514-40396
SHEET 1 OF 1 REV. 01

PROJECT : 2 X 800 MW ULTRA SUPER CRITCAL THERMAL POWER PROJECT MAHAN PHASE-II)
CUSTOMER NO. : 1832-33
REFERENCE DRAWING N : 0-99-514-40396 Rev 01

1.0 Supplier to supply Furnace maintenance platforms as per specification no. **MHS-HEQ/071 Rev. 05**
2.0 Top of ceiling girder elevation : 102.094 M.
3.0 Access door elevation : 15.113 M.
4.0 SCOPE OF SUPPLY
4.1.0 PLATFORMS
4.1.1 Platform with 45° LH chamfer at one end and other with flat end for a length of 9.000M. - 2 Nos.
4.1.2 Platform with 45° RH chamfer at one end and other with flat end for a length of 9.000M. - 2 Nos.
4.1.3 Platform with both sides flat with length of 16.000M. - 2 Nos.
4.1.3 Platform wall roller assy & bracket complete with connecting fasteners. The rollers shall be designed suitably to move on the spiral water walls.
4.1.4 Complete guard rails with connecting fasteners.
4.1.5 Connecting block and tubes with connecting fasteners.
4.1.6 Lugs/Fixing assembly required for suspending the SAE to ceiling girder & goose neck area.
4.1.7 Each module shall be capable of mounting STIRRUP arrangements such that any module can be used for traversing between any two cable openings.
4.2.0 STIRRUPS
4.2.1 Suitable Hot galvanised stirrups & stirrup retainer complete with fasteners.
4.3.0 HOIST (ROPE CLIMBING MACHINE)
4.3.1 Hoist for safe working load of minimum 800 Kgs.
4.3.2 Electrically operated rope climbing machine with top limit switch.
4.3.3 Common single power control for both hoists.
4.4.0 SAFETY DEVICES
4.4.1 Safety braking system
4.4.2 Anti tilting device
4.4.3 Mercury level switches
4.4.4 Over speed safety device
4.4.5 Top limit switches
4.4.6 Overload/Under load safety device assembly
4.5.0 WIRE ROPE
4.5.1 Suitable length and quantity of steel wire rope with suitable size and construction of 6 X 36 for electrically operated hoist. Supplier to specify the size of the rope offered. Minimum length of wire rope shall be 100 M.
4.5.2 Secondary wire rope with cable weight.
4.5.3 Rope shall be of galvanised steel wire.

4.5.4 Rope shall have tensile strength of 240 Kg/Sq.mm. minimum.
4.5.5 Rope end fittings,'D'shakles, thimbles, rope clamps and other required items.
4.6.0 POWER SUPPLY
4.6.1 Power supply cable shall be provided for 3 Phase; 415V AC; 50 Hz.
4.6.2 Power supply cable shall be provided for suitable length as per BHEL arrangement drawing (0-99-514-40396).
4.6.3 Power supply cable rating shall be furnished by vendor.
4.6.4 Power supply cable shall be provided with plug and cable retainer.
4.7.0 CONTROL SYSTEM
4.7.1 Centralised control box shall be provided for easy operation.
4.7.2 The hoisting machines shall be synchronised and control shall be centralized with safety switch
5.0 Vendor shall furnish other mechanical, electrical and control accessories required for safety, easy maintenance and easy operation.
5.0 DOCUMENTS NEEDED
5.1 Refer clause no 18.0 of specification.
5.2 O & M MANUALS
5.2.1 Operation and Maintenance manuals both as soft copy (CD) and hard copies (in A4-size) should be submitted to BHEL/Tiruchirappalli prior to despatch of the equipment.
5.3.0 Operation and maintenance manual should contain the following
5.3.1 Data sheet for the equipment & its bought out items.
5.3.2 Brief description of equipment under supply.
5.3.3 Operation, and Trouble shooting
5.3.4 Maintenance and service instructions including lubrication schedule wherever required.
5.3.5 Recommended spare parts for 3 years for trouble free operation.
5.3.6 Assembly drawing with parts list.
5.3.7 The manual shall pertain to the model or type supplied for the particular contract.
7.0 All the points in specification & annexure - I to the specification should be strictly adhered to.
8.0 Offers without the required documents along with the offer shall not be considered.

BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI-620 014

Fuel Systems/PE(FB)

Title Sheet

General Specification for

ELECTRICALLY OPERATED
SUSPENDED SCAFFOLDING SYSTEM

Specification No.: MHS-HEQ/071 ***Revision No. : 05***

Rev. No.	Rev. Date	Clause	Description	Chd. & Appd.
05	16/08/18	-various-	Revisit & update of specification.	NF/GSK
04	10/12/07	2.6	Special tools included in the scope of supply	DVK
03	11/10/07	1.1 2.2 13.5.1	Scope clarity specified Access opening size referred in Annexure-I O&M- No. of copies was 25	SSR
02	26/09/07	2.6	Special tools included in the scope of supply	DVK
01	26/11/97	4.1 7.3 11.4 13.5.0 14.0, 15.0	Platforms Factor of safety Cable opening Operation & Maintenance manual Included	TKP
00	03/03/97		First issue	

	Name	Signature	Date
Prepared	T.K.Prabu	Sd.,	03/03/97
Checked	T.K.Prabu	Sd.,	03/03/97
Approved	A.Rajamohan	Sd.,	03/03/97

CONTENTS

1.0 SCOPE:

This specification covers design, manufacture, inspection, testing and supply of electrically operated suspended scaffolding system. The specification is for ensuring a safe and trouble free operation of Powered suspended scaffolding system used during shutdowns and overhauls, for inspection and maintenance of furnace internals of steam generator.

This is a general specification dealing with the technical Requirements of Suspended Scaffolding System. The specific Contract requirements and special requirements, if any, are specified in the enclosed annexures-1. If the scope of the Specification differs from Annexure-1, the scope of supply exclusively dealt in the contract specific requirement of Annexure-1 will be binding.

2.0 SPECIAL REQUIREMENTS OF THE SYSTEM

2.1 The suspended power scaffolding system shall consist of independently suspended platforms for the front / rear walls and sidewalls of boiler furnace as specified.

2.2 The scaffold platforms shall be modular and interchangeable construction made out of light weight material, easy for assembly inside the furnace, possible for taking inside the furnace, through an access door whose **overall opening size is furnished in the Annexure-I.** The platforms shall be easily assembled inside the furnace.

2.3 The suspension wire ropes will be introduced into the furnace through the furnace cable openings provided at the top of boiler and will be fastened to roof girders of boiler.

2.4 The suspension wire rope shall be capable to withstand temperature up to **250 Deg. C** which would be prevailing for longer duration after boiler shutdown.

2.5 The suspended platforms shall be operated by electric motor and climbing hoists.

2.6 The controls, safety devices, safety locks with necessary power supply cable, cable weight steel wire rope, secondary steel wire rope and special tools required for suspended platforms shall form part of the offer.

2.7 Vendor to provide suspension lugs (suitable to be welded at site) and other related items required for suspending the scaffolding at site. The lugs shall be capable of supporting four times the reaction forces imposed by the rated load on the scaffolding including scaffold self-weight.

3.0 GENERAL REQUIREMENTS

3.1 All materials, components and equipments used in the design, construction and installation of suspended powered scaffolds shall meet the requirements of its specified application in accordance with good engineering practice.

3.2 Scaffold platforms/ropes & other components of SAE shall be capable of supporting without failure under any scenario of usage.

3.3 The maximum rated speed at which the suspended powered scaffold moved in a vertical direction shall be in the range of 8.0 to 9.0 meters per minute.

3.4 An automatic overload/under load protection device shall be provided to cut power supply to the climbing machine for travel in the up/down direction when the load applied to the climbing machine exceeds 125% of its normal tension with rated load or under load.

3.5 Hoist shall never come down on its own.

3.6 Supplier shall provide suitable arrangement to prevent suspended power scaffolds from swaying. Suspended Scaffold platforms with rollers should always be engaged with water walls of boiler furnace. This should be ensured by providing extended wall rollers if necessary to prevent swaying of the platforms.

4.0 CODES & STANDARDS

4.1 The scaffolding system shall be designed to meet all the safety, design & sizing requirement defined by either of the codes - **EN-1808:2015 or ANSI A10.8-2011.**

4.2 Vendor shall follow either of the standards as mentioned above in total for designing the suspended scaffolding system.

4.3 Vendor should specify which code/standard is followed in their design of the offered system by **filling Sheet-A** of this specification.

5.0 PLATFORM OF SUSPENDED SCAFFOLD

5.1 The platform width shall not be less than 510 mm.

5.2 Platforms shall be provided with guard rails, mid rails and toe boards installed on all open sides and ends. The clear vertical distance between toe board, mid rails or guard rails shall be less that 500mm. The height of the guard rails shall be not less than 1000mm and not be more than 1100mm. All rails and posts shall be suitable for easy assembly & disassembly. Hoisting machines when located at not more than 450mm from ends of platforms hoist supporting stirrups, shall be considered as end guard rails. Else separate end guard rails shall be provided.

5.3 Toe boards shall extend to a minimum of **150mm** above the working surface.

5.4 Each platform shall bear a manufacturer's load rating plate stating the maximum rated load and stating the load rating when arranged in small modules. Load rating plates shall be made of non-corrosive material and shall

have letters and figures that are legible.

5.5 Suspended Platforms shall be designed to carry the rated load. Considering **800 Kg per hoist** capacity, vendor to indicate the rated load of platforms in their drawings and technical data sheet for our review. This shall be never be less than 3 persons loading requirement. Per person loading = 120Kg.

5.6 The minimum load capacity of deck of platform shall be 200 Kg/m^2 at worst case loading zone.

5.7 Fabricated platforms and scaffold decks shall be designed to support, in addition to their own weight, at least four times the maximum intended load.

6.0 HOISTING MACHINES

6.1 Each electrically operated hoist of minimum safe working load of 800 Kgs, shall be complying with applicable international codes. Each motor shall bear a name plate, indicating the operating voltage, current rating and power rating.

6.2 All gearing shall conform to the applicable standards with a service factor of not less than 1.0.

6.3 The hoist - Electrically operated rope climbing machine shall be supplied with top limit switch. There shall be common single power control for both hoists.

6.4 Lubrication where needed shall be provided to assure that all moving parts of hoists are lubricated at all times.

6.5 Speed Reducers

6.5.1 Each hoisting equipment shall be equipped with speed reducers or an equivalent to obtain mechanical advantage. Such speed reducers or other device shall contain positive type gearing such as worm gears, spur gears or bevel gears.

6.5.2 The speed reducer or other devices shall be directly connected to the traction sheave /drum of the hoisting equipment.

6.6 Primary Brakes

6.6.1 Each electrically operated hoisting equipment shall be provided with a primary brake that automatically engages whenever power supply is interrupted.

6.6.2 The primary brake shall be rated to stop and hold 125% of its rated load of hoisting equipment.

6.6.3 Each primary brake shall be directly connected to the drive of the hoisting machine.

6.7 Fall arrest device

6.7.1 Each hoisting equipment shall be provided with an automatic emergency type fall arrest device that will stop and hold at least 125% of the rated load of the hoisting machine. If such a fall arrest device is of instantaneous stopping type, then it should stop and hold its total load before the hoist travels a vertical distance of 450mm maximum.

6.7.2 The fall arrest safety device shall act directly on a **secondary safety wire rope** in case of failure of the hoist or the suspensions rope. The traction hoist works on the primary suspension rope. The actuating mechanism of the fall arrest device shall be separate from the primary brake.

6.7.3 The fall arrest safety device shall not be used to stop and hold the hoist except under emergency situations. In normal operation, such a device shall not engage before the hoist is stopped by primary brake.

6.7.4 The design, installation and maintenance of every fall arrest safety device shall be such that the device is prevented from being made defective or in-operative by outside contamination.

6.8 Hoisting Drum / Sheaves

All hoisting drums/sheaves shall be of proven design through tests to have no deleterious or serious effect on the suspension wire rope.

6.8.1 Traction Drum / sheaves

6.8.1.1 The traction drum/sheaves shall be designed in a manner to maintain correct wire rope reeving at all times to prevent scrubbing and cross overs. They shall have a means of applying pressure on the hoist rope against the drum/sheave to ensure constant tractive force to develop the rating of the hoist.

6.8.1.2 The diameter of any traction drum/sheave shall not be less than 20 times the diameter of the wire rope used. If lesser diameter be used, tests shall be performed by the wire rope manufacturer or a qualified testing laboratory to determine that no deleterious effect is caused on hoist wire for the usage intended.

6.8.2 Winding Drum (If Applicable)

Each winding drum hoist shall be provided with a positive means of attachment of the suspension rope. Such attachment should develop a minimum of 80% of the rated breaking strength of the suspension rope.

6.8.2.1 Single Wrap Winding Drum

a) Every single wrap winding drum hoisting machine shall be provided with a means of level winding of the suspension rope.
b) Every single wrap winding drum shall be so designed that the drum will contain a minimum of four wire ropes of the suspension rope at all times.
c) The minimum diameter of every single wrap winding drum shall not be less than 25 times of the diameter of the suspension rope used.

6.8.2.2 Multiple wrap Winding Drum

a) Every multiple wrap winding drum hoisting machine shall be provided with a means for level winding of the suspension rope.

b) Every multiple wrap winding drum shall contain not less than four wraps of suspension rope at all times.

c) The minimum diameter of every multiple wrap winding drum shall not be less than 10 times the diameter of the suspension rope used.

6.9 **Electrical Wiring And Equipment**

6.9.1 The electrical wiring and controls shall comply with governing codes, ordinances and regulation such as Low Voltage Directive 5006/95/EC, NFPA, NEC, National Electrical Manufacturers Association Regulations etc.

6.9.2 The power supply shall be 415 VOLTS, AC three phase 50Hz.

6.9.3 The power supply cable to any hoisting machine shall contain a separate conductor which will serve as a ground connection for the hoist.

6.9.4 Strain relief devices shall be provided for cables supplying power to hoisting machines. Such devices shall be located at the suitable places where the cables are plugged in at the cable connections on the hoists.

6.10 **Hoisting Machine Controls**

6.10.1 Hoisting machines shall have common control for each platform. If the control is of push button type, it shall be of the constant pressure. If it is fixed position type, it must have the provision for automatic locking when in the "OFF" position, or by means of guards against accidental actuation. The lever type control can be of the constant pressure type or of the fixed position type.

6.10.2 All hoist shall have a manually operated system that allows controlled descent of the scaffold in case of power failure. This **no-power decent** system shall be such that the controlled speed is lower than the tripping speed of the fall arrest device.

6.10.3 For a multi-point suspension, all the hoisting machines shall be synchronised and control shall be centralized with safety switch.

6.10.4 An **Anti-tilt device** shall be provided for the suspended platform with multi point suspensions.

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7.1 Each workman on a suspended powered scaffold shall be provided with an approved safety belt with a lanyard of not more than 1.5 meters in length. The lanyard shall be attached to the safety belt with a self-closing safety hook. The scaffold needs to have anchor points for eventually attaching the other end of the lanyard.

7.2 The suspended powered scaffold shall be equipped with Overload Protection system and overload indicator.

8.0 ROPES

8.1 Suspended powered scaffolds shall be suspended by wire ropes. The minimum grade of the wire rope shall be of improved plough steel. (galvanized)

8.2 The suspension wire rope shall be covered with insulating material at least 1.2 Mtr above the hoist to prevent possibility of the welding current arcing through the suspension wire rope during the course of welding, scarfing, etc.

8.3 Reverse bends in rope arrangement shall be avoided.

8.4 The minimum factor of safety of the wire rope shall be 6. Each wire rope used for scaffold suspension shall be capable of supporting at least six times the rated capacity of the hoist.

8.5 Fastening:

8.5.1 Babbitted and zinc sockets for wire ropes are prohibited.

8.5.2 Swagged attachments or spliced eyes are acceptable for fastening of wires.

8.5.3 Wire rope clips with twin base type shall be used and shall be installed as per the wire rope clip manufacture's recommendation.

8.5.4 All fasteners shall have anti-corrosion protection and develop at least 80% of the wire rope rated breaking strength.

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8.6.1 On traction drum /sheave applications, provisions shall be made to prevent the machine from running off the wire rope.

8.6.2 The wire rope shall be of such length that the operator can lower to the lowest point of travel with out end of the wire rope passing through the traction drum/sheave hoist.

8.7 Winding Drum Type (If applicable)

8.7.1 Winding drums shall have at least four turns of rope remaining when the platform has landed at the lowest possible point of its travel.

9.0 MULT POINT SUSPENDED POWERED PLATFORM

9.1 The scaffold shall be suspended by more than two (2) independent wire ropes.

9.2 The scaffold shall be provided with hoisting machines complying with clause 6.0

9.3 The stages shall be supported by galvanized steel stirrups.

9.4 Hoisting machine wire ropes shall conform to clause 8.0

9.5 Guard rails, mid rails and toe boards shall conform to clause 5.0

9.6 Anti-tilt device shall be included.

9.7 Both hoisting machines shall be operated from the center of platform in a centralized fashion.

10.0 INSPECTION

10.1 All test certificates shall be furnished for buyer's reference and records.

10.2 All suspended power scaffold installations shall, on their completion and before being placed in service, be subjected to inspection by BHEL inspector or BHEL nominated inspection authority during manufacture/testing stages, to determine

that the assembly conforms to applicable requirements. Hoist machines shall be inspected and tested in accordance with the manufacturer's recommendation.

10.3 Scaffolds (platform) & hoist machine shall be inspected and tested as per approved quality plan. The certificates and documents generated during inspection of above shall be furnished.

11.0 SPECIAL NOTES SUPPLEMENTED TO TECHNICAL SPECIFICATION

11.1 Supplier shall quote for recommended spares for three years trouble free operation separately.

11.2 Supplier shall furnish motor specification.

11.3 Sufficient number of packages of portable sizes to carry the components in fields shall be offered.

11.4 The size and locations of cable opening will be furnished for individual project by BHEL. Offer shall include the cable support details envisaged by supplier.

11.5 The procedure and support details of the false platform to be laid down before the assembly of suspended powered scaffolds shall be included in the offer with sketches.

11.6 The maximum temperature to which the rope shall be exposed for longer duration shall be specified.

11.7 Necessary provision shall be provided to keep the suspension ropes separate without twist.

11.8 Cable weights shall be provided suitably for secondary wire ropes.

12.0 GUARANTEE

12.1 The offered system shall be guaranteed for 18 months from the date on which the equipment / system is put into use (by the end user) or 24 months from the date of supply whichever is earlier against defective design, defective material usage, defective workmanship, defective packaging and forwarding.

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13.1.1 Product literature and drawings in support of the offer shall be submitted with the quotation to evaluate the offer.

13.1.2 Weight of individual major components as per the scope of supply shall be indicated in the drawing as bill of material (BOM).

13.1.3 The quality plan for the product under supply shall be furnished along with the offer.

13.1.4 General arrangement drawing with plan, elevation, and end view along with major dimensions and weight particulars.

13.1.5 Electric wiring diagram / circuit diagram as per clause 6.9 of this specification.

13.1.6 Filled in sheet-A of this Specification indicating the standards followed.

13.1.7 List of Initial spares (if any) to be supplied along with SAE.

13.1.8 Design calculations

13.1.8.1 Vendor to provide calculations to justify the following:

a) Minimum load capacity of each offered suspended platform.
b) Selection of Rated Load for each offered suspended platform.
c) No. of person loading.
d) Suspended platform structural calculation
e) Calculation of suspension lugs.

13.2 DOCUMENTS TO BE FURNISHED AFTER AWARD OF CONTRACT

13.2.1 Packaging procedure detailing the list of components shall be dispatched individually with identification and with preservation and storage.

13.2.2 SAE - Data sheet including drawings and design information shall be submitted to get approval from End user/owner of the boiler.

13.2.3 SAE – CERTIFICATES

13.2.3.1 Test certificates shall be furnished before dispatch of components.

13.2.3.2 A certificate for the components' safety from Safety Steward of the country of make shall be provided.

13.2.3.3 Test certificate for the following shall be furnished.

a) Material test certificate for all the major components.
b) Shop test certificates for safety devices.
c) Performance TC for the intended duty conditions.
d) Quality Control/Inspection documents generated during the stages of inspection, performance inspection, and final inspection.

13.2.3.4 Guarantee certificate shall be furnished by the vendor.

13.2.4 Operation & Maintenance (O & M) Manual

13.2.4.1 No of copies of manual:3Sets + 3 CD ROMS / USB drives.

13.2.4.2 The size of manuals should be in correct A4 size with drawings in A3 size. Large size drawings (greater than A3 size) shall be reduced to A3 size and inserted.

13.2.4.3 Drawings shall be of printed or laser prints only.

13.2.4.4 Spiral of comb bound copies should be totally avoided.

13.2.4.5 If manuals are supplied in folders, the folder should have 3 hole punching system.

13.2.4.6 O & M manuals, should be submitted to BHEL/Tiruchirappalli prior to dispatch of the equipment.

13.2.4.7 Manual, generally should contain the following:

a) Data sheet
b) Brief description
c) Operation

d) Maintenance (including lubrication, where necessary) & service, recommended spares for 2/3 years trouble free service.
e) Bill of Materials
f) Assembly drawings with part list, dimensional drawings and other applicable drawings.
g) Manual should pertain only to the type or model supplied for this contract.
h) Drawings and catalogues
i) Sequence of erection and dismantling
j) Erection instruction
k) List of tools and tackles
l) Critical checks and permissible deviations/tolerances
m) Procedure/checklist for commissioning the system
n) Procedure for initial checking after erection
o) Trouble Shooting

14.0 GENERAL:

14.1 The language used shall be "English only" in offer, O & M manual, Labels, Drawings etc.

14.2 For equipment and other special requirements refer Annexure-I to this specification.

15.0 SHEET-A: STANDARD / CODE CHECKLIST

DESCRIPTION	CODE FOLLOWED (Vendor to fill and submit)
PLATFORM OF SUSPENDED SCAFFOLD	
RATED LOAD OF SUSPENDED PLATFORM	
HOISTING MACHINES	
POWER SYSTEM FOR HOISTS	
CONTROL SYSTEM FOR HOISTS	
SAFETY AND CONTROL OF SUSPENDED PLATFORM	
WIRING AND EQUIPMENT	
SUSPENSION ROPES	

Technical Pre-Qualification Requirement for

Furnace Maintenance Platform

1. The vendor shall be an established Furnace Maintenance Platform/ Furnace cradle of electric/ Pneumatic operation (henceforth referred as FMP) manufacturer having adequate Design, Engineering, Manufacturing, inspection and testing facilities and shall furnish technical backup documents for the proof of above requirements.

2. The FMP offered shall be of sizes as per enquiry with a minimum hoist capacity of 800 Kg and from the existing regular manufacturing range of the supplier. Vendor shall provide the manufacturing catalogue or general reference list for the offered FMP along with offer.

3. The supplier shall have experience of having supplied FMP and its accessories for dusty, corrosive & highly polluted atmospheric conditions or for the application of similar severity as specified in the enquiry. Supplier shall submit documents in proof of the same.

4. Proven track record is required. Minimum one end user certificate for the satisfactory operational performance of their supplied FMP with accessories as per enquiry in similar ambient conditions is required as a proof.

   (or)

   successfully executed two POs for same item meeting minimum requirements specified in enquiry specification. Purchase orders should not be more than ten (10) years old as on date of bid submission, for establishing continuity in business. Vendor to submit the corresponding datasheets / drawings / technical documents of supplied item as per POs / end user certificate.

5. In case of ordering, the vendor shall have the responsibility for the following and same to be confirmed point wise.
   i) Vendor should have the component replacement responsibility in case of defect / failure.
   ii) Vendor shall have capability to provide assistance in commissioning activities, if required.
   iii) Vendor should ensure the product performance during erection & commissioning.

6. Backup document checklist to meet PQR to the fullest satisfaction of BHEL. All documents shall be in English, if the original document is in other language, same shall be translated in English.

S. No	Document description	Check list
1	Documents to meet Clause(1)	☐
2	Product Catalogues to meet clause(2)	☐
3	Supply reference document to meet clause (3) (PO /Inspection Reports/supply reference list)	☐
4	Min. one end user certificate (or) Two POs to meet clause (4)	☐
5	Confirmation to clause (5)	☐

Package -4

MAHAN PH-3 PROJECT

FURNACE PLATFORM

BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI-620 014

Fuel Systems/PE(FB)

Title Sheet

General Specification for

ELECTRICALLY OPERATED
SUSPENDED SCAFFOLDING SYSTEM

Specification No.: MHS-HEQ/071 ***Revision No. : 05***

Rev. No.	Rev. Date	Clause	Description	Chd. & Appd.
05	16/08/18	-various-	Revisit & update of specification.	NF/GSK
04	10/12/07	2.6	Special tools included in the scope of supply	DVK
03	11/10/07	1.1 2.2 13.5.1	Scope clarity specified Access opening size referred in Annexure-I O&M- No. of copies was 25	SSR
02	26/09/07	2.6	Special tools included in the scope of supply	DVK
01	26/11/97	4.1 7.3 11.4 13.5.0 14.0, 15.0	Platforms Factor of safety Cable opening Operation & Maintenance manual Included	TKP
00	03/03/97		First issue	

	Name	Signature	Date
Prepared	T.K.Prabu	Sd.,	03/03/97
Checked	T.K.Prabu	Sd.,	03/03/97
Approved	A.Rajamohan	Sd.,	03/03/97

CONTENTS

1.0 SCOPE:

This specification covers design, manufacture, inspection, testing and supply of electrically operated suspended scaffolding system. The specification is for ensuring a safe and trouble free operation of Powered suspended scaffolding system used during shutdowns and overhauls, for inspection and maintenance of furnace internals of steam generator.

This is a general specification dealing with the technical Requirements of Suspended Scaffolding System. The specific Contract requirements and special requirements, if any, are specified in the enclosed annexures-1. If the scope of the Specification differs from Annexure-1, the scope of supply exclusively dealt in the contract specific requirement of Annexure-1 will be binding.

2.0 SPECIAL REQUIREMENTS OF THE SYSTEM

2.1 The suspended power scaffolding system shall consist of independently suspended platforms for the front / rear walls and sidewalls of boiler furnace as specified.

2.2 The scaffold platforms shall be modular and interchangeable construction made out of light weight material, easy for assembly inside the furnace, possible for taking inside the furnace, through an access door whose **overall opening size is furnished in the Annexure-I.** The platforms shall be easily assembled inside the furnace.

2.3 The suspension wire ropes will be introduced into the furnace through the furnace cable openings provided at the top of boiler and will be fastened to roof girders of boiler.

2.4 The suspension wire rope shall be capable to withstand temperature up to **250 Deg. C** which would be prevailing for longer duration after boiler shutdown.

2.5 The suspended platforms shall be operated by electric motor and climbing hoists.

2.6 The controls, safety devices, safety locks with necessary power supply cable, cable weight steel wire rope, secondary steel wire rope and special tools required for suspended platforms shall form part of the offer.

2.7 Vendor to provide suspension lugs (suitable to be welded at site) and other related items required for suspending the scaffolding at site. The lugs shall be capable of supporting four times the reaction forces imposed by the rated load on the scaffolding including scaffold self-weight.

3.0 GENERAL REQUIREMENTS

3.1 All materials, components and equipments used in the design, construction and installation of suspended powered scaffolds shall meet the requirements of its specified application in accordance with good engineering practice.

3.2 Scaffold platforms/ropes & other components of SAE shall be capable of supporting without failure under any scenario of usage.

3.3 The maximum rated speed at which the suspended powered scaffold moved in a vertical direction shall be in the range of 8.0 to 9.0 meters per minute.

3.4 An automatic overload/under load protection device shall be provided to cut power supply to the climbing machine for travel in the up/down direction when the load applied to the climbing machine exceeds 125% of its normal tension with rated load or under load.

3.5 Hoist shall never come down on its own.

3.6 Supplier shall provide suitable arrangement to prevent suspended power scaffolds from swaying. Suspended Scaffold platforms with rollers should always be engaged with water walls of boiler furnace. This should be ensured by providing extended wall rollers if necessary to prevent swaying of the platforms.

4.0 CODES & STANDARDS

4.1 The scaffolding system shall be designed to meet all the safety, design & sizing requirement defined by either of the codes - **EN-1808:2015 or ANSI A10.8-2011.**

4.2 Vendor shall follow either of the standards as mentioned above in total for designing the suspended scaffolding system.

4.3 Vendor should specify which code/standard is followed in their design of the offered system by **filling Sheet-A** of this specification.

5.0 PLATFORM OF SUSPENDED SCAFFOLD

5.1 The platform width shall not be less than 510 mm.

5.2 Platforms shall be provided with guard rails, mid rails and toe boards installed on all open sides and ends. The clear vertical distance between toe board, mid rails or guard rails shall be less that 500mm. The height of the guard rails shall be not less than 1000mm and not be more than 1100mm. All rails and posts shall be suitable for easy assembly & disassembly. Hoisting machines when located at not more than 450mm from ends of platforms hoist supporting stirrups, shall be considered as end guard rails. Else separate end guard rails shall be provided.

5.3 Toe boards shall extend to a minimum of **150mm** above the working surface.

5.4 Each platform shall bear a manufacturer's load rating plate stating the maximum rated load and stating the load rating when arranged in small modules. Load rating plates shall be made of non-corrosive material and shall

have letters and figures that are legible.

5.5 Suspended Platforms shall be designed to carry the rated load. Considering **800 Kg per hoist** capacity, vendor to indicate the rated load of platforms in their drawings and technical data sheet for our review. This shall be never be less than 3 persons loading requirement. Per person loading = 120Kg.

5.6 The minimum load capacity of deck of platform shall be 200 Kg/m^2 at worst case loading zone.

5.7 Fabricated platforms and scaffold decks shall be designed to support, in addition to their own weight, at least four times the maximum intended load.

6.0 HOISTING MACHINES

6.1 Each electrically operated hoist of minimum safe working load of 800 Kgs, shall be complying with applicable international codes. Each motor shall bear a name plate, indicating the operating voltage, current rating and power rating.

6.2 All gearing shall conform to the applicable standards with a service factor of not less than 1.0.

6.3 The hoist - Electrically operated rope climbing machine shall be supplied with top limit switch. There shall be common single power control for both hoists.

6.4 Lubrication where needed shall be provided to assure that all moving parts of hoists are lubricated at all times.

6.5 Speed Reducers

6.5.1 Each hoisting equipment shall be equipped with speed reducers or an equivalent to obtain mechanical advantage. Such speed reducers or other device shall contain positive type gearing such as worm gears, spur gears or bevel gears.

6.5.2 The speed reducer or other devices shall be directly connected to the traction sheave /drum of the hoisting equipment.

6.6 Primary Brakes

6.6.1 Each electrically operated hoisting equipment shall be provided with a primary brake that automatically engages whenever power supply is interrupted.

6.6.2 The primary brake shall be rated to stop and hold 125% of its rated load of hoisting equipment.

6.6.3 Each primary brake shall be directly connected to the drive of the hoisting machine.

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6.7.1 Each hoisting equipment shall be provided with an automatic emergency type fall arrest device that will stop and hold at least 125% of the rated load of the hoisting machine. If such a fall arrest device is of instantaneous stopping type, then it should stop and hold its total load before the hoist travels a vertical distance of 450mm maximum.

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e) Calculation of suspension lugs.

13.2 DOCUMENTS TO BE FURNISHED AFTER AWARD OF CONTRACT

13.2.1 Packaging procedure detailing the list of components shall be dispatched individually with identification and with preservation and storage.

13.2.2 SAE - Data sheet including drawings and design information shall be submitted to get approval from End user/owner of the boiler.

