



BHARAT HEAVY ELECTRICALS LIMITED

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

PHONE :0431-2574111
GRAMS : BHARATELEC
FAX NO: 0431-2520719
E-mail:
Web:

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Enquiry No	Enquiry Date	Due Date for Quotation
1801601357 - 14	31.10.2016	25.11.2016
Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order. Bid should be submitted in two parts. 1.Techno-commercial bid (Part-I) and 2.Price bid(Part-II) in a separate sealed cover and both covers must be placed in a third cover and sealed. Our Enquiry No., Enq. date & Enq. Due date must be written on all three covers.		

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	L171119950104001 QUICK ERECT SCAFFOLDINGS Mouda 2 x 660 MW - Quick Erect Scaffold assembly (Aluminium) as per the Specification MHS-HEQ-078/01 (15 Sheets)with Annexure -I, II & III (G.A.Drawing 0-99-501-40282/02)	SET	1.000	1.00	18.02.17
20	L171519950101001 QUICK ERECT SCAFFOLDINGS Nabinagar 3 x 600 MW - Quick Erect Scaffold assembly (Aluminium) as per the Specification MHS-HEQ-078/01 (15 Sheets)with Annexure -I, II & III (G.A.Drawing 0-99-501-40298/02)	SET	1.000	1.00	18.02.17
30	L180419950101001 QICK ERECT SCAFFOLDING Gadarwara 2 x 800 MW - Quick Erect Scaffold assembly (Aluminium)as per the Specification MHS-HEQ-078/01 (15 Sheets)with Annexure -I, II & III (G.A.Drawing 0-99-501-40290/01)	SET	1.000	1.00	18.02.17
40	L180619950103001 QICK ERECT SCAFFOLDING Daralipali 2 x 800 MW - Quick Erect Scaffold assembly (Aluminium)as per the Specification MHS-HEQ-078 /Rev 01 (15 Sheets)with Annexure -I, II & III (G.A.Drawing 0-99-501-40303 / 01)	SET	1.000	1.00	18.02.17

This Enquiry shall be monitored by Independent External Monitor

Mrs. Pravin Tripathi, IA & AS (Retd.)
D-243, Anupam Gardens, Lane IB, Neb Sarai,
Sainik Farms,
New Delhi - 110 068
Ph : +91 11 29533206 / 29531715.
pravin.tripathi@gmail.com

General Note:

1) Please fill up the Annxure-A (commercial terms and conditions) and Annexure -B (Loading Factor for Enquiry) enclosed and submit along ith the offer for evaluation.

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

VIGILANCE AWARENESS WEEK

31st OCT to 5th NOV 2016

FOR VIGILANCE RELATED COMPLAINTS,

CONTACT DGM/VIGILANCE & SM/VIGILANCE

PHONE:0431-2577552,2577636,2577985

Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED

(Signature)
MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,



BHARAT HEAVY ELECTRICALS LIMITED

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2) Please give point wise confirmation to our specification and fill all the columns in the datasheet.

3) The offer to be submitted in two part bid system:

- a) Technical offer with commercial terms
- b) Price bid separately.

4) Indigenous vendor:

The materials are to be despatched to respective project sites. You are requested to quote on FOR/Destination basis including freight & insurance charges to your account.

Enquiry Sl. No : 10- Mouda 2 x 660 MW Project/ Maharashtra State

Enquiry Sl. No : 20- Nabinagar 3 x 660 MW Project /Bihar State

Enquiry Sl. No : 30- Gadarwara 2 x 800 MW Project / Madhya Pradesh State

Enquiry Sl. No : 40- Daraliaplli 2 x 800 MW Project / Orissa state

Import vendor :

Offer shall be submitted on CFR Chennai Port / INDIA basis. It is requested to indicate the Freight amount separately as per Price / Unpriced format attached.

5) The tender will be considered on project wise package basis for evaluation and ordering.

6) You are requested to note our Loading terms as per Annexure-B and Annexure-C (Special provision for Micro and Small Enterprises) for finalizing the tender and same will be taken for evaluation for arriving the L1 rate.

7) Vendors to note that their offer shall be in line with our enclosed specification requirement only. Any deviation may lead to rejection of the offer.

8) All the details as mentioned in the specification to be strictly adhered. Any deviation to be clearly spelt out by vendor in the technical offer.

9) Confirmation towards the Annexure - I to our spec to be submitted along with offer. Any deviation may lead to rejection of the offer. Filled in data for Annexure-II of enclosed specifications shall be furnished by the Vendor along with the offer.

10) Offers will be considered subjected to Custmer (NTPC) approval and accordingly price bids of approved vendors only will be opened.

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For **BHARAT HEAVY ELECTRICALS LIMITED**

h. Vign 31/10/16
MANAGER / PURCHASE
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11) Vendor have to submit all the documents duly filled in "Supplier Registration Forms" through online available in <http://www.bheltry.co.in/>- Online Vendor Registration- Material Management). Duly filled-in Supplier Registration Forms, along with all credentials and supporting documents as applicable in vendor registration application form. All the documents to be uploaded in online vendor registration portal. Apart from Qualifying the Techno-Commercial requirements of the enquiry, BHEL has the right for spot assessment of the facilities for evaluation, approval and for registration.

12) Vendors are requested to submit the Integrity pact along the Techno commercial offer (Part-1).

13) Vendor requested to quote the Optional Price for Training / Installation supervision at site with a validity period of 2 years from the date of supply.

14) Mouda 2 x 660 , Nabinagar 3 x 660 , Gadawara 2 x 800 , Daralipali 2 x 800 MW comes under Mega Power Project category. Hence Payment of Excise Duty Exempted.

All the tenders may be addressed to the following address:

**The Tender Opening Cell / MM
Room No: 26, Building 24, Ground Floor
Bharat Heavy Electricals Limited
TIRUCHIRAPALLI 620014**

In case personal delivery of the offer, it shall be dropped into the respective box kept in Room No: 26, after duly entering the data in the system.

Offers will be accepted only up to 14.00 Hrs on the due date. Therefore, vendors shall ensure to submit the offers well before this time. All due date extension requirements should be addressed to the respective Purchase mail IDs. All the due date extension requests from vendors will be considered only up to 48 hours before the due date and time.

Vendors are requested to avoid submission of offers through e mail / fax. In case of any unavoidable situation, offers shall be sent through e mail to the following mail ID only tender_cell@bheltry.co.in.

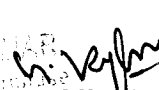
As tenders are being opened by Common Tender Opening Cell, offer covers should be sealed with tenderer's distinctive seal and super scribed with correct Tender No. item of supply and due date of opening.

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

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For **BHARAT HEAVY ELECTRICALS LIMITED**


MANAGER / PURCHASE
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The 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.

The supplier shall submit EI/EII forms to BHEL time to time as indicated by the BHEL and in case of inordinate delay in issuing EI/EII forms, then BHEL reserves the right to deduct 5% of the value of the supplied items against which EI/EII forms pending to be issued

Enclosures:

1. Annexure-A Commercial Terms & Conditions.
2. Annexure-B Loading Factors for Enquiry.
3. Annexure-C Special Provision for Micro & Small Enterprises.
4. PBG format with Bank list.
- 5) Price / unprice format.
- 6) Integrity pact.
- 7) Specification MHS-HEQ-078 / Rev 01 (Mouda 2 x 660 MW)
 - a)Annexure-I to Specification MHS-HEQ-078 /01
 - b)Annexure-II to Specification MHS-HEQ-078 /01
 - c)Annexure-III DRG 0-99-501-40282/02
- 8) Specification MHS-HEQ-078 / Rev 01(Nabinagar 3 x 660 MW)
 - a)Annexure-I to Specification MHS-HEQ-078 /01
 - b)Annexure-II to Specification MHS-HEQ-078 /01
 - c)Annexure-III DRG 0-99-501-40298/02
- 9) Specification MHS-HEQ-78 / Rev 01 (Gadarwara 2 x 800 MW)
 - a)Annexure-I to Specification MHS-HEQ-078 /01
 - b)Annexure-II to Specification MHS-HEQ-078 /01
 - c)Annexure-III DRG 0-99-501-40290 /01
- 10) Specification MHS-HEQ-08 /Rev01 (Darlipali)
 - a)Annexure-I to Specification MHS-HEQ-078 /01
 - b)Annexure-II to Specification MHS-HEQ-078 /01
 - c)Annexure-III DRG 0-99-501-40303 /01

"LD clause has to be confirmed without fail."

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Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED

[Signature]
31/10/16
MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,

BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI-620 014

Handling System/PE(FB)



Title Sheet

Quick Erect Scaffolding System
(Aluminium / Aluminium alloy)

Specification Number: MHS-HEQ-078

Revision No. : 01

01	20-10-2016	Staircase width & angle updated. Peripheral platform width updated. Clause 3.7, 4.4, 6.2, 6.10, 6.11, 6.14, 7.6 & 14.1 modified.	Arul / MTP
Revision No.	Revision Date	Revision statement	Checked & Approved

	Name	Signature	Date
Prepared	D.V.Kumar	-Sd-	06.11.2015
Checked	D.V.Kumar	-Sd-	06.11.2015
Reviewed	M.Thandapani	-Sd-	07.11.2015
Approved	M.Thandapani	-Sd-	07.11.2015



**Specification for
Quick Erect Scaffolding System**

MHS-HEQ-078

Revision No.:01

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15.0	General

Annexure – I ----- Specific Project Requirements

Annexure – II ----- Check list

Annexure – III ----- Copy of Drawing (Furnace Arrangement for Quick Erect Scaffold)



Specification for Quick Erect Scaffolding System

MHS-HEQ-078

Revision No.:01

1.0 Intent:

The quick erect scaffolding system is intended for carrying out maintenance work inside a boiler furnace which comprises water walls, Burners, Soot blowers, Super heaters, Re-heaters etc. during shut down period. As the name implies, the scaffolding shall be safely erected and dismantled in the shortest possible time with less manpower and with minimum supervision.