13.2.3 SAE – CERTIFICATES

13.2.3.1 Test certificates shall be furnished before dispatch of components.

13.2.3.2 A certificate for the components' safety from Safety Steward of the country of make shall be provided.

13.2.3.3 Test certificate for the following shall be furnished.

a) Material test certificate for all the major components.
b) Shop test certificates for safety devices.
c) Performance TC for the intended duty conditions.
d) Quality Control/Inspection documents generated during the stages of inspection, performance inspection, and final inspection.

13.2.3.4 Guarantee certificate shall be furnished by the vendor.

13.2.4 Operation & Maintenance (O & M) Manual

13.2.4.1 No of copies of manual:3Sets + 3 CD ROMS / USB drives.

13.2.4.2 The size of manuals should be in correct A4 size with drawings in A3 size. Large size drawings (greater than A3 size) shall be reduced to A3 size and inserted.

13.2.4.3 Drawings shall be of printed or laser prints only.

13.2.4.4 Spiral of comb bound copies should be totally avoided.

13.2.4.5 If manuals are supplied in folders, the folder should have 3 hole punching system.

13.2.4.6 O & M manuals, should be submitted to BHEL/Tiruchirappalli prior to dispatch of the equipment.

13.2.4.7 Manual, generally should contain the following:

a) Data sheet
b) Brief description
c) Operation

d) Maintenance (including lubrication, where necessary) & service, recommended spares for 2/3 years trouble free service.
e) Bill of Materials
f) Assembly drawings with part list, dimensional drawings and other applicable drawings.
g) Manual should pertain only to the type or model supplied for this contract.
h) Drawings and catalogues
i) Sequence of erection and dismantling
j) Erection instruction
k) List of tools and tackles
l) Critical checks and permissible deviations/tolerances
m) Procedure/checklist for commissioning the system
n) Procedure for initial checking after erection
o) Trouble Shooting

14.0 GENERAL:

14.1 The language used shall be "English only" in offer, O & M manual, Labels, Drawings etc.

14.2 For equipment and other special requirements refer Annexure-I to this specification.

15.0 SHEET-A: STANDARD / CODE CHECKLIST

DESCRIPTION	CODE FOLLOWED (Vendor to fill and submit)
PLATFORM OF SUSPENDED SCAFFOLD	
RATED LOAD OF SUSPENDED PLATFORM	
HOISTING MACHINES	
POWER SYSTEM FOR HOISTS	
CONTROL SYSTEM FOR HOISTS	
SAFETY AND CONTROL OF SUSPENDED PLATFORM	
WIRING AND EQUIPMENT	
SUSPENSION ROPES	

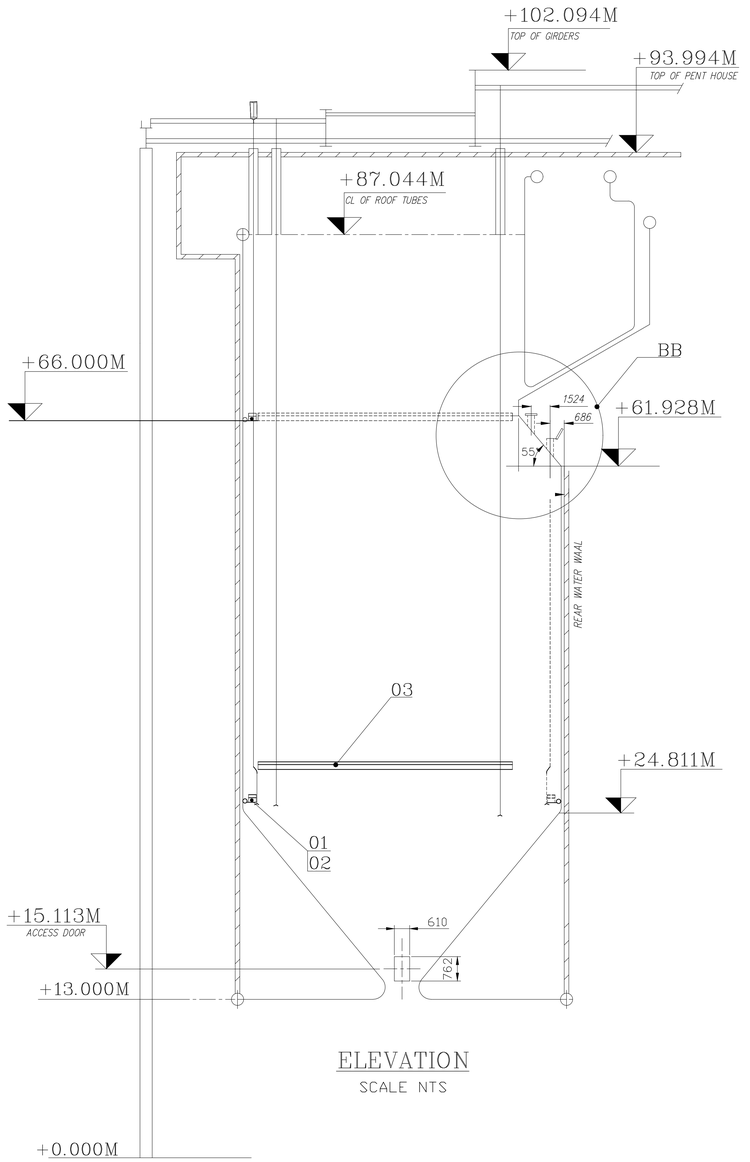
PROJECT : MAHAN ENERGN LIMITED (MEL) 2x800 MW Ph-III USTPP
CUSTOMER NO. : 1854-55
REFERENCE DRAWING N : 0-99-514-40416

1.0 Supplier to supply Furnace maintenance platforms as per specification no. **MHS-HEQ/071 Rev. 05**
2.0 Top of ceiling girder elevation : 102.094 M.
3.0 Access door elevation : 15.113 M.
4.0 SCOPE OF SUPPLY
4.1.0 PLATFORMS
4.1.1 Platform with 45° LH chamfer at one end and other with flat end for a length of 9.000M. - 2 Nos.
4.1.2 Platform with 45° RH chamfer at one end and other with flat end for a length of 9.000M. - 2 Nos.
4.1.3 Platform with both sides flat with length of 16.000M. - 2 Nos.
4.1.3 Platform wall roller assy & bracket complete with connecting fasteners. The rollers shall be designed suitably to move on the spiral water walls.
4.1.4 Complete guard rails with connecting fasteners.
4.1.5 Connecting block and tubes with connecting fasteners.
4.1.6 Lugs/Fixing assembly required for suspending the SAE to ceiling girder & goose neck area.
4.1.7 Each module shall be capable of mounting STIRRUP arrangements such that any module can be used for traversing between any two cable openings.
4.2.0 STIRRUPS
4.2.1 Suitable Hot galvanised stirrups & stirrup retainer complete with fasteners.
4.3.0 HOIST (ROPE CLIMBING MACHINE)
4.3.1 Hoist for safe working load of minimum 800 Kgs.
4.3.2 Electrically operated rope climbing machine with top limit switch.
4.3.3 Common single power control for both hoists.
4.4.0 SAFETY DEVICES
4.4.1 Safety braking system
4.4.2 Anti tilting device
4.4.3 Mercury level switches
4.4.4 Over speed safety device
4.4.5 Top limit switches
4.4.6 Overload/Under load safety device assembly
4.5.0 WIRE ROPE
4.5.1 Suitable length and quantity of steel wire rope with suitable size and construction of 6 X 36 for electrically operated hoist. Supplier to specify the size of the rope offered. Minimum length of wire rope shall be 100 M.
4.5.2 Secondary wire rope with cable weight.
4.5.3 Rope shall be of galvanised steel wire.

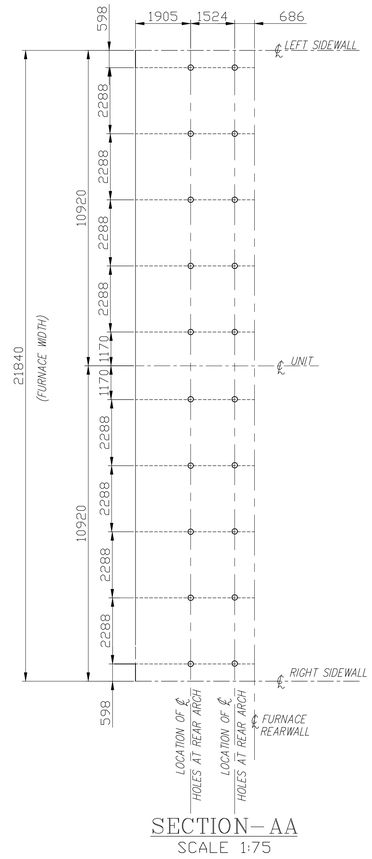
4.5.4 Rope shall have tensile strength of 240 Kg/Sq.mm. minimum.
4.5.5 Rope end fittings,'D'shakles, thimbles, rope clamps and other required items.
4.6.0 POWER SUPPLY
4.6.1 Power supply cable shall be provided for 3 Phase; 415V AC; 50 Hz.
4.6.2 Power supply cable shall be provided for suitable length as per BHEL arrangement drawing 0-99-514-40416
4.6.3 Power supply cable rating shall be furnished by vendor.
4.6.4 Power supply cable shall be provided with plug and cable retainer.
4.7.0 CONTROL SYSTEM
4.7.1 Centralised control box shall be provided for easy operation.
4.7.2 The hoisting machines shall be synchronised and control shall be centralized with safety switch
5.0 Vendor shall furnish other mechanical, electrical and control accessories required for safety, easy maintenance and easy operation.
5.0 DOCUMENTS NEEDED
5.1 Refer clause no 18.0 of specification.
5.2 O & M MANUALS
5.2.1 Operation and Maintenance manuals both as soft copy (CD) and hard copies (in A4-size) should be submitted to BHEL/Tiruchirappalli prior to despatch of the equipment.
5.3.0 Operation and maintenance manual should contain the following
5.3.1 Data sheet for the equipment & its bought out items.
5.3.2 Brief description of equipment under supply.
5.3.3 Operation, and Trouble shooting
5.3.4 Maintenance and service instructions including lubrication schedule wherever required.
5.3.5 Recommended spare parts for 3 years for trouble free operation.
5.3.6 Assembly drawing with parts list.
5.3.7 The manual shall pertain to the model or type supplied for the particular contract.
7.0 All the points in specification & annexure - I to the specification should be strictly adhered to.
8.0 Offers without the required documents along with the offer shall not be considered.

DRAWING NO 0-99-514-40416

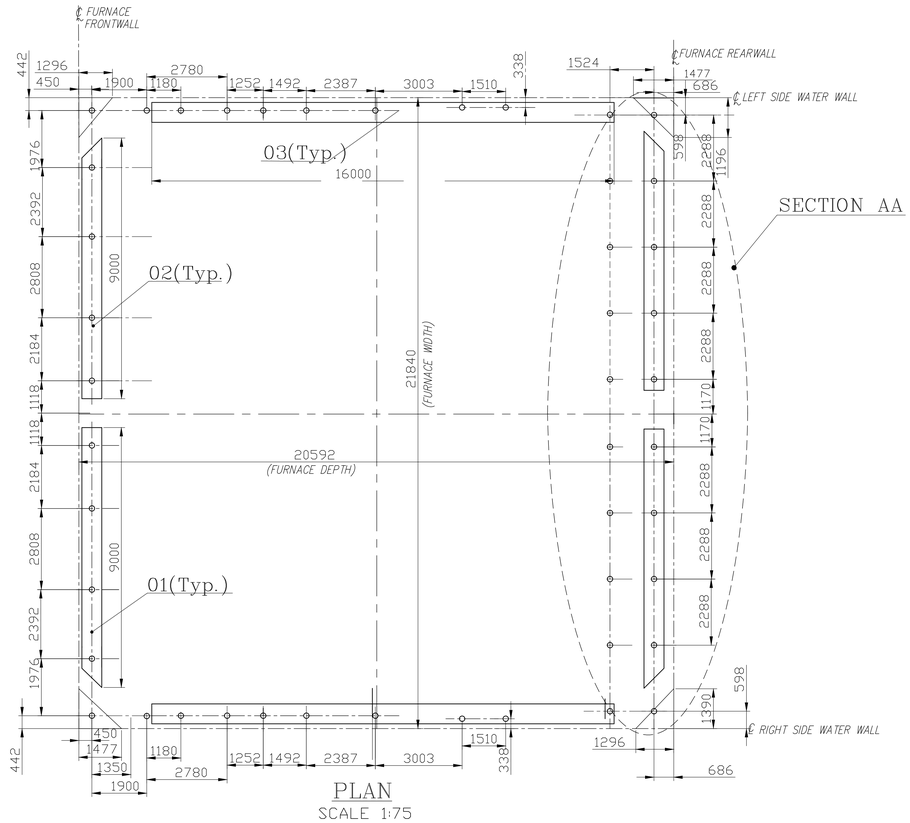
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



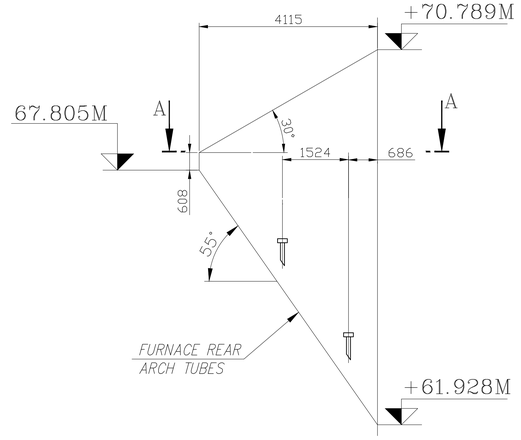
ELEVATION
SCALE NTS



SECTION–AA
SCALE 1:75



PLAN
SCALE 1:75



DETAIL BB
SIDE ELEVATION
DEFLECTION ARCH
SCALE 1:100

NOTES: –

1. *REFERENCE DRAWINGS :*
   - *A. 0–00–022–78273 –GENERAL ARRANGEMENT OF BOILER SECTIONAL SIDE ELEVATION.*
   - *B. 0–00–027–36039 –PPA – SECTIONAL SIDE ELEVATION BACKPASS.*
   - *C. 0–00–027–36040–PPA – SECTIONAL SIDE ELEVATION LOWER FURNACE.*
   - *D. 0–00–027–36038 –PPA – SECTIONAL SIDE ELEVATION UPPER FURNACE.*
2. *CABLE OPENING WITH CAPS AND OTHER ACCESSORIES RELEASED UNDER PG–MA 18 – 001.*
3. *ALL THE ELEVATIONS ARE WITH RESPECT TO EL(+) 0.00M,FINISHED GROUND FLOOR LEVEL OF TG BUILDING, WHICH CORRERSPONDS TO RL.(+) 346.30 M. FINISHED GROOUND FLOOR LEVEL (PAVING LEVEL) OF THE BOILER AND ESP AREAS ARE AT (–) 0.150 M, WHICH CORRESPONDS TO RL.(+) 346.15 M. FINISHED GROUND FLOOR LEVEL (PAVING LEVEL) OF MILL BAY AT (+) 0.00 M, WHICH CORRESPONDS TO RL.(+) 346.30 M.*

SCOPE OF EQUIPMENT.

HOIST, TOP LIMIT SWITCH WITH COMMON CONTROL – ELECTRICALALLY OPERATED.

SUSPENSION SYSTEM – Suitable steel wire rope with suitable length, upto Access Door (Min.100 metres), Secondary wire rope with suitable length (Min.100 metres). Rope clamp,end fittings, "D" shackle and thimbles. Fixing arrangement in furnace roof and goose neck area.

PLATFORMS – Split–type platforms – suitable for 610mmx762mm access door with guardrails, suitable stirrups with retainers. Connection blocks & tubes with fasteners. Wall roller assembly with mounting bracket & fasteners.

POWER SUPPLY – All electrical items required for safe operation including rated SFU. Power supply cables

SAFETY DEVICES – All safety devices. [A sensing device (Sky lock safety device) that locks the wire as soon as it accelerates beyond a preset speed either gradual or instantaneous shall be provided.] Hoist capacity : 800 kg. Each platform is driven by two hoists in tandem operation There are 12 hoists for the six platforms common for one boiler.

DRAWING NUMBER ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO / VAR NO	MATERIAL CODE / MATERIAL SPECN	A/S/P UNIT / DI	UNIT WEIGHT / QUANTITY	GS	ZONE
03	PLATFORM WITH BOTH ENDS FLAT. LENGTH- 16,000 M.					KG	900.000		
					SUB-DELY	L	2		
02	PLATFORM WITH 45 DEG. CHAMFER AT LEFT SIDE. LENGTH- 9,000 M.					KG	600.000		
					SUB-DELY	L	2		
01	PLATFORM WITH 45 DEG. CHAMFER AT RIGHT SIDE. LENGTH- 9,000 M.					KG	600.000		
					SUB-DELY	L	2		

REV.	DATE	ALTD	CHD	APPD

CUST NO: 1854,1855

BTG & AUXILIARIES

OWNER
MAHAN ENERGN LTD (MEL), PHASE–III

OWNER'S ENGINEER
CONSULTING ENGINEERS LIMITED
MUMBAI

CONTRACTOR
BHARAT HEAVY ELECTRICALS LTD
HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI–620014

PROJECT
2X800MW ULTRA SUPERCRITICAL THERMAL POWER PROJECT
SINGRAULI DIST, MADHYA PRADESH

DRAWING TITLE
FURNACE MAINTENANCE PLATFORM 4 WC–ELECTRICALLY OPERATED

DRAWN : ABHISHEK SINGH	CHECKED : SAURABH KR SINGH
REVIEWED : MANDADI VENKETESWARLU	SCALE NTS
APPROVED : SRINIVASU ARUGULA	DATE 15.03.2025
OWNER'S DRG. NO.: 552P–E–BTG–BOA–DM–G–V–0080	JOB NO. 1854–1855
CONTRACTOR DRG. NO.: 0–99–514–40416	REV.00

Technical Pre-Qualification Requirement for

Furnace Maintenance Platform

1. The vendor shall be an established Furnace Maintenance Platform/ Furnace cradle of electric/ Pneumatic operation (henceforth referred as FMP) manufacturer having adequate Design, Engineering, Manufacturing, inspection and testing facilities and shall furnish technical backup documents for the proof of above requirements.

2. The FMP offered shall be of sizes as per enquiry with a minimum hoist capacity of 800 Kg and from the existing regular manufacturing range of the supplier. Vendor shall provide the manufacturing catalogue or general reference list for the offered FMP along with offer.

3. The supplier shall have experience of having supplied FMP and its accessories for dusty, corrosive & highly polluted atmospheric conditions or for the application of similar severity as specified in the enquiry. Supplier shall submit documents in proof of the same.

4. Proven track record is required. Minimum one end user certificate for the satisfactory operational performance of their supplied FMP with accessories as per enquiry in similar ambient conditions is required as a proof.

   (or)

   successfully executed two POs for same item meeting minimum requirements specified in enquiry specification. Purchase orders should not be more than ten (10) years old as on date of bid submission, for establishing continuity in business. Vendor to submit the corresponding datasheets / drawings / technical documents of supplied item as per POs / end user certificate.

5. In case of ordering, the vendor shall have the responsibility for the following and same to be confirmed point wise.
   i) Vendor should have the component replacement responsibility in case of defect / failure.
   ii) Vendor shall have capability to provide assistance in commissioning activities, if required.
   iii) Vendor should ensure the product performance during erection & commissioning.

6. Backup document checklist to meet PQR to the fullest satisfaction of BHEL. All documents shall be in English, if the original document is in other language, same shall be translated in English.

S. No	Document description	Check list
1	Documents to meet Clause(1)	☐
2	Product Catalogues to meet clause(2)	☐
3	Supply reference document to meet clause (3) (PO /Inspection Reports/supply reference list)	☐
4	Min. one end user certificate (or) Two POs to meet clause (4)	☐
5	Confirmation to clause (5)	☐

Package -5

MIRZAPUR PROJECT

FURNACE PLATFORM

BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI-620 014

Fuel Systems/PE(FB)

Title Sheet

General Specification for

ELECTRICALLY OPERATED
SUSPENDED SCAFFOLDING SYSTEM

Specification No.: MHS-HEQ/071 ***Revision No. : 05***

Rev. No.	Rev. Date	Clause	Description	Chd. & Appd.
05	16/08/18	-various-	Revisit & update of specification.	NF/GSK
04	10/12/07	2.6	Special tools included in the scope of supply	DVK
03	11/10/07	1.1 2.2 13.5.1	Scope clarity specified Access opening size referred in Annexure-I O&M- No. of copies was 25	SSR
02	26/09/07	2.6	Special tools included in the scope of supply	DVK
01	26/11/97	4.1 7.3 11.4 13.5.0 14.0, 15.0	Platforms Factor of safety Cable opening Operation & Maintenance manual Included	TKP
00	03/03/97		First issue	

	Name	Signature	Date
Prepared	T.K.Prabu	Sd.,	03/03/97
Checked	T.K.Prabu	Sd.,	03/03/97
Approved	A.Rajamohan	Sd.,	03/03/97

CONTENTS

1.0 SCOPE:

This specification covers design, manufacture, inspection, testing and supply of electrically operated suspended scaffolding system. The specification is for ensuring a safe and trouble free operation of Powered suspended scaffolding system used during shutdowns and overhauls, for inspection and maintenance of furnace internals of steam generator.

This is a general specification dealing with the technical Requirements of Suspended Scaffolding System. The specific Contract requirements and special requirements, if any, are specified in the enclosed annexures-1. If the scope of the Specification differs from Annexure-1, the scope of supply exclusively dealt in the contract specific requirement of Annexure-1 will be binding.

2.0 SPECIAL REQUIREMENTS OF THE SYSTEM

2.1 The suspended power scaffolding system shall consist of independently suspended platforms for the front / rear walls and sidewalls of boiler furnace as specified.

2.2 The scaffold platforms shall be modular and interchangeable construction made out of light weight material, easy for assembly inside the furnace, possible for taking inside the furnace, through an access door whose **overall opening size is furnished in the Annexure-I.** The platforms shall be easily assembled inside the furnace.

2.3 The suspension wire ropes will be introduced into the furnace through the furnace cable openings provided at the top of boiler and will be fastened to roof girders of boiler.

2.4 The suspension wire rope shall be capable to withstand temperature up to **250 Deg. C** which would be prevailing for longer duration after boiler shutdown.

2.5 The suspended platforms shall be operated by electric motor and climbing hoists.

2.6 The controls, safety devices, safety locks with necessary power supply cable, cable weight steel wire rope, secondary steel wire rope and special tools required for suspended platforms shall form part of the offer.

2.7 Vendor to provide suspension lugs (suitable to be welded at site) and other related items required for suspending the scaffolding at site. The lugs shall be capable of supporting four times the reaction forces imposed by the rated load on the scaffolding including scaffold self-weight.

3.0 GENERAL REQUIREMENTS

3.1 All materials, components and equipments used in the design, construction and installation of suspended powered scaffolds shall meet the requirements of its specified application in accordance with good engineering practice.

3.2 Scaffold platforms/ropes & other components of SAE shall be capable of supporting without failure under any scenario of usage.

3.3 The maximum rated speed at which the suspended powered scaffold moved in a vertical direction shall be in the range of 8.0 to 9.0 meters per minute.

3.4 An automatic overload/under load protection device shall be provided to cut power supply to the climbing machine for travel in the up/down direction when the load applied to the climbing machine exceeds 125% of its normal tension with rated load or under load.

3.5 Hoist shall never come down on its own.

3.6 Supplier shall provide suitable arrangement to prevent suspended power scaffolds from swaying. Suspended Scaffold platforms with rollers should always be engaged with water walls of boiler furnace. This should be ensured by providing extended wall rollers if necessary to prevent swaying of the platforms.

4.0 CODES & STANDARDS

4.1 The scaffolding system shall be designed to meet all the safety, design & sizing requirement defined by either of the codes - **EN-1808:2015 or ANSI A10.8-2011.**

4.2 Vendor shall follow either of the standards as mentioned above in total for designing the suspended scaffolding system.

4.3 Vendor should specify which code/standard is followed in their design of the offered system by **filling Sheet-A** of this specification.

5.0 PLATFORM OF SUSPENDED SCAFFOLD

5.1 The platform width shall not be less than 510 mm.

5.2 Platforms shall be provided with guard rails, mid rails and toe boards installed on all open sides and ends. The clear vertical distance between toe board, mid rails or guard rails shall be less that 500mm. The height of the guard rails shall be not less than 1000mm and not be more than 1100mm. All rails and posts shall be suitable for easy assembly & disassembly. Hoisting machines when located at not more than 450mm from ends of platforms hoist supporting stirrups, shall be considered as end guard rails. Else separate end guard rails shall be provided.

5.3 Toe boards shall extend to a minimum of **150mm** above the working surface.

5.4 Each platform shall bear a manufacturer's load rating plate stating the maximum rated load and stating the load rating when arranged in small modules. Load rating plates shall be made of non-corrosive material and shall

have letters and figures that are legible.

5.5 Suspended Platforms shall be designed to carry the rated load. Considering **800 Kg per hoist** capacity, vendor to indicate the rated load of platforms in their drawings and technical data sheet for our review. This shall be never be less than 3 persons loading requirement. Per person loading = 120Kg.

5.6 The minimum load capacity of deck of platform shall be 200 Kg/m^2 at worst case loading zone.

5.7 Fabricated platforms and scaffold decks shall be designed to support, in addition to their own weight, at least four times the maximum intended load.

6.0 HOISTING MACHINES

6.1 Each electrically operated hoist of minimum safe working load of 800 Kgs, shall be complying with applicable international codes. Each motor shall bear a name plate, indicating the operating voltage, current rating and power rating.

6.2 All gearing shall conform to the applicable standards with a service factor of not less than 1.0.

6.3 The hoist - Electrically operated rope climbing machine shall be supplied with top limit switch. There shall be common single power control for both hoists.

6.4 Lubrication where needed shall be provided to assure that all moving parts of hoists are lubricated at all times.

6.5 Speed Reducers

6.5.1 Each hoisting equipment shall be equipped with speed reducers or an equivalent to obtain mechanical advantage. Such speed reducers or other device shall contain positive type gearing such as worm gears, spur gears or bevel gears.

6.5.2 The speed reducer or other devices shall be directly connected to the traction sheave /drum of the hoisting equipment.

6.6 Primary Brakes

6.6.1 Each electrically operated hoisting equipment shall be provided with a primary brake that automatically engages whenever power supply is interrupted.

6.6.2 The primary brake shall be rated to stop and hold 125% of its rated load of hoisting equipment.

6.6.3 Each primary brake shall be directly connected to the drive of the hoisting machine.

6.7 Fall arrest device

6.7.1 Each hoisting equipment shall be provided with an automatic emergency type fall arrest device that will stop and hold at least 125% of the rated load of the hoisting machine. If such a fall arrest device is of instantaneous stopping type, then it should stop and hold its total load before the hoist travels a vertical distance of 450mm maximum.

6.7.2 The fall arrest safety device shall act directly on a **secondary safety wire rope** in case of failure of the hoist or the suspensions rope. The traction hoist works on the primary suspension rope. The actuating mechanism of the fall arrest device shall be separate from the primary brake.

6.7.3 The fall arrest safety device shall not be used to stop and hold the hoist except under emergency situations. In normal operation, such a device shall not engage before the hoist is stopped by primary brake.

6.7.4 The design, installation and maintenance of every fall arrest safety device shall be such that the device is prevented from being made defective or in-operative by outside contamination.

6.8 Hoisting Drum / Sheaves

All hoisting drums/sheaves shall be of proven design through tests to have no deleterious or serious effect on the suspension wire rope.

6.8.1 Traction Drum / sheaves

6.8.1.1 The traction drum/sheaves shall be designed in a manner to maintain correct wire rope reeving at all times to prevent scrubbing and cross overs. They shall have a means of applying pressure on the hoist rope against the drum/sheave to ensure constant tractive force to develop the rating of the hoist.

6.8.1.2 The diameter of any traction drum/sheave shall not be less than 20 times the diameter of the wire rope used. If lesser diameter be used, tests shall be performed by the wire rope manufacturer or a qualified testing laboratory to determine that no deleterious effect is caused on hoist wire for the usage intended.

6.8.2 Winding Drum (If Applicable)

Each winding drum hoist shall be provided with a positive means of attachment of the suspension rope. Such attachment should develop a minimum of 80% of the rated breaking strength of the suspension rope.

6.8.2.1 Single Wrap Winding Drum

a) Every single wrap winding drum hoisting machine shall be provided with a means of level winding of the suspension rope.

b) Every single wrap winding drum shall be so designed that the drum will contain a minimum of four wire ropes of the suspension rope at all times.

c) The minimum diameter of every single wrap winding drum shall not be less than 25 times of the diameter of the suspension rope used.

6.8.2.2 Multiple wrap Winding Drum

a) Every multiple wrap winding drum hoisting machine shall be provided with a means for level winding of the suspension rope.

b) Every multiple wrap winding drum shall contain not less than four wraps of suspension rope at all times.

c) The minimum diameter of every multiple wrap winding drum shall not be less than 10 times the diameter of the suspension rope used.

6.9 **Electrical Wiring And Equipment**

6.9.1 The electrical wiring and controls shall comply with governing codes, ordinances and regulation such as Low Voltage Directive 5006/95/EC, NFPA, NEC, National Electrical Manufacturers Association Regulations etc.

6.9.2 The power supply shall be 415 VOLTS, AC three phase 50Hz.

6.9.3 The power supply cable to any hoisting machine shall contain a separate conductor which will serve as a ground connection for the hoist.

6.9.4 Strain relief devices shall be provided for cables supplying power to hoisting machines. Such devices shall be located at the suitable places where the cables are plugged in at the cable connections on the hoists.

6.10 **Hoisting Machine Controls**

6.10.1 Hoisting machines shall have common control for each platform. If the control is of push button type, it shall be of the constant pressure. If it is fixed position type, it must have the provision for automatic locking when in the "OFF" position, or by means of guards against accidental actuation. The lever type control can be of the constant pressure type or of the fixed position type.

6.10.2 All hoist shall have a manually operated system that allows controlled descent of the scaffold in case of power failure. This **no-power decent** system shall be such that the controlled speed is lower than the tripping speed of the fall arrest device.

6.10.3 For a multi-point suspension, all the hoisting machines shall be synchronised and control shall be centralized with safety switch.

6.10.4 An **Anti-tilt device** shall be provided for the suspended platform with multi point suspensions.

7.0 SAFETY BELTS AND ANCHOR POINTS

7.1 Each workman on a suspended powered scaffold shall be provided with an approved safety belt with a lanyard of not more than 1.5 meters in length. The lanyard shall be attached to the safety belt with a self-closing safety hook. The scaffold needs to have anchor points for eventually attaching the other end of the lanyard.

7.2 The suspended powered scaffold shall be equipped with Overload Protection system and overload indicator.

8.0 ROPES

8.1 Suspended powered scaffolds shall be suspended by wire ropes. The minimum grade of the wire rope shall be of improved plough steel. (galvanized)

8.2 The suspension wire rope shall be covered with insulating material at least 1.2 Mtr above the hoist to prevent possibility of the welding current arcing through the suspension wire rope during the course of welding, scarfing, etc.

8.3 Reverse bends in rope arrangement shall be avoided.

8.4 The minimum factor of safety of the wire rope shall be 6. Each wire rope used for scaffold suspension shall be capable of supporting at least six times the rated capacity of the hoist.

8.5 Fastening:

8.5.1 Babbitted and zinc sockets for wire ropes are prohibited.

8.5.2 Swagged attachments or spliced eyes are acceptable for fastening of wires.

8.5.3 Wire rope clips with twin base type shall be used and shall be installed as per the wire rope clip manufacture's recommendation.

8.5.4 All fasteners shall have anti-corrosion protection and develop at least 80% of the wire rope rated breaking strength.

8.6 Ropes in Traction Drum /sheave Type

8.6.1 On traction drum /sheave applications, provisions shall be made to prevent the machine from running off the wire rope.

8.6.2 The wire rope shall be of such length that the operator can lower to the lowest point of travel with out end of the wire rope passing through the traction drum/sheave hoist.

8.7 Winding Drum Type (If applicable)

8.7.1 Winding drums shall have at least four turns of rope remaining when the platform has landed at the lowest possible point of its travel.

9.0 MULT POINT SUSPENDED POWERED PLATFORM

9.1 The scaffold shall be suspended by more than two (2) independent wire ropes.

9.2 The scaffold shall be provided with hoisting machines complying with clause 6.0

9.3 The stages shall be supported by galvanized steel stirrups.

9.4 Hoisting machine wire ropes shall conform to clause 8.0

9.5 Guard rails, mid rails and toe boards shall conform to clause 5.0

9.6 Anti-tilt device shall be included.

9.7 Both hoisting machines shall be operated from the center of platform in a centralized fashion.

10.0 INSPECTION

10.1 All test certificates shall be furnished for buyer's reference and records.

10.2 All suspended power scaffold installations shall, on their completion and before being placed in service, be subjected to inspection by BHEL inspector or BHEL nominated inspection authority during manufacture/testing stages, to determine

that the assembly conforms to applicable requirements. Hoist machines shall be inspected and tested in accordance with the manufacturer's recommendation.

10.3 Scaffolds (platform) & hoist machine shall be inspected and tested as per approved quality plan. The certificates and documents generated during inspection of above shall be furnished.

11.0 SPECIAL NOTES SUPPLEMENTED TO TECHNICAL SPECIFICATION

11.1 Supplier shall quote for recommended spares for three years trouble free operation separately.

11.2 Supplier shall furnish motor specification.

11.3 Sufficient number of packages of portable sizes to carry the components in fields shall be offered.

11.4 The size and locations of cable opening will be furnished for individual project by BHEL. Offer shall include the cable support details envisaged by supplier.

11.5 The procedure and support details of the false platform to be laid down before the assembly of suspended powered scaffolds shall be included in the offer with sketches.

11.6 The maximum temperature to which the rope shall be exposed for longer duration shall be specified.

11.7 Necessary provision shall be provided to keep the suspension ropes separate without twist.

11.8 Cable weights shall be provided suitably for secondary wire ropes.

12.0 GUARANTEE

12.1 The offered system shall be guaranteed for 18 months from the date on which the equipment / system is put into use (by the end user) or 24 months from the date of supply whichever is earlier against defective design, defective material usage, defective workmanship, defective packaging and forwarding.

13.0 DOCUMENTS TO BE SUBMITTED BY VENDOR

13.1 DOCUMENTS TO BE SUBMITTED ALONG WITH THE OFFER:

13.1.1 Product literature and drawings in support of the offer shall be submitted with the quotation to evaluate the offer.

13.1.2 Weight of individual major components as per the scope of supply shall be indicated in the drawing as bill of material (BOM).

13.1.3 The quality plan for the product under supply shall be furnished along with the offer.

13.1.4 General arrangement drawing with plan, elevation, and end view along with major dimensions and weight particulars.

13.1.5 Electric wiring diagram / circuit diagram as per clause 6.9 of this specification.

13.1.6 Filled in sheet-A of this Specification indicating the standards followed.

13.1.7 List of Initial spares (if any) to be supplied along with SAE.

13.1.8 Design calculations

13.1.8.1 Vendor to provide calculations to justify the following:

a) Minimum load capacity of each offered suspended platform.
b) Selection of Rated Load for each offered suspended platform.
c) No. of person loading.
d) Suspended platform structural calculation
e) Calculation of suspension lugs.

13.2 DOCUMENTS TO BE FURNISHED AFTER AWARD OF CONTRACT

13.2.1 Packaging procedure detailing the list of components shall be dispatched individually with identification and with preservation and storage.

13.2.2 SAE - Data sheet including drawings and design information shall be submitted to get approval from End user/owner of the boiler.

13.2.3 SAE – CERTIFICATES

13.2.3.1 Test certificates shall be furnished before dispatch of components.

13.2.3.2 A certificate for the components' safety from Safety Steward of the country of make shall be provided.

13.2.3.3 Test certificate for the following shall be furnished.

a) Material test certificate for all the major components.
b) Shop test certificates for safety devices.
c) Performance TC for the intended duty conditions.
d) Quality Control/Inspection documents generated during the stages of inspection, performance inspection, and final inspection.

13.2.3.4 Guarantee certificate shall be furnished by the vendor.

13.2.4 Operation & Maintenance (O & M) Manual

13.2.4.1 No of copies of manual:3Sets + 3 CD ROMS / USB drives.

13.2.4.2 The size of manuals should be in correct A4 size with drawings in A3 size. Large size drawings (greater than A3 size) shall be reduced to A3 size and inserted.

13.2.4.3 Drawings shall be of printed or laser prints only.

13.2.4.4 Spiral of comb bound copies should be totally avoided.

13.2.4.5 If manuals are supplied in folders, the folder should have 3 hole punching system.

13.2.4.6 O & M manuals, should be submitted to BHEL/Tiruchirappalli prior to dispatch of the equipment.

13.2.4.7 Manual, generally should contain the following:

a) Data sheet
b) Brief description
c) Operation

d) Maintenance (including lubrication, where necessary) & service, recommended spares for 2/3 years trouble free service.
e) Bill of Materials
f) Assembly drawings with part list, dimensional drawings and other applicable drawings.
g) Manual should pertain only to the type or model supplied for this contract.
h) Drawings and catalogues
i) Sequence of erection and dismantling
j) Erection instruction
k) List of tools and tackles
l) Critical checks and permissible deviations/tolerances
m) Procedure/checklist for commissioning the system
n) Procedure for initial checking after erection
o) Trouble Shooting

14.0 GENERAL:

14.1 The language used shall be "English only" in offer, O & M manual, Labels, Drawings etc.

14.2 For equipment and other special requirements refer Annexure-I to this specification.

15.0 SHEET-A: STANDARD / CODE CHECKLIST

DESCRIPTION	CODE FOLLOWED (Vendor to fill and submit)
PLATFORM OF SUSPENDED SCAFFOLD	
RATED LOAD OF SUSPENDED PLATFORM	
HOISTING MACHINES	
POWER SYSTEM FOR HOISTS	
CONTROL SYSTEM FOR HOISTS	
SAFETY AND CONTROL OF SUSPENDED PLATFORM	
WIRING AND EQUIPMENT	
SUSPENSION ROPES	

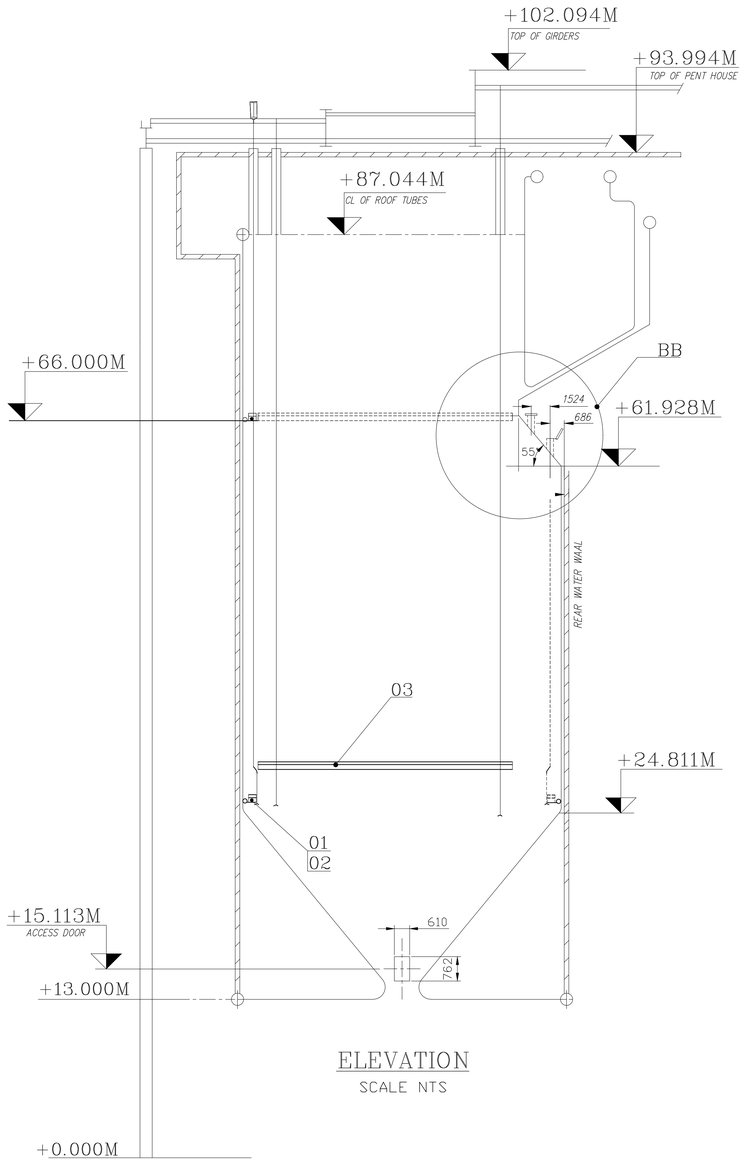
PROJECT : 2 X 800 MW ULTRA SUPER CRITCAL THERMAL POWER PROJECT
Mirzapur
CUSTOMER NO. : 1846-47
REFERENCE DRAWING N : 0-99-514-40407

1.0 Supplier to supply Furnace maintenance platforms as per specification no. **MHS-HEQ/071 Rev. 05**
2.0 Top of ceiling girder elevation : 102.094 M.
3.0 Access door elevation : 15.113 M.
4.0 SCOPE OF SUPPLY
4.1.0 PLATFORMS
4.1.1 Platform with 45° LH chamfer at one end and other with flat end for a length of 9.000M. - 2 Nos.
4.1.2 Platform with 45° RH chamfer at one end and other with flat end for a length of 9.000M. - 2 Nos.
4.1.3 Platform with both sides flat with length of 16.000M. - 2 Nos.
4.1.3 Platform wall roller assy & bracket complete with connecting fasteners. The rollers shall be designed suitably to move on the spiral water walls.
4.1.4 Complete guard rails with connecting fasteners.
4.1.5 Connecting block and tubes with connecting fasteners.
4.1.6 Lugs/Fixing assembly required for suspending the SAE to ceiling girder & goose neck area.
4.1.7 Each module shall be capable of mounting STIRRUP arrangements such that any module can be used for traversing between any two cable openings.
4.2.0 STIRRUPS
4.2.1 Suitable Hot galvanised stirrups & stirrup retainer complete with fasteners.
4.3.0 HOIST (ROPE CLIMBING MACHINE)
4.3.1 Hoist for safe working load of minimum 800 Kgs.
4.3.2 Electrically operated rope climbing machine with top limit switch.
4.3.3 Common single power control for both hoists.
4.4.0 SAFETY DEVICES
4.4.1 Safety braking system
4.4.2 Anti tilting device
4.4.3 Mercury level switches
4.4.4 Over speed safety device
4.4.5 Top limit switches
4.4.6 Overload/Under load safety device assembly
4.5.0 WIRE ROPE
4.5.1 Suitable length and quantity of steel wire rope with suitable size and construction of 6 X 36 for electrically operated hoist. Supplier to specify the size of the rope offered. Minimum length of wire rope shall be 100 M.
4.5.2 Secondary wire rope with cable weight.
4.5.3 Rope shall be of galvanised steel wire.

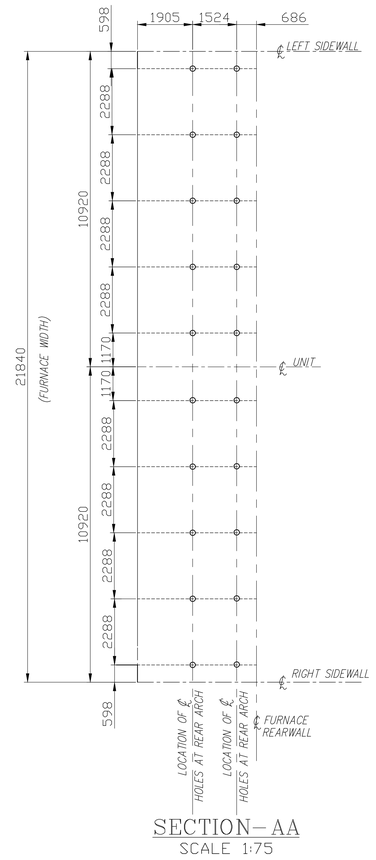
4.5.4 Rope shall have tensile strength of 240 Kg/Sq.mm. minimum.
4.5.5 Rope end fittings,'D'shakles, thimbles, rope clamps and other required items.
4.6.0 POWER SUPPLY
4.6.1 Power supply cable shall be provided for 3 Phase; 415V AC; 50 Hz.
4.6.2 Power supply cable shall be provided for suitable length as per BHEL arrangement drawing 0-99-514-40407
4.6.3 Power supply cable rating shall be furnished by vendor.
4.6.4 Power supply cable shall be provided with plug and cable retainer.
4.7.0 CONTROL SYSTEM
4.7.1 Centralised control box shall be provided for easy operation.
4.7.2 The hoisting machines shall be synchronised and control shall be centralized with safety switch
5.0 Vendor shall furnish other mechanical, electrical and control accessories required for safety, easy maintenance and easy operation.
5.0 DOCUMENTS NEEDED
5.1 Refer clause no 18.0 of specification.
5.2 O & M MANUALS
5.2.1 Operation and Maintenance manuals both as soft copy (CD) and hard copies (in A4-size) should be submitted to BHEL/Tiruchirappalli prior to despatch of the equipment.
5.3.0 Operation and maintenance manual should contain the following
5.3.1 Data sheet for the equipment & its bought out items.
5.3.2 Brief description of equipment under supply.
5.3.3 Operation, and Trouble shooting
5.3.4 Maintenance and service instructions including lubrication schedule wherever required.
5.3.5 Recommended spare parts for 3 years for trouble free operation.
5.3.6 Assembly drawing with parts list.
5.3.7 The manual shall pertain to the model or type supplied for the particular contract.
7.0 All the points in specification & annexure - I to the specification should be strictly adhered to.
8.0 Offers without the required documents along with the offer shall not be considered.

DRAWING NO 0-99-514-40407

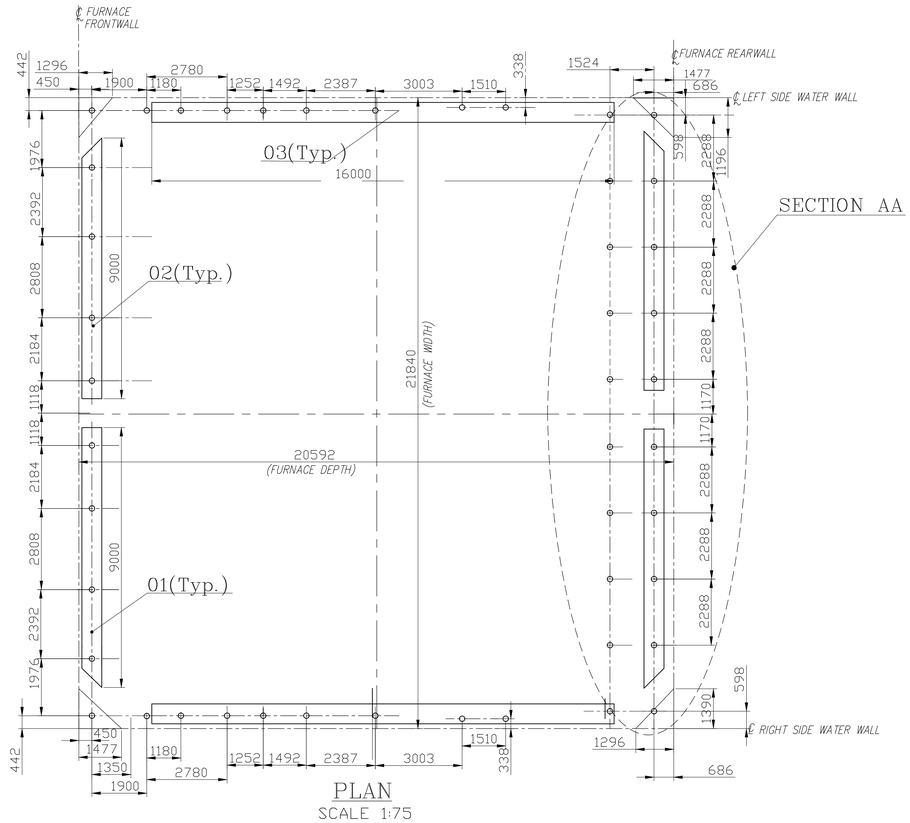
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



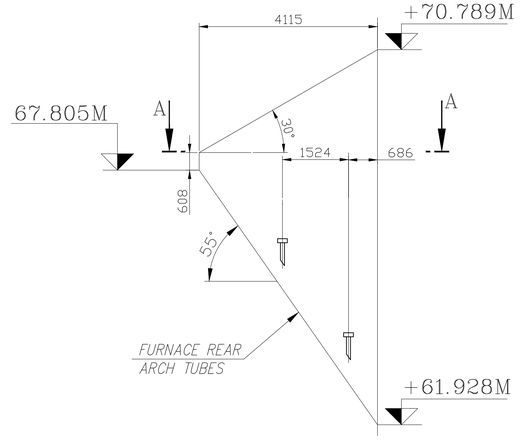
ELEVATION
SCALE NTS



SECTION–AA
SCALE 1:75



PLAN
SCALE 1:75



DETAIL BB
SIDE ELEVATION
DEFLECTION ARCH
SCALE 1:100

	03	PLATFORM WITH BOTH ENDS FLAT. LENGTH- 16.000 M.					KG	900.000	
						SUB-DELY	L	2	
	02	PLATFORM WITH 45 DEG. CHAMFER AT LEFT SIDE. LENGTH- 9.000 M.					KG	600.000	
						SUB-DELY	L	2	
	01	PLATFORM WITH 45 DEG. CHAMFER AT RIGHT SIDE. LENGTH- 9.000 M.					KG	600.000	
						SUB-DELY	L	2	
DRAWING NUMBER / ITEM NUMBER		DESCRIPTION	STD	DRAWING NUMBER	ITEM NO / VAR NO	MATERIAL CODE / MATERIAL SPECN	A/C.P. / DI	UNIT / QUANTITY	UNIT WEIGHT / ZONE

NOTES: –

1. *REFERENCE DRAWINGS :*
   - *A. 0–00–022–78075 –GENERAL ARRANGEMENT OF BOILER SECTIONAL SIDE ELEVATION.*
   - *B. 0–00–027–35751 –PPA – SECTIONAL SIDE ELEVATION BACKPASS.*
   - *C. 0–00–027–35752 –PPA – SECTIONAL SIDE ELEVATION LOWER FURNACE.*
   - *D. 0–00–027–35750 –PPA – SECTIONAL SIDE ELEVATION UPPER FURNACE.*
2. *CABLE OPENING WITH CAPS AND OTHER ACCESSORIES RELEASED UNDER PG–MA 18 – 001.*
3. *ALL THE ELEVATIONS ARE WITH RESPECT TO EL(+) 0.00M,FINISHED GROUND FLOOR LEVEL OF TG BUILDING, WHICH CORRERSPONDS TO RL.(+) 175.30 M. FINISHED GROUND FLOOR LEVEL (PAVING LEVEL) OF THE BOILER AND ESP AREAS ARE AT (–) 0.150 M, WHICH CORRESPONDS TO RL.(+) 175.15 M. FINISHED GROUND FLOOR LEVEL (PAVING LEVEL) OF MILL BAY AT (+) 0.00 M, WHICH CORRESPONDS TO RL.(+) 175.30 M.*

SCOPE OF EQUIPMENT.

HOIST, TOP LIMIT SWITCH WITH COMMON CONTROL – ELECTRICALALLY OPERATED.

SUSPENSION SYSTEM – Suitable steel wire rope with suitable length, upto Access Door (Min.100 metres), Secondary wire rope with suitable length (Min.100 metres). Rope clamp,end fittings, "D" shackle and thimbles. Fixing arrangement in furnace roof and goose neck area.

PLATFORMS – Split–type platforms – suitable for 610mmx762mm access door with guardrails, suitable stirrups with retainers. Connection blocks & tubes with fasteners. Wall roller assembly with mounting bracket & fasteners.

POWER SUPPLY – All electrical items required for safe operation including rated SFU. Power supply cables

SAFETY DEVICES – All safety devices. [A sensing device (Sky lock safety device) that locks the wire as soon as it accelerates beyond a preset speed either gradual or instantaneous shall be provided.] Hoist capacity : 800 kg. Each platform is driven by two hoists in tandem operation There are 12 hoists for the six platforms common for one boiler.

REV.	DATE	ALTD	CHD	APPD

CUST NO: 1846,1847

BTG & AUXILIARIES

OWNER
MIRZAPUR THERMAL ENERGY (U.P) PVT. LTD.

OWNER'S ENGINEER
CONSULTING ENGINEERS LIMITED
MUMBAI

CONTRACTOR
BHARAT HEAVY ELECTRICALS LTD
HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI–620014

PROJECT
2X800MW ULTRA SUPERCRITICAL THERMAL POWER PROJECT
MIRZAPUR, UP

DRAWING TITLE
FURNACE MAINTENANCE PLATFORM 4 WC–ELECTRICALLY OPERATED

DRAWN : ABHISHEK SINGH	CHECKED : SAURABH KR SINGH
SCALE NIL	
REVIEWED : MANDADI VENKETESWARLU	DATE 14.12.2024
APPROVED : SRINIVASU ARUGULA	JOB NO.1846–1847

OWNER'S DRG. NO.: 5981–E–BTG–BOA–DM–G–V–0043

CONTRACTOR DRG. NO.: 0–99–514–40407 REV.00

Technical Pre-Qualification Requirement for

Furnace Maintenance Platform

1. The vendor shall be an established Furnace Maintenance Platform/ Furnace cradle of electric/ Pneumatic operation (henceforth referred as FMP) manufacturer having adequate Design, Engineering, Manufacturing, inspection and testing facilities and shall furnish technical backup documents for the proof of above requirements.

2. The FMP offered shall be of sizes as per enquiry with a minimum hoist capacity of 800 Kg and from the existing regular manufacturing range of the supplier. Vendor shall provide the manufacturing catalogue or general reference list for the offered FMP along with offer.

3. The supplier shall have experience of having supplied FMP and its accessories for dusty, corrosive & highly polluted atmospheric conditions or for the application of similar severity as specified in the enquiry. Supplier shall submit documents in proof of the same.

4. Proven track record is required. Minimum one end user certificate for the satisfactory operational performance of their supplied FMP with accessories as per enquiry in similar ambient conditions is required as a proof.

   (or)

   successfully executed two POs for same item meeting minimum requirements specified in enquiry specification. Purchase orders should not be more than ten (10) years old as on date of bid submission, for establishing continuity in business. Vendor to submit the corresponding datasheets / drawings / technical documents of supplied item as per POs / end user certificate.

5. In case of ordering, the vendor shall have the responsibility for the following and same to be confirmed point wise.
   i) Vendor should have the component replacement responsibility in case of defect / failure.
   ii) Vendor shall have capability to provide assistance in commissioning activities, if required.
   iii) Vendor should ensure the product performance during erection & commissioning.

6. Backup document checklist to meet PQR to the fullest satisfaction of BHEL. All documents shall be in English, if the original document is in other language, same shall be translated in English.

S. No	Document description	Check list
1	Documents to meet Clause(1)	☐
2	Product Catalogues to meet clause(2)	☐
3	Supply reference document to meet clause (3) (PO /Inspection Reports/supply reference list)	☐
4	Min. one end user certificate (or) Two POs to meet clause (4)	☐
5	Confirmation to clause (5)	☐

Package -6

RAIGARH PROJECT

FURNACE PLATFORM

BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI-620 014

Fuel Systems/PE(FB)

Title Sheet

General Specification for

ELECTRICALLY OPERATED
SUSPENDED SCAFFOLDING SYSTEM

Specification No.: MHS-HEQ/071 ***Revision No. : 05***

Rev. No.	Rev. Date	Clause	Description	Chd. & Appd.
05	16/08/18	-various-	Revisit & update of specification.	NF/GSK
04	10/12/07	2.6	Special tools included in the scope of supply	DVK
03	11/10/07	1.1 2.2 13.5.1	Scope clarity specified Access opening size referred in Annexure-I O&M- No. of copies was 25	SSR
02	26/09/07	2.6	Special tools included in the scope of supply	DVK
01	26/11/97	4.1 7.3 11.4 13.5.0 14.0, 15.0	Platforms Factor of safety Cable opening Operation & Maintenance manual Included	TKP
00	03/03/97		First issue	

	Name	Signature	Date
Prepared	T.K.Prabu	Sd.,	03/03/97
Checked	T.K.Prabu	Sd.,	03/03/97
Approved	A.Rajamohan	Sd.,	03/03/97

CONTENTS

1.0 SCOPE:

This specification covers design, manufacture, inspection, testing and supply of electrically operated suspended scaffolding system. The specification is for ensuring a safe and trouble free operation of Powered suspended scaffolding system used during shutdowns and overhauls, for inspection and maintenance of furnace internals of steam generator.

This is a general specification dealing with the technical Requirements of Suspended Scaffolding System. The specific Contract requirements and special requirements, if any, are specified in the enclosed annexures-1. If the scope of the Specification differs from Annexure-1, the scope of supply exclusively dealt in the contract specific requirement of Annexure-1 will be binding.

2.0 SPECIAL REQUIREMENTS OF THE SYSTEM

2.1 The suspended power scaffolding system shall consist of independently suspended platforms for the front / rear walls and sidewalls of boiler furnace as specified.

2.2 The scaffold platforms shall be modular and interchangeable construction made out of light weight material, easy for assembly inside the furnace, possible for taking inside the furnace, through an access door whose **overall opening size is furnished in the Annexure-I.** The platforms shall be easily assembled inside the furnace.

2.3 The suspension wire ropes will be introduced into the furnace through the furnace cable openings provided at the top of boiler and will be fastened to roof girders of boiler.

2.4 The suspension wire rope shall be capable to withstand temperature up to **250 Deg. C** which would be prevailing for longer duration after boiler shutdown.

2.5 The suspended platforms shall be operated by electric motor and climbing hoists.

2.6 The controls, safety devices, safety locks with necessary power supply cable, cable weight steel wire rope, secondary steel wire rope and special tools required for suspended platforms shall form part of the offer.

2.7 Vendor to provide suspension lugs (suitable to be welded at site) and other related items required for suspending the scaffolding at site. The lugs shall be capable of supporting four times the reaction forces imposed by the rated load on the scaffolding including scaffold self-weight.

3.0 GENERAL REQUIREMENTS

3.1 All materials, components and equipments used in the design, construction and installation of suspended powered scaffolds shall meet the requirements of its specified application in accordance with good engineering practice.

3.2 Scaffold platforms/ropes & other components of SAE shall be capable of supporting without failure under any scenario of usage.

3.3 The maximum rated speed at which the suspended powered scaffold moved in a vertical direction shall be in the range of 8.0 to 9.0 meters per minute.

3.4 An automatic overload/under load protection device shall be provided to cut power supply to the climbing machine for travel in the up/down direction when the load applied to the climbing machine exceeds 125% of its normal tension with rated load or under load.

3.5 Hoist shall never come down on its own.

3.6 Supplier shall provide suitable arrangement to prevent suspended power scaffolds from swaying. Suspended Scaffold platforms with rollers should always be engaged with water walls of boiler furnace. This should be ensured by providing extended wall rollers if necessary to prevent swaying of the platforms.

4.0 CODES & STANDARDS

4.1 The scaffolding system shall be designed to meet all the safety, design & sizing requirement defined by either of the codes - **EN-1808:2015 or ANSI A10.8-2011.**

4.2 Vendor shall follow either of the standards as mentioned above in total for designing the suspended scaffolding system.

4.3 Vendor should specify which code/standard is followed in their design of the offered system by **filling Sheet-A** of this specification.

5.0 PLATFORM OF SUSPENDED SCAFFOLD

5.1 The platform width shall not be less than 510 mm.

5.2 Platforms shall be provided with guard rails, mid rails and toe boards installed on all open sides and ends. The clear vertical distance between toe board, mid rails or guard rails shall be less that 500mm. The height of the guard rails shall be not less than 1000mm and not be more than 1100mm. All rails and posts shall be suitable for easy assembly & disassembly. Hoisting machines when located at not more than 450mm from ends of platforms hoist supporting stirrups, shall be considered as end guard rails. Else separate end guard rails shall be provided.

5.3 Toe boards shall extend to a minimum of **150mm** above the working surface.

5.4 Each platform shall bear a manufacturer's load rating plate stating the maximum rated load and stating the load rating when arranged in small modules. Load rating plates shall be made of non-corrosive material and shall

have letters and figures that are legible.

5.5 Suspended Platforms shall be designed to carry the rated load. Considering **800 Kg per hoist** capacity, vendor to indicate the rated load of platforms in their drawings and technical data sheet for our review. This shall be never be less than 3 persons loading requirement. Per person loading = 120Kg.

5.6 The minimum load capacity of deck of platform shall be 200 Kg/m^2 at worst case loading zone.

5.7 Fabricated platforms and scaffold decks shall be designed to support, in addition to their own weight, at least four times the maximum intended load.

6.0 HOISTING MACHINES

6.1 Each electrically operated hoist of minimum safe working load of 800 Kgs, shall be complying with applicable international codes. Each motor shall bear a name plate, indicating the operating voltage, current rating and power rating.

6.2 All gearing shall conform to the applicable standards with a service factor of not less than 1.0.

6.3 The hoist - Electrically operated rope climbing machine shall be supplied with top limit switch. There shall be common single power control for both hoists.

6.4 Lubrication where needed shall be provided to assure that all moving parts of hoists are lubricated at all times.

6.5 Speed Reducers

6.5.1 Each hoisting equipment shall be equipped with speed reducers or an equivalent to obtain mechanical advantage. Such speed reducers or other device shall contain positive type gearing such as worm gears, spur gears or bevel gears.

6.5.2 The speed reducer or other devices shall be directly connected to the traction sheave /drum of the hoisting equipment.

6.6 Primary Brakes

6.6.1 Each electrically operated hoisting equipment shall be provided with a primary brake that automatically engages whenever power supply is interrupted.

6.6.2 The primary brake shall be rated to stop and hold 125% of its rated load of hoisting equipment.

6.6.3 Each primary brake shall be directly connected to the drive of the hoisting machine.

6.7 Fall arrest device

6.7.1 Each hoisting equipment shall be provided with an automatic emergency type fall arrest device that will stop and hold at least 125% of the rated load of the hoisting machine. If such a fall arrest device is of instantaneous stopping type, then it should stop and hold its total load before the hoist travels a vertical distance of 450mm maximum.

6.7.2 The fall arrest safety device shall act directly on a **secondary safety wire rope** in case of failure of the hoist or the suspensions rope. The traction hoist works on the primary suspension rope. The actuating mechanism of the fall arrest device shall be separate from the primary brake.

6.7.3 The fall arrest safety device shall not be used to stop and hold the hoist except under emergency situations. In normal operation, such a device shall not engage before the hoist is stopped by primary brake.

6.7.4 The design, installation and maintenance of every fall arrest safety device shall be such that the device is prevented from being made defective or in-operative by outside contamination.

6.8 Hoisting Drum / Sheaves

All hoisting drums/sheaves shall be of proven design through tests to have no deleterious or serious effect on the suspension wire rope.