The scaffolding system shall be sufficient enough to cover all the water wall areas, in a single set up, including inclined area of the boiler above rear wall and furnace bottom (Bottom hopper).

The system shall be preferably of modular and interchangeable construction and easily and quickly assembled inside the furnace.

2.0 Scope:

This specification covers design, manufacture, inspection and supply of quick erect scaffolding system. The specification is for ensuring a safe and trouble free quick erect scaffolding system used during shutdowns and overhauls, for inspection and maintenance of furnace internals of steam generator like Water walls, Burners, Super heaters etc.,

3.0 Requirements of the system

3.1 Quick erect scaffolding system shall be of fast erecting with suitable connecting/coupling arrangement.

3.2 Codes & standards

All equipment parts, systems and works covered under this specification shall comply with all currently applicable statutory regulations and safety codes of the Republic of India as well as of the Company where they will be installed. The offered system shall conform to national / international standards and the same may be clearly spelt out in the offer.

3.3 Material of construction

3.3.1 The material of construction of various components shall be Aluminium / Aluminium alloy of proven design for Scaffolding application. It is suggested that the selected material shall also be light in weight to hasten the erection of scaffold in the shortest possible time. For general requirements of materials, refer to cl.8.1 of this specification.

3.3.2 All materials used for construction of different components shall individually conform to latest revisions of National / International Standards and it shall be specified in the offer.



Specification for Quick Erect Scaffolding System

MHS-HEQ-078

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- 3.3.3 All the components of the scaffolding system shall have *appropriate colour code* for easy identification. The colour code shall be specified in the offer and will have Purchaser's approval.
- 3.4 The quick erect scaffolding system shall provide flexibility in erection of vertical posts & horizontal / diagonal connecting members.
- 3.5 Vertical posts & horizontal / diagonal connecting members shall have equal spacing for easy erection. Connections of the above shall be with suitable quick connect hardware arrangement. Vertical posts / horizontal / diagonal members shall have equal and standard lengths for easy interchangeability & modular assembly and disassembly.
- 3.6 The vertical posts and horizontal members shall be so designed to fill the space of furnace configuration.
- 3.7 Vendor shall offer a system which is erectable and dismantlable at the quickest possible time. Vendor shall indicate, in the offer, the man-hours required and also manpower (skilled and unskilled) needed to carry out erection and dismantling of the system. Vendor shall also provide the total erection /assembly time of the full scaffold. **The total time required for erection shall not exceed 4 days (96 hours) and dismantling 2 days (48 hours), considering the work force deployed for 24 hrs in 3 shifts a day.**
Vendor shall submit, along with the offer, a user certificate for the time taken for assembly and dismantling of a similar system which is equivalent to or bigger than the offered system. Vendor shall undertake guarantee to demonstrate the same (manpower & man days) during the installation (both erection and dismantling) of scaffold in any one of the shutdown period as and when demanded by the end user within 2 years after commissioning of the boilers or 48 months after completion of supply, whichever is later. The cost of supervisory support at site or any other requirement related to scaffolding system supplied by the vendor for the purpose of demonstration shall be borne by the vendor.
- 3.8 Quick erect scaffolding system shall meet the shape & configuration of the Furnace arrangement to have easy access to all parts of furnace including rear water wall arch. (Ref. Annexure-III).
- 3.9 The requirement of the system, as spelt above, is indicative only. Vendor shall offer the most appropriate system for the intended specification and duty condition. The offered system shall be clearly illustrated with sketches and elaborate details.
- 3.10 All the required materials shall be introduced into the furnace for assembly through the access door opening (Refer Annexure-I) and or furnace bottom opening and all components shall be sized accordingly.
- 3.11 Vendor shall include the required number of Initial Spares in the base offer itself. *Initial spares means the spares required during first erection/commissioning of the system to replace the items that are either damaged or lost during*



Specification for Quick Erect Scaffolding System

MHS-HEQ-078

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transit/storage. Hence, vendor shall quote for the initial spares along with the base offer. The list of initial spares shall be clearly furnished in the offer.

The spares required for long term usage shall be quoted separately.

4.0 Safety

- 4.1 The locking arrangement shall not call for any welding.
- 4.2 Quick erect scaffolding system shall be arranged in such a manner to remove / erect individually without affecting other components.
- 4.3 Safety accessories like safety belt etc. shall also form part of the offer.
- 4.4 Scaffolds, as per ANSI A10.8-2011- section 4.8, shall be capable of supporting, without failure, their own weight and at-least four times the maximum intended load. In line with this, Scaffolding, which includes work platforms, bracings, and supporting members, shall be designed for a minimum safety factor of '4' which is applied to the design load.

5.0 Load Transfer

Vendor shall clearly spell out in his offer the load that is likely to be transferred to the furnace walls. This load shall include the dead weight of the scaffolding including the platforms and the safe working load that can be loaded on to the platform. With respect to the Load transfer, the following details shall be furnished in the offer.

- The number of support points
- The location of support points
- The load per vertical post at the support points
- The load transfer points shall be clearly marked up in the drawing
- Vendor shall indicate the type of supports proposed with an aid of sketch/drawing. (Load transfer through all supports shall be at the fins zone only and not on the tubes)

6.0 Scaffolding system :

The scaffolding system shall be provided with:

- 6.1 Close access to inspection / maintenance of boiler tubes / water wall & other components.
- 6.2 Stair case with a width of minimum 500 mm and not more than 55° inclination. Staircase shall be provided with hand rails.
- 6.3 System shall have upper / mid guard rail without any special components.
- 6.4 Access to Panel and Platen super heater and rear wall upper arch portion.
- 6.5 Arrangement for stable floor.
- 6.6 Suitable arrangement for supporting at furnace bottom without additional attachment with boiler tubes.



Specification for Quick Erect Scaffolding System

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- 6.7 In total, the assembly shall have amongst other things vertical posts, horizontal members, vertical / horizontal / diagonal bracings, trusses and other fastening arrangements etc.,
- 6.8 Load per square metre (not less than 150 kg/sq.m) on the scaffolding system shall be furnished by vendor. Vendor shall indicate the overall permissible load at any given instant on the scaffolding system offered. (Refer clause 4.4 also)
- 6.9 Handrails shall be with a height between 900 mm to 1000mm.

6.10 Floors

- 6.10.1 Floors are to be provided peripherally at all elevations except at the levels specified in clause 6.10.2 where full planking is required. The elevation levels shall be determined by the vendor. However, the space between two floors shall not exceed 2.5 m below the top of wind box and shall not exceed 3.5 m there after (above windbox). However to provide access to all the areas with in the floor space, suitable ladders shall be provided which can be safely fixed on to the floors. Minimum 6 nos. of such ladders shall be provided.
- 6.10.2 Full platforms/floors (not just peripheral) shall be provided at just below the upper rear arch and below the access door opening in the furnace hopper. The full floor elevation details shall be furnished by the vendor.
- 6.10.3 Floors shall be provided with guard rails, mid rails and toe boards installed on all open sides and ends. Mid-rails and shall be of dismountable type. All rails and posts shall be suitable for easy assembly & disassembly.
- 6.10.4 Toe boards/guards shall extend to a minimum of 150mm above the working surface.
- 6.10.5 Vendor to specify the type of flooring offered. The flooring material offered shall be of non-flammable/ non-combustible material.
- 6.10.6 The width of the floor and gap between the furnace wall and floor shall be clearly specified by the vendor and the same shall be clearly shown in the drawing. Floor width (peripheral) shall be minimum 600 mm.
- 6.10.7 The number of floors offered with "elevation" details shall be clearly mentioned in the drawing.
- 6.10.8 The floor elevations and no. of floors shall be decided in such a way that access is available to all parts (especially burner area) of the water walls. (For burner level elevations refer to Annexure-III).

6.11 Tools and tackles

- The Vendor shall supply with the main equipment, complete set of special tools and tackles required for erection, assembly, dismantling and proper maintenance of the equipment and system. These special tools will also include special material handling equipment such as electrical winches, jigs and fixtures if applicable to meet the erection / dismantling time as per



Specification for Quick Erect Scaffolding System

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clause 3.7. The list of such tools and tackles shall be submitted by the vendor along with the offer.

- The price of each tool/tackle shall be deemed to have been included in the total bid price. These tools and tackles shall be packed and sent to site. All the tools and tackles shall be of reputed make acceptable to the Purchaser.

6.12 Any other items though not specifically mentioned in this specification but needed to complete the equipment and system [unless specifically mentioned under exclusions] shall form part of the offer.

6.13 Vendor shall specify the storage space requirement of the system components and shall furnish suggested storage layout with special instructions, if any, for proper storage of the material.