6.8.1 Traction Drum / sheaves

6.8.1.1 The traction drum/sheaves shall be designed in a manner to maintain correct wire rope reeving at all times to prevent scrubbing and cross overs. They shall have a means of applying pressure on the hoist rope against the drum/sheave to ensure constant tractive force to develop the rating of the hoist.

6.8.1.2 The diameter of any traction drum/sheave shall not be less than 20 times the diameter of the wire rope used. If lesser diameter be used, tests shall be performed by the wire rope manufacturer or a qualified testing laboratory to determine that no deleterious effect is caused on hoist wire for the usage intended.

6.8.2 Winding Drum (If Applicable)

Each winding drum hoist shall be provided with a positive means of attachment of the suspension rope. Such attachment should develop a minimum of 80% of the rated breaking strength of the suspension rope.

6.8.2.1 Single Wrap Winding Drum

a) Every single wrap winding drum hoisting machine shall be provided with a means of level winding of the suspension rope.

b) Every single wrap winding drum shall be so designed that the drum will contain a minimum of four wire ropes of the suspension rope at all times.

c) The minimum diameter of every single wrap winding drum shall not be less than 25 times of the diameter of the suspension rope used.

6.8.2.2 Multiple wrap Winding Drum

a) Every multiple wrap winding drum hoisting machine shall be provided with a means for level winding of the suspension rope.

b) Every multiple wrap winding drum shall contain not less than four wraps of suspension rope at all times.

c) The minimum diameter of every multiple wrap winding drum shall not be less than 10 times the diameter of the suspension rope used.

6.9 **Electrical Wiring And Equipment**

6.9.1 The electrical wiring and controls shall comply with governing codes, ordinances and regulation such as Low Voltage Directive 5006/95/EC, NFPA, NEC, National Electrical Manufacturers Association Regulations etc.

6.9.2 The power supply shall be 415 VOLTS, AC three phase 50Hz.

6.9.3 The power supply cable to any hoisting machine shall contain a separate conductor which will serve as a ground connection for the hoist.

6.9.4 Strain relief devices shall be provided for cables supplying power to hoisting machines. Such devices shall be located at the suitable places where the cables are plugged in at the cable connections on the hoists.

6.10 **Hoisting Machine Controls**

6.10.1 Hoisting machines shall have common control for each platform. If the control is of push button type, it shall be of the constant pressure. If it is fixed position type, it must have the provision for automatic locking when in the "OFF" position, or by means of guards against accidental actuation. The lever type control can be of the constant pressure type or of the fixed position type.

6.10.2 All hoist shall have a manually operated system that allows controlled descent of the scaffold in case of power failure. This **no-power decent** system shall be such that the controlled speed is lower than the tripping speed of the fall arrest device.

6.10.3 For a multi-point suspension, all the hoisting machines shall be synchronised and control shall be centralized with safety switch.

6.10.4 An **Anti-tilt device** shall be provided for the suspended platform with multi point suspensions.

7.0 SAFETY BELTS AND ANCHOR POINTS

7.1 Each workman on a suspended powered scaffold shall be provided with an approved safety belt with a lanyard of not more than 1.5 meters in length. The lanyard shall be attached to the safety belt with a self-closing safety hook. The scaffold needs to have anchor points for eventually attaching the other end of the lanyard.

7.2 The suspended powered scaffold shall be equipped with Overload Protection system and overload indicator.

8.0 ROPES

8.1 Suspended powered scaffolds shall be suspended by wire ropes. The minimum grade of the wire rope shall be of improved plough steel. (galvanized)

8.2 The suspension wire rope shall be covered with insulating material at least 1.2 Mtr above the hoist to prevent possibility of the welding current arcing through the suspension wire rope during the course of welding, scarfing, etc.

8.3 Reverse bends in rope arrangement shall be avoided.

8.4 The minimum factor of safety of the wire rope shall be 6. Each wire rope used for scaffold suspension shall be capable of supporting at least six times the rated capacity of the hoist.

8.5 Fastening:

8.5.1 Babbitted and zinc sockets for wire ropes are prohibited.

8.5.2 Swagged attachments or spliced eyes are acceptable for fastening of wires.

8.5.3 Wire rope clips with twin base type shall be used and shall be installed as per the wire rope clip manufacture's recommendation.

8.5.4 All fasteners shall have anti-corrosion protection and develop at least 80% of the wire rope rated breaking strength.

8.6 Ropes in Traction Drum /sheave Type

8.6.1 On traction drum /sheave applications, provisions shall be made to prevent the machine from running off the wire rope.

8.6.2 The wire rope shall be of such length that the operator can lower to the lowest point of travel with out end of the wire rope passing through the traction drum/sheave hoist.

8.7 Winding Drum Type (If applicable)

8.7.1 Winding drums shall have at least four turns of rope remaining when the platform has landed at the lowest possible point of its travel.

9.0 MULT POINT SUSPENDED POWERED PLATFORM

9.1 The scaffold shall be suspended by more than two (2) independent wire ropes.

9.2 The scaffold shall be provided with hoisting machines complying with clause 6.0

9.3 The stages shall be supported by galvanized steel stirrups.

9.4 Hoisting machine wire ropes shall conform to clause 8.0

9.5 Guard rails, mid rails and toe boards shall conform to clause 5.0

9.6 Anti-tilt device shall be included.

9.7 Both hoisting machines shall be operated from the center of platform in a centralized fashion.

10.0 INSPECTION

10.1 All test certificates shall be furnished for buyer's reference and records.

10.2 All suspended power scaffold installations shall, on their completion and before being placed in service, be subjected to inspection by BHEL inspector or BHEL nominated inspection authority during manufacture/testing stages, to determine

that the assembly conforms to applicable requirements. Hoist machines shall be inspected and tested in accordance with the manufacturer's recommendation.

10.3 Scaffolds (platform) & hoist machine shall be inspected and tested as per approved quality plan. The certificates and documents generated during inspection of above shall be furnished.

11.0 SPECIAL NOTES SUPPLEMENTED TO TECHNICAL SPECIFICATION

11.1 Supplier shall quote for recommended spares for three years trouble free operation separately.

11.2 Supplier shall furnish motor specification.

11.3 Sufficient number of packages of portable sizes to carry the components in fields shall be offered.

11.4 The size and locations of cable opening will be furnished for individual project by BHEL. Offer shall include the cable support details envisaged by supplier.

11.5 The procedure and support details of the false platform to be laid down before the assembly of suspended powered scaffolds shall be included in the offer with sketches.

11.6 The maximum temperature to which the rope shall be exposed for longer duration shall be specified.

11.7 Necessary provision shall be provided to keep the suspension ropes separate without twist.

11.8 Cable weights shall be provided suitably for secondary wire ropes.

12.0 GUARANTEE

12.1 The offered system shall be guaranteed for 18 months from the date on which the equipment / system is put into use (by the end user) or 24 months from the date of supply whichever is earlier against defective design, defective material usage, defective workmanship, defective packaging and forwarding.

13.0 DOCUMENTS TO BE SUBMITTED BY VENDOR

13.1 DOCUMENTS TO BE SUBMITTED ALONG WITH THE OFFER:

13.1.1 Product literature and drawings in support of the offer shall be submitted with the quotation to evaluate the offer.

13.1.2 Weight of individual major components as per the scope of supply shall be indicated in the drawing as bill of material (BOM).

13.1.3 The quality plan for the product under supply shall be furnished along with the offer.

13.1.4 General arrangement drawing with plan, elevation, and end view along with major dimensions and weight particulars.

13.1.5 Electric wiring diagram / circuit diagram as per clause 6.9 of this specification.

13.1.6 Filled in sheet-A of this Specification indicating the standards followed.

13.1.7 List of Initial spares (if any) to be supplied along with SAE.

13.1.8 Design calculations

13.1.8.1 Vendor to provide calculations to justify the following:

a) Minimum load capacity of each offered suspended platform.
b) Selection of Rated Load for each offered suspended platform.
c) No. of person loading.
d) Suspended platform structural calculation
e) Calculation of suspension lugs.

13.2 DOCUMENTS TO BE FURNISHED AFTER AWARD OF CONTRACT

13.2.1 Packaging procedure detailing the list of components shall be dispatched individually with identification and with preservation and storage.

13.2.2 SAE - Data sheet including drawings and design information shall be submitted to get approval from End user/owner of the boiler.

13.2.3 SAE – CERTIFICATES

13.2.3.1 Test certificates shall be furnished before dispatch of components.

13.2.3.2 A certificate for the components' safety from Safety Steward of the country of make shall be provided.

13.2.3.3 Test certificate for the following shall be furnished.

a) Material test certificate for all the major components.
b) Shop test certificates for safety devices.
c) Performance TC for the intended duty conditions.
d) Quality Control/Inspection documents generated during the stages of inspection, performance inspection, and final inspection.

13.2.3.4 Guarantee certificate shall be furnished by the vendor.

13.2.4 Operation & Maintenance (O & M) Manual

13.2.4.1 No of copies of manual:3Sets + 3 CD ROMS / USB drives.

13.2.4.2 The size of manuals should be in correct A4 size with drawings in A3 size. Large size drawings (greater than A3 size) shall be reduced to A3 size and inserted.

13.2.4.3 Drawings shall be of printed or laser prints only.

13.2.4.4 Spiral of comb bound copies should be totally avoided.

13.2.4.5 If manuals are supplied in folders, the folder should have 3 hole punching system.

13.2.4.6 O & M manuals, should be submitted to BHEL/Tiruchirappalli prior to dispatch of the equipment.

13.2.4.7 Manual, generally should contain the following:

a) Data sheet
b) Brief description
c) Operation

d) Maintenance (including lubrication, where necessary) & service, recommended spares for 2/3 years trouble free service.
e) Bill of Materials
f) Assembly drawings with part list, dimensional drawings and other applicable drawings.
g) Manual should pertain only to the type or model supplied for this contract.
h) Drawings and catalogues
i) Sequence of erection and dismantling
j) Erection instruction
k) List of tools and tackles
l) Critical checks and permissible deviations/tolerances
m) Procedure/checklist for commissioning the system
n) Procedure for initial checking after erection
o) Trouble Shooting

14.0 GENERAL:

14.1 The language used shall be "English only" in offer, O & M manual, Labels, Drawings etc.

14.2 For equipment and other special requirements refer Annexure-I to this specification.

15.0 SHEET-A: STANDARD / CODE CHECKLIST

DESCRIPTION	CODE FOLLOWED (Vendor to fill and submit)
PLATFORM OF SUSPENDED SCAFFOLD	
RATED LOAD OF SUSPENDED PLATFORM	
HOISTING MACHINES	
POWER SYSTEM FOR HOISTS	
CONTROL SYSTEM FOR HOISTS	
SAFETY AND CONTROL OF SUSPENDED PLATFORM	
WIRING AND EQUIPMENT	
SUSPENSION ROPES	

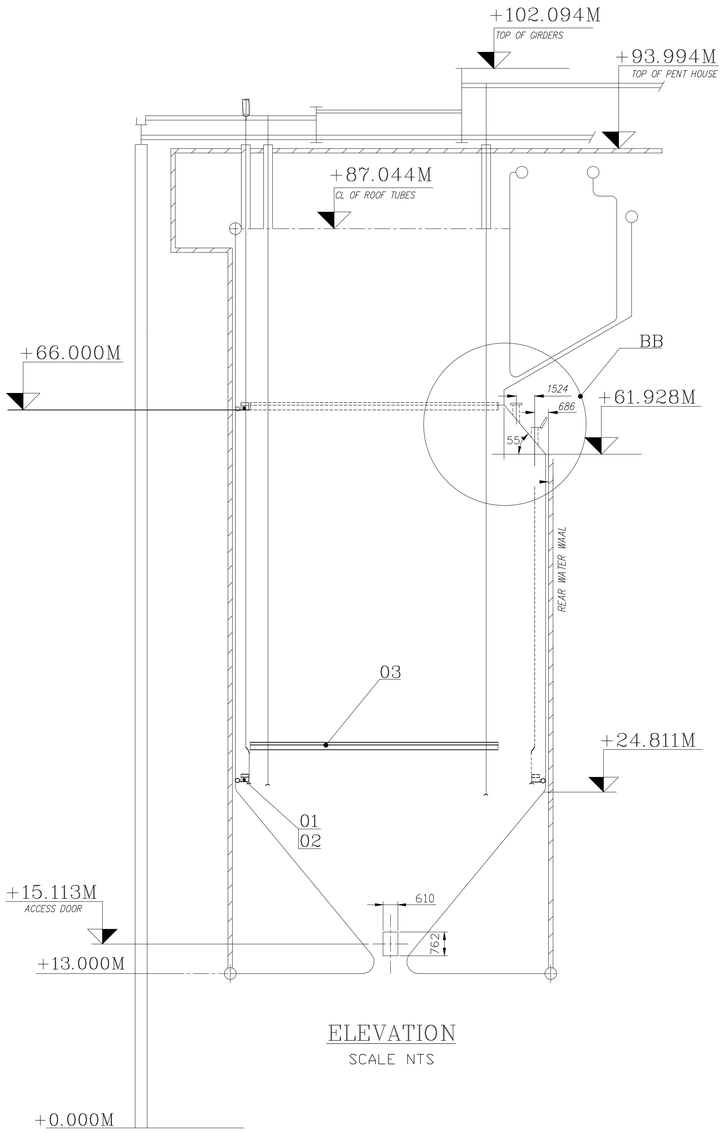
PROJECT : 2 X 800 MW RAIGARH ULTRA SUPER CRITICAL THERMAL POWER PROJECT (PHASE-II)
CUSTOMER NO. : 1842-43
REFERENCE DRAWING N : 0-99-514-40397 Rev 01

1.0 Supplier to supply Furnace maintenance platforms as per specification no. **MHS-HEQ/071 Rev. 05**
2.0 Top of ceiling girder elevation : 102.094 M.
3.0 Access door elevation : 15.113 M.
4.0 SCOPE OF SUPPLY
4.1.0 PLATFORMS
4.1.1 Platform with 45° LH chamfer at one end and other with flat end for a length of 9.000M. - 2 Nos.
4.1.2 Platform with 45° RH chamfer at one end and other with flat end for a length of 9.000M. - 2 Nos.
4.1.3 Platform with both sides flat with length of 16.000M. - 2 Nos.
4.1.3 Platform wall roller assy & bracket complete with connecting fasteners. The rollers shall be designed suitably to move on the spiral water walls.
4.1.4 Complete guard rails with connecting fasteners.
4.1.5 Connecting block and tubes with connecting fasteners.
4.1.6 Lugs/Fixing assembly required for suspending the SAE to ceiling girder & goose neck area.
4.1.7 Each module shall be capable of mounting STIRRUP arrangements such that any module can be used for traversing between any two cable openings.
4.2.0 STIRRUPS
4.2.1 Suitable Hot galvanised stirrups & stirrup retainer complete with fasteners.
4.3.0 HOIST (ROPE CLIMBING MACHINE)
4.3.1 Hoist for safe working load of minimum 800 Kgs.
4.3.2 Electrically operated rope climbing machine with top limit switch.
4.3.3 Common single power control for both hoists.
4.4.0 SAFETY DEVICES
4.4.1 Safety braking system
4.4.2 Anti tilting device
4.4.3 Mercury level switches
4.4.4 Over speed safety device
4.4.5 Top limit switches
4.4.6 Overload/Under load safety device assembly
4.5.0 WIRE ROPE
4.5.1 Suitable length and quantity of steel wire rope with suitable size and construction of 6 X 36 for electrically operated hoist. Supplier to specify the size of the rope offered. Minimum length of wire rope shall be 100 M.
4.5.2 Secondary wire rope with cable weight.
4.5.3 Rope shall be of galvanised steel wire.

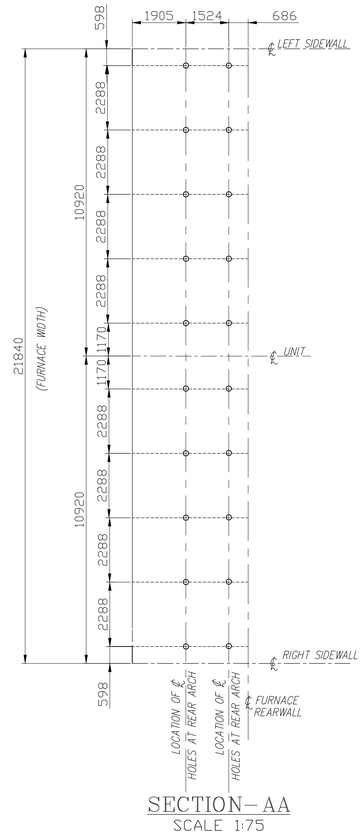
4.5.4 Rope shall have tensile strength of 240 Kg/Sq.mm. minimum.
4.5.5 Rope end fittings,'D'shakles, thimbles, rope clamps and other required items.
4.6.0 POWER SUPPLY
4.6.1 Power supply cable shall be provided for 3 Phase; 415V AC; 50 Hz.
4.6.2 Power supply cable shall be provided for suitable length as per BHEL arrangement drawing (0-99-514-40397).
4.6.3 Power supply cable rating shall be furnished by vendor.
4.6.4 Power supply cable shall be provided with plug and cable retainer.
4.7.0 CONTROL SYSTEM
4.7.1 Centralised control box shall be provided for easy operation.
4.7.2 The hoisting machines shall be synchronised and control shall be centralized with safety switch
5.0 Vendor shall furnish other mechanical, electrical and control accessories required for safety, easy maintenance and easy operation.
5.0 DOCUMENTS NEEDED
5.1 Refer clause no 18.0 of specification.
5.2 O & M MANUALS
5.2.1 Operation and Maintenance manuals both as soft copy (CD) and hard copies (in A4-size) should be submitted to BHEL/Tiruchirappalli prior to despatch of the equipment.
5.3.0 Operation and maintenance manual should contain the following
5.3.1 Data sheet for the equipment & its bought out items.
5.3.2 Brief description of equipment under supply.
5.3.3 Operation, and Trouble shooting
5.3.4 Maintenance and service instructions including lubrication schedule wherever required.
5.3.5 Recommended spare parts for 3 years for trouble free operation.
5.3.6 Assembly drawing with parts list.
5.3.7 The manual shall pertain to the model or type supplied for the particular contract.
7.0 All the points in specification & annexure - I to the specification should be strictly adhered to.
8.0 Offers without the required documents along with the offer shall not be considered.

DRAWING NO. 0-99-514-40397

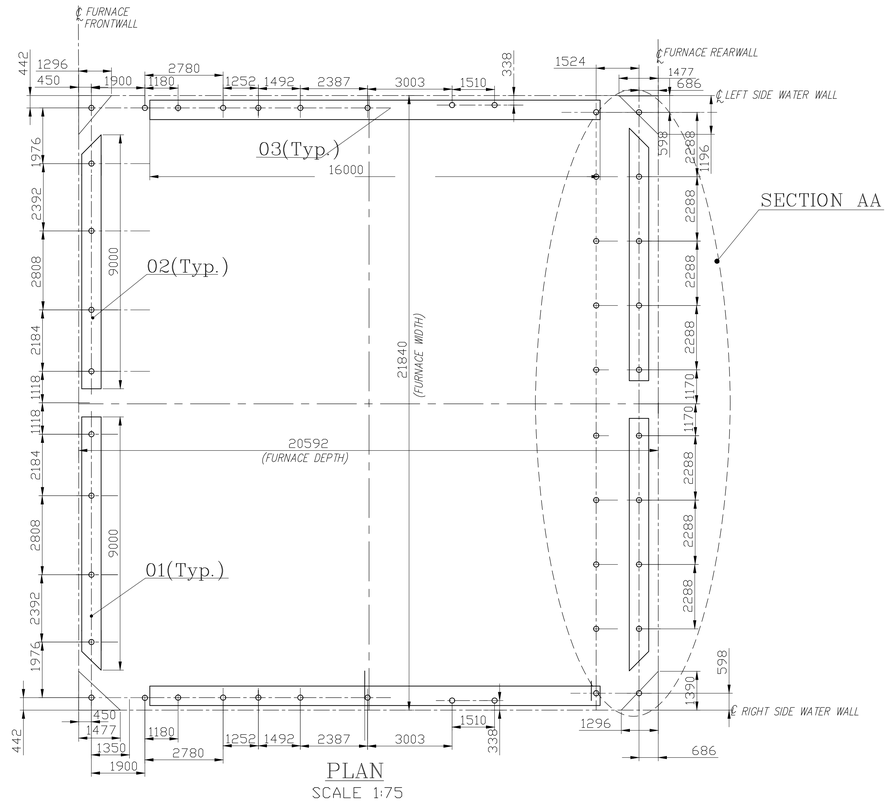
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



ELEVATION
SCALE NTS



SECTION–AA
SCALE 1:75



PLAN
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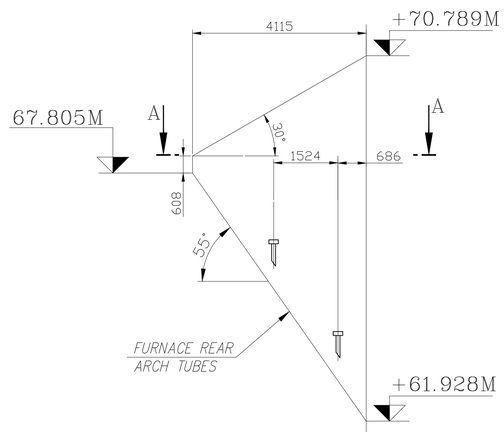


DETAIL BB
SIDE ELEVATION
DEFLECTION ARCH
SCALE 1:100

NOTES: –

1. REFERENCE DRAWINGS :
   - A. 0-00-022-77830 (01) GENERAL ARRANGEMENT OF BOILER SECTIONAL SIDE ELEVATION.
   - B. 0-00-027-35475 (01) PPA – SECTIONAL SIDE ELEVATION BACKPASS.
   - C. 0-00-027-35474 (01) PPA – SECTIONAL SIDE ELEVATION LOWER FURNACE.
   - D. 0-00-027-35473 (01) PPA – SECTIONAL SIDE ELEVATION UPPER FURNACE.
2. CABLE OPENING WITH CAPS AND OTHER ACCESSORIES RELEASED UNDER PG-MA 18 – 001.
3. (01) ALL THE ELEVATIONS ARE WITH RESPECT TO EL(+) 0.00M,FINISHED GROUND FLOOR LEVEL OF TG BUILDING, WHICH CORRERSPONDS TO RL.(+) 229.8 M.
   PAVING LEVEL OF THE BOILER AND ESP AREAS ARE AT (–) 0.150 M,
   WHICH CORRESPONDS TO RL.(+) 229.65 M.
   PAVING LEVEL OF MILL BAY AT (–) 0.00 M,
   WHICH CORRESPONDS TO RL.(+) 229.8M.

SCOPE OF EQUIPMENT.

HOIST, TOP LIMIT SWITCH WITH COMMON CONTROL – ELECTRICALALLY OPERATED.

SUSPENSION SYSTEM – Suitable steel wire rope with suitable length, upto Access Door (Min.100 metres), Secondary wire rope with suitable length (Min.100 metres). Rope clamp,end fittings, "D" shackle and thimbles. Fixing arrangement in furnace roof and goose neck area.

PLATFORMS – Split-type platforms – suitable for 610mmx762mm access door with guardrails, suitable stirrups with retainers. Connection blocks & tubes with fasteners. Wall roller assembly with mounting bracket & fasteners.

POWER SUPPLY – All electrical items required for safe operation including rated SFU. Power supply cables

SAFETY DEVICES – All safety devices. [A sensing device (Sky lock safety device) that locks the wire as soon as it accelerates beyond a preset speed either gradual or instantaneous shall be provided.] Hoist capacity : 800 kg. Each platform is driven by two hoists in tandem operation There are 12 hoists for the six platforms common for one boiler.

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	GS	ZONE
	03	PLATFORM WITH BOTH ENDS FLAT LENGTH: 16.000 M.						KG	900.000		
						SUB-DELY		L	2		
	02	PLATFORM WITH 45 DEG. CHAMFER AT LEFT SIDE. LENGTH: 9.000 M.						KG	600.000		
						SUB-DELY		L	2		
	01	PLATFORM WITH 45 DEG. CHAMFER AT RIGHT SIDE. LENGTH: 9.000 M.						KG	600.000		
						SUB-DELY		L	2		
					VAR NO	MATERIAL SPECN	DI		QUANTITY		

CUST NO: 1842,1843

BTG & AUXILIARIES

OWNER
ADANI POWER LIMITED–RAIGARH, PHASE–II

OWNER'S ENGINEER
TATA CONSULTING ENGINEERS LIMITED
MUMBAI

CONTRACTOR
BHARAT HEAVY ELECTRICALS LTD
HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI–620014

PROJECT
2X800MW Ultra Supercritical Thermal Power Project
Raigarh, Chhattisgarh

DRAWING TITLE
FURNACE MAINTENANCE PLATFORM 4 WC–ELECTRICALLY OPERATED

REV.	DATE	ALTD	CHD	APPD
01	19.11.24	GAURAVH KUMAR	VENKATESWARALU	SRINIVA RAGULA

DRAWING IS REVISED TO UPDATE CUSTOMER COMMENTS

DRAWN : ABHISHEK SINGH	CHECKED : SAURABH KR	SCALE	NTS
REVIEWED : M.VENKATESWARALU		DATE	11.11.2024
APPROVED : SRINIVASU A.		JOB NO.	1842-1843

OWNER'S DRG. NO.: P59K-E-BTG-BOA-DM-G-V-0026

CONTRACTOR DRG. NO.: 0-99-514-40397 REV.01

Technical Pre-Qualification Requirement for

Furnace Maintenance Platform

1. The vendor shall be an established Furnace Maintenance Platform/ Furnace cradle of electric/ Pneumatic operation (henceforth referred as FMP) manufacturer having adequate Design, Engineering, Manufacturing, inspection and testing facilities and shall furnish technical backup documents for the proof of above requirements.

2. The FMP offered shall be of sizes as per enquiry with a minimum hoist capacity of 800 Kg and from the existing regular manufacturing range of the supplier. Vendor shall provide the manufacturing catalogue or general reference list for the offered FMP along with offer.

3. The supplier shall have experience of having supplied FMP and its accessories for dusty, corrosive & highly polluted atmospheric conditions or for the application of similar severity as specified in the enquiry. Supplier shall submit documents in proof of the same.

4. Proven track record is required. Minimum one end user certificate for the satisfactory operational performance of their supplied FMP with accessories as per enquiry in similar ambient conditions is required as a proof.

   (or)

   successfully executed two POs for same item meeting minimum requirements specified in enquiry specification. Purchase orders should not be more than ten (10) years old as on date of bid submission, for establishing continuity in business. Vendor to submit the corresponding datasheets / drawings / technical documents of supplied item as per POs / end user certificate.

5. In case of ordering, the vendor shall have the responsibility for the following and same to be confirmed point wise.
   i) Vendor should have the component replacement responsibility in case of defect / failure.
   ii) Vendor shall have capability to provide assistance in commissioning activities, if required.
   iii) Vendor should ensure the product performance during erection & commissioning.

6. Backup document checklist to meet PQR to the fullest satisfaction of BHEL. All documents shall be in English, if the original document is in other language, same shall be translated in English.

S. No	Document description	Check list
1	Documents to meet Clause(1)	☐
2	Product Catalogues to meet clause(2)	☐
3	Supply reference document to meet clause (3) (PO /Inspection Reports/supply reference list)	☐
4	Min. one end user certificate (or) Two POs to meet clause (4)	☐
5	Confirmation to clause (5)	☐

Package -7

RAIPUR PROJECT

FURNACE PLATFORM

BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI-620 014

Fuel Systems/PE(FB)

Title Sheet

General Specification for

ELECTRICALLY OPERATED
SUSPENDED SCAFFOLDING SYSTEM

Specification No.: MHS-HEQ/071 ***Revision No. : 05***

Rev. No.	Rev. Date	Clause	Description	Chd. & Appd.
05	16/08/18	-various-	Revisit & update of specification.	NF/GSK
04	10/12/07	2.6	Special tools included in the scope of supply	DVK
03	11/10/07	1.1 2.2 13.5.1	Scope clarity specified Access opening size referred in Annexure-I O&M- No. of copies was 25	SSR
02	26/09/07	2.6	Special tools included in the scope of supply	DVK
01	26/11/97	4.1 7.3 11.4 13.5.0 14.0, 15.0	Platforms Factor of safety Cable opening Operation & Maintenance manual Included	TKP
00	03/03/97		First issue	

	Name	Signature	Date
Prepared	T.K.Prabu	Sd.,	03/03/97
Checked	T.K.Prabu	Sd.,	03/03/97
Approved	A.Rajamohan	Sd.,	03/03/97

CONTENTS

1.0 SCOPE:

This specification covers design, manufacture, inspection, testing and supply of electrically operated suspended scaffolding system. The specification is for ensuring a safe and trouble free operation of Powered suspended scaffolding system used during shutdowns and overhauls, for inspection and maintenance of furnace internals of steam generator.

This is a general specification dealing with the technical Requirements of Suspended Scaffolding System. The specific Contract requirements and special requirements, if any, are specified in the enclosed annexures-1. If the scope of the Specification differs from Annexure-1, the scope of supply exclusively dealt in the contract specific requirement of Annexure-1 will be binding.

2.0 SPECIAL REQUIREMENTS OF THE SYSTEM

2.1 The suspended power scaffolding system shall consist of independently suspended platforms for the front / rear walls and sidewalls of boiler furnace as specified.

2.2 The scaffold platforms shall be modular and interchangeable construction made out of light weight material, easy for assembly inside the furnace, possible for taking inside the furnace, through an access door whose **overall opening size is furnished in the Annexure-I.** The platforms shall be easily assembled inside the furnace.

2.3 The suspension wire ropes will be introduced into the furnace through the furnace cable openings provided at the top of boiler and will be fastened to roof girders of boiler.

2.4 The suspension wire rope shall be capable to withstand temperature up to **250 Deg. C** which would be prevailing for longer duration after boiler shutdown.

2.5 The suspended platforms shall be operated by electric motor and climbing hoists.

2.6 The controls, safety devices, safety locks with necessary power supply cable, cable weight steel wire rope, secondary steel wire rope and special tools required for suspended platforms shall form part of the offer.

2.7 Vendor to provide suspension lugs (suitable to be welded at site) and other related items required for suspending the scaffolding at site. The lugs shall be capable of supporting four times the reaction forces imposed by the rated load on the scaffolding including scaffold self-weight.

3.0 GENERAL REQUIREMENTS

3.1 All materials, components and equipments used in the design, construction and installation of suspended powered scaffolds shall meet the requirements of its specified application in accordance with good engineering practice.

3.2 Scaffold platforms/ropes & other components of SAE shall be capable of supporting without failure under any scenario of usage.

3.3 The maximum rated speed at which the suspended powered scaffold moved in a vertical direction shall be in the range of 8.0 to 9.0 meters per minute.

3.4 An automatic overload/under load protection device shall be provided to cut power supply to the climbing machine for travel in the up/down direction when the load applied to the climbing machine exceeds 125% of its normal tension with rated load or under load.

3.5 Hoist shall never come down on its own.

3.6 Supplier shall provide suitable arrangement to prevent suspended power scaffolds from swaying. Suspended Scaffold platforms with rollers should always be engaged with water walls of boiler furnace. This should be ensured by providing extended wall rollers if necessary to prevent swaying of the platforms.

4.0 CODES & STANDARDS

4.1 The scaffolding system shall be designed to meet all the safety, design & sizing requirement defined by either of the codes - **EN-1808:2015 or ANSI A10.8-2011.**

4.2 Vendor shall follow either of the standards as mentioned above in total for designing the suspended scaffolding system.

4.3 Vendor should specify which code/standard is followed in their design of the offered system by **filling Sheet-A** of this specification.

5.0 PLATFORM OF SUSPENDED SCAFFOLD

5.1 The platform width shall not be less than 510 mm.

5.2 Platforms shall be provided with guard rails, mid rails and toe boards installed on all open sides and ends. The clear vertical distance between toe board, mid rails or guard rails shall be less that 500mm. The height of the guard rails shall be not less than 1000mm and not be more than 1100mm. All rails and posts shall be suitable for easy assembly & disassembly. Hoisting machines when located at not more than 450mm from ends of platforms hoist supporting stirrups, shall be considered as end guard rails. Else separate end guard rails shall be provided.

5.3 Toe boards shall extend to a minimum of **150mm** above the working surface.

5.4 Each platform shall bear a manufacturer's load rating plate stating the maximum rated load and stating the load rating when arranged in small modules. Load rating plates shall be made of non-corrosive material and shall

have letters and figures that are legible.

5.5 Suspended Platforms shall be designed to carry the rated load. Considering **800 Kg per hoist** capacity, vendor to indicate the rated load of platforms in their drawings and technical data sheet for our review. This shall be never be less than 3 persons loading requirement. Per person loading = 120Kg.

5.6 The minimum load capacity of deck of platform shall be 200 Kg/m^2 at worst case loading zone.

5.7 Fabricated platforms and scaffold decks shall be designed to support, in addition to their own weight, at least four times the maximum intended load.

6.0 HOISTING MACHINES

6.1 Each electrically operated hoist of minimum safe working load of 800 Kgs, shall be complying with applicable international codes. Each motor shall bear a name plate, indicating the operating voltage, current rating and power rating.

6.2 All gearing shall conform to the applicable standards with a service factor of not less than 1.0.

6.3 The hoist - Electrically operated rope climbing machine shall be supplied with top limit switch. There shall be common single power control for both hoists.

6.4 Lubrication where needed shall be provided to assure that all moving parts of hoists are lubricated at all times.

6.5 Speed Reducers

6.5.1 Each hoisting equipment shall be equipped with speed reducers or an equivalent to obtain mechanical advantage. Such speed reducers or other device shall contain positive type gearing such as worm gears, spur gears or bevel gears.

6.5.2 The speed reducer or other devices shall be directly connected to the traction sheave /drum of the hoisting equipment.

6.6 Primary Brakes

6.6.1 Each electrically operated hoisting equipment shall be provided with a primary brake that automatically engages whenever power supply is interrupted.

6.6.2 The primary brake shall be rated to stop and hold 125% of its rated load of hoisting equipment.

6.6.3 Each primary brake shall be directly connected to the drive of the hoisting machine.

6.7 Fall arrest device

6.7.1 Each hoisting equipment shall be provided with an automatic emergency type fall arrest device that will stop and hold at least 125% of the rated load of the hoisting machine. If such a fall arrest device is of instantaneous stopping type, then it should stop and hold its total load before the hoist travels a vertical distance of 450mm maximum.

6.7.2 The fall arrest safety device shall act directly on a **secondary safety wire rope** in case of failure of the hoist or the suspensions rope. The traction hoist works on the primary suspension rope. The actuating mechanism of the fall arrest device shall be separate from the primary brake.

6.7.3 The fall arrest safety device shall not be used to stop and hold the hoist except under emergency situations. In normal operation, such a device shall not engage before the hoist is stopped by primary brake.

6.7.4 The design, installation and maintenance of every fall arrest safety device shall be such that the device is prevented from being made defective or in-operative by outside contamination.

6.8 Hoisting Drum / Sheaves

All hoisting drums/sheaves shall be of proven design through tests to have no deleterious or serious effect on the suspension wire rope.

6.8.1 Traction Drum / sheaves

6.8.1.1 The traction drum/sheaves shall be designed in a manner to maintain correct wire rope reeving at all times to prevent scrubbing and cross overs. They shall have a means of applying pressure on the hoist rope against the drum/sheave to ensure constant tractive force to develop the rating of the hoist.

6.8.1.2 The diameter of any traction drum/sheave shall not be less than 20 times the diameter of the wire rope used. If lesser diameter be used, tests shall be performed by the wire rope manufacturer or a qualified testing laboratory to determine that no deleterious effect is caused on hoist wire for the usage intended.

6.8.2 Winding Drum (If Applicable)

Each winding drum hoist shall be provided with a positive means of attachment of the suspension rope. Such attachment should develop a minimum of 80% of the rated breaking strength of the suspension rope.

6.8.2.1 Single Wrap Winding Drum

a) Every single wrap winding drum hoisting machine shall be provided with a means of level winding of the suspension rope.

b) Every single wrap winding drum shall be so designed that the drum will contain a minimum of four wire ropes of the suspension rope at all times.

c) The minimum diameter of every single wrap winding drum shall not be less than 25 times of the diameter of the suspension rope used.

6.8.2.2 Multiple wrap Winding Drum

a) Every multiple wrap winding drum hoisting machine shall be provided with a means for level winding of the suspension rope.

b) Every multiple wrap winding drum shall contain not less than four wraps of suspension rope at all times.

c) The minimum diameter of every multiple wrap winding drum shall not be less than 10 times the diameter of the suspension rope used.

6.9 **Electrical Wiring And Equipment**

6.9.1 The electrical wiring and controls shall comply with governing codes, ordinances and regulation such as Low Voltage Directive 5006/95/EC, NFPA, NEC, National Electrical Manufacturers Association Regulations etc.

6.9.2 The power supply shall be 415 VOLTS, AC three phase 50Hz.

6.9.3 The power supply cable to any hoisting machine shall contain a separate conductor which will serve as a ground connection for the hoist.

6.9.4 Strain relief devices shall be provided for cables supplying power to hoisting machines. Such devices shall be located at the suitable places where the cables are plugged in at the cable connections on the hoists.

6.10 **Hoisting Machine Controls**

6.10.1 Hoisting machines shall have common control for each platform. If the control is of push button type, it shall be of the constant pressure. If it is fixed position type, it must have the provision for automatic locking when in the "OFF" position, or by means of guards against accidental actuation. The lever type control can be of the constant pressure type or of the fixed position type.

6.10.2 All hoist shall have a manually operated system that allows controlled descent of the scaffold in case of power failure. This **no-power decent** system shall be such that the controlled speed is lower than the tripping speed of the fall arrest device.

6.10.3 For a multi-point suspension, all the hoisting machines shall be synchronised and control shall be centralized with safety switch.

6.10.4 An **Anti-tilt device** shall be provided for the suspended platform with multi point suspensions.

7.0 SAFETY BELTS AND ANCHOR POINTS

7.1 Each workman on a suspended powered scaffold shall be provided with an approved safety belt with a lanyard of not more than 1.5 meters in length. The lanyard shall be attached to the safety belt with a self-closing safety hook. The scaffold needs to have anchor points for eventually attaching the other end of the lanyard.

7.2 The suspended powered scaffold shall be equipped with Overload Protection system and overload indicator.

8.0 ROPES

8.1 Suspended powered scaffolds shall be suspended by wire ropes. The minimum grade of the wire rope shall be of improved plough steel. (galvanized)

8.2 The suspension wire rope shall be covered with insulating material at least 1.2 Mtr above the hoist to prevent possibility of the welding current arcing through the suspension wire rope during the course of welding, scarfing, etc.

8.3 Reverse bends in rope arrangement shall be avoided.

8.4 The minimum factor of safety of the wire rope shall be 6. Each wire rope used for scaffold suspension shall be capable of supporting at least six times the rated capacity of the hoist.

8.5 Fastening:

8.5.1 Babbitted and zinc sockets for wire ropes are prohibited.

8.5.2 Swagged attachments or spliced eyes are acceptable for fastening of wires.

8.5.3 Wire rope clips with twin base type shall be used and shall be installed as per the wire rope clip manufacture's recommendation.

8.5.4 All fasteners shall have anti-corrosion protection and develop at least 80% of the wire rope rated breaking strength.

8.6 Ropes in Traction Drum /sheave Type

8.6.1 On traction drum /sheave applications, provisions shall be made to prevent the machine from running off the wire rope.

8.6.2 The wire rope shall be of such length that the operator can lower to the lowest point of travel with out end of the wire rope passing through the traction drum/sheave hoist.

8.7 Winding Drum Type (If applicable)

8.7.1 Winding drums shall have at least four turns of rope remaining when the platform has landed at the lowest possible point of its travel.

9.0 MULT POINT SUSPENDED POWERED PLATFORM

9.1 The scaffold shall be suspended by more than two (2) independent wire ropes.

9.2 The scaffold shall be provided with hoisting machines complying with clause 6.0

9.3 The stages shall be supported by galvanized steel stirrups.

9.4 Hoisting machine wire ropes shall conform to clause 8.0

9.5 Guard rails, mid rails and toe boards shall conform to clause 5.0

9.6 Anti-tilt device shall be included.

9.7 Both hoisting machines shall be operated from the center of platform in a centralized fashion.

10.0 INSPECTION

10.1 All test certificates shall be furnished for buyer's reference and records.

10.2 All suspended power scaffold installations shall, on their completion and before being placed in service, be subjected to inspection by BHEL inspector or BHEL nominated inspection authority during manufacture/testing stages, to determine

that the assembly conforms to applicable requirements. Hoist machines shall be inspected and tested in accordance with the manufacturer's recommendation.

10.3 Scaffolds (platform) & hoist machine shall be inspected and tested as per approved quality plan. The certificates and documents generated during inspection of above shall be furnished.

11.0 SPECIAL NOTES SUPPLEMENTED TO TECHNICAL SPECIFICATION

11.1 Supplier shall quote for recommended spares for three years trouble free operation separately.

11.2 Supplier shall furnish motor specification.

11.3 Sufficient number of packages of portable sizes to carry the components in fields shall be offered.

11.4 The size and locations of cable opening will be furnished for individual project by BHEL. Offer shall include the cable support details envisaged by supplier.

11.5 The procedure and support details of the false platform to be laid down before the assembly of suspended powered scaffolds shall be included in the offer with sketches.

11.6 The maximum temperature to which the rope shall be exposed for longer duration shall be specified.

11.7 Necessary provision shall be provided to keep the suspension ropes separate without twist.

11.8 Cable weights shall be provided suitably for secondary wire ropes.

12.0 GUARANTEE

12.1 The offered system shall be guaranteed for 18 months from the date on which the equipment / system is put into use (by the end user) or 24 months from the date of supply whichever is earlier against defective design, defective material usage, defective workmanship, defective packaging and forwarding.

13.0 DOCUMENTS TO BE SUBMITTED BY VENDOR

13.1 DOCUMENTS TO BE SUBMITTED ALONG WITH THE OFFER:

13.1.1 Product literature and drawings in support of the offer shall be submitted with the quotation to evaluate the offer.

13.1.2 Weight of individual major components as per the scope of supply shall be indicated in the drawing as bill of material (BOM).

13.1.3 The quality plan for the product under supply shall be furnished along with the offer.

13.1.4 General arrangement drawing with plan, elevation, and end view along with major dimensions and weight particulars.

13.1.5 Electric wiring diagram / circuit diagram as per clause 6.9 of this specification.

13.1.6 Filled in sheet-A of this Specification indicating the standards followed.

13.1.7 List of Initial spares (if any) to be supplied along with SAE.

13.1.8 Design calculations

13.1.8.1 Vendor to provide calculations to justify the following:

a) Minimum load capacity of each offered suspended platform.
b) Selection of Rated Load for each offered suspended platform.
c) No. of person loading.
d) Suspended platform structural calculation
e) Calculation of suspension lugs.

13.2 DOCUMENTS TO BE FURNISHED AFTER AWARD OF CONTRACT

13.2.1 Packaging procedure detailing the list of components shall be dispatched individually with identification and with preservation and storage.

13.2.2 SAE - Data sheet including drawings and design information shall be submitted to get approval from End user/owner of the boiler.

13.2.3 SAE – CERTIFICATES

13.2.3.1 Test certificates shall be furnished before dispatch of components.

13.2.3.2 A certificate for the components' safety from Safety Steward of the country of make shall be provided.

13.2.3.3 Test certificate for the following shall be furnished.

a) Material test certificate for all the major components.
b) Shop test certificates for safety devices.
c) Performance TC for the intended duty conditions.
d) Quality Control/Inspection documents generated during the stages of inspection, performance inspection, and final inspection.

13.2.3.4 Guarantee certificate shall be furnished by the vendor.

13.2.4 Operation & Maintenance (O & M) Manual

13.2.4.1 No of copies of manual:3Sets + 3 CD ROMS / USB drives.

13.2.4.2 The size of manuals should be in correct A4 size with drawings in A3 size. Large size drawings (greater than A3 size) shall be reduced to A3 size and inserted.

13.2.4.3 Drawings shall be of printed or laser prints only.

13.2.4.4 Spiral of comb bound copies should be totally avoided.

13.2.4.5 If manuals are supplied in folders, the folder should have 3 hole punching system.

13.2.4.6 O & M manuals, should be submitted to BHEL/Tiruchirappalli prior to dispatch of the equipment.

13.2.4.7 Manual, generally should contain the following:

a) Data sheet
b) Brief description
c) Operation

d) Maintenance (including lubrication, where necessary) & service, recommended spares for 2/3 years trouble free service.
e) Bill of Materials
f) Assembly drawings with part list, dimensional drawings and other applicable drawings.
g) Manual should pertain only to the type or model supplied for this contract.
h) Drawings and catalogues
i) Sequence of erection and dismantling
j) Erection instruction
k) List of tools and tackles
l) Critical checks and permissible deviations/tolerances
m) Procedure/checklist for commissioning the system
n) Procedure for initial checking after erection
o) Trouble Shooting

14.0 GENERAL:

14.1 The language used shall be "English only" in offer, O & M manual, Labels, Drawings etc.

14.2 For equipment and other special requirements refer Annexure-I to this specification.

15.0 SHEET-A: STANDARD / CODE CHECKLIST

DESCRIPTION	CODE FOLLOWED (Vendor to fill and submit)
PLATFORM OF SUSPENDED SCAFFOLD	
RATED LOAD OF SUSPENDED PLATFORM	
HOISTING MACHINES	
POWER SYSTEM FOR HOISTS	
CONTROL SYSTEM FOR HOISTS	
SAFETY AND CONTROL OF SUSPENDED PLATFORM	
WIRING AND EQUIPMENT	
SUSPENSION ROPES	

PROJECT : 2 X 800 MW ULTRA SUPER CRITCAL THERMAL POWER PROJECT APL RAIPUR PHASE-II)

CUSTOMER NO. : 1844-45

REFERENCE DRAWING N : 0-99-514-40404

1.0 Supplier to supply Furnace maintenance platforms as per specification no. **MHS-HEQ/071 Rev. 05**

2.0 Top of ceiling girder elevation : 102.094 M.

3.0 Access door elevation : 15.113 M.

4.0 SCOPE OF SUPPLY

4.1.0 PLATFORMS

4.1.1 Platform with 45° LH chamfer at one end and other with flat end for a length of 9.000M. - 2 Nos.

4.1.2 Platform with 45° RH chamfer at one end and other with flat end for a length of 9.000M. - 2 Nos.

4.1.3 Platform with both sides flat with length of 16.000M. - 2 Nos.

4.1.3 Platform wall roller assy & bracket complete with connecting fasteners. The rollers shall be designed suitably to move on the spiral water walls.

4.1.4 Complete guard rails with connecting fasteners.

4.1.5 Connecting block and tubes with connecting fasteners.

4.1.6 Lugs/Fixing assembly required for suspending the SAE to ceiling girder & goose neck area.

4.1.7 Each module shall be capable of mounting STIRRUP arrangements such that any module can be used for traversing between any two cable openings.

4.2.0 STIRRUPS

4.2.1 Suitable Hot galvanised stirrups & stirrup retainer complete with fasteners.

4.3.0 HOIST (ROPE CLIMBING MACHINE)

4.3.1 Hoist for safe working load of minimum 800 Kgs.

4.3.2 Electrically operated rope climbing machine with top limit switch.

4.3.3 Common single power control for both hoists.

4.4.0 SAFETY DEVICES

4.4.1 Safety braking system

4.4.2 Anti tilting device

4.4.3 Mercury level switches

4.4.4 Over speed safety device

4.4.5 Top limit switches

4.4.6 Overload/Under load safety device assembly

4.5.0 WIRE ROPE

4.5.1 Suitable length and quantity of steel wire rope with suitable size and construction of 6 X 36 for electrically operated hoist. Supplier to specify the size of the rope offered. Minimum length of wire rope shall be 100 M.

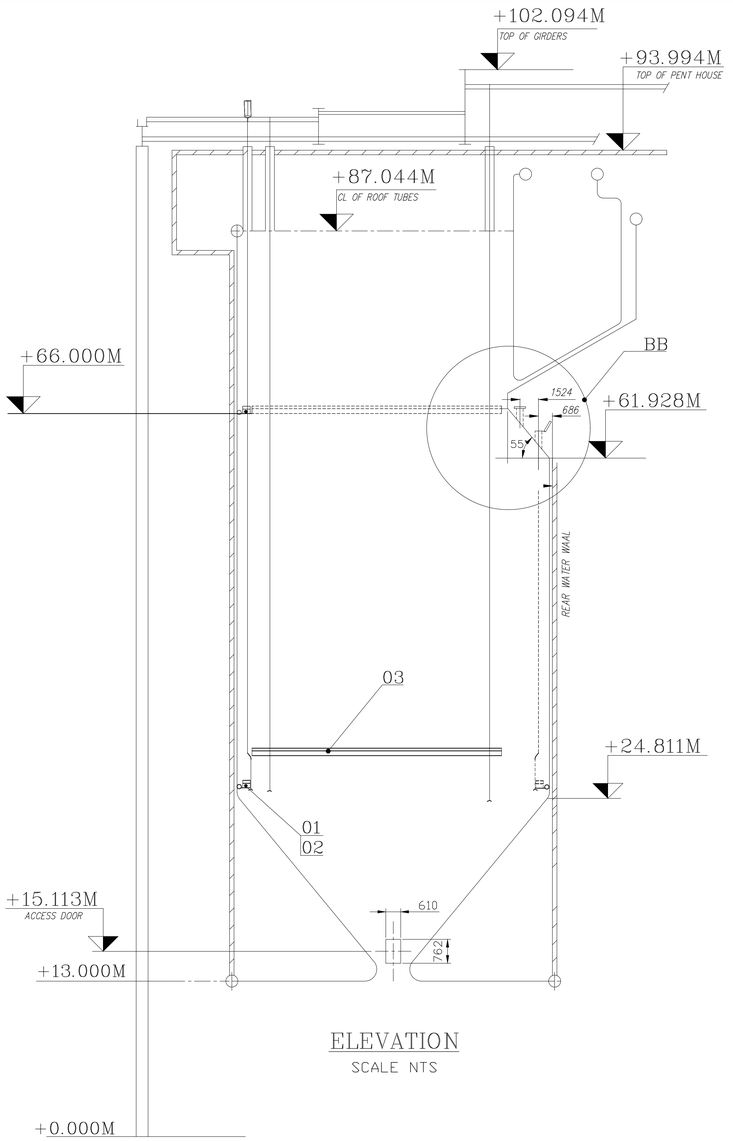
4.5.2 Secondary wire rope with cable weight.

4.5.3 Rope shall be of galvanised steel wire.

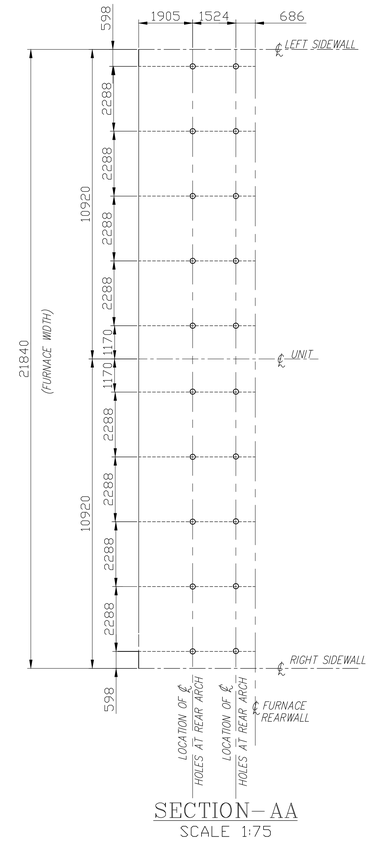
4.5.4 Rope shall have tensile strength of 240 Kg/Sq.mm. minimum.
4.5.5 Rope end fittings,'D'shakles, thimbles, rope clamps and other required items.
4.6.0 POWER SUPPLY
4.6.1 Power supply cable shall be provided for 3 Phase; 415V AC; 50 Hz.
4.6.2 Power supply cable shall be provided for suitable length as per BHEL arrangement drawing (0-99-514-40404).
4.6.3 Power supply cable rating shall be furnished by vendor.
4.6.4 Power supply cable shall be provided with plug and cable retainer.
4.7.0 CONTROL SYSTEM
4.7.1 Centralised control box shall be provided for easy operation.
4.7.2 The hoisting machines shall be synchronised and control shall be centralized with safety switch
5.0 Vendor shall furnish other mechanical, electrical and control accessories required for safety, easy maintenance and easy operation.
5.0 DOCUMENTS NEEDED
5.1 Refer clause no 18.0 of specification.
5.2 O & M MANUALS
5.2.1 Operation and Maintenance manuals both as soft copy (CD) and hard copies (in A4-size) should be submitted to BHEL/Tiruchirappalli prior to despatch of the equipment.
5.3.0 Operation and maintenance manual should contain the following
5.3.1 Data sheet for the equipment & its bought out items.
5.3.2 Brief description of equipment under supply.
5.3.3 Operation, and Trouble shooting
5.3.4 Maintenance and service instructions including lubrication schedule wherever required.
5.3.5 Recommended spare parts for 3 years for trouble free operation.
5.3.6 Assembly drawing with parts list.
5.3.7 The manual shall pertain to the model or type supplied for the particular contract.
7.0 All the points in specification & annexure - I to the specification should be strictly adhered to.
8.0 Offers without the required documents along with the offer shall not be considered.

DRAWING NO. 0-99-514-40404

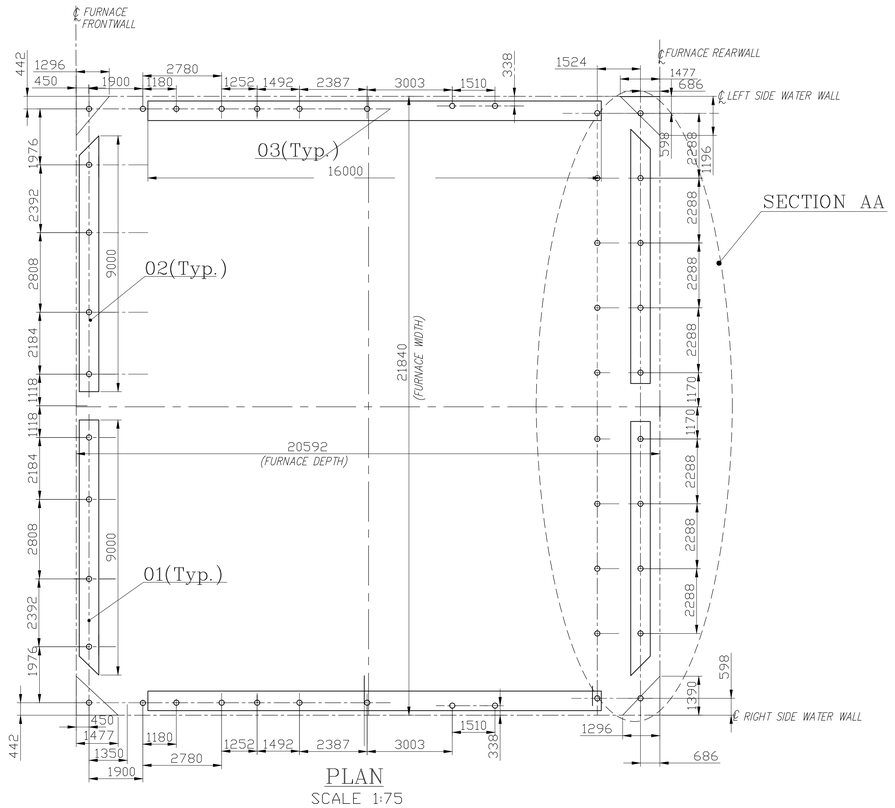
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



ELEVATION
SCALE NTS



SECTION–AA
SCALE 1:75



PLAN
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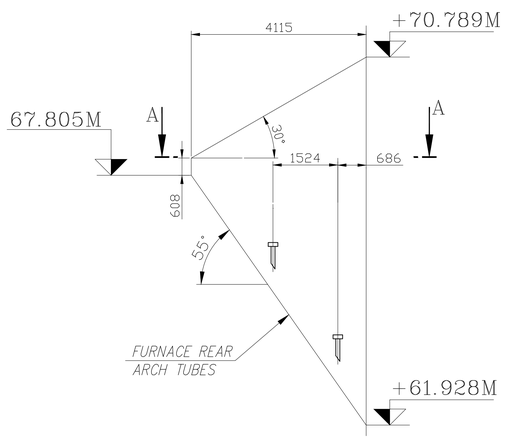

DETAIL BB
SIDE ELEVATION
DEFLECTION ARCH
SCALE 1:100

NOTES: –

1. REFERENCE DRAWINGS :
   - A. 0–00–022–78022 –GENERAL ARRANGEMENT OF BOILER SECTIONAL SIDE ELEVATION. 01
   - B. 0–00–027–35681 –PPA – SECTIONAL SIDE ELEVATION BACKPASS. 01
   - C. 0–00–027–35682 –PPA – SECTIONAL SIDE ELEVATION LOWER FURNACE. 01
   - D. 0–00–027–35680 –PPA – SECTIONAL SIDE ELEVATION UPPER FURNACE. 01
2. CABLE OPENING WITH CAPS AND OTHER ACCESSORIES RELEASED UNDER PG–MA 18 – 001.
3. ALL THE ELEVATIONS ARE WITH RESPECT TO EL(+) 0.00M,FINISHED GROUND FLOOR LEVEL OF TG BUILDING, WHICH CORRERSPONDS TO RL.(+) 311.80 M. 01
   FINISHED GROOUND FLOOR LEVEL (PAVING LEVEL) OF THE BOILER AND ESP AREAS ARE AT (–) 0.150 M, WHICH CORRESPONDS TO RL.(+) 311.65 M. 01
   FINISHED GROUND FLOOR LEVEL (PAVING LEVEL) OF MILL BAY AT (+) 0.00 M, WHICH CORRESPONDS TO RL.(+) 311.80 M. 01

SCOPE OF EQUIPMENT.

HOIST, TOP LIMIT SWITCH WITH COMMON CONTROL – ELECTRICALALLY OPERATED.

SUSPENSION SYSTEM – Suitable steel wire rope with suitable length, upto Access Door (Min.100 metres),
Secondary wire rope with suitable length (Min.100 metres).
Rope clamp,end fittings, "D" shackle and thimbles.
Fixing arrangement in furnace roof and goose neck area.

PLATFORMS – Split–type platforms – suitable for 610mmx762mm access door with guardrails, suitable stirrups with retainers.
Connection blocks & tubes with fasteners.
Wall roller assembly with mounting bracket & fasteners.

POWER SUPPLY – All electrical items required for safe operation including rated SFU. Power supply cables

SAFETY DEVICES – All safety devices.
[A sensing device (Sky lock safety device) that locks the wire as soon as it accelerates beyond a preset speed either gradual or instantaneous shall be provided.]
Hoist capacity : 800 kg.
Each platform is driven by two hoists in tandem operation
There are 12 hoists for the six platforms common for one boiler.

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER							
	03	PLATFORM WITH BOTH ENDS FLAT. LENGTH: 16.000 M.						KG	900.000		
						SUB–DELY		L	2		
	02	PLATFORM WITH 45 DEG. CHAMFER AT LEFT SIDE. LENGTH: 9.000 M.						KG	600.000		
						SUB–DELY		L	2		
	01	PLATFORM WITH 45 DEG. CHAMFER AT RIGHT SIDE. LENGTH: 9.000 M.						KG	600.000		
						SUB–DELY		L	2		
					ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT		
		DESCRIPTION	STD	DRAWING NUMBER	VAR NO	MATERIAL SPECN		DI	QUANTITY	GS	ZONE

CUST NO: 1844,1845

BTG & AUXILIARIES

OWNER
ADANI POWER LIMITED–RAIPUR, PHASE–II

OWNER'S ENGINEER
CONSULTING ENGINEERS LIMITED
MUMBAI

CONTRACTOR
BHARAT HEAVY ELECTRICALS LTD
HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI–620014

PROJECT
2X800MW Ultra Supercritical Thermal Power Project
Raipur, Chhattisgarh

REV.	DATE	ALTD	CHD	APPD
01	19.11.24	ABHISHEK SINGH	SAURABH KUMAR	MANDADI VENKATESWARLU

DRAWING IS REVISED TO UPDATE CUSTOMER COMMENTS

DRAWING TITLE
FURNACE MAINTENANCE PLATFORM 4 WC–ELECTRICALLY OPERATED

DRAWN : ABHISHEK S.	CHECKED : SAURABH KR	SCALE	NTS
REVIEWED : M. VENKETESWARLU		DATE	11.11.24
APPROVED : SRINIVASU ARUGULA		JOB NO.	1844–1845

OWNER'S DRG. NO.: P56X–E–BTG–BOA–DM–G–V–0026

CONTRACTOR DRG. NO.: 0–99–514–40404 REV.01

Technical Pre-Qualification Requirement for

Furnace Maintenance Platform

1. The vendor shall be an established Furnace Maintenance Platform/ Furnace cradle of electric/ Pneumatic operation (henceforth referred as FMP) manufacturer having adequate Design, Engineering, Manufacturing, inspection and testing facilities and shall furnish technical backup documents for the proof of above requirements.

2. The FMP offered shall be of sizes as per enquiry with a minimum hoist capacity of 800 Kg and from the existing regular manufacturing range of the supplier. Vendor shall provide the manufacturing catalogue or general reference list for the offered FMP along with offer.

3. The supplier shall have experience of having supplied FMP and its accessories for dusty, corrosive & highly polluted atmospheric conditions or for the application of similar severity as specified in the enquiry. Supplier shall submit documents in proof of the same.

4. Proven track record is required. Minimum one end user certificate for the satisfactory operational performance of their supplied FMP with accessories as per enquiry in similar ambient conditions is required as a proof.

   (or)

   successfully executed two POs for same item meeting minimum requirements specified in enquiry specification. Purchase orders should not be more than ten (10) years old as on date of bid submission, for establishing continuity in business. Vendor to submit the corresponding datasheets / drawings / technical documents of supplied item as per POs / end user certificate.

5. In case of ordering, the vendor shall have the responsibility for the following and same to be confirmed point wise.
   i) Vendor should have the component replacement responsibility in case of defect / failure.
   ii) Vendor shall have capability to provide assistance in commissioning activities, if required.
   iii) Vendor should ensure the product performance during erection & commissioning.

6. Backup document checklist to meet PQR to the fullest satisfaction of BHEL. All documents shall be in English, if the original document is in other language, same shall be translated in English.