6.14 Vendor shall furnish reference list for having supplied similar QES system in the past and the same should have been put in use atleast in one thermal power station for a boiler capacity of 210 MW or above for a period of minimum one year and should have been put to use atleast once. Also vendor shall produce the performance certificate for the same from the end user.

6.15 Vendor may also submit necessary documents for justifying the design aspects of the scaffold offered both for stability and safety

7.0 General requirements

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

7.2 The material of construction and its duty class shall be clearly spelt out in the offer and the same shall conform to specified National / International Standards. All materials used for the construction of the equipment shall be new and shall be in accordance with the requirements of this specification. Materials utilised for various components shall be those which have established themselves for use in such applications for atleast a period in excess of 2 years.

7.3 All fasteners used, if applicable, shall be of Metric threads only. (No British / American threads in the inch system is permitted)

7.4 Vendor shall follow International colour Code wherever applicable for various components, assembly and sub-assembly for easy identification of components of the system.

7.5 All assemblies /sub-assemblies and individual components shall bear proper identification numbers. The methodology followed shall be clearly spelt out in the base offer.

	Specification for Quick Erect Scaffolding System	MHS-HEQ-078 Revision No.:01
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7.6 Training:

- The Vendor shall extend all possible assistance and co-operation to the purchaser regarding the development of expertise in the area of assembly, disassembly, identification, storage & retrieval and safety aspects of the system offered.
- Vendor shall also impart the necessary training - training of personnel for the required days at the job site for the required period by the vendor's representative. This shall be integral part of the offer.

7.7 Drawing and Documents:

- All documents/text information shall be in MSWord 2000 or latest version
- All drawings shall be made in AutoCAD- Release 2000 or latest Version.
- All drawings submitted by the Vendor including those submitted at the time of bid shall be in sufficient detail indicating the type, size, arrangement, weight of each component for packing and shipment, the external connection, fixing arrangement required, the dimensions required for installation and interconnections with other equipment and materials, clearance and spaces required between various portions of equipment and any other information specifically requested in the drawing schedules.
- Each drawing submitted by the Vendor (including those of sub-vendors) shall bear a title block at the right hand bottom corner with clear mention of the name of the Purchaser, the system designation, the specifications title, the specification number, the name of the Project, drawing number and revisions. If standard catalogue pages are submitted the applicable items shall be indicated therein. All titles, notes, markings and writings on the drawing shall be in English. All the dimensions should be in metric units.
- The Vendor shall also furnish a "Master Drawing List" which shall be a comprehensive list of all drawings/documents/calculations envisaged to be furnished by him during the detailed engineering to the Purchaser. Such list should clearly indicate the purpose of submission of these drawings i.e., "FOR APPROVAL" or "FOR INFORMATION ONLY". Similarly, all the drawings/documents submitted by the Vendor during detailed engineering stage shall be stamped "FOR APPROVAL" or "FOR INFORMATION" prior to submission.
- The furnishing of detailed engineering data and drawings by the Vendor shall be in accordance with the time schedule for the project. The review



Specification for Quick Erect Scaffolding System

MHS-HEQ-078

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of these documents / data /drawings by the Purchaser will cover only general conformance of the data/drawings/documents to the specifications and contract, interfaces with the equipment provided by others. The review by the Purchaser should not be construed to be a thorough review of all dimensions, quantities and details of the equipment, materials, any devices or items indicated or the accuracy of the information submitted. The review and/or approval by the Purchaser shall not relieve the Vendor of any of his responsibilities and liabilities under this contract.

- After the approval of the drawings, further work by the Vendor shall be in strict accordance with these approved drawings and no deviation shall be permitted without the written approval of the Purchaser.
- The Vendor shall submit adequate points of drawing/data/document for Purchaser's review and or approval. When changes are required, drawings shall be resubmitted promptly, with revisions clearly marked, for final review. Any delays arising out of the failure of the Vendor to submit/rectify and resubmit in time shall not be accepted as a reason for delay in the contract schedule.

7.8 Operation & Maintenance (O & M) Manual

Typical O&M manual for the type of system offered shall be submitted along with the offer.

Manuals generally shall contain the following:

- Brief description
- Assembly drawings with part list, dimensional drawings and other applicable drawings.
- Manuals should pertain only to the type or model supplied for this contract.
- Drawing and catalogues
- Sequence of erection.
- Erection instructions
- Critical checks and permissible deviation/tolerances.
- List of tool, tackles,
- Bill of Materials.
- Procedure for erection and dismantling.
- Procedure for initial checking after erection.
- Procedure /Check list for commissioning of the system.

7.8.1 Format of manuals

- Manuals should be both in printed form and in electronic media with a text font size of 12.



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- The size of manuals should be in correct A4 size with drawings in either A4 or A3 size. Large size drawings (greater than A3 size) should be reduced to A3 size and inserted.
- Drawings shall be of printed or laser printed only.
- Spiral or comb bound copies should be totally avoided.
- If manuals are supplied in folders, the folder shall have 3 hole punching system.
- **No of copies of manuals: 3 Sets + 3 CD –ROMS**
- O & M manuals, should be submitted to BHEL / Tiruchirappalli prior to despatch of the equipment.

8.0 Quality

8.1 General requirements

- ♦ All materials used for equipment construction including plates, pipes, forgings, fittings etc., shall be of tested quality as per relevant codes/standards. All material shall be chosen from the fresh lots and shall be free from defects like scales, seam, lamination, pitting etc., Detail of results of the tests conducted to determine the mechanical properties, chemical analysis and the details of heat treatment procedure shall be recorded on certificates. Tests shall be carried out as per applicable material standards and or agreed details.
- ♦ All plates of thickness more than 21 mm shall be ultrasonically tested.
- ♦ All bar-stock forgings above 21mm diameter shall be ultrasonically tested.
- ♦ All codes standards or specifications with latest editions shall be referred.

8.2 Quality plan

Vendor shall submit along with the offer the quality plan for Purchaser's review / comments / approval to ensure that the equipment and services, under the scope of contract whether manufactured or performed, within the Vendor's works or at his sub-vendor's premises or at the Purchaser's site or at any other place of work are in accordance with the specifications, the Vendor shall adopt suitable quality assurance programme to control such activities at all points, as necessary. Such programmes shall be outlined by the Vendor and shall be finally accepted by the Purchaser/authorised representative after discussions before the award of the contract. The offer which is not complying with this requirement will not be considered for evaluation.

8.3 Quality assurance- general requirements

- ❖ All materials, components and equipment covered under this specification shall be procured, manufactured, erected, commissioned and tested at all



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the stages, as per a comprehensive Quality Assurance Programme which shall be submitted along with the offer. It is the vendor's responsibility to draw up and implement such programme duly approved by the Purchaser. The detailed Quality Plans for manufacturing should be drawn up by the Vendor and will be submitted to Purchaser for approval. Schedule of finalisation of such quality plans will be finalised before award of contract.

- ❖ Manufacturing Quality Plan will detail out for all the components and equipment, various tests/inspection, to be carried out as per the requirements of this specification and standards mentioned therein and quality practices and procedures followed by the Vendor, the relevant reference documents and standards, acceptance norms, inspection documents raised, etc., during all stages of materials procurement, manufacture, assembly and final testing.
- ❖ The Vendor shall also furnish copies of the reference documents/plant standards/acceptance norms/tests and inspection procedure, etc., as referred in Quality Plans along with Quality Plans. These Quality Plans and reference documents/standards, etc. will be subject to Purchaser's approval without which manufacture shall not proceed.
- ❖ These approved documents shall form a part of the contract. In these approved Quality Plans, Purchaser shall identify customer hold points (CHP), i.e., test/checks which shall be carried out in presence of the Purchaser's engineer or his authorised representative and beyond which the work will not proceed without consent of Purchaser/Authorised representative in writing. All deviations to this specification, approved quality plans and applicable standards must be documented and referred to Purchaser along with technical justification for approval and dispositioning.
- ❖ No material shall be despatched from the manufacturer's works before the same is accepted subsequent to pre-despatch final inspection including verification of records of all previous tests/inspections by Purchaser's engineer / Authorised representative.

8.4 Site checks/tests

The Vendor shall prepare and submit detailed field quality plans in the format setting out the quality practice and procedures to be adopted for assuring quality for each equipment of material at this specification from the receipt of material at site, during storage & erection. These procedures shall necessarily include all checks/tests conducted at site for preservation, assembly, alignment, positioning of the equipment etc. The Vendor shall also furnish detailed quality procedure proposed by him for storage & preservation to the Purchaser.



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9.0 Inspection

- 9.1 The complete System has to be offered for inspection by Purchaser / end user and the vendor shall give 30 days advance notice for arranging the inspection after the system is fully ready. After inspection the equipment can be despatched only after obtaining the MDCC (Material Despatch Clearance Certificate). No material shall be despatched without MDCC.
- 9.2 The word "inspector" shall mean the Purchaser and / or his authorised representative and or an outside inspection agency acting on behalf of the Purchaser to inspect and examine the materials and workmanship of the works during its manufacture or erection.
- 9.3 The Purchaser or his duly authorised representative and / or an outside inspection agency acting on behalf of the Purchaser shall inspect the materials and workmanship of the works during its manufacture or erection and its part of the works, if any, being manufactured or assembled at other premises or works. In case of inspection at other premises/ works, the Vendor shall obtain from the sub-vendor permission to inspect as if the works were manufactured or assembled at the Vendor's own premises or works.
- 9.4 The Vendor shall give the Purchaser / inspector fifteen (15) days written notice of any material being ready for testing. Such tests shall be to the Vendor's account except for the expenses of the inspectors. The Inspector, unless the witnessing of the tests is virtually waived, will attend such tests within fifteen (15) days of the date on which the equipment is noticed as being ready for test/inspection, failing which the vendor may proceed with test which shall be deemed to have been made in the inspector's presence and he shall forthwith forward to the inspector duly certified test reports in two (2) copies.
- 9.5 Scaffolds shall be inspected and tested as per approved quality plan. The certificates and documents generated during inspection of above shall be furnished.
- 9.6 The Inspector shall within fifteen (15) days from the date of inspection as defined herein give notice in writing to the Vendor of any objection to any drawings and / or any equipment and workmanship which is in his opinion not in accordance with the contract. The Vendor shall give due consideration to such objections and shall either carry out the necessary modifications as called for by the Purchaser/Inspector or inform in writing to the Purchaser / inspector giving reasons therein that no modifications are necessary to comply with the contract.



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9.7 The inspection by Inspector and issue of inspection certificate thereon shall in no way limit the liabilities and responsibilities of the vendor in respect of the agreed quality assurance programme forming a part of the contract.

9.8 All inspection measuring and test equipment used by vendor shall be calibrated periodically depending on its use and criticality of the test / measurement to be done. The contractor shall maintain all the relevant records of periodic calibration and instrument identification and shall produce the same for inspection by Purchaser. Wherever asked specifically the vendor shall re-calibrate the measuring / test equipment in the presence of Purchaser/ Inspector.

10.0 Protection, preservation, packaging and transportation

10.1 Protection

All coated surfaces shall be protected against abrasion, impact, discoloration and any other damages. All exposed threaded portions shall be suitably protected with non-metallic protection device. The ends of all piping and conduit equipment connections shall be properly sealed with suitable devices to protect them from damage. The parts which are likely to get oxidized or corroded, due to exposure to weather, should also be properly treated and protected in a suitable manner. All primers/paints/coatings shall take into account the hot humid, corrosive & alkaline, over ground environment.

10.2 Preservation

All exposed metallic surfaces subject to corrosion shall be protected by shop application of suitable coatings. All surfaces shall be thoroughly cleaned of all mill scales, oxides and other coatings and prepared in the shop. The surfaces that are to be finish-painted after installation or require corrosion protection until installation, shall be shop painted with at least two coats of primer. *For special painting requirements refer to Annexure-I to this specification.*

10.3 Packaging and transportation

- All the equipment shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at Site till the time of erection.
- The over dimensional consignment (ODC) w.r.t Indian road / rail conditions shall be mutually discussed and finalised during the execution of contract.

11.0 Guarantee / Warranty

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



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date of supply whichever is later against defective design, defective material usage, defective workmanship, defective packaging and forwarding.

12.0 Deviations

Deviations to specification, if any, shall be clearly spelt out in the offer stage itself. During contract/ inspection/ final erection stages, the Purchaser reserves the right to entertain or deny such deviation.

13.0 Exclusions

Any exclusion from scope of supply shall be clearly spelt out in the offer. Exclusion of major / critical items shall make the offer liable for rejection.

14.0 Documents to be submitted by vendor

14.1 Documents to be submitted along with the offer:

- Product literature / catalogue and drawings in support of the offer shall be submitted in three copies along with the quotation to evaluate the offer.
- Sectional arrangement drawing with plan, elevation, and end view along with major dimensions and weight particulars
- Filled in check list. (Annexure-II to this specification)
- Weight and quantity of individual components as per the scope of supply shall be indicated in the drawing as bill of quantity / material.
- The quality plan for the product under supply shall be furnished along with the offer. (This will be amended in consultation with the ultimate customer/end user, if required)
- List of Special tools and tackles
- List of initial spares
- Qualification Requirement: Vendor shall submit the reference list (list shall give the information like, name of customer / power station, name of the contact person, capacity of the power station, size of the scaffolding system offered etc.,) for having supplied similar QES system in the past and the same should have been put in use atleast in one thermal power station for a boiler capacity of 210 MW or above for a period of minimum one year and should have been put to use atleast once. User Certificate: Vendor shall submit a certificate issued by the end user of the equipment under subject item for the satisfactory service and use of the system.
- A certificate for the components from Safety Steward of the country of make shall be provided.
- Document for justifying the design aspects of the offered system both from stability and safety aspects.
- List of Deviations



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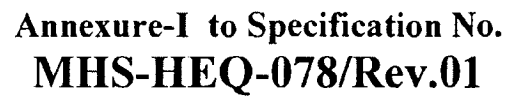
- List of Exclusions
- Typical O&M manual of the offered system similar to the earlier job executed by the vendor.(preferably that applicable for the certificate provider)

14.2 Documents to be furnished after award of contract

- The complete arrangement drawing giving particulars like
 - Bill Of Quantity (of all individual components)
 - Weight details of all components individually
 - Identification marks / Numbers
- Packaging procedure detailing the list of components shall be despatched individually with identification and with preservation and storage.
- Test certificates shall be furnished before despatch of components.
- Material test certificate for all the major components.
- Quality control / Inspection documents generated during the stages of inspection, performance inspection and final inspection inline with the final approved quality plan.
- Guarantee certificate shall be furnished by the vendor.
- O & M manual

15.0 General

- The language used in offer, O & M manual, Labels, drawings etc. shall be "English only"
- For Equipment and other special requirements pertaining to the contract, refer **Annexure - I** to this specification.
- **Annexure - II** is the Check list to be filled in completely by the vendor and submitted **along with the offer**. Offer with incomplete Check list is liable for rejection.
- **Annexure – III (Drawing)**, Furnace arrangement for Quick Erect Scaffold, contains all details of the requirements like furnace width, depth, height, location of access / manhole doors, goose neck / furnace bottom position, elevations of burners etc.



- | | | |
|---|--|--|
| 1 | Name of Project | : Mouda 2x660MW |
| 2 | Customer No. | : 1711 |
| 3 | Quantity | : 1 Set |
| 4 | Material of construction | : Aluminium / Aluminium alloy |
| 5 | Reference Drawing No. | :0-99-501-40282/02
(Furnace arrangement for Quick Erect Scaffold) |
| 6 | Man Hole (Access Door)
Opening Size in mm | : 610x762mm |

	Name	Signature	Date
Prepared & Checked	Preetam & R.Arul Prabhu		21-10-2016
Approved	M.Thandapani		21-10-2016

Annexure-II to Specification No.:MHS-HEQ-078/Rev.01

VENDOR'S CHECK LIST

This check list is to be filled up by the vendor and submitted along with the offer. This shall form part of ordering specification and shall be approved by the purchaser incorporating all the comments if any. Vendor to completely fill up the column under "vendor's compliance/confirmation/comments". Non applicability shall be clearly spelt out. Offer with incomplete data sheet/ check list is liable for rejection.

S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
1	Name of the equipment	1.0	Quick Erect scaffolding system		
2	Type of system offered		Vendor to specify		
3	Model of the system offered		Vendor to specify		
4	Type of jointing arrangement Provided	3.1	Vendor to specify		
5	Standards / Codes followed	3.2	Vendor to specify		
6	Materials of construction:	3.3.1	Steel / Aluminium		
6.1	Tubes				
6.2	Coupler / Jointing				
6.3	Fasteners				
6.4	Stair ways				
6.5	Decking				
6.6	Others				
6.7	Others				
6.8	Others				
7	All components shall have appropriate colour code	3.3.4	Vendor to confirm		
8.0	Quick erect / Quick dismantle	3.7			
8.1			Total Man-hours required for erecting the complete system		
8.2			No. of manpower required for erection:		
8.2.1			Skilled		
8.2.2			Unskilled		
8.3			Total Man-hours required for dismantling the complete system		
8.4			No. of manpower required for dismantling:		
8.4.1			Skilled		

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VENDOR'S CHECK LIST

S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
8.4.2			Unskilled		
8.5			User certificate for the time taken for assembly and dismantling of a similar system shall be furnished along with the offer.		
8.6	Vendor's confirmation to demonstrate the mandays & man power requirement during the actual installation of QES.		Vendor to confirm		
9	Furnace configuration	3.8	The offered system shall meet the shape and configuration as shown in BHEL drawing. (Refer Annexure-I). Vendor's compliance.		
10	Provision to introduce all materials thro Access door opening	3.10	Opening size given in annexure -I		
11	Spares	3.11			
11.1	Initial spares		Shall be included in the base offer		
11.2	List of initial spares		Vendor to furnish the list of initial spares offered		
11.3	Long term spares		To be quoted separately		
12	Safety Accessories	4.3	Shall form part of the offer. Vendor to furnish the list of accessories supplied.		
13	Factor of safety	4.4	4 times the rated load		
13.1	Maximum intended load of 6 tons		Vendor to confirm for having taken this into the design		
14	Load transfer	5.0			
14.1	No. of support points		Vendor to specify		
14.2	Location of support points		Vendor to furnish		