S. No	Document description	Check list
1	Documents to meet Clause(1)	☐
2	Product Catalogues to meet clause(2)	☐
3	Supply reference document to meet clause (3) (PO /Inspection Reports/supply reference list)	☐
4	Min. one end user certificate (or) Two POs to meet clause (4)	☐
5	Confirmation to clause (5)	☐

ANNEXURE- 1

CHECK LIST

NOTE: - Suppliers are required to fill in the following details in their Letterhead and no column should be left blank

A	**Name and Address of the Supplier**	
B	**GSTN No. the Supplier (Place of Execution of Contract / Purchase Order)**	
C	**Details of Contact person for this Tender**	Name: Mr./ Ms. Designation: Telephone No: Mobile No: Email ID:
D	**EMD DETAILS**	

E	DESCRIPTION	APPLICABILITY (BY BHEL)	ENCLOSED BY BIDDER
i.	Whether **Pre - Qualification Criteria** is understood and provided proper supporting documents.	**Applicable**/ ~~Not Applicable~~	YES / NO
ii.	Whether all pages of the Tender documents including annexures, appendices etc. are read and understood	**Applicable**/ ~~Not Applicable~~	YES / NO
iii.	Audited Balance Sheet and profit & Loss Account for the last three years	**Applicable**/ ~~Not Applicable~~	YES / NO
iv.	Copy of PAN Card & GST registration	**Applicable**/ ~~Not Applicable~~	YES / NO
v.	Submission of **MSE certificate** as specified in Tender	**Applicable**/ ~~Not Applicable~~	YES / NO
vi.	**Offer forwarding letter** / tender submission letter as per Annexure 2	**Applicable**/ ~~Not Applicable~~	YES / NO
vii.	Submission of **Certificate of No Deviation** as per Annexure 3	**Applicable**/ ~~Not Applicable~~	YES / NO
viii.	Declaration regarding **Insolvency/ Liquidation/ Bankruptcy Proceedings** as per Annexure 4	**Applicable**/ ~~Not Applicable~~	YES / NO
ix.	Declaration by **Authorized Signatory** as per Annexure 5	**Applicable**/ ~~Not Applicable~~	YES / NO
x.	Declaration by **Authorized Signatory regarding Authenticity** of submitted Documents Annexure 6	**Applicable**/ ~~Not Applicable~~	YES / NO
xi.	Submission of **Non-Disclosure Certificate** as per Annexure 7	**Applicable**/ ~~Not Applicable~~	YES / NO
xii.	Submission of **Integrity Pact** as specified in Tender as per Annexure 8	**Applicable**/ ~~Not Applicable~~	YES / NO

xiii.	~~Declaration confirming knowledge about Site Conditions as per Annexure- 9~~	~~Applicable/~~ **~~Not Applicable~~**	~~YES / NO~~
xiv.	Declaration reg. **Related Firms & their areas of Activities** as per Annexure 10	**Applicable**/ ~~Not Applicable~~	YES / NO
xv.	Declaration for **relation in BHEL** as per Annexure 11	**Applicable**/ ~~Not Applicable~~	YES / NO
xvi.	Declaration reg. **minimum local content** in line with revised public procurement as per Annexure 12	**Applicable**/ ~~Not Applicable~~	YES / NO
~~xvii.~~	~~Declaration regarding **compliance to Restrictions under Rule 144 (xi) of GFR 2017** as per Annexure- 13~~	~~**Applicable**/ Not Applicable~~	~~YES / NO~~
~~xviii.~~	~~**Bank Account Details** for E-Payment as per Annexure- 14~~	~~**Applicable**/ Not Applicable~~	~~YES / NO~~
~~xix.~~	~~**Power of Attorney** for submission of tender as per Annexure 15~~	~~**Applicable**/ Not Applicable~~	~~YES / NO~~
~~xx.~~	~~Performa of Bank Guarantee for Earnest Money as per Annexure- 16~~	~~Applicable/~~ **~~Not Applicable~~**	~~YES / NO~~
xxi.	Bank guarantee for performance security as per Annexure 17	**Applicable**/ Not Applicable	YES / NO
xxii.	List of consortium bank as per Annexure 18	**Applicable**/ Not Applicable	YES / NO

NOTE: Strike off" YES" or" NO", as applicable. Tender not accompanied by the prescribed **above applicable documents** are liable to be summarily rejected.

DATE:

Sign. of the AUTHORISED SIGNATORY
(With Name, Designation and Company seal)

ANNEXURE - 2

OFFER FORWARDING LETTER / TENDER SUBMISSION LETTER

(To be typed and submitted in the Letter Head of the Company/Firm of Bidder

Offer Reference No: …… Date: ……..

To,

Manager, MM - BOI, BHEL, Trichy - 620014

Dear Sir,

Sub: Submission of Offer against NIC Bid No: ……..

Having examined the tender documents against your NIC Bid No. _____ dated _____ and having understood the provisions of the said tender documents and having thoroughly studied the requirements of BHEL related to the work tendered for, in connection with _____ (name of work & project site), we hereby submit our offer for the proposed work in accordance with terms and conditions mentioned in the tender documents, at the prices quoted by us and as per the indicated delivery schedule.

I/We further agree to execute all the works referred to in the said Tender documents upon the terms and conditions contained or referred to therein and as detailed in the appendices annexed thereto.

Authorised Representative of Bidder
Signature:
Name:
Address:

Place:
Date:

ANNEXURE- 3

CERTIFICATE OF NO DEVIATION

(to be typed & submitted in the letter head of the company/firm of bidder)

To,
Manager, MM - BOI, BHEL, Trichy - 620014

Tender Details: Supply of Furnace Maintenance Platforms required for Respective project.

Subject: No Deviation Certificate

Ref: 1) NIC Bid No: ……

2) All other pertinent issues till date

Sl. No.	Document Reference	BHEL specification	Firms Alternative offer
TECHNICAL DOCUMENTS FOR KAWAI PROJECT			
	ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM – 4 WALL COVERAGE .	TECHNICAL SPECIFICATION FOR FURNACE MAINTENANCE PLATFORM MHS-HEQ/071 REV.05	
	REFER THE TECHNICAL DOCUMENT	Annexure-I to the specification	
	REFER THE TECHNICAL DOCUMENT	DRAWING ITEM NO.-01, 02 AND 03 AS PER DRG. 0-99-514-40412	
TECHNICAL DOCUMENTS FOR KORBA PROJECT			
	ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM – 4 WALL COVERAGE .	TECHNICAL SPECIFICATION FOR FURNACE MAINTENANCE PLATFORM MHS-HEQ/071 REV.05	
	REFER THE TECHNICAL DOCUMENT	Annexure-I to the specification	
	REFER THE TECHNICAL DOCUMENT	DRAWING ITEM NO.-01, 02 AND 03 AS PER DRG. 0-99-514-40414	
TECHNICAL DOCUMENTS FOR MAHAN PH 1 PROJECT			
	ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM – 4 WALL COVERAGE .	TECHNICAL SPECIFICATION FOR FURNACE MAINTENANCE PLATFORM MHS-HEQ/071 REV.05	
	REFER THE TECHNICAL DOCUMENT	Annexure-I to the specification	
	REFER THE TECHNICAL DOCUMENT	DRAWING ITEM NO.-01, 02 AND 03 AS PER DRG. 10-99-514-40396	
TECHNICAL DOCUMENTS FOR MAHAN PH 3 PROJECT			
	ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM – 4 WALL COVERAGE .	TECHNICAL SPECIFICATION FOR FURNACE MAINTENANCE PLATFORM MHS-HEQ/071 REV.05	
	REFER THE TECHNICAL DOCUMENT	Annexure-I to the specification	
	REFER THE TECHNICAL DOCUMENT	DRAWING ITEM NO.-01, 02 AND 03 AS PER DRG. 0-99-514-40416	
TECHNICAL DOCUMENTS FOR MIRZAPUR PROJECT			
	ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM – 4 WALL COVERAGE .	TECHNICAL SPECIFICATION FOR FURNACE MAINTENANCE PLATFORM MHS-HEQ/071 REV.05	
	REFER THE TECHNICAL DOCUMENT	Annexure-I to the specification	
	REFER THE TECHNICAL DOCUMENT	DRAWING ITEM NO.-01, 02 AND 03 AS PER DRG. 0-99-514-40407	
TECHNICAL DOCUMENTS FOR RAIGARH PROJECT			
	ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM – 4 WALL COVERAGE .	TECHNICAL SPECIFICATION FOR FURNACE MAINTENANCE PLATFORM MHS-HEQ/071 REV.05	
	REFER THE TECHNICAL DOCUMENT	Annexure-I to the specification	
	REFER THE TECHNICAL DOCUMENT	DRAWING ITEM NO.-01, 02 AND 03 AS PER DRG. 0-99-514-40397	
TECHNICAL DOCUMENTS FOR APL RAIPUR PROJECT			
	ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM – 4 WALL COVERAGE .	TECHNICAL SPECIFICATION FOR FURNACE MAINTENANCE PLATFORM MHS-HEQ/071 REV.05	
	REFER THE TECHNICAL DOCUMENT	Annexure-I to the specification	
	REFER THE TECHNICAL DOCUMENT	DRAWING ITEM NO.-01, 02 AND 03 AS PER DRG. 0-99-514-40404/Rev01	
COMMERCIAL DOCUMENTS APPLICABLE FOR THIS TENDER			

	General Terms and Conditions and Special Conditions	ACCEPTANCE OF TECHNO - COMMERCIAL TERMS AND CONDITIONS BY THE BIDDERS	
	ANNEXURE-B - SCHEDULE OF ITEMS	ANNEXURE-B - SCHEDULE OF ITEMS	
	Checklist and Annexures	ACCEPTANCE TO ALL THE CHECLIST AND ANNEXURES	

We hereby confirm that we have not changed/ modified/materially altered any of the tender documents as downloaded from the website/ issued by BHEL and in case of such observance at any stage, it shall be treated as null and void.

We also hereby confirm that we have neither set any Terms and Conditions and nor have we taken any deviation from the Tender conditions together with other references applicable for the above referred NIC Bid.

We further confirm our unqualified acceptance to all Terms and Conditions, unqualified compliance to Tender Conditions.

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

Thanking you,

Yours faithfully,

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

Date:

Place:

ANNEXURE- 4

UNDERTAKING

(To be typed and submitted in the Letter Head of the Company/Firm of Bidder)

To,

Manager, MM - BOI, BHEL, Trichy - 620014

Dear Sir/Madam,

Sub: **DECLARATION REGARDING INSOLVENCY/ LIQUIDATION/ BANKRUPTCY PROCEEDINGS**

Ref: NIC Bid No:

I/We, _____ declare that, I/We am/are not admitted under insolvency resolution process or liquidation under Insolvency and Bankruptcy Code, 2016, as amended from time to time or under any other law as on date, by NCLT or any adjudicating authority/authorities.

Sign. of the AUTHORISED SIGNATORY
(With Name, Designation and Company seal)

Place:
Date:

ANNEXURE 5

DECLARATION BY AUTHORISED SIGNATORY OF BIDDER

(To be typed and submitted in the Letter Head of the Company/Firm of Bidder)

To,

Manager, MM - BOI, BHEL, Trichy - 620014

Dear Sir,

Sub: **Declaration by Authorised Signatory**

Ref: 1) NIC Bid No: ……

2) All other pertinent issues till date

I/We, hereby certify that all the information and data furnished by me with regard to the above Tender Specification are true and complete to the best of my knowledge. I have gone through the specifications, conditions, stipulations and all other pertinent issues till date, and agree to comply with the requirements and Intent of the specification.

I further certify that I am authorised to represent on behalf of my Company/Firm for the above mentioned tender and a valid Power of Attorney to this effect is also enclosed.

Yours faithfully,

(Signature, Date & Seal of Authorized Signatory of the Bidder)

Date:

Enclosed: Power of Attorney

ANNEXURE 6

DECLARATION BY AUTHORISED SIGNATORY OF BIDDER

(To be typed and submitted in the Letter Head of the Company/Firm of Bidder)

To,

Manager, MM - BOI, BHEL, Trichy - 620014

Dear Sir,

Sub : **Declaration by Authorised Signatory regarding Authenticity of submitted documents.**

Ref : 1) NIC Bid No & Date : .....

2) All other pertinent issues till date

I / We hereby certify that all the documents submitted by us in support of possession of "Qualifying Requirements" are true copies of the original and are fully compliant required for qualifying / applying in the bid and shall produce the original of same as and when required by Bharat Heavy Electricals Limited.

I / We hereby further confirm that no tampering is done with documents submitted in support of our qualification as bidder. I / We understand that at any stage (during bidding process or while executing the awarded contract) if it is found that fake / false / forged bid qualifying / supporting documents / certificates were submitted, it would lead to summarily rejection of our bid / termination of contract. BHEL shall be at liberty to initiate other appropriate actions as per the terms of the Bid / Contract and other extant policies of Bharat Heavy Electricals Limited.

Yours faithfully,

(Signature, Date & Seal of Authorized Signatory of the Bidder)

Date:

ANNEXURE- 7

NON-DISCLOSURE CERTIFICATE

(To be Typed & submitted in the Letter Head of the Company/Firm of Bidder)

I/We understand that BHEL TRICHY is committed to Information Security Management System as per their Information Security Policy.

Hence, I/We M/s ……..
who are submitting offer for providing services to BHEL TRICHY against NIC Bid No. …XXXXXXXX…… hereby undertake to comply with the following in line with Information Security Policy of BHEL TRICHY.

- To maintain confidentiality of documents & information which shall be used during the execution of the Contract.

- The documents & information shall not be revealed to or shared with third party which shall not be in the business interest of BHEL TRICHY.

(Signature, date & seal of Authorized Signatory of the bidder)

Date:

Integrity Pact (IP)

(a) IP is a tool to ensure that activities and transactions between the Company and its Bidders / Contractors are handled in a fair, transparent and corruption free manner. Following Independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

SL	IEM	Email
1.	Shri Bishwamitra Pandey, IRAS (Retd.)	iem2@bhel.in
2.	Shri Mukesh Mittal, IRS (Retd.)	Iem3@bhel.in

(b) The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/ three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.
(c) Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to any of the above IEM(s). All correspondence with the IEMs shall be done through email only.

Note:
No routine correspondence shall be addressed to the IEM (phone/post/ email) regarding the clarifications, time extensions or any other administrative queries, etc. on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) departments officials whose contact details are provided below.
Details of contact person(s): -

(1)
Name: R SrijaMole
Dept.: MM/BOI
Address: 24 Building, BHEL, Trichy
Phone: 0431-2577872
Email: srija@bhel.in

(2)
Name: S Sujit
Dept.: MM/BOI
Address:24 Building, BHEL, Trichy
Phone: 0431-257 5576
Email:ssujit@bhel.in

INTEGRITY PACT

Between

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi-110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with the address), hereinafter referred to as "The Bidder/Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART.

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for

_____

_____

_____. The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1- Commitments of the Principal

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -

1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

1.1.3 The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in

particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Indian Penal Code (IPC) and Prevention of Corruption Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and will await their decision in the matter.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 4 - Compensation for Damages

4.1 If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent Earnest Money Deposit/ Bid Security.

4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee, whichever is higher.

Section 5 - Previous Transgression

5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.

5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 - Equal treatment of all Bidders/ Contractors / Sub-contractors

6.1 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors. In case of sub-contracting, the Principal contractor shall be responsible for the adoption of IP by his sub-contractors and shall continue to remain responsible for any default by his subcontractors.

6.2 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 -Independent External Monitor(s)

8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.

8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality in line with Non- disclosure agreement.

8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

8.5 The role of IEMs is advisory, would not be legally binding and it is restricted to resolving issues raised by an intending bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.

8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process, the matter should be examined by the full panel of IEMs jointly as far as possible, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.

8.7 The IEMs would examine all complaints received by them and give their recommendations/ views to CMD, BHEL, at the earliest. They may also send their report directly to the CVO and the Commission,

in case of suspicion of serious irregularities requiring legal/ administrative action. IEMs will tender their advice on the complaints within 10 days as far as possible.

8.8 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.

8.9 IEM should examine the process integrity; they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the organization should be looked into by the CVO of the concerned organization.

8.10 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code/ Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.11 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.

8.12 The word `Monitor' would include both singular and plural.

Section 9 - Pact Duration

9.1 This Pact shall be operative from the date IP is signed by both the parties till the final completion of contract for successful bidder and for all other bidders 6 months after the contract has been awarded. Issues like warranty / guarantee etc. should be outside the purview of IEMs.

9.2 If any claim is made/ lodged during currency of IP, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 - Other Provisions

10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.

10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10.5 Only those bidders / contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

R. SRIJA MOLE
Manager / Purchase / BOI
Materials Management
Bharat Heavy Electricals Limited
Tiruchirappalli, Tamil Nadu - 620 014

For & On behalf of the Principal
(Office Seal)
Place: Trichy
Date:

S. SUJIT
Sr. Manager / Purchase / BOI
Materials Management
Bharat Heavy Electricals Limited
Tiruchirappalli, Tamil Nadu - 620 014

Witness:_____
(Name & Address)_____

For & On behalf of the Bidder/Contractor
(Office Seal)

Witness:_____
(Name & Address) __

ANNEXURE 10

DECLARATION

Date:

To,

Manager, MM - BOI, BHEL, Trichy - 620014
Dear Sir/ Madam,

Sub: **Details of related firms and their area of activities**

Please find below details of firms owned by our family members that are doing business/ registered for same item with BHEL, _____ (NA, if not applicable)

1	Material Category/ Work Description	
	Name of Firm	
	Address of Firm	
	Nature of Business	
	Name of Family Member	
	Relationship	
2	Material Category/ Work Description	
	Name of Firm	
	Address of Firm	
	Nature of Business	
	Name of Family Member	
	Relationship	

Note: *I certify that the above information is true and I agree for penal action from BHEL in case any of the above information furnished is found to be false*.

Regards,

(_____)

From: M/s _____

Supplier Code: _____

Address_____

_____

ANNEXURE 11

DECLARATION FOR RELATION IN BHEL

(To be typed and submitted in the Letter Head of the Company/Firm of Bidder failing which the offer of Bidder is liable to be summarily rejected)

To,

(Write Name & Address of Officer of BHEL inviting the Tender)

Dear Sir,

Sub: Declaration for relation in BHEL

Ref: 1) NIC Bid No & Date:

I/We hereby submit the following information pertaining to relation/relatives of Proprietor/Partner(s)/ Director(s) employed in BHEL

Tick (√) any one as applicable:

1. The Proprietor, Partner(s), Director(s) of our Company/Firm DO NOT have any relation or relatives employed in BHEL

OR

2. The Proprietor, Partner(s), or Director(s) of our Company/Firm HAVE relation/relatives employed in BHEL and their particulars are as below:

i.

ii.

(Signature, Date & Seal of Authorized Signatory of the Bidder)

Note:

1. Attach separate sheet, if necessary.
2. If BHEL Management comes to know at a later date that the information furnished by the Bidder is false, BHEL reserves the right to take suitable against the Bidder/Contractor.

ANNEXURE 12

DECLARATION REGARDING MINIMUM LOCAL CONTENT IN LINE WITH REVISED PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA), ORDER 2017 DATED 04TH JUNE, 2020 AND SUBSEQUENT ORDER(S)

(To be typed and submitted in the Letter Head of the Entity/Firm providing certificate as applicable)

To,

(Write Name & Address of Officer of BHEL inviting the Tender)

Dear Sir,

Sub: Declaration reg. minimum local content in line with Public Procurement (Preference to Make in India), Order 2017-Revision, dated 04th June, 2020 and subsequent order(s).

Ref: 1) NIC Bid No and Date:
2) All other pertinent issues till date

We hereby certify that the items/works/services offered by…….. (specify the name of the organization here) has a local content of _____ % and this meets the local content requirement for **'Class-I local supplier' / 'Class II local supplier'** ** as defined in Public Procurement (Preference to Make in India), Order 2017-Revision dated 04.06.2020 issued by DPIIT and subsequent order(s).

The details of the location(s) at which the local value addition is made are as follows:

1. _____ 2. _____

3. _____ 4. _____

...

Thanking you,

Yours faithfully,

(Signature, Date & Seal of Authorized Signatory of the Bidder)

** - Strike out whichever is not applicable.

Note:

1. Bidders to note that above format, duly filled & signed by authorized signatory, shall be submitted along with the techno-commercial offer.
2. In case the bidder's quoted value is in excess of Rs. 10 crores, the authorized signatory for this declaration shall necessarily be the statutory auditor or cost auditor of the company (in the case of companies) or a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies).
3. In the event of false declaration, actions as per the above order and as per BHEL Guidelines shall be initiated against the bidder.

BHARAT HEAVY ELECTRICALS LIMITED – TRICHY

GENERAL TERMS AND CONDITIONS OF ENQUIRY FOR SUPPLY OF FURNACE MAINTENANCE PLATFORM

Note: ***This Annexure has to be mandatorily filled & signed by the manufacturer (or) mill and submitted along with Technical Bid.***

Any deviation to the below mentioned terms shall be stated specifically in the comments column for each term and also in case of acceptance to our terms, it will be construed that the whole term is understood and agreed in totality without any deviation (if otherwise mentioned).

Sl No	BHEL Requirements	Supplier Comments
01	**Pre-Qualification Criteria:**	
	1.1 Technical: Supply of FURNACE MAINTENANCE PLATFORM shall be as per the Specification attached with the enquiry. **1.KAWAI PROJECT** ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM – 4 WALL COVERAGE AS PER SPECIFICATION NO: MHS-HEQ/071 REV.05, ANNEXURE -I TO THE SPECIFICATION AND DRAWING ITEM NO.-01, 02 AND 03 AS PER DRG. 0-99-514-40412. **2.KORBA PROJECT** ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM – 4 WALL COVERAGE AS PER SPECIFICATION NO: MHS-HEQ/071 REV.05, ANNEXURE -I TO THE SPECIFICATION AND DRAWING ITEM NO.-01, 02 AND 03 AS PER DRG. 0-99-514-40414 **3.MAHAN PROJECT** ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM – 4 WALL COVERAGE AS PER SPECIFICATION NO: MHS-HEQ/071 REV.05, ANNEXURE -I TO THE SPECIFICATION AND DRAWING ITEM NO.-01, 02 AND 03 AS PER DRG. 10-99-514-40396. **4.MAHAN PH 3 PROJECT** ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM – 4 WALL COVERAGE AS PER SPECIFICATION NO: MHS-HEQ/071 REV.05, ANNEXURE -I TO THE SPECIFICATION AND DRAWING ITEM NO.-01, 02 AND 03 AS PER DRG. 0-99-514-40416. **5.MIRZAPUR PROJECT** ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM – 4 WALL COVERAGE AS PER SPECIFICATION NO: MHS-HEQ/071 REV.05, ANNEXURE -I TO THE SPECIFICATION AND DRAWING ITEM NO.-01, 02 AND 03 AS PER DRG. 0-99-514-40407. **6.RAIGARH PROJECT** ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM – 4 WALL COVERAGE AS PER SPECIFICATION NO: MHS-HEQ/071 REV.05, ANNEXURE -I TO THE SPECIFICATION AND DRAWING ITEM NO.-01, 02 AND 03 AS PER DRG. 0-99-514-40397. **7.APL RAIPUR PROJECT** ELECTRICALLY OPERATED FURNACE MAINTENANCE PLATFORM – 4 WALL COVERAGE AS PER SPECIFICATION NO: MHS-HEQ/071 REV.05, ANNEXURE -I TO THE SPECIFICATION AND DRAWING ITEM NO.-01, 02 AND 03 AS PER DRG. 0-99-514-40404/Rev01.	

	ANNEXURE B – SCHEDULE OF ITEMS **1.2 Financial** **Indigenous:** **Audited Balance Sheet and profit & Loss Account for the last three years are to be submitted by the firm** **Import:** **Latest report from reputed third party business rating agency like D&B /Credit reform etc for the last three years are to be submitted by the firm** **1.3 Integrity Pact** – Applicable **1.4** Bidder must not be admitted under Corporate Insolvency Resolution Process or Liquidation as on date, by NCLT or any adjudicating authority/authorities, and shall submit undertaking (Annexure-4) to this effect. **1.5 Customer Approval (Applicable)** **Explanatory Notes for the PQR:** **i.** 'Supplied' in **PQR – 1.1** means, bidder should have delivered the enquired items. Bidder shall submit the relevant documents against the above PQRs inclusive of Purchase order (wherein PO no., date, etc. is legible) along with proof of supply (i.e. - Completion Certificate/ Copy of Invoices / LR Copies/ Store Receipt Vouchers/ Payment Advice etc.) in the respective attachments in their offer in support of PQR. The "Contract" referred in Technical PQR may be Rate Contract/ Framework Agreement/ Purchase Order/ Work Order. (Refer the attached PQR) **ii.** Bidder to submit Audited Balance Sheet and Profit and Loss Account for the respective years as indicated against Financial Turnover **PQR – 1.2** above along with all annexures. **iii.** In case of audited Financial Statements have not been submitted for all the three years as indicated against Financial Turnover PQR above, then the applicable audited statements submitted by the bidders against the requisite three years, will be averaged for three years i.e. total divided by three. **iv.** If Financial Statements are not required to be audited statutorily, then instead of audited Financial Statements, Financial Statements are required to be certified by Chartered Accountant. **v.** Credentials furnished by the bidder against "PRE-QUALIFYING CRITERIA" shall be verified from the issuing authority for its authenticity. In case, any credential (s) is/are found to be spurious, offer of the bidder is liable to be rejected. BHEL reserves the right to initiate any further action as per extant guidelines for Suspension of Business Dealings as applicable in BHEL. **vi. Price Bids of only those bidders shall be opened who stand qualified after compliance of QR – 1.1 to 1.5**	
01 a	Vendor offers will be considered for price bid opening subject to fulfilment of PQR requirement, techno commercial suitability and vendor approval by end customer. Along with the offer, bidders shall submit the required credentials as per the vendor approval format attached and as per the request from the customer. Subsequently, If the bidder is not approved by customer or fails to submit the complete credentials, their offer will be liable for commercial rejection	
02	**Scope of Supply:**	
	2.1 Supply of Furnace Maintenance Platform shall be as per the Specification attached against the respective project package (Refer Annexure B Schedule of Items and Technical requirements) Unloading of materials at Destination / Site shall be in BHEL's scope.	
	2.2 Supply shall confirm to the above specification and strictly as per Tender Requirement. Pls confirm.	
	2.3 In case of deviation, pls mention the specific clause and the specific deviation against it in the No Deviation Annexure. Pls avoid mentioning any additional points other than what is required as per the Specification.	

	Any other Deviation indicated by the vendor in their offer elsewhere will be ignored. BHEL will proceed with tender evaluation as per the No Deviation format.	
	2.4 Tender evaluation:	
	2.4.1 Tender shall be evaluated on Total Package basis. L1 will be identified on **NET COST TO BHEL basis** (Annexure B – Schedule of Items) Currency of evaluation shall be INR. Rate quoted in Foreign currencies will be converted to INR by multiplying with the Exchange rate (SBI TT Selling rate) as on the technical bid opening date. If the date of opening happens to be a bank holiday, then the forex rate as on previous bank (SBI) working day shall be taken. Note: For import vendors, applicable custom duty, other clearance charges at the port, transportation to Respective Project site will be taken into account for arriving the NET COST TO BHEL.	
	2.4.2 Offers will be considered for price bid opening subject to the fulfilment of techno-commercial suitability and approval by the end customer.	
	2.4.3 Vendor shall quote as per the enclosed price Schedule format only.	
	2.4.4 **Reverse Auction is applicable for this tender**.	
03	**Price Basis:**	
	3.1 Indigenous:	
	3.1.1 The quote shall be on FOR/Respective Project basis as indicated below inclusive of Packing and forwarding, Freight also to yours account. Transit Insurance is under BHEL scope. Refer Annexure B – For the Schedule of Items. FURNACE MAINTENANCE PLATFORM FOR KAWAI PROJECT FURNACE MAINTENANCE PLATFORM FOR KORBA PROJECT FURNACE MAINTENANCE PLATFORM FOR MAHAN PROJECT FURNACE MAINTENANCE PLATFORM FOR MAHAN PH 3 PROJECT FURNACE MAINTENANCE PLATFORM FOR MIRZAPUR PROJECT FURNACE MAINTENANCE PLATFORM FOR RAIGARH PROJECT FURNACE MAINTENANCE PLATFORM FOR RAIPUR PROJECT **Freight shall be considering based on the above project location and the same shall be fed in the BOQ – Format.**	
	3.1.2 Price Variation Clause (PVC) is not acceptable and offer with PVC shall be rejected.	
	3.2 Import :	
	3.2.1 Import vendors to submit offers on CFR (Cost & Freight), Chennai port (LILO – Liner in Liner Out) basis for all the packages. Port of loading should be indicated without fail. Port of discharge should be Chennai.	
	3.2.2 Price Variation Clause (PVC) is not acceptable and offer with PVC shall be rejected.	
	3.2.3 The preferred shipment mode "Containerized Cargo or Break Bulk" shall be specified clearly in the offer. **FOR CFR INCO TERMS – CONTAINERIZED CARGO** For CFR terms, moved through CONTAINERS (Suppliers should clearly specify this in their offer) it would be presumed by BHEL that the freight charges quoted is on LILO (LINER IN LINER OUT) basis including extra charges, if any, like Container Imbalance Charges, Trade Imbalance charges or any other charges payable to the Liner. No other charges other than the quoted Freight rate will be paid by BHEL excepting applicable Terminal Handling Charges, Container cleaning Charges, DO charges to Shipping Liner at Discharge Port. 14 FREE DAYS FOR Container detention shall be provided.	

3.2.4 In case of shipment through Containers on CFR basis, the BL should bear the endorsement that "14 free days for Container Detention is applicable

3.2.5 FOR BREAKBULK CARGO:

For CFR terms, moved through BREAK BULK BASIS (Suppliers should clearly specify this in their offer) it would be presumed by BHEL that the freight charges quoted is on LILO (LINER IN LINER OUT) basis.

The materials will be Custom cleared from Port itself.

Note:

14 Free days for Container detention at final port of destination shall be provided and the same to be endorsed in the Bill of Lading. If there is no free day or less than 14 free days provided by the supplier, the actual cost incurred towards detention charges due to non-availability of above said free days will be recovered from the supplier Invoice.

3.2.6 All invoices shall bear the HSN Code for each item separately (Harmonized System of Nomenclature)/ SAC code (Services Accounting Code

3.2.7 Important Information for Import Supplies

1. Indian Customs imposes a penalty on late filing of Bill of Entries (Air/Sea Shipments) by the importer. The maximum free time allowed is 24 hrs from the time of arrival of cargo at final port of discharge. At present penalty is Rs.5000/- per day (for Initial 03 days) & Rs.10000/- per day (thereafter). Hence the supplier shall submit the Non-Negotiable Documents (Bill of Lading, Commercial Invoice, Packing List, Certificate of Origin, etc.) either by email or post/courier to BHEL well before the landing of cargo at final port of discharge.
2. In case of any penalty due to late filing of Bill of entry for reasons attributable to suppliers (as listed below), the same will be recovered from the bills of supplier:
    i. Non availability of Non-Negotiable Documents (NNDs) before the cargo arrival
    ii. Discrepancy in documents
    iii. Short landing of Consignments (For shipments on CFR– Chennai Port)
3. For all the shipments for the contracts (POs) finalized on CFR- Chennai Port basis,
    a. Delivery Orders involving multiple agencies like liners/freight forwarders are not allowed. To avoid any delay, BHEL prefers Single agency office at the final discharge Port (Chennai) for issuing the Delivery Order to BHEL.
    b. The detention/demurrage charges arise due to the delay in collection of Delivery Orders from multiple agencies of liner/freight forwarder also whose offices are not at available Chennai, the same amount will be deducted from Supplier's bills.
    c. Apart from the Terminal Handling Charges, Container cleaning Charges & Delivery Order Charges at final port of discharge, any other charges will not be borne by BHEL.
    d. The liner/freight forwarders shall be informed by the Vendor not to claim any additional charges (like charges listed below) for issuing Delivery Order. In case if the liner/freight forwarder claims such charges, the same amount will be deducted from the Vendor bills with/without any prior intimation in order to avoid the delay in Customs clearance. The likely additional/hidden charges are listed below.