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VENDOR'S CHECK LIST

S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
14.3	Load per vertical post at support point		Vendor to specify		
14.4	Load transfer points		To be marked up in the drawing		
14.5	Type of support at the furnace hopper		Explain with a drawing. Is the support calling for any welding? If yes, it is accommodated only at the fins and not on the water wall tubes.		
14.6	Maximum safe working load that can be loaded onto the platform		Vendor to specify		
15	Scaffolding System	6.0			
15.1	Staircase width	6.2	Min. 500mm		
15.2	Staircase inclination	6.2	Not more than 55 deg.		
15.3	Provision of upper / mid guardrail	6.3	Vendor to confirm		
15.4	Access to panel and platen superheater and upper rear arch areas	6.4	Vendor to confirm		
15.5	Permissible load on each floor	6.8	Vendor to specify. Shall not be less than 150 kg/sq.m		
15.6	Hand rails height	6.9	900 - 1000mm		
16	Floors	6.10			
16.1	Provision of floor	6.10.1	All floors/ All elevations peripherally only.		
		6.10.2	Full floor platforms shall be provided at just below the upper arch and below the access door opening in the furnace hopper		
16.2	Width of peripheral floor	6.10.6	Min. 600 mm		
16.3	Provision of dismountable midrails	6.10.3	Vendor's compliance		
16.4	Height of Toe boards	6.10.4	Min. 150 mm		
16.5	Materials of construction of floors	6.10.5	Vendor to specify		
16.6	Arrangement drawing of floor	6.10.7	Vendor to enclose		
16.7	No. of floors offered	6.10.7	Vendor to specify		

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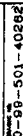
VENDOR'S CHECK LIST

S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars (to be filled up by vendor)	Remarks
16.8	Elevation details	6.10.7	Vendor to indicate in the drawing. Spacing between two successive floors shall not exceed 2.5 m shall not exceed 3.5m		
16.9	Access to all parts	6.10.8	Vendor to confirm		
17	List of Tools & Tackles	6.11	List to be attached with the offer. If vendor states that special tools are required for the offered system, then the same has to be listed in detail		
18	Storage of scaffold	6.12	Storage volume required and the suggested storage layout		
19	Reference list	6.14	Vendor to submit		
19.1	User certificate	6.14	Vendor to submit		
20	Design justification document	6.15	Vendor to submit		
21	Fasteners with Metric threads	7.3	Vendor to confirm		
22	Applicable colour code	7.4	Vendor to specify		
23	Methodology followed for marking up identification number	7.5	Vendor to specify		
24	Training of purchaser's engineers	7.6	Vendor's compliance		
25	Drawing & documents	7.7	Vendor's compliance		
26	O & M manual	7.8	Vendor to furnish a typical O&M manual of the offered system. Vendor's compliance		
27	Quality plan	8.2	Vendor's compliance		
27.1	Site checks / tests	8.4	Field quality plan - vendor's compliance		
27.2	Inspection	9.0	Vendor's compliance		
28	Packaging and Transportation	10.3	Vendor's compliance		
29	Painting	Annexure-I	Vendor's compliance		
30	Guarantee / Warranty	11.0	Vendor's compliance		

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VENDOR'S CHECK LIST

S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
31	Deviations	12.0	Shall be spelt out in the offer. If there are no deviations, the same shall be confirmed by the vendor		
32	Exclusions	13.0	Shall be spelt out in the offer. If there are no deviations, the same shall be confirmed by the vendor		
33	Documents along with offer	14.1	Vendor to furnish all the documents along with the offer		
33.1	Product literature / catalogue				
33.2	Drawing --- covering:		Specify vendor drawing No.		
33.2.1	General Arrangement		Vendor's compliance		
33.2.2	Sectional arrangement		Vendor's compliance		
33.2.3	Plan view		Vendor's compliance		
33.2.4	Elevation		Vendor's compliance		
33.2.5	Illustrated sketch of coupler / jointing arrangement		Vendor's compliance		
33.2.6	Marking up of load transfer points		Vendor's compliance		
33.2.7	Elevation details of all floor levels		Vendor's compliance		
33.2.8	Weight details		Vendor's compliance		
33.2.9	BOQ covering all components		Vendor's compliance		
33.7	Reference list		Vendor's compliance		
33.8	User certificate		Vendor's compliance		
33.9	Typical O&M manual		Vendor's compliance		
33.3	Deviations		Vendor's compliance		
33.4	Exclusions		Vendor's compliance		
33.5	Quality plan		Vendor's compliance		
33.6	List of special tools & tackles		Vendor's compliance		
34	Documents after placement of Purchase Order	14.2	Vendor's confirmation to furnish all the documents enlisted in Cl.14.2 of specification.		



BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI-620 014

Handling System/PE(FB)



Title Sheet

Quick Erect Scaffolding System
(Aluminium / Aluminium alloy)

Specification Number: MHS-HEQ-078

Revision No. : 01

01	20-10-2016	Staircase width & angle updated. Peripheral platform width updated. Clause 3.7, 4.4, 6.2, 6.10, 6.11, 6.14, 7.6 & 14.1 modified.	Arul / MTP
Revision No.	Revision Date	Revision statement	Checked & Approved

	Name	Signature	Date
Prepared	D.V.Kumar	-Sd-	06.11.2015
Checked	D.V.Kumar	-Sd-	06.11.2015
Reviewed	M.Thandapani	-Sd-	07.11.2015
Approved	M.Thandapani	-Sd-	07.11.2015



**Specification for
Quick Erect Scaffolding System**

MHS-HEQ-078

Revision No.:01

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2.0	Scope
3.0	Requirements of the system
4.0	Safety
5.0	Load transfer
6.0	Scaffolding system
6.11	Tools and Tackles
7.0	General requirements
7.6	Training
7.7	Drawings and Documents
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9.0	Inspection
10.0	Protection, Preservation, Packaging & Transportation
11.0	Guarantee / Warranty
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13.0	Exclusions
14.0	Documents to be submitted by the vendor
14.1	Documents to be submitted by vendor along with offer
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15.0	General

Annexure – I ----- Specific Project Requirements

Annexure – II ----- Check list

Annexure – III ----- Copy of Drawing (Furnace Arrangement for Quick Erect Scaffold)



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1.0 Intent:

The quick erect scaffolding system is intended for carrying out maintenance work inside a boiler furnace which comprises water walls, Burners, Soot blowers, Super heaters, Re-heaters etc. during shut down period. As the name implies, the scaffolding shall be safely erected and dismantled in the shortest possible time with less manpower and with minimum supervision.

The scaffolding system shall be sufficient enough to cover all the water wall areas, in a single set up, including inclined area of the boiler above rear wall and furnace bottom (Bottom hopper).

The system shall be preferably of modular and interchangeable construction and easily and quickly assembled inside the furnace.

2.0 Scope:

This specification covers design, manufacture, inspection and supply of quick erect scaffolding system. The specification is for ensuring a safe and trouble free quick erect scaffolding system used during shutdowns and overhauls, for inspection and maintenance of furnace internals of steam generator like Water walls, Burners, Super heaters etc.,

3.0 Requirements of the system

3.1 Quick erect scaffolding system shall be of fast erecting with suitable connecting/coupling arrangement.

3.2 Codes & standards

All equipment parts, systems and works covered under this specification shall comply with all currently applicable statutory regulations and safety codes of the Republic of India as well as of the Company where they will be installed. The offered system shall conform to national / international standards and the same may be clearly spelt out in the offer.

3.3 Material of construction

3.3.1 The material of construction of various components shall be Aluminium / Aluminium alloy of proven design for Scaffolding application. It is suggested that the selected material shall also be light in weight to hasten the erection of scaffold in the shortest possible time. For general requirements of materials, refer to cl.8.1 of this specification.

3.3.2 All materials used for construction of different components shall individually conform to latest revisions of National / International Standards and it shall be specified in the offer.



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- 3.3.3 All the components of the scaffolding system shall have *appropriate colour code* for easy identification. The colour code shall be specified in the offer and will have Purchaser's approval.
- 3.4 The quick erect scaffolding system shall provide flexibility in erection of vertical posts & horizontal / diagonal connecting members.
- 3.5 Vertical posts & horizontal / diagonal connecting members shall have equal spacing for easy erection. Connections of the above shall be with suitable quick connect hardware arrangement. Vertical posts / horizontal / diagonal members shall have equal and standard lengths for easy interchangeability & modular assembly and disassembly.
- 3.6 The vertical posts and horizontal members shall be so designed to fill the space of furnace configuration.
- 3.7 Vendor shall offer a system which is erectable and dismantlable at the quickest possible time. Vendor shall indicate, in the offer, the man-hours required and also manpower (skilled and unskilled) needed to carry out erection and dismantling of the system. Vendor shall also provide the total erection /assembly time of the full scaffold. **The total time required for erection shall not exceed 4 days (96 hours) and dismantling 2 days (48 hours), considering the work force deployed for 24 hrs in 3 shifts a day.** Vendor shall submit, along with the offer, a user certificate for the time taken for assembly and dismantling of a similar system which is equivalent to or bigger than the offered system. Vendor shall undertake guarantee to demonstrate the same (manpower & man days) during the installation (both erection and dismantling) of scaffold in any one of the shutdown period as and when demanded by the end user within 2 years after commissioning of the boilers or 48 months after completion of supply, whichever is later. The cost of supervisory support at site or any other requirement related to scaffolding system supplied by the vendor for the purpose of demonstration shall be borne by the vendor.
- 3.8 Quick erect scaffolding system shall meet the shape & configuration of the Furnace arrangement to have easy access to all parts of furnace including rear water wall arch. (Ref. Annexure-III).
- 3.9 The requirement of the system, as spelt above, is indicative only. Vendor shall offer the most appropriate system for the intended specification and duty condition. The offered system shall be clearly illustrated with sketches and elaborate details.
- 3.10 All the required materials shall be introduced into the furnace for assembly through the access door opening (Refer Annexure-I) and or furnace bottom opening and all components shall be sized accordingly.
- 3.11 Vendor shall include the required number of Initial Spares in the base offer itself. *Initial spares means the spares required during first erection/commissioning of the system to replace the items that are either damaged or lost during*



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transit/storage. Hence, vendor shall quote for the initial spares along with the base offer. The list of initial spares shall be clearly furnished in the offer.