Transport Conditions for Import:

The Original Documents (Bill of Lading, Invoice, Packing List, Certificate of Origin & Test Certificate) shall reach BHEL well in advance before the vessel arrival. The soft copies of the above shall be forwarded to BHEL immediately after shipment.

o 14 FREE DAYS for Container detention at final port of destination shall be provided and the same to be endorsed in the Bill of Lading. If there is no free day or less than 14 free days provided by the supplier, the actual cost incurred towards detention charges due to non-availability of above said free days will be recovered from the supplier Invoice.

	o In the event of delayed submission of documents/ non-submission of documents by the supplier as per the mutually agreed terms, an amount up to 5% of the invoice value will be retained towards detention/ demurrage & other charges and the difference if any between actual charges and recovery will be settled separately through supplementary invoice. o In such cases, the Supplier shall authorize the Steamer / Shipping agent / transporter to freely release the consignment to BHEL by providing a "Surrender Bill of Lading". o Otherwise, No-objection Certificate shall be issued to the Liner, authorizing BHEL to get the Delivery Order without producing the Original Bill of Lading. a. o This is required to ensure avoidance of detention/ demurrage at Chennai Sea-port that may arise in case of delayed presentation of documents by the Seller	
	1. CIC - Container Imbalance Charges/Surcharges 2. CAF - Container/Currency Adjustment Factor 3. RDS - Rupee Depreciation Surcharge	4. EIC - Equipment Imbalance Charge/Surcharges 5. BAF - Bunker Adjustment Factor 6. CDS - Currency Depreciation Surcharge
04	**TAXES & DUTIES: (Indigenous)**	
	4.1 The Supplier/Vendor shall pay all (save the specific exclusions as enumerated in this clause) taxes, fees, license, charges, deposits, duties, tools, royalty, commissions, other charges, etc. which may be levied on the input goods & services consumed and output goods & services delivered in course of his operations in executing the contract. In case BHEL is forced to pay any of such taxes/duties, BHEL shall have the right to recover the same from his bills or otherwise as deemed fit along with the applicable overheads @5% and interest on the total value (i.e. amount paid by BHEL + overhead). However, provisions regarding **GST** on output supply (goods/service) and TDS/TCS as per Income Tax Act shall be as per following clauses. **4.2 GST (Goods and Services Tax)**	
	Pls indicate the GSTN of your firm	
	4.2.1 GST as applicable on output supply (goods/services) are excluded from Supplier/Vendor's scope; therefore, contractor's price/rates shall be **exclusive** of GST. Reimbursement of GST is subject to compliance of following terms and conditions. BHEL shall have the right to deny payment of GST and to recover any loss to BHEL on account of tax, interest, penalty etc. for non-compliance of any of the following condition.	
	4.2.2 The admissibility of GST, taxes and duties referred in this chapter or elsewhere in the contract shall be limited to direct transactions between BHEL & its Supplier/Vendor. BHEL shall not consider GST on any transaction other than the direct transaction between BHEL & its Supplier/Vendor.	
	4.2.3 Supplier/Vendor shall obtain prior written consent of BHEL before billing the amount towards such taxes. Where the GST laws permit more than one option or methodology for discharging the liability of tax/levy/duty, BHEL shall have the right to adopt the appropriate one considering the amount of tax liability on BHEL/Client as well as procedural simplicity with regard to assessment of the liability. The option chosen by BHEL shall be binding on the Contractor for discharging the obligation of BHEL in respect of the tax liability to the Supplier/Vendor.	
	4.2.4 Supplier/Vendor has to submit GST registration certificate of the concerned state. Supplier/Vendor also needs to ensure that the submitted GST registration certificate should be in active status during the entire contract period.	

	4.2.5	Supplier/Vendor has to issue Invoice/Debit Note/Credit Note indicating HSN/SAC code, Description, Value, Rate, applicable tax and other particulars in compliance with the provisions of relevant GST Act and Rules made thereunder	
	4.2.6	Supplier/Vendor has to submit GST compliant invoice within the due date of invoice as per GST Law. In case of delay, BHEL reserves the right of denial of GST payment if there occurs any hardship to BHEL in claiming the input thereof. In case of goods, Supplier/Vendor has to provide scan copy of invoice & GR/LR/RR to BHEL before movement of goods starts to enable BHEL to meet its GST related compliances. Special care should be taken in case of month end transactions	
	4.2.7	Supplier/Vendor has to ensure that invoice in respect of such services which have been provided/completed on or before end of the month should not bear the date later than last working day of the month in which services are performed.	
	4.2.8	Subject to other provisions of the contract, GST amount claimed in the invoice shall be released on fulfilment of all the following conditions by the Supplier/Vendor: - a) Supply of goods and/or services have been received by BHEL. b) Original Tax Invoice has been submitted to BHEL. c) Supplier/Vendor has submitted all the documents required for processing of bill as per contract/ purchase order/ work order. d) In cases where e-invoicing provision is applicable, Supplier/Vendor is required to submit invoice in compliance with e-invoicing provisions of GST Act and Rules made thereunder. e) Supplier/Vendor has filed all the relevant GST return (e.g. GSTR-1, GSTR-3B, etc.) pertaining to the invoice submitted and submit the proof of such return along with immediate subsequent invoice. In case of final invoice/ bill, contractor has to submit proof of such return within fifteen days from the due date of relevant return. f) Respective invoice has appeared in BHEL's GSTR - 2A for the month corresponding to the month of invoice and in GSTR-2B of the month in which such invoices has been reported by the contractor along with status of ITC availability as "YES" in GSTR-2B. Alternatively, BG of appropriate value may be furnished which shall be valid at least one month beyond the due date of confirmation of relevant payment of GST on GSTN portal or sufficient security is available to adjust the financial impact in case of any default by the Supplier/Vendor. g) Supplier/Vendor has to submit an undertaking confirming the payment of all due GST in respect of invoices pertaining to BHEL.	
	4.2.9	Any financial loss arises to BHEL on account of failure or delay in submission of any document as per contract/purchase order/work order at the time of submission of Tax invoice to BHEL, shall be deducted from Supplier/Vendor's bill or otherwise as deemed fit.	
	4.2.10	TDS as applicable under GST law shall be deducted from Supplier/Vendor's bill.	
	4.2.11	Supplier/Vendor shall comply with the provisions of e-way bill wherever applicable. Further wherever provisions of GST Act permits, all the e-way bills, road permits etc. required for transportation of goods needs to be arranged by the contractor.	
	4.2.12	Supplier/Vendor shall be solely responsible for discharging his GST liability according to the provisions of GST Law and BHEL will not entertain any claim of GST/interest/penalty or any other liability on account of failure of	

	Supplier/Vendor in complying the provisions of GST Law or discharging the GST liability in a manner laid down thereunder.	
	4.2.13 In case declaration of any invoice is delayed by the vendor in his GST return or any invoice is subsequently amended/altered/deleted on GSTN portal which results in any adverse financial implication on BHEL, the financial impact thereof including interest/penalty shall be recovered from the Supplier/Vendor's due payment.	
	4.2.14 Any denial of input credit to BHEL or arising of any tax liability on BHEL due to non-compliance of GST Law by the Supplier/Vendor in any manner, will be recovered along with liability on account of interest and penalty (if any) from the payments due to the Supplier/Vendor.	
	4.2.15 In the event of any ambiguity in GST law with respect to availability of input credit of GST charged on the invoice raised by the contractor or with respect to any other matter having impact on BHEL, BHEL's decision shall be final and binding on the Supplier/Vendor.	
	4.2.16 Variation in Taxes & Duties:	
	Any upward variation in GST shall be considered for reimbursement provided supply of goods and services are made within schedule date stipulated in the contract or approved extended schedule for the reason solely attributable to BHEL. However downward variation shall be subject to adjustment as per actual GST applicability. In case the Government imposes any new levy/tax on the output service/goods after price bid opening, the same shall be reimbursed by BHEL at actual. The reimbursement under this clause is restricted to the direct transaction between BHEL and its Supplier/Vendor only and within the contractual delivery period only. In case any new tax/levy/duty etc. becomes applicable after the date of Bidder's offer but before opening of the price Bid, the Bidder/ Supplier/Vendor must convey its impact on his price duly substantiated by documentary evidence in support of the same before opening of price bid. Claim for any such impact after opening the price bid will not be considered by BHEL for reimbursement of tax or reassessment of offer	
	4.3 Income Tax:	
	TDS/TCS as applicable under Income Tax Act, 1961 or rules made thereunder shall be deducted/collected from Supplier/Vendor's bill.	
	4.4 HSN Code & Applicable GST % (To be filled by Supplier**)**	
	4.5 Import suppliers: As per extant provisions of Income Tax Act,1962 in India, foreign suppliers have to submit the following documents to avail benefits under DTAA at time of each dispatches, failing which TDS will be applicable considering Business Income in India. (Current TDS rate @ 40% as per the extant law provisions) plus applicable surcharge and cess is to be deducted u/s. 195 of I.T Tax Act. 4.5.1 Valid Tax Residency Certificate issued by Govt / Tax agency of country	
	4.5.2 Form 10F duly filed signed	
	4.5.3 No PE and No Business connection declaration in mills letter head.	
	4.5.4 Declaration of No Significant Economic Presence (SEP) in India as per Indian I.T Rule 11UD & indemnity to pay taxes at later stages on demand.	
	4.5.5 Self-declaration that Non-resident is eligible to obtain benefits of relevant DTAA between India and Supplier's country.	
05	**MATERIAL DISPATCH CLEARANCE CERTIFICATE (MDCC):** MDCC shall be issued by BHEL. No material shall be dispatched by supplier unless and until Material Dispatch Clearance Certificate (MDCC)/MAIL issued by BHEL Site. In case any material is dispatched without MDCC and any loss is incurred by Supplier/Vendor for any reason whatsoever, BHEL shall not be responsible in any manner to compensate the supplier in this regard.	

06	**INSPECTION / INSPECTION & TESTING AT SUPPLIERS WORKS:** (Inspection notice period): For TPI inspector visit to vendor works, a minimum of 7 working days' notice period is required. For Joint Inspection (if applicable), vendor shall raise inspection call at least 7 days prior to the proposed date of inspection at vendor works. Any comments on the CQIR report to be replied by the vendor within 3 days. Any delay regarding this will be considered as vendor's delay and account for LD) BHEL reserves the right to inspect the material during manufacturing and also to get tested the material under dispatch from third party. The test results of third party test shall be final and binding on the Supplier/Vendor. BHEL will reserve the right to inspect/test the material during/after manufacturing at suppliers' works, and/or at BHEL Site. In case of rejection at any stage, Supplier/Vendor shall be liable to replace the materials at his own cost.	
07	**DELIVERY PERIOD:** **Indigenous:** Delivery Period shall be as below: (including Manufacturing, Inspection, Packing, Forwarding and delivery at Respective Project Site) First Lot—4 Months from the date of manufacturing clearance and subsequent lots will be after 2 months thereafter **Each project (Consist of 6 Nos as indicated in the Annexure B))** **Project delivery sequence will be provided during manufacturing clearance.** **Manufacturing clearance shall be provided project wise based on site erection schedule** **Import:** Delivery Period shall be as below (Indicated delivery period covers Manufacturing, Inspection, Packing, Forwarding and Loading on Ship): First Lot—4 Months from the date of manufacturing clearance and subsequent lots will be after 2 months thereafter **Each Project (Consist of 6 Nos as indicated in the Annexure B))** **Project delivery sequence will be provided during manufacturing clearance.** **Manufacturing clearance shall be provided project wise based on site erection schedule.** Material shall be dispatched after obtaining dispatch clearance from BHEL. Note: Delivery period mentioned anywhere else in the bid document is for indicative purpose. Delivery schedule shall be as per this clause. Vendors shall strictly adhere to the following. • After material readiness and inspection completion (by TPI/ BHEL/ End Customer), vendor shall seek dispatch clearance from BHEL. • After obtaining dispatch clearance from BHEL, vendor shall proceed to generate dispatch documents. After generating dispatch documents (Invoice, LR, Packing List, E-waybill etc. – Indigenous supplier and Import – Bill of Lading and Invoice, Country of Origin and Packing List) vendor shall immediately share these documents to BHEL (scan copy over email) for accounting the materials and securing insurance coverage for Indigenous suppliers. **NOTE:**	

a) If the delivery of supply as detailed above gets delayed beyond the delivery period, the Supplier/Vendor shall request for a delivery extension and BHEL at its discretion may extend the Contract. However, if any 'Delivery extension' is granted to the Supplier/Vendor for completion of supply, due to backlog attributable to the Supplier/Vendor, then it shall be without prejudice to the rights of BHEL to impose LD for the delays attributable to the Supplier/Vendor

b) In case BHEL increase the quantity during currency of the contract in line with quantity variation clause, delivery extension shall be given for supply of these additional quantity.

08 **TRANSIT INSURANCE:**

Indigenous and Import: Transit Insurance of materials is in BHEL scope.

09 **PAYMENT TERMS:**

9.1 Indigenous

9.1.1 Payment terms:

Indigenous Supplier (Non MSE and MSE)

• Payment term is 100% direct EFT payment on Nth day from the date of Site Acknowledgement date (Against submission of GST invoice, Packing List, LR copy, site acknowledged LR by BHEL and submission of 5% PBG valid for warranty period).

Value for "N" referred above:

N- 90 for Non MSE vendors, 60 for Medium scale vendors and 45 for MSE vendors

However, GST amount shall be reimbursed in line with compliance to Cl. No. 4 (Taxes & Duties) above.

No Interest Payable to Contractor

No interest shall be payable on the security deposit or any other money due to the Supplier.

9.2 Import

9.2.1

Option:1:

BHEL Payment term is 100% payment on CAD basis after 90 days from the date of receipt of documents, specified in PO, at BHEL bank and submission of 5% PBG valid for warranty period.

Respective bank charges to respective account.

Option:2:

If supplier insists for LC, only Usance LC with 120 days' credit will be opened one month prior to material readiness subject to submission of 5% PBG valid for warranty period. Hence, supplier shall intimate the material readiness accordingly for opening of LC. LC validity period will be 90 days and for any extension, applicable charges will be to supplier's account.

Upon LC expiry, the subsequent bills will be against CAD basis.

Any deviation in the above payment term will attract loading as mentioned below. MCLR rate of SBI p.a. + 6% (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) shall be considered for loading for the period of relaxation sought by bidder's subject to competent authority approval. Example of the same is provided below:

Payment Term	Relaxation Period	Loading (@ MCLR 9% p.a. + 6%)

LC 90 days	30	1.23%	
LC 60 days	60	2.47%	
LC 30 days	90	3.70%	

9.2.2 Quoted currency to be indicated

Note: *LC will be opened one month prior to material readiness. Hence supplier shall intimate the material readiness accordingly for opening of LC. LC validity period will be 90 days and for any extension applicable charges will be to supplier account. Extension of LC validity will not be entertained and dispatches beyond LC validity shall be on collection basis only.*

9.2.3 No Interest Payable to Contractor

No interest shall be payable on the security deposit or any other money due to the Supplier.

08 Documents Required For Bill Processing:

8.1 Indigenous

The following documents are required to be sent with Material Dispatch/Billing Documents:

- Original Tax Invoice-02 Copies Sign with Seal (As per Cl. No. 4 above).
- Duplicate for Transporter
- Copy of LR
- Original Consignee copy of the LR
- Site Acknowledged copy of the LR
- E Way bill (Part A and Part B)
- E Invoice
- Warranty Certificate
- Bank Guarantee

8.2 Import

8.2.1 Bill of Lading.

8.2.2 Invoice, should show the description of the goods and the unit rate of each item as in the purchase contract. Against each item in the invoice and packing list, the serial number of the corresponding item in the purchase contract or as per order acknowledgement should be indicated. HSN code to be indicated for each item.

8.2.3 Packing list must indicate case identification, case dimension, and case contents, no of bundles, gross and net weight.

8.2.4 Country of origin Certificate. HSN code to be indicated for each item.

8.2.5 Test certificate.

All the above documents should be submitted in triplicate & in all documents Contract No., L.C. No. and Import License No. are to be indicated.

8.3 For Imports: Port of discharge shall be **Chennai Sea Port.** Pls confirm specifically

8.4 For Imports: Indicate the Port of shipment

8.5 For Imports: Indicate the Mill (Name, Location) & Country of origin

11 BANK DETAILS FOR EMD & PERFORMANCE SECURITY SUBMISSION:

For Electronic Fund Transfer the details are as below:
a) Name of the Beneficiary: Bharat Heavy Electricals Limited

b) Bank Particulars (Details of Respectively executing region):

Name of the Company: BHARAT HEAVY ELECTRICALS LTD
Address of the Company: HIGH PRESSURE BOILER PLANT, KAILASAPURAM
TRICHY - 620014
Name of the bank: STATE BANK OF INDIA/KAILASAPURAM
City : TRICHY
Branch code : 01363

	Account Number : 10891588977 Account type : CC IFSC code - :SBIN0001363 MICR code : 620002004	
12	**~~EARNEST MONEY DEPOSIT: Applicable / Not Applicable.~~** ~~12.1 Every tender must be accompanied by the prescribed amount of Earnest Money Deposit (EMD) in the manner described herein.~~ ~~i EMD shall be furnished before tender opening / along with the offer in full as per the amount indicated in the NIT.~~ ~~ii The EMD up to an amount of Rs. ..... is to be paid only in the following forms:~~ ~~a) Electronic Fund Transfer credited in BHEL account (before tender opening).~~ ~~b) Banker's cheque/ Pay order/ Demand draft, in favour of 'Bharat Heavy Electricals Limited' and payable at Regional HQ issuing the tender (along with offer).~~ ~~c) Fixed Deposit Receipt (FDR) issued by Scheduled Banks/ Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL marking lien in favour of BHEL) (along with offer). The Fixed Deposit in such cases shall be valid for a period of 45 (forty-five) days beyond the final bid validity period.~~ ~~d) Bank Guarantee from any of the Scheduled Banks. In such cases shall be valid for a period of 45 (forty-five) days beyond the final bid validity period.~~ ~~e) Insurance Surety Bonds. In case the EMD is more than Rs. Two lakh and in case of foreign bidders, it may be in the form of a bank guarantee (in equivalent Foreign Exchange amount, in case of foreign bidders) issued/ confirmed from any of the scheduled commercial bank in India in the prescribed format. The EMD shall remain valid for a period of 45 (forty-five) days beyond the final bid validity period.~~ ~~iii No other form of EMD remittance shall be acceptable to BHEL.~~ ~~12.2 EMD by the Bidder will be forfeited as per NIT conditions, if:~~ ~~i. The bidder withdraws or amends its/his tender or impairs or derogates from the tender in any respect within the period of validity of the tender or if the successful bidder fails to furnish the required performance security within the specified period mentioned in the Tender.~~ ~~ii. EMD by the Bidder shall be withheld in case any action on the tenderer is envisaged under the provisions of extant "Guidelines on Suspension of business dealings with suppliers/ contractors" and shall be forfeited in case of suspension~~ ~~12.3 Subject to Clause 12.2 above, EMD of the unsuccessful bidders shall be returned at the earliest after expiry of the final bid validity period and latest by the 30th day after the award of the contract. However, in case of two packet or two stage bidding, EMD of unsuccessful bidders during first stage i.e., technical evaluation etc. shall be returned within 30 days of declaration of result of first stage i.e. technical evaluation etc.~~ ~~12.4 EMD of successful Bidder shall be refunded on conclusion of the order/ receipt of a performance security as mentioned in NIT.~~ ~~12.5 EMD shall not carry any interest.~~ ~~12.6 MSE / KVIC / ACASH / WDO / Coir Board / TRIFED / Kendriya Bhandar / Turnover above 500 Cr / BIS License holders / Central PSU / State PSU / Startups as recognized by Department for Promotion of Industry and Internal Trade (DPIIT) shall be exempted from payment of EMD.~~	~~NOT APPLICABLE~~
13	**PERFORMANCE SECURITY:** 13.1 Successful bidder awarded the contract should deposit 5 % of the contract value as performance security towards fulfilment of all contractual obligations including warranty obligations.	APPLICABLE

	13.2 Performance Security is to be furnished within 30 days after issuance of Contract/PO and should remain valid for a period of 60 (sixty) days beyond the date of completion of all contractual obligations of the Supplier/Vendor including warranty obligations. 13.3 Modes of deposit: a) Performance security may be furnished in the following forms: i. Local cheques of Scheduled Banks (subject to realization)/ Pay Order/Demand Draft/ Electronic Fund Transfer in favour of 'Bharat Heavy Electricals Limited' and payable at Regional HQ ii. Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The Bank Guarantee should be in the prescribed format of BHEL and through SFMS Structured Financial Messaging System) iii. ~~Fixed Deposit Receipt (FDR) issued by Scheduled Banks / Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL).~~ iv. Securities available from Indian Post offices such as National Savings Certificates, Kisan Vikas Patras etc. (held in the name of Contractor furnishing the security and duly endorsed/ hypothecated/ pledged, as applicable, in favour of BHEL). v. Insurance Surety Bond. Note: BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith. b) In case of GTE tenders, the performance security should be in the same currency as the contract and must conform to Uniform Rules for Demand warans (URDG 758) - an international convention regulating international securities. 13.4 The performance security will be forfeited and credited to BHEL's account in the event of a breach of contract by the Supplier/Vendor as provided herein or elsewhere in the Contract/PO. 13.5 Performance Security shall be refunded to the Supplier/Vendor without interest, after the Supplier/Vendor duly performs and completes the contract in all respects but not later than 60(sixty) days of completion of all such obligations including the warranty under the contract. 13.6 The Performance Security shall not carry any interest. 13.7 There is no exemption of Performance security deposit submission for MSE Vendors.	
14	**Breach of contract, Remedies and Termination**	
	14.1 The following shall amount to breach of contract: I. Non-supply of material/ non-completion of work by the Supplier/Vendor within scheduled delivery/ completion period as per contract or as extended from time to time. II. The Supplier/Vendor fails to perform as per the activity schedule and there are sufficient reasons even before expiry of the delivery/ completion period to justify that supplies shall be inordinately delayed beyond contractual delivery/ completion period III. The Supplier/Vendor delivers equipment/ material not of the contracted quality. IV. The Supplier/Vendor fails to replace the defective equipment/ material/ component as per guarantee clause. V. Withdrawal from or abandonment of the work by the Supplier/Vendor before completion as per contract. VI. Assignment, transfer, subletting of Contract by the Supplier/Vendor without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.	

VII. Non-compliance to any contractual condition or any other default attributable to Supplier/Vendor.

VIII. Any other reason(s) attributable to Vendor towards failure of performance of contract. In case of breach of contract, BHEL shall have the right to terminate the Purchase Order/ Contract either in whole or in part thereof without any compensation to the Supplier/Vendor.

IX. Any of the declarations furnished by the contractor at the time of bidding and/ or entering into the contract for supply are found untruthful and such declarations were of a nature that could have resulted in non-award of contract to the contractor or could expose BHEL and/ or Owner to adverse consequences, financial or otherwise.

X. Supplier/Vendor is convicted of any offence involving corrupt business practices, antinational activities or any such offence that compromises the business ethics of BHEL, in violation of the Integrity Pact entered into with BHEL has the potential to harm the overall business of BHEL/ Owner.

Note- Once BHEL considers that a breach of contract has occurred on the part of Supplier/Vendor, BHEL shall notify the Supplier/Vendor by way of notice in this regard. Contractor shall be given an opportunity to rectify the reasons causing the breach of contract within a period of 14 days.

In case the contractor fails to remedy the breach, as mentioned in the notice, to the satisfaction of BHEL, BHEL shall have the right to take recourse to any of the remedial actions available to it under the relevant provisions of contract.

14.2 Remedies in case of Breach of Contract.

I. Wherein the period as stipulated in the notice issued under clause 14.1 has expired and Supplier/Vendor has failed to remedy the breach, BHEL will have the right to terminate the contract on the ground of "Breach of Contract" without any further notice to contractor.

II. Upon termination of contract, BHEL shall be entitled to recover an amount equivalent to 10% of the Contract Value for the damages on account of breach of contract committed by the Supplier/Vendor. This amount shall be recovered by way of encashing the security instruments like performance bank guarantee etc available with BHEL against the said contract. In case the value of the security instruments available is less than 10% of the contract value, the balance amount shall be recovered from other financial remedies (i.e. available bills of the Supplier/Vendor, retention amount, from the money due to the Supplier/Vendor etc. with BHEL) or the other legal remedies shall be pursued.

III. wherever the value of security instruments like performance bank guarantee available with BHEL against the said contract is 10% of the contract value or more, such security instruments to the extent of 10% contract value will be encashed. In case no security instruments are available or the value of the security instruments available is less than 10% of the contract value, the 10% of the contract value or the balance amount, as the case may be, will be recovered in all or any of the following manners:

IV. In case the amount recovered under sub clause (a) above is not sufficient to fulfil the amount recoverable then; a demand notice to deposit the balance amount within 30 days shall be issued to Supplier/Vendor.

V. If Supplier/Vendor fails to deposit the balance amount within the period as prescribed in demand notice, following action shall be taken for recovery of the balance amount:

a) from dues available in the form of Bills payable to defaulted Supplier/Vendor against the same contract.

b) If it is not possible to recover the dues available from the same contract or dues are insufficient to meet the recoverable amount,

	balance amount shall be recovered from any money(s) payable to Supplier/Vendor under any contract with other Units of BHEL including recovery from security deposits or any other deposit available in the form of security instruments of any kind against Security deposit or EMD. VI. In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against defaulted supplier/Vendor. VII. It is an agreed term of contract that this amount shall be a genuine pre-estimate of damages that BHEL would incur in completion of balance contractual obligation of the contract through any other agency and BHEL will not be required to furnish any other evidence to the Supplier/Vendor for the purpose of estimation of damages. VIII. In addition to the above, imposition of liquidated damages, debarment, termination, de-scoping, short-closure, etc., shall be applied as per provisions of the contract. **Note:** 1) The defaulting Supplier/Vendor shall not be eligible for participation in any of the future enquiries floated by BHEL to complete the balance work. The defaulting contractor shall mean and include: a. In case defaulted Supplier/Vendor is the Sole Proprietorship Firm, any Sole Proprietorship Firm owned by same Sole Proprietor. b. In case defaulted Supplier/Vendor is The Partnership Firm, any firm comprising of same partners/ some of the same partners; or sole proprietorship firm owned by any partner(s) as a sole proprietor.	
	LD against delay in executed supply in case of Termination of Contract:	
	LD against delay in executed supply shall be calculated in line with LD clause no. 10.0 below, for the delay attributable to Supplier/Vendor. For limiting the maximum value of LD, contract value shall be taken as Executed Value of supply till termination of contract. Method for calculation of "LD against delay in executed supply in case of termination of contract" is given below. i. Let the time period from scheduled date of start of supply till termination of contract excluding the period of Hold (if any) not attributable to contractor = T1 ii. **Let the value of executed supply till the time of termination of contract= X** iii. Let the Total Executable Value of supply for which inputs/fronts were made available to Supplier/Vendor and were planned for execution till termination of contract = Y iv. Delay in executed supply attributable to Supplier/Vendor i.e. T2=[1-(X/Y)] x T1 v. LD shall be calculated in line with LD clause (clause 18.0) of the Contract for the delay attributable to Supplier/Vendor taking "X" as Contract Value and "T2" as period of delay attributable to Supplier/Vendor.	
15	**BILL TO/ SHIP TO ADDRESS:** **BILL TO ADDRESS:** **BHARAT HEAVY ELECTRICALS LIMITED** **HIGH PRESSURE BOILER PLANT, TIRUCHIRAPALLI - 620 014** **TAMIL NADU - INDIA.** **GST: 33AAACB4146P2ZL** **(Indigenous)** For site – As per Dispatch instructions during dispatch clearance by BHEL **Import**	

	FOR/ CFR BASIS Destination : Chennai Sea Port Basis	
16	**GUARANTEE/WARRANTY: (As per Product Requirement)** Guarantee period for Supply of tendered items shall be shall be twenty-four (24) months from the date of Supply or eighteen (18) months from the date of commissioning, whichever is earlier.	
17	**MICRO AND SMALL ENTERPRISES (MSE):**	

Any Bidder falling under MSE category shall furnish the following details & submit documentary evidence/ Govt. Certificate etc. in support of the same along with their techno-commercial offer.

Type under MSE	UDYAM No	SC/ST Owned	Women Owned	Others (Excluding SC/ST/Women)
Micro				
Small				

Note: If the bidder does not furnish the above, offer shall be processed construing that the bidder is not falling under MSE category.

a) MSE suppliers can avail the intended benefits in respect of the procurements related to the Goods and Services only (Definition of Goods and Services as enumerated by Govt. of India vide Office Memorandum F. No. 21(8)/2011-MA dtd. 09/11/2016 office of AS & DC, MSME) only if they submit along with the offer, attested copies of either Udyam Registration. Date to be reckoned for determining the deemed validity will be the last date of Technical Bid submission. Non-submission of supporting document along with the tender documents will lead to consideration of their bids at par with other bidders. No benefits shall be applicable for this enquiry if the above required documents are not uploaded at the time of bid submission. Documents submitted by the bidder shall be verified by BHEL for rendering the applicable benefits.

b) Material entry date (Gate Entry date) will be considered for payment due date calculation (when no objections are raised by BHEL). If such objection(s) is raised within 15 days of zero date /last closure of objection and payment due date will be accordingly revised considering date on which vendor has successfully replied against objection as zero date.

c) As per the public procurement policy notified by the central government, micro and small enterprises quoting within the price band of L1 +15% shall be allowed to supply a portion of the requirement up to 25 % of the tender value subject to condition that such enterprises bring down their price to L1 price where L1 price is from other than a micro and small enterprise. If L1 offer is from a micro / small enterprise, this provision will not be applicable.

d) Counter offering to MSE vendor shall be in such a way that minimum 12 Nos – 2 Projects shall be counter offered with MSE vendor in case L1 is a non MSE vendor. Project will be informed based on the site clearance.

18	**LIQUIDATED DAMAGE:** Liquidated Damages, wherever referred under this Tender/Agreement, shall mean and refer to the damages, not in the nature of penalty, which the contractor agrees to pay in the event of delay in delivery of supplies, breach of contract etc. as the case may be. Liquidated Damages leviable upon the Supplier/Vendor is a sum which is agreed by the parties as a reasonable and genuine pre-estimate of damages which will be suffered by BHEL on account of delay/breach on the part of the Supplier/Vendor. If the Seller/Service Provider fails to deliver any or all of the Goods/Services within the original/re-fixed delivery period(s) specified in the contract/PO, the Buyer/BHEL will be entitled to deduct/recover the Liquidated Damages for the delay, unless covered	

under Force Majeure conditions aforesaid, @ 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10 % of Purchase order value. (PV)

NOTE:

a. Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value).

b. **Imports**: CFR order- LD will be reckoned from B/L date

19 **INTEGRITY PACT:** Signed Integrity pact (IP) should be furnished along with offer. IP would be signed by authorized official of the bidder/vendor/contractor. Offer without signed Integrity Pact (IP) shall be rejected. Copy of IP should be enclosed. This tender will be monitored by Independent external monitor (IEM). For information only.

a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner. Following Independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

Sl.No	IEM	Email
1	Shri Bishwamitra Pandey, IRAS (Retd.)	iem2@bhel.in
2	Shri Mukesh Mittal, IRS (Retd.)	iem3@bhel.in

The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/ three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.

Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to any of the above IEM(s). All correspondence with the IEMs shall be done through email only.