The spares required for long term usage shall be quoted separately.

4.0 Safety

- 4.1 The locking arrangement shall not call for any welding.
- 4.2 Quick erect scaffolding system shall be arranged in such a manner to remove / erect individually without affecting other components.
- 4.3 Safety accessories like safety belt etc. shall also form part of the offer.
- 4.4 Scaffolds, as per ANSI A10.8-2011- section 4.8, shall be capable of supporting, without failure, their own weight and at-least four times the maximum intended load. In line with this, Scaffolding, which includes work platforms, bracings, and supporting members, shall be designed for a minimum safety factor of '4' which is applied to the design load.

5.0 Load Transfer

Vendor shall clearly spell out in his offer the load that is likely to be transferred to the furnace walls. This load shall include the dead weight of the scaffolding including the platforms and the safe working load that can be loaded on to the platform. With respect to the Load transfer, the following details shall be furnished in the offer.

- The number of support points
- The location of support points
- The load per vertical post at the support points
- The load transfer points shall be clearly marked up in the drawing
- Vendor shall indicate the type of supports proposed with an aid of sketch/drawing. (Load transfer through all supports shall be at the fins zone only and not on the tubes)

6.0 Scaffolding system :

The scaffolding system shall be provided with:

- 6.1 Close access to inspection / maintenance of boiler tubes / water wall & other components.
- 6.2 Stair case with a width of minimum 500 mm and not more than 55° inclination. Staircase shall be provided with hand rails.
- 6.3 System shall have upper / mid guard rail without any special components.
- 6.4 Access to Panel and Platen super heater and rear wall upper arch portion.
- 6.5 Arrangement for stable floor.
- 6.6 Suitable arrangement for supporting at furnace bottom without additional attachment with boiler tubes.

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- 6.7 In total, the assembly shall have amongst other things vertical posts, horizontal members, vertical / horizontal / diagonal bracings, trusses and other fastening arrangements etc.,
- 6.8 Load per square metre (not less than 150 kg/sq.m) on the scaffolding system shall be furnished by vendor. Vendor shall indicate the overall permissible load at any given instant on the scaffolding system offered. (Refer clause 4.4 also)
- 6.9 Handrails shall be with a height between 900 mm to 1000mm.

6.10 Floors

- 6.10.1 Floors are to be provided peripherally at all elevations except at the levels specified in clause 6.10.2 where full planking is required. The elevation levels shall be determined by the vendor. However, the space between two floors shall not exceed 2.5 m below the top of wind box and shall not exceed 3.5 m there after (above windbox). However to provide access to all the areas with in the floor space, suitable ladders shall be provided which can be safely fixed on to the floors. Minimum 6 nos. of such ladders shall be provided.
- 6.10.2 Full platforms/floors (not just peripheral) shall be provided at just below the upper rear arch and below the access door opening in the furnace hopper. The full floor elevation details shall be furnished by the vendor.
- 6.10.3 Floors shall be provided with guard rails, mid rails and toe boards installed on all open sides and ends. Mid-rails and shall be of dismountable type. All rails and posts shall be suitable for easy assembly & disassembly.
- 6.10.4 Toe boards/guards shall extend to a minimum of 150mm above the working surface.
- 6.10.5 Vendor to specify the type of flooring offered. The flooring material offered shall be of non-flammable/ non-combustible material.
- 6.10.6 The width of the floor and gap between the furnace wall and floor shall be clearly specified by the vendor and the same shall be clearly shown in the drawing. Floor width (peripheral) shall be minimum 600 mm.
- 6.10.7 The number of floors offered with "elevation" details shall be clearly mentioned in the drawing.
- 6.10.8 The floor elevations and no. of floors shall be decided in such a way that access is available to all parts (especially burner area) of the water walls. (For burner level elevations refer to Annexure-III).

6.11 Tools and tackles

- The Vendor shall supply with the main equipment, complete set of special tools and tackles required for erection, assembly, dismantling and proper maintenance of the equipment and system. These special tools will also include special material handling equipment such as electrical winches, jigs and fixtures if applicable to meet the erection / dismantling time as per



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clause 3.7. The list of such tools and tackles shall be submitted by the vendor along with the offer.

- The price of each tool/tackle shall be deemed to have been included in the total bid price. These tools and tackles shall be packed and sent to site. All the tools and tackles shall be of reputed make acceptable to the Purchaser.

6.12 Any other items though not specifically mentioned in this specification but needed to complete the equipment and system [unless specifically mentioned under exclusions] shall form part of the offer.

6.13 Vendor shall specify the storage space requirement of the system components and shall furnish suggested storage layout with special instructions, if any, for proper storage of the material.

6.14 Vendor shall furnish reference list for having supplied similar QES system in the past and the same should have been put in use atleast in one thermal power station for a boiler capacity of 210 MW or above for a period of minimum one year and should have been put to use atleast once. Also vendor shall produce the performance certificate for the same from the end user.

6.15 Vendor may also submit necessary documents for justifying the design aspects of the scaffold offered both for stability and safety

7.0 General requirements

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

7.2 The material of construction and its duty class shall be clearly spelt out in the offer and the same shall conform to specified National / International Standards. All materials used for the construction of the equipment shall be new and shall be in accordance with the requirements of this specification. Materials utilised for various components shall be those which have established themselves for use in such applications for atleast a period in excess of 2 years.

7.3 All fasteners used, if applicable, shall be of Metric threads only. (No British / American threads in the inch system is permitted)

7.4 Vendor shall follow International colour Code wherever applicable for various components, assembly and sub-assembly for easy identification of components of the system.

7.5 All assemblies /sub-assemblies and individual components shall bear proper identification numbers. The methodology followed shall be clearly spelt out in the base offer.



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7.6 Training:

- The Vendor shall extend all possible assistance and co-operation to the purchaser regarding the development of expertise in the area of assembly, disassembly, identification, storage & retrieval and safety aspects of the system offered.
- Vendor shall also impart the necessary training - training of personnel for the required days at the job site for the required period by the vendor's representative. This shall be integral part of the offer.

7.7 Drawing and Documents:

- All documents/text information shall be in MSWord 2000 or latest version
- All drawings shall be made in AutoCAD- Release 2000 or latest Version.
- All drawings submitted by the Vendor including those submitted at the time of bid shall be in sufficient detail indicating the type, size, arrangement, weight of each component for packing and shipment, the external connection, fixing arrangement required, the dimensions required for installation and interconnections with other equipment and materials, clearance and spaces required between various portions of equipment and any other information specifically requested in the drawing schedules.
- Each drawing submitted by the Vendor (including those of sub-vendors) shall bear a title block at the right hand bottom corner with clear mention of the name of the Purchaser, the system designation, the specifications title, the specification number, the name of the Project, drawing number and revisions. If standard catalogue pages are submitted the applicable items shall be indicated therein. All titles, notes, markings and writings on the drawing shall be in English. All the dimensions should be in metric units.
- The Vendor shall also furnish a "Master Drawing List" which shall be a comprehensive list of all drawings/documents/calculations envisaged to be furnished by him during the detailed engineering to the Purchaser. Such list should clearly indicate the purpose of submission of these drawings i.e., "FOR APPROVAL" or "FOR INFORMATION ONLY". Similarly, all the drawings/documents submitted by the Vendor during detailed engineering stage shall be stamped "FOR APPROVAL" or "FOR INFORMATION" prior to submission.
- The furnishing of detailed engineering data and drawings by the Vendor shall be in accordance with the time schedule for the project. The review



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of these documents / data /drawings by the Purchaser will cover only general conformance of the data/drawings/documents to the specifications and contract, interfaces with the equipment provided by others. The review by the Purchaser should not be construed to be a thorough review of all dimensions, quantities and details of the equipment, materials, any devices or items indicated or the accuracy of the information submitted. The review and/or approval by the Purchaser shall not relieve the Vendor of any of his responsibilities and liabilities under this contract.

- After the approval of the drawings, further work by the Vendor shall be in strict accordance with these approved drawings and no deviation shall be permitted without the written approval of the Purchaser.
- The Vendor shall submit adequate points of drawing/data/document for Purchaser's review and or approval. When changes are required, drawings shall be resubmitted promptly, with revisions clearly marked, for final review. Any delays arising out of the failure of the Vendor to submit/rectify and resubmit in time shall not be accepted as a reason for delay in the contract schedule.

7.8 Operation & Maintenance (O & M) Manual

Typical O&M manual for the type of system offered shall be submitted along with the offer.

Manuals generally shall contain the following:

- Brief description
- Assembly drawings with part list, dimensional drawings and other applicable drawings.
- Manuals should pertain only to the type or model supplied for this contract.
- Drawing and catalogues
- Sequence of erection.
- Erection instructions
- Critical checks and permissible deviation/tolerances.
- List of tool, tackles,
- Bill of Materials.
- Procedure for erection and dismantling.
- Procedure for initial checking after erection.
- Procedure /Check list for commissioning of the system.

7.8.1 Format of manuals

- Manuals should be both in printed form and in electronic media with a text font size of 12.



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- The size of manuals should be in correct A4 size with drawings in either A4 or A3 size. Large size drawings (greater than A3 size) should be reduced to A3 size and inserted.
- Drawings shall be of printed or laser printed only.
- Spiral or comb bound copies should be totally avoided.
- If manuals are supplied in folders, the folder shall have 3 hole punching system.
- **No of copies of manuals: 3 Sets + 3 CD –ROMS**
- O & M manuals, should be submitted to BHEL / Tiruchirappalli prior to despatch of the equipment.

8.0 Quality

8.1 General requirements

- ♦ All materials used for equipment construction including plates, pipes, forgings, fittings etc., shall be of tested quality as per relevant codes/standards. All material shall be chosen from the fresh lots and shall be free from defects like scales, seam, lamination, pitting etc., Detail of results of the tests conducted to determine the mechanical properties, chemical analysis and the details of heat treatment procedure shall be recorded on certificates. Tests shall be carried out as per applicable material standards and or agreed details.
- ♦ All plates of thickness more than 21mm shall be ultrasonically tested.
- ♦ All bar-stock forgings above 21mm diameter shall be ultrasonically tested.
- ♦ All codes standards or specifications with latest editions shall be referred.

8.2 Quality plan

Vendor shall submit along with the offer the quality plan for Purchaser's review / comments / approval to ensure that the equipment and services, under the scope of contract whether manufactured or performed, within the Vendor's works or at his sub-vendor's premises or at the Purchaser's site or at any other place of work are in accordance with the specifications, the Vendor shall adopt suitable quality assurance programme to control such activities at all points, as necessary. Such programmes shall be outlined by the Vendor and shall be finally accepted by the Purchaser/authorised representative after discussions before the award of the contract. The offer which is not complying with this requirement will not be considered for evaluation.

8.3 Quality assurance- general requirements

- ❖ All materials, components and equipment covered under this specification shall be procured, manufactured, erected, commissioned and tested at all



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the stages, as per a comprehensive Quality Assurance Programme which shall be submitted along with the offer. It is the vendor's responsibility to draw up and implement such programme duly approved by the Purchaser. The detailed Quality Plans for manufacturing should be drawn up by the Vendor and will be submitted to Purchaser for approval. Schedule of finalisation of such quality plans will be finalised before award of contract.

- ❖ Manufacturing Quality Plan will detail out for all the components and equipment, various tests/inspection, to be carried out as per the requirements of this specification and standards mentioned therein and quality practices and procedures followed by the Vendor, the relevant reference documents and standards, acceptance norms, inspection documents raised, etc., during all stages of materials procurement, manufacture, assembly and final testing.
- ❖ The Vendor shall also furnish copies of the reference documents/plant standards/acceptance norms/tests and inspection procedure, etc., as referred in Quality Plans along with Quality Plans. These Quality Plans and reference documents/standards, etc. will be subject to Purchaser's approval without which manufacture shall not proceed.
- ❖ These approved documents shall form a part of the contract. In these approved Quality Plans, Purchaser shall identify customer hold points (CHP), i.e., test/checks which shall be carried out in presence of the Purchaser's engineer or his authorised representative and beyond which the work will not proceed without consent of Purchaser/Authorised representative in writing. All deviations to this specification, approved quality plans and applicable standards must be documented and referred to Purchaser along with technical justification for approval and dispositioning.
- ❖ No material shall be despatched from the manufacturer's works before the same is accepted subsequent to pre-despatch final inspection including verification of records of all previous tests/inspections by Purchaser's engineer / Authorised representative.

8.4 Site checks/tests

The Vendor shall prepare and submit detailed field quality plans in the format setting out the quality practice and procedures to be adopted for assuring quality for each equipment of material at this specification from the receipt of material at site, during storage & erection. These procedures shall necessarily include all checks/tests conducted at site for preservation, assembly, alignment, positioning of the equipment etc. The Vendor shall also furnish detailed quality procedure proposed by him for storage & preservation to the Purchaser.



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9.0 Inspection

- 9.1 The complete System has to be offered for inspection by Purchaser / end user and the vendor shall give 30 days advance notice for arranging the inspection after the system is fully ready. After inspection the equipment can be despatched only after obtaining the MDCC (Material Despatch Clearance Certificate). No material shall be despatched without MDCC.
- 9.2 The word "inspector" shall mean the Purchaser and / or his authorised representative and or an outside inspection agency acting on behalf of the Purchaser to inspect and examine the materials and workmanship of the works during its manufacture or erection.
- 9.3 The Purchaser or his duly authorised representative and / or an outside inspection agency acting on behalf of the Purchaser shall inspect the materials and workmanship of the works during its manufacture or erection and its part of the works, if any, being manufactured or assembled at other premises or works. In case of inspection at other premises/ works, the Vendor shall obtain from the sub-vendor permission to inspect as if the works were manufactured or assembled at the Vendor's own premises or works.
- 9.4 The Vendor shall give the Purchaser / inspector fifteen (15) days written notice of any material being ready for testing. Such tests shall be to the Vendor's account except for the expenses of the inspectors. The Inspector, unless the witnessing of the tests is virtually waived, will attend such tests within fifteen (15) days of the date on which the equipment is noticed as being ready for test/inspection, failing which the vendor may proceed with test which shall be deemed to have been made in the inspector's presence and he shall forthwith forward to the inspector duly certified test reports in two (2) copies.
- 9.5 Scaffolds shall be inspected and tested as per approved quality plan. The certificates and documents generated during inspection of above shall be furnished.
- 9.6 The Inspector shall within fifteen (15) days from the date of inspection as defined herein give notice in writing to the Vendor of any objection to any drawings and / or any equipment and workmanship which is in his opinion not in accordance with the contract. The Vendor shall give due consideration to such objections and shall either carry out the necessary modifications as called for by the Purchaser/Inspector or inform in writing to the Purchaser / inspector giving reasons therein that no modifications are necessary to comply with the contract.



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9.7 The inspection by Inspector and issue of inspection certificate thereon shall in no way limit the liabilities and responsibilities of the vendor in respect of the agreed quality assurance programme forming a part of the contract.

9.8 All inspection measuring and test equipment used by vendor shall be calibrated periodically depending on its use and criticality of the test / measurement to be done. The contractor shall maintain all the relevant records of periodic calibration and instrument identification and shall produce the same for inspection by Purchaser. Wherever asked specifically the vendor shall re-calibrate the measuring / test equipment in the presence of Purchaser/ Inspector.

10.0 Protection, preservation, packaging and transportation

10.1 Protection

All coated surfaces shall be protected against abrasion, impact, discoloration and any other damages. All exposed threaded portions shall be suitably protected with non-metallic protection device. The ends of all piping and conduit equipment connections shall be properly sealed with suitable devices to protect them from damage. The parts which are likely to get oxidized or corroded, due to exposure to weather, should also be properly treated and protected in a suitable manner. All primers/paints/coatings shall take into account the hot humid, corrosive & alkaline, over ground environment.

10.2 Preservation

All exposed metallic surfaces subject to corrosion shall be protected by shop application of suitable coatings. All surfaces shall be thoroughly cleaned of all mill scales, oxides and other coatings and prepared in the shop. The surfaces that are to be finish-painted after installation or require corrosion protection until installation, shall be shop painted with at least two coats of primer. *For special painting requirements refer to Annexure-I to this specification.*

10.3 Packaging and transportation

- All the equipment shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at Site till the time of erection.
- The over dimensional consignment (ODC) w.r.t Indian road / rail conditions shall be mutually discussed and finalised during the execution of contract.

11.0 Guarantee / Warranty

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



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date of supply whichever is later against defective design, defective material usage, defective workmanship, defective packaging and forwarding.

12.0 Deviations

Deviations to specification, if any, shall be clearly spelt out in the offer stage itself. During contract/ inspection/ final erection stages, the Purchaser reserves the right to entertain or deny such deviation.

13.0 Exclusions

Any exclusion from scope of supply shall be clearly spelt out in the offer. Exclusion of major / critical items shall make the offer liable for rejection.