Note:

No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department's officials whose contact details as below:

Details of contact person(s):

Name	P.Duraippandi	R SrijaMole
Dept	SDGM/MM/BOI	Manager MM/BOI
Address	Bldg No:24, BHEL Trichy	Bldg No:24, BHEL Trichy
Phone	0431 -2577741/ 9978988766	0431 -2577872/7598369940
E-Mail	duraip@bhel.in	srija@bhel.in

20 **PREFERENCE TO MAKE IN INDIA:**

For this procurement, the local content to categorize a supplier as a class I local supplier/class II local supplier /Non-local supplier and purchase preference to class I local supplier, is as defined in Public Procurement (Preference to Make in India), Order 2017 dated 19.07.2024 issued by DPIIT. In case of subsequent Orders issued by the respective Nodal Ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before opening of part II bids against this NIT.

Counter offer to CLASS I supplier shall be in such way that Minimum 24 Nos – 4 Projects shall be counter offered to Class I local supplier in case L1 is not a Class I local supplier

~~**20.1 Compliance to Restrictions under Rule 144 (xi) of GFR 2017:**~~

~~I. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. The Competent Authority for the purpose of this Clause shall be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT).~~

~~II. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process~~.

~~III. "Bidder from a country which shares a land border with India" for the purpose of this Clause means: -~~

~~a. An entity incorporated established or registered in such a country; or~~
~~b. A subsidiary of an entity incorporated established or registered in such a country; or~~
~~c. An entity substantially controlled through entities incorporated, established or registered in such a country; or~~
~~d. An entity whose beneficial owner is situated in such a country; or~~
~~e. An Indian (or other) agent of such an entity; or~~
~~f. A natural person who is a citizen of such a country; or~~
~~g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above.~~

IV. The beneficial owner for the purpose of (III) above will be as under:

1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.
   Explanation
   a. *"Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent of shares or capital or profits of the company.*
   b. *"Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholder's agreements or voting agreements.*
2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership.
3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person has ownership of or entitlement to more than fifteen percent of the property or capital or profits of the such association or body of individuals.
4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

	a. *The bidder shall provide undertaking for their compliance to this Clause, in the format provided in Annexure-13.* b. *Registration of the bidder with Competent Authority should be valid at the time of submission of bids and at the time of acceptance of the bids*	
21	**Settlement of Dispute:** If any dispute or difference of any kind whatsoever shall arise between BHEL and the Supplier/Vendor, arising out of the contract for the performance of the work whether during the progress of contract termination, abandonment or breach of the contract, it shall in the first place referred to Designated Engineer for amicable resolution by the parties. Designated Engineer (to be nominated by BHEL for settlement of disputes arising out of the contract) who within 60 days after being requested shall give written notice of his decision to the contractor. Save as hereinafter provided, such decision in respect of every matter so referred shall forthwith be given effect to by the Supplier/Vendor who shall proceed with the work with all due diligence, whether he or BHEL desires to resolve the dispute as hereinafter provided or not. If after the Designated Engineer has given written notice of this decision to the party and no intention to pursue the dispute has been communicated to him by the affected party within 30 days from the receipt of such notice, the said decision shall become final and binding on the parties. In the event the Supplier/Vendor being dissatisfied with any such decision or if amicable settlement cannot be reached then all such disputed issues shall be resolved through conciliation in terms of the BHEL Conciliation Scheme 2018 as per Clause 14.1 **21.1 Conciliation:** Any dispute, difference or controversy of whatever nature howsoever arising under or out of or in relation to this Agreement (including its interpretation) between the Parties, and so notified in writing by either Party to the other Party (the "Dispute") shall, in the first instance, be attempted to be resolved amicably in accordance with the conciliation procedure as per BHEL Conciliation Scheme 2018. The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof and as provided in - "Procedure for conduct of conciliation proceedings" (as available in www.bhel.com)). **Note:** Ministry of Finance has issued OM reference No. 1/2/24 dated 03.06.2024 regarding "Guidelines for Arbitration and Mediation in Contracts of Domestic Public Procurement. In the said OM it has been recommended that Government departments/ Entities/agencies are to encourage mediation under the Mediation Act. 2023. The said Act has not yet been notified by the Government. Therefore, the clause "Settlement of Disputes" shall be modified accordingly as and when the Mediation Act 2023 gets notified. **21.2 ARBITRATION:** 21.2.1 Except as provided elsewhere in this Contract, in case Parties are unable to reach amicable settlement (whether by Conciliation to be conducted as provided in Clause 14.1 herein above or otherwise) in respect of any dispute or difference; arising out of the formation, breach, termination, validity or execution of the Contract; or, the respective rights and liabilities of the Parties; or, in relation to interpretation of any provision of the Contract; or. in any manner touching upon the Contract (hereinafter referred to as the 'Dispute'), then, either Party may, refer the disputes to **Madras High Court, Arbitration Centre (MHCAC)**and such dispute to be adjudicated by Sole Arbitrator appointed in accordance with the Rules of said Arbitral Institution. 21.2.2 A party willing to commence arbitration proceeding shall invoke Arbitration Clause by giving notice to the other party in terms of section 21 of the	

Arbitration & Conciliation Act, 1996 (hereinafter referred to as the 'Notice') before referring the matter to arbitral institution. The Notice shall be addressed to the Head of the Unit, BHEL, executing the Contract and shall contain the particulars of all claims to be referred to arbitration with sufficient detail and shall also indicate the monetary amount of such claim including interest, if any.

21.2.3 After expiry of 30 days from the date of receipt of aforesaid notice, the party invoking the Arbitration shall submit that dispute to the Arbitral Institution- **Madras High Court, Arbitration Centre (MHCAC)-** and that dispute shall be adjudicated in accordance with their respective Arbitration Rules. The matter shall be adjudicated by a Sole Arbitrator who shall necessarily be a Retd Judge having considerable experience in commercial matters to be appointed/nominated by the respective institution. The cost/expenses pertaining to the said Arbitration shall also be governed in accordance with the Rules of the respective Arbitral Institution. The decision of the party invoking the Arbitration for reference of dispute to **Madras High Court, Arbitration Centre (MHCAC)-** for adjudication of that dispute shall be final and binding on both the parties and shall not be subject to any change thereafter. The institution once selected at the time of invocation of dispute shall remain unchanged.

21.2.4 The fee and expenses shall be borne by the parties as per the Arbitral Institutional rules.

21.2.5 The Arbitration proceedings shall be in English language and the seat of Arbitration shall be **Trichy.**

21.2.6 Subject to the above, the provisions of Arbitration & Conciliation Act 1996 and any amendment thereof shall be applicable. All matters relating to this Contract and arising out of invocation of Arbitration clause are subject to the exclusive jurisdiction of the Court(s) situated at **Trichy.**

21.2.7 Notwithstanding any reference to the Designated Engineer or Conciliation or Arbitration herein, a. the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree. Settlement of Dispute clause cannot be invoked by the Contractor, if the Contract has been mutually closed or 'No Demand Certificate' has been furnished by the Contractor or any Settlement Agreement has been signed between the Employer and the Contractor.

21.2.8 It is agreed that Mechanism of resolution of disputes through arbitration shall be available only in the cases where the value of the dispute is less than Rs. 10 Crores.

21.2.9 In case the disputed amount Claim, Counter claim including interest is Rs. 10 crores and above, the parties shall be within their rights to take recourse to remedies other than Arbitration, as may be available to them under the applicable laws after prior intimation to the other party. Subject to the aforesaid conditions, provisions of the Arbitration and Conciliation Act, 1996 and any statutory modifications or re-enactment thereof as amended from time to time, shall apply to the arbitration proceedings under this clause.

21.2.10 In case, multiple arbitrations are invoked (whether sub-judice or arbitral award passed) by any party to under this contract, then the cumulative value of claims (including interest claimed or awarded) in all such arbitrations shall be taken in account while arriving at the total claim in dispute for the subject contract for the purpose of clause 14.2.9. Disputes having cumulative value of less than 10 crores shall be resolved through arbitration and any additional dispute shall be adjudicated by the court of competent jurisdiction.

21.2.11 In **case of Contract with Public Sector Enterprise (PSE) or a Government Department, the following shall be applicable:**

	In the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contract(s) between Central Public Sector Enterprises (CPSEs)/ Port Trusts inter se and also between CPSEs and Government Departments/Organizations (excluding disputes concerning Railways, Income Tax, Customs & Excise Departments), such dispute or difference shall be taken up by either party for resolution through AMRCD (Administrative Mechanism for Resolution	
22	**JURISDICTION** Subject to clause 14 of this contract, the Civil Court having original Civil Jurisdiction at Tiruchirappalli, TamilNadu shall alone have exclusive jurisdiction in regard to all matters in respect of the Contract.	
	GOVERNING LAWS The contract shall be governed by the Law for the time being in force in the Republic of India.	
23	**FORCE MAJEURE** 23.1 "Force Majeure" shall mean circumstance which is: a) beyond control of either of the parties to contract, b) either of the parties could not reasonably have provided against the event before entering into the contract, c) having arisen, either of the parties could not reasonably have avoided or overcome, and d) not substantially attributable to either of the parties and Prevents the performance of the contract, such circumstances include but shall not be limited to: i. War, hostilities, invasion, act of foreign enemies. ii. Rebellion, terrorism, revolution, insurrection, military or usurped power, or civil war. iii. Riot, commotion or disorder by persons other than the contractor's personnel and other employees of the contractor and sub-contractors. iv. Strike or lockout not solely involving the contractor's personnel and other employees of the contractor and sub-contractors. v. Encountering munitions of war, explosive materials, ionizing radiation or contamination by radio-activity, except as may be attributable to the contractor's use of such munitions, explosives, radiation or radio- activity. vi. Natural catastrophes such as earthquake, tsunami, volcanic activity, hurricane or typhoon, flood, fire, cyclones etc. vii. Epidemic, pandemic etc. 23.2 The following events are explicitly excluded from Force Majeure and are solely the responsibilities of the non-performing party: a) any strike, work-to-rule action, go-slow or similar labour difficulty (b) late delivery of equipment or material (unless caused by Force Majeure event) and (c) economic hardship. 23.3 If either party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within 15 (fifteen) days after the occurrence of such event. 23.4 The party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such party's performance is prevented, hindered or delayed. The Time for Completion shall be extended by a period of time equal to period of delay caused due to such Force Majeure event. 23.5 Delay or non-performance by either party hereto caused by the occurrence of any event of Force Majeure shall not 1. Constitute a default or breach of the Contract. 2. Give rise to any claim for damages or additional cost expense occasioned thereby, if and to the extent that such delay or non-performance is caused by the occurrence of an event of Force Majeure.	

	23.6 BHEL at its discretion may consider short closure of contract after 1 year of imposition of Force Majeure in line with extant guidelines. In any case, Supplier/Vendor cannot consider deemed short-closure after 1 year of imposition of Force Majeure.	
24	**Non-Disclosure Agreement:** The bidders shall enter into the Non-disclosure agreement separately. (Annexure 7 attached).	
25	**Cartel Formation** The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines.	
26	**Fraud Prevention Policy** Bidder along with its associate /collaborators /sub-contractors /sub-vendors / consultants / service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website http://www.bhel.com and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.	
27	**Suspension of Business Dealings with Suppliers / Contractors:** The offers of the bidders who are under suspension as also the offers of the bidders, who engage the services of the banned firms / principal / agents, shall be rejected. The list of banned firms is available on BHEL website www.bhel.com. If any bidder / supplier / contractor during pre-tendering / tendering / post tendering / award /execution / post-execution stage indulges in any act, including but not limited to, mal-practices, cheating, bribery, fraud or and other misconduct or formation of cartel so as to influence the bidding process or influence the price or tampers the tendering process or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860(Bhartiya Nyaya Samhita 2023) or any other law in force in India, or does anything which is actionable under the Guidelines for Suspension of Business dealings, action may be taken against such bidder / supplier / contractor as per extant guidelines of the company available on www.bhel.com and / or under applicable legal provisions. Guidelines for suspension of business dealings is available in the webpage: http://www.bhel.com/vender_registration/vender.php.	
28	Bid should be free from correction, overwriting, using corrective fluid, etc. Any interlineation, cutting, erasure or overwriting shall be valid only if they are attested under full signature(s) of person(s) signing the bid else bid shall be liable for rejection. In the event of any Technical or Commercial queries, the same may please be addressed to the following BHEL concerned before Part I opening	
	BHEL Official 1 / BHEL Official 2	
	R SrijaMole Manager/MM/BOI srija@bhel.in 04312577872 / S Sujit SM/MM/BOI ssujit@bhel.in 04312575576	
28	**Order of Precedence:** In the event of any ambiguity or conflict between the Tender Documents, the order of precedence shall be in the order below: a. Amendments/Clarifications/Corrigenda/Errata etc. issued in respect of the tender documents by BHEL. b. General conditions of Enquiry terms and conditions c. Special Conditions for Import suppliers	
30	**Note**	

	30.1 In the event of our customer order covering this tender being cancelled /placed on hold /otherwise modified, BHEL would be constrained to accordingly cancel / hold / modify the tender at any stage of execution	
	30.2 BHEL may negotiate the L1 rate, if not meeting our budget / estimated cost. BHEL may re-float the tender opened, if L1 price is not acceptable to BHEL even after negotiation.	
	30.3 Any deviation from the conditions specified in GENERAL TERMS AND CONDITIONS, will lead to rejection of offer	
	30.4 Any change in applicable rates of Tax or any other statutory levies (Direct / Indirect) or any new introduction of any levy by means of statute and its corresponding liability for the deliveries beyond the agreed delivery date for reasons not attributable to BHEL will be to vendors account. BHEL will not reimburse the same and any subsequent claim in this respect will be summarily rejected.	
	30.5 BHEL reserves its right to reject an offer due to unsatisfactory past performance by the respective Vendor in the execution of any contract to any BHEL project / Unit.	
	30.6 The offers of the bidders who are under suspension and also the offers of the bidders, who engage the services of the banned firms /principal/agents, shall be rejected. The list of banned firms is available on BHEL web site www.bhel.com	
	30.7 Any PO Amendment for delivery extension shall be done only after successful completion of the entire PO.	
	30.8 Due to un avoidable circumstances for any delay in unloading at site. No detention charges shall be payable.	
31	**Enclosure:** Annexure-1: Check List. Annexure-2: Offer forwarding letter / tender submission letter Annexure-3: No Deviation Certificate Annexure-4: Declaration regarding Insolvency/ Liquidation/ Bankruptcy Proceedings Annexure-5: Declaration by Authorized Signatory Annexure-6: Declaration by Authorized Signatory regarding Authenticity of submitted Documents Annexure-7: Non-Disclosure Certificate Annexure-8: Integrity Pact Annexure-9: Declaration confirming knowledge about Site Conditions - Not applicable Annexure-10: Declaration reg. Related Firms & their areas of Activities Annexure-11: Declaration for relation in BHEL Annexure- 12: Declaration reg. minimum local content in line with revised public procurement Annexure- 13: Declaration regarding compliance to Restrictions under Rule 144 (xi) of GFR 2017 Not applicable Annexure-14: Bank Account Details for E-Payment Annexure-15: Power of Attorney for submission of tender. Annexure-16: Proforma of Bank Guarantee for Earnest Money. - Not applicable Annexure-17: Proforma of Bank Guarantee for Performance Security. - Applicable Annexure-18: List of Consortium Bank. - Applicable	

Signature and seal of the authorized official

Special Conditions of Tender

Sl No	BHEL Requirements	Supplier Comments (Acceptance or otherwise)
1.	Offer is to be submitted in two part bids system in the E-Procurement portal. Scan copy of the filled General Terms and Conditions, Tender documents etc., shall be uploaded in the EPS portal	
2.	BHEL will consider the ranking after the loading is applied as referred above wherever deviations are observed.	
3.	Offer Validity: 120 days minimum from techno commercial bid opening (Part-1).	
4.	The Tender will be operated in two part bid system. One-part consisting Technical bid with Commercial terms & conditions and other part is Price Bid. Based on the technical suitability subject to customer approval vendors will be short-listed. The price Bid of short listed vendors will be opened on a suitable date with due intimation to vendors. **REVERSE AUCTION WILL BE APPLICABLE.**	
5.	**Offer Submission:** a. This Tender is hosted in EPS portal & offer to be submitted through EPS portal only. You are requested to submit your 2 parts offer before due date & time of the enquiry through NIC (https://eprocurebhel.co.in) only. b. Offer is to be submitted in TWO part bids system (Technical bid + Price bid) in the E-Procurement NIC PORTAL (https://eprocurebhel.co.in) ONLY. c. Scanned copy of the filled Annexure A and B, Tender documents etc., shall be uploaded in the EPS portal. d. At its option, BHEL may consider extending the due date/s for the tender openings. Sufficient notice would be given by BHEL for such extensions and it will be published as corrigendum in following websites, **https://eprocurebhel.co.in** **http://www.bhel.com/tender/**	
6.	**Authorization for participation in EPS portal through DSC: E-Tender. Participation requirements:** Either Principal or authorized agent shall register their Digital Signature Certificate (DSC) (Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION). Suppliers are advised to go through the FAQ available in the web portal (https://eprocurebhel.co.in). DSC shall be registered for the authorized person and all transaction done using that DSC against our tenders shall be taken as valid communication and shall be binding on principal/agent and is valid legally. For foreign Principal In case of Principal (being foreigner), they may apply for DSC through Indian embassy at their country and can register with us for participating in E-tenders. Details of the applicable procedure is available in the webpage http://www.cca.gov.in/cca/. For Indian agent In case of agents participating/registering their DSC (of authorized person), it will be at the sole authorization of principal to their agents to participate on their behalf and all transactions done using that DSC against our tenders shall be known as valid communication and shall binding on principal and is legally valid.	

7.	One Indian agent can represent one foreign principal only and submit one offer for these tender items. **Note:** In order to maintain sanctity of the tender system it is mandatory that one agent cannot represent two suppliers or quote on their behalf in a particular tender enquiry. If any agent represents more than one supplier, all such offers will be rejected.	
8.	**Acceptance of materials supplied:** i. The supply shall strictly as per the specifications in the tender /purchase order. ii. Delivery of the ordered items as per the delivery terms in the Purchase Order does not automatically constitute acceptance of the delivered items. iii.The acceptance or otherwise of the delivered items at Project Site /Stores/Trichy will be separately communicated to the supplier by BHEL either through B2B portal or through e mail within 15 days from the delivery of items or delivery of the required test certificates /other documents whichever is later. iv.In case of rejection of the delivered items at Project Site/Stores/ Trichy, either part or full, the vendor shall replace the rejected items as per the specification in the Purchase order/tender at their cost within specified days/months of communication of rejection to the supplier. v. In case of rejection of the delivered items, either part or full, if the supplier fails to replace the rejected items within the specified days/months of communication of the rejection, the same shall be treated as failure to execute the contract and actions as per the Guidelines for Suspension of Business Dealings with Suppliers/Contractors available in the webpage: http://www.bhel.com/vender_registration/vender.php. would be taken against such supplier	
9.	**Performance Bank Guarantee:** BHEL require a performance Bank Guarantee to a value of 5% of supply value covering the Guarantee/Warranty period. The PBG shall be in BHEL format (Format attached) which is to be opened in any one of the banks mentioned under List of Consortium Banks attachment. All banks charges shall be to vendor account only. Any deviation on PBG leads to rejection of offer. Claim Period is applicable for a period of 6 months after expiry.	
10.	In case of PO placements, first document submission has to be submitted for approval in line with below details within 15 days from the date of PO & reply for any further clarification has to be submitted within 7 days. Any delay beyond the above specified period will be considered during LD calculation. • Clause no-13.2 (DOCUMENTATION-Documents to be furnished after Award of Contract) of Technical Specification Ref No: MHS-HEQ/71 Rev 05).	
11.	**Repair & replacements:** If during the Warranty/Defect Liability Period any defect should be found in the design, engineering, materials and workmanship of the Plant and Equipment supplied or of the work executed by the Bidder, the Bidder shall promptly, in consultation and agreement with BHEL regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good (as the Bidder shall, at its discretion, determine) such defect as well as any damage to the Facilities caused by such defect.	
12.	In case of failure of the equipment to meet the guarantee, END CUSTOMER/BHEL reserves the right to reject the equipment. However, END CUSTOMER/BHEL reserves the right to use the equipment until new equipment supplied by bidder meets the guaranteed requirement .	

13.	**Guarantee / Warranty Period:** No Deviation is permitted. If still vendor offered any deviation on the Guarantee / warranty period, **it may lead to rejection of offer.**	
14.	**Documents are to be submitted along with technical bid (Part-1**) • Clause no-13 DOCUMENTATION-Documents to be submitted along with the Bid) of Technical Specification Ref No: MHS-HEQ/71 Rev 05). • Duly Filled and Signed Annexures in your letter head • Duly Filled & Signed General Terms and Condition and Special Conditions. • Local Content Certification • MSE Certificates (if applicable) Documents are to be submitted along with Price bid (Part-2) • Priced offer on NIC Portal Note: All the pages of documents are to be signed and sealed by authorized signatory of the company. Any query during technical evaluation shall be replied within three days failing which offer may be rejected as non-responsive.	
15.	**Packing & Forwarding Requirements:** • Packing should ensure the healthiness of the Equipment including all electrical Accessories which may be stored for longer period (up to 2 years) at Site conditions (open to atmosphere). • All openings (Fluid, Pneumatic & Electric) shall be firmly capped. • Items shall be packed in suitable enclosure (to prevent damage/rusting due to Seashore atmospheric conditions) from all four sides and also it should be covered with polythene to make it water proof. • Packing and struts shall be used to arrest rolling of items and to avoid transit damage. • Limit switches and such components shall be encapsulated properly with suitable material like Thermocol. • Suitable arrangement (lugs/hooks) for loading and unloading of the equipment in packed condition at site. **Packing Requirements (for import vendors):** Packing shall be sea worthy.	
16.	**Role of Agents:**	
	a. BHEL will deal directly with manufacturers only. **Offers from Traders & Stockist will not be considered.**	
	b. BHEL strongly discourages the engagement of Agents in India by foreign principals, to deal with BHEL, in BHEL's tenders.	
	c. BHEL, due to business reasons would ban, would have banned Indian agents from dealing with BHEL. Any foreign principal who engages such a banned agent, or an employee of the banned agency, or any other person connected with the banned agency, at any time during the tender proceedings, would be disqualified from the tender proceedings. The decision of BHEL in this regard shall be final and be binding on the OEM. Hence in their own interests, prospective tenderers may check with BHEL, the status of their proposed agent vis-à-vis BHEL.	
	d. In view of the requirement of BHEL, it is strongly suggested that in their own interest, foreign principals may desist from engaging any Indian agent and deal with BHEL directly and it is stressed that any Main producer proposing to deal with BHEL by engaging and through an Indian Agent does so at their own risk. BHEL shall in no way be responsible for any consequences that may arise to the foreign principal on account of the antecedents / actions of their Indian Agent.	
17.	**Agency Commission :**	
	a) In respect of offers from overseas suppliers, agency commission, if any, payable to their agents in India, shall invariably be shown separately in the Performa	

	invoice & shall be declared in techno-commercial offer itself and this will be paid by us in India, in Indian rupees, on satisfactory completion of the contract. b) For calculation of rupee equivalent for agency commission, exchange rate as prevailing on the date of order will be taken.	
18.	Agency commission, if any should be clearly given in the offer (% on FOB / CFR Chennai inclusive).	
19.	**Execution of the Order**	
	a. BHEL will have the option to pre-inspect the materials at Supplier's works by BHEL's own inspector or by third party agency appointed by BHEL or BHEL"s end customer/s. The mere act of the pre-dispatch inspection (PDI) does not absolve the Supplier from giving the specifications as agreed upon in the Purchase Order.	
	b. In the event of any short supply, it shall be the responsibility of the supplier to deliver such short supplied/ missing items on Free-of-Cost basis at BHEL stores, including customs clearances at Indian Ports in the case of foreign suppliers.	
20.	**Conditions for transportation:**	
	In the event there is a delay by the Supplier in negotiating / submitting the document, any demurrage / wharfage arising out of the same shall be to the account of the Supplier and shall be deducted from the final payment. Also, in such cases, the Supplier shall authorize the Steamer / Shipping agent / transporter to freely release the consignment to BHEL by providing a "Surrender Bill of Lading". Over-seas Suppliers have to give a No-Objection Certificate to BHEL, authorizing BHEL to get the Delivery Order from the Steamer Agent without producing the Original Bill of Lading. This is required to ensure avoidance of incidence of demurrage at Chennai Sea-port that may arise in case of delayed presentation of documents by the Seller.	
21.	**Set-off Clause**: BHEL shall have the right to recover any money which in the sole opinion of BHEL is due from the supplier from any money due to the supplier under this Contract or any other contract or from the Security Deposit furnished by the supplier under this Contract or any other contract.	
22.	**Conflict of Interest among Bidders/ Agents** A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices to the detriment of Procuring Entity's interests**.** **The bidder found to have a conflict of interest shall be disqualified**. A bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if: a. they have controlling partner (s) in common; or b. they receive or have received any direct or indirect subsidy/financial stake from any of them, or c. they have the same legal/representative/agent for purposes of this bid; or d. they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on. the bid of another Bidder,' or e. Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than. one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/ Assemblies from one bidding manufacturer in more than one bid; or f. In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. One manufacturer can also authorize only one agent/dealer. There can be only one bid from the following: 1. The principal manufacturer directly or through one Indian agent on his behalf; and	

	2. Indian/foreign agent on behalf of only one principal; **or** g. A Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid; **or** In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Bidders must proactively declare such sister/ common business/ management units in same/ similar line of business. "	
23.	**Duty benefits for Import Vendors**	
	a. In case CEPA or any other agreement/treaty between respective Governments/Countries exists for the enquired Items/tender, which entails concessional custom duty or any other benefits for importing the same in India, supplier shall declare/ mention it in their offer. Pls confirm whether any such concessional duty for importing in India is applicable or not.	
	b. For such cases, pls mention the Concessional Customs Duty (% of Basic custom duty) for the offered item/s. Pls mention in percentage only.	
	c. Documentary proof for the applicable Concessional Customs Duty (e.g. CEPA or other agreement) shall be submitted along with the Part-1 bid.	
	d. Relevant documents to avail the above concessional duty benefits by BHEL shall be submitted by the supplier along with dispatch documents. Confirm your acceptance.	
	e. In the event of seller failing to provide appropriate documents along with dispatch documents for purchasers to avail disclosed concessional duty benefits in India, financial loss, so incurred, will be to the seller's account.	
	Note: Evaluation of the Price bids will be based on the above details. Unless specifically mentioned/furnished by the supplier in the offer document, Customs Duty benefit may not be applied for evaluation purposes.	
24.	**Additional terms**	
	17.1 The price break-up should be in line with technical specification / scope of the tender and as per the BOQ attached.	
	17.2 If any Supplier attempts to bribe, or pay commission, gift or any advantage or bring in undue influence either by himself or on his behalf any one including a stranger to the tender, in addition to instituting legal proceedings as per the extant laws prevailing, will disqualify the supplier from this tender and all future tenders of BHEL. Decision of the Purchaser would be final in this matter.	
	17.3 In their own interest, all Tenderers are advised to double check their prices, applicable duties and taxes. Incomplete documents / offer will be rejected.	
	17.4 Bids including all enclosures and supporting documents like catalogues, pamphlets, etc., shall be submitted / uploaded in ENGLISH language only. If the documents submitted have other than English language, translation of the same shall be provided for evaluation	
	17.5 Unloading of the materials is in the scope of BHEL. However, Demurrages on account of delay in unloading due to improper packing, non-availability of proper dunnage, not adhering to the tender conditions and other reasons attributable to supplier shall be on supplier's accounts only.	
	17.6 Foreign suppliers has to submit the **Non-Negotiable Document** to bank/directly to BHEL as per the relevant payment term, well **before the shipment reaches the port** or else the demurrage and detention charges due to the delay in submission by supplier will be deducted from suppliers invoice.	

	17.7 BHEL Reserves the right to negotiate and re-float the tender if the lowest offered price is not found competitive.	
	17.8 In the event of our customer order covering this tender being cancelled /placed on hold /otherwise modified, BHEL would be constrained to accordingly cancel / hold / modify the tender at any stage of execution	
	17.9 Any other Techno -Commercial Terms indicated by the vendor in their offer elsewhere will be ignored. BHEL will proceed with tender evaluation as per General Terms and Condition and Special Conditions only.	

	To be filled & Signed by Original Manufacturer/Mill Name of the mill / Principal: Signature: (Affix Seal) (All conditions were read & clearly understood and agreed in totality with the mentioned deviations only)

BANK GUARANTEE FOR PERFORMANCE SECURITY

(Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s))

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

IFSC AND MICR CODE

Dear Sirs,

1. In consideration of Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____[1] through its Unit at……..(name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) (VENDOR CODE) with its registered office at_____[2] hereinafter referred to as the ' Vendor / Contractor / Supplier ', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No……dated ……..[3] valued at Rs……[4] (Rupees ----------)/FC……(in words……..) for ……[5] (hereinafter called the 'Contract') and the Vendor / Contractor / Supplier having agreed to provide a Contract Performance Bank Guarantee, equivalent to ……% (…. Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

2. we, ……, (hereinafter referred to as the Bank), having registered/Head office at ……. and inter alia a branch at …… being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer any sum or sums upto a maximum amount of Rs ---------- [6] (Rupees ----------) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

3. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

4. We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor / Contractor / Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

5. The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor / Contractor / Supplier shall have no claim against us for making such payment.

6. We the ……bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract/satisfactory completion of the performance guarantee period as per the terms of the Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

7. We……..BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor / Contractor / Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor / Contractor / Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor / Contractor / Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor / Contractor / Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

8. The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor / Contractor / Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor / Contractor / Supplier's liabilities.

9. This Guarantee shall remain in force upto and including…….. [7] and shall be extended from time to time for such period as may be desired by Employer.

10. This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor / Contractor / Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

11. Unless a demand or claim under this guarantee is made on us in writing on or before the ……[8]we shall be discharged from all liabilities under this guarantee thereafter.

12. Any claim or dispute arising under the terms of this document shall only be enforced or settled in the Courts at Tiruchirappalli.

13. We……. BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

a) The liability of the Bank under this Guarantee shall not exceed…… [6]

b) This Guarantee shall be valid up to …….[7]

c) Unless the Bank is served a written claim or demand on or before (minimum 3 to 6 months from the expiry date [8] all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

14. We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dated…….
Place of Issue……..

BANK EMAIL ID:

BANK PHONE NO:

AUTHORISED SIGNATORIES CELL PHONE NO:

BANK FAX NO:

[1] *NAME AND ADDRESS OF EMPLOYER I.e Bharat Heavy Electricals Limited*

[2] *NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.*

[3] *DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE*

[4] *CONTRACT VALUE*

[5] *PROJECT/SUPPLY DETAILS*
[6] *BG AMOUNT IN FIGURES AND WORDS*

[7] *VALIDITY DATE*

[8] *DATE OF EXPIRY OF CLAIM PERIOD*

List of Consortium Banks	
Sl. No.	**Name of the bank**
1.	State Bank of India
2.	Canara Bank
3.	Axis Bank
4.	Bank of Baroda
5.	Central bank
6.	Citi Bank N.A.
7.	Deutsche Bank
8.	Exim Bank
9.	Federal Bank Limited
10.	HDFC Bank Limited
11.	Hongkong and Shanghai Banking Corporation Limited
12.	Indian Bank
13.	ICICI Bank Limited
14.	IDBI Bank Limited
15.	IndusInd Bank Limited
16.	Indian Overseas Bank
17.	Kotak Mahindra Bank Limited
18.	Punjab National Bank
19.	RBL Bank Ltd.
20.	Standard Chartered Bank
21.	Union Bank of India
22.	Yes Bank Limited