14.0 Documents to be submitted by vendor

14.1 Documents to be submitted along with the offer:

- Product literature / catalogue and drawings in support of the offer shall be submitted in three copies along with the quotation to evaluate the offer.
- Sectional arrangement drawing with plan, elevation, and end view along with major dimensions and weight particulars
- Filled in check list. (Annexure-II to this specification)
- Weight and quantity of individual components as per the scope of supply shall be indicated in the drawing as bill of quantity / material.
- The quality plan for the product under supply shall be furnished along with the offer. (This will be amended in consultation with the ultimate customer/end user, if required)
- List of Special tools and tackles
- List of initial spares
- Qualification Requirement: Vendor shall submit the reference list (list shall give the information like, name of customer / power station, name of the contact person, capacity of the power station, size of the scaffolding system offered etc.) for having supplied similar QES system in the past and the same should have been put in use atleast in one thermal power station for a boiler capacity of 210 MW or above for a period of minimum one year and should have been put to use atleast once. User Certificate: Vendor shall submit a certificate issued by the end user of the equipment under subject item for the satisfactory service and use of the system.
- A certificate for the components from Safety Steward of the country of make shall be provided.
- Document for justifying the design aspects of the offered system both from stability and safety aspects.
- List of Deviations



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- List of Exclusions
- Typical O&M manual of the offered system similar to the earlier job executed by the vendor.(preferably that applicable for the certificate provider)

14.2 Documents to be furnished after award of contract

- The complete arrangement drawing giving particulars like
 - Bill Of Quantity (of all individual components)
 - Weight details of all components individually
 - Identification marks / Numbers
- Packaging procedure detailing the list of components shall be despatched individually with identification and with preservation and storage.
- Test certificates shall be furnished before despatch of components.
- Material test certificate for all the major components.
- Quality control / Inspection documents generated during the stages of inspection, performance inspection and final inspection inline with the final approved quality plan.
- Guarantee certificate shall be furnished by the vendor.
- O & M manual

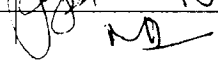
15.0 General

- The language used in offer, O & M manual, Labels, drawings etc. shall be "English only"
- For Equipment and other special requirements pertaining to the contract, refer **Annexure - I** to this specification.
- **Annexure - II** is the Check list to be filled in completely by the vendor and submitted **along with the offer**. Offer with incomplete Check list is liable for rejection.
- **Annexure - III (Drawing)**, Furnace arrangement for Quick Erect Scaffold, contains all details of the requirements like furnace width, depth, height, location of access / manhole doors, goose neck / furnace bottom position, elevations of burners etc.



**Annexure-I to Specification No.
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- 1 **Name of Project** : NABINAGAR 3x660MW
- 2 **Customer No.** : 1715
- 3 **Quantity** : 1 Set
- 4 **Material of construction** : Aluminium / Aluminium alloy
- 5 **Reference Drawing No.** : 0-99-501-40298/02
(Furnace arrangement for Quick Erect Scaffold)
- 6 **Man Hole (Access Door)
Opening Size in mm** : 610x762mm

	Name	Signature	Date
Prepared & Checked	Preetam & R.Arul Prabhu		21-10-2016
Approved	M.Thandapani		21-10-2016

Annexure-II to Specification No.:MHS-HEQ-078/Rev.01

VENDOR'S CHECK LIST

This check list is to be filled up by the vendor and submitted along with the offer. This shall form part of ordering specification and shall be approved by the purchaser incorporating all the comments if any. Vendor to completely fill up the column under "vendor's compliance/confirmation/comments". Non applicability shall be clearly spelt out. Offer with incomplete data sheet/ check list is liable for rejection.

S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
1	Name of the equipment	1.0	Quick Erect scaffolding system		
2	Type of system offered		Vendor to specify		
3	Model of the system offered		Vendor to specify		
4	Type of jointing arrangement Provided	3.1	Vendor to specify		
5	Standards / Codes followed	3.2	Vendor to specify		
6	Materials of construction	3.3.1	Steel / Aluminium		
6.1	Tubes				
6.2	Coupler / Jointing				
6.3	Fasteners				
6.4	Stair ways				
6.5	Decking				
6.6	Others				
6.7	Others				
6.8	Others				
7	All components shall have appropriate colour code	3.3.4	Vendor to confirm		
8.0	Quick erect / Quick dismantle	3.7			
8.1			Total Man-hours required for erecting the complete system		
8.2			No. of manpower required for erection:		
8.2.1			Skilled		
8.2.2			Unskilled		
8.3			Total Man-hours required for dismantling the complete system		
8.4			No. of manpower required for dismantling:		
8.4.1			Skilled		

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VENDOR'S CHECK LIST

S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
8.4.2			Unskilled		
8.5			User certificate for the time taken for assembly and dismantling of a similar system shall be furnished along with the offer.		
8.6	Vendor's confirmation to demonstrate the mandays & man power requirement during the actual installation of QES.		Vendor to confirm		
9	Furnace configuration	3.8	The offered system shall meet the shape and configuration as shown in BHEL drawing. (Refer Annexure-I). Vendor's compliance.		
10	Provision to introduce all materials thro Access door opening	3.10	Opening size given in annexure -I		
11	Spares	3.11			
11.1	Initial spares		Shall be included in the base offer		
11.2	List of initial spares		Vendor to furnish the list of initial spares offered		
11.3	Long term spares		To be quoted separately		
12	Safety Accessones	4.3	Shall form part of the offer. Vendor to furnish the list of accessories supplied.		
13	Factor of safety	4.4	4 times the rated load		
13.1	Maximum intended load of 6 tons		Vendor to confirm for having taken this into the design		
14	Load transfer	5.0			
14.1	No of support points		Vendor to specify		
14.2	Location of support points		Vendor to furnish		

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VENDOR'S CHECK LIST

S.No.	Description	Spec. Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
14.3	Load per vertical post at support point		Vendor to specify		
14.4	Load transfer points		To be marked up in the drawing		
14.5	Type of support at the furnace hopper		Explain with a drawing. Is the support calling for any welding? If yes, it is accommodated only at the fins and not on the water wall tubes.		
14.6	Maximum safe working load that can be loaded onto the platform		Vendor to specify		
15	Scaffolding System	6.0			
15.1	Staircase width	6.2	Min. 500mm		
15.2	Staircase inclination	6.2	Not more than 55 deg.		
15.3	Provision of upper / mid guardrail	6.3	Vendor to confirm		
15.4	Access to panel and platen superheater and upper rear arch areas	6.4	Vendor to confirm		
15.5	Permissible load on each floor	6.8	Vendor to specify. Shall not be less than 150 kg/sq.m		
15.6	Hand rails height	6.9	900 - 1000mm		
16	Floors	6.10			
16.1	Provision of floor	6.10.1	All floors/ All elevations peripherally only.		
		6.10.2	Full floor platforms shall be provided at just below the upper arch and below the access door opening in the furnace hopper.		
16.2	Width of peripheral floor	6.10.6	Min. 600 mm		
16.3	Provision of dismountable midrails	6.10.3	Vendor's compliance		
16.4	Height of Toe boards	6.10.4	Min. 150 mm		
16.5	Materials of construction of floors	6.10.5	Vendor to specify		
16.6	Arrangement drawing of floor	6.10.7	Vendor to enclose		
16.7	No. of floors offered	6.10.7	Vendor to specify		

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VENDOR'S CHECK LIST

S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
16.8	Elevation details	6.10.7	Vendor to indicate in the drawing. Spacing between two successive floors shall not exceed 2.5 m shall not exceed 3.5m		
16.9	Access to all parts	6.10.8	Vendor to confirm		
17	List of Tools & Tackles	6.11	List to be attached with the offer. If vendor states that special tools are required for the offered system, then the same has to be listed in detail		
18	Storage of scaffold	6.12	Storage volume required and the suggested storage layout		
19	Reference list	6.14	Vendor to submit		
19.1	User certificate	6.14	Vendor to submit		
20	Design justification document	6.15	Vendor to submit		
21	Fasteners with Metric threads	7.3	Vendor to confirm		
22	Applicable colour code	7.4	Vendor to specify		
23	Methodology followed for marking up identification number	7.5	Vendor to specify		
24	Training of purchaser's engineers	7.6	Vendor's compliance		
25	Drawing & documents	7.7	Vendor's compliance		
26	O & M manual	7.8	Vendor to furnish a typical O&M manual of the offered system. Vendor's compliance		
27	Quality plan	8.2	Vendor's compliance		
27.1	Site checks / tests	8.4	Field quality plan - vendor's compliance		
27.2	Inspection	9.0	Vendor's compliance		
28	Packaging and Transportation	10.3	Vendor's compliance		
29	Painting	Annexure-I	Vendor's compliance		
30	Guarantee / Warranty	11.0	Vendor's compliance		

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VENDOR'S CHECK LIST

S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
31	Deviations	12.0	Shall be spelt out in the offer. If there are no deviations, the same shall be confirmed by the vendor		
32	Exclusions	13.0	Shall be spelt out in the offer. If there are no deviations, the same shall be confirmed by the vendor		
33	Documents along with offer	14.1	Vendor to furnish all the documents along with the offer		
33.1	Product literature / catalogue				
33.2	Drawing --- covering:		Specify vendor drawing No.		
33.2.1	General Arrangement		Vendor's compliance		
33.2.2	Sectional arrangement		Vendor's compliance		
33.2.3	Plan view		Vendor's compliance		
33.2.4	Elevation		Vendor's compliance		
33.2.5	Illustrated sketch of coupler / jointing arrangement		Vendor's compliance		
33.2.6	Marking up of load transfer points		Vendor's compliance		
33.2.7	Elevation details of all floor levels		Vendor's compliance		
33.2.8	Weight details		Vendor's compliance		
33.2.9	BOQ covering all components		Vendor's compliance		
33.7	Reference list		Vendor's compliance		
33.8	User certificate		Vendor's compliance		
33.9	Typical O&M manual		Vendor's compliance		
33.3	Deviations		Vendor's compliance		
33.4	Exclusions		Vendor's compliance		
33.5	Quality plan		Vendor's compliance		
33.6	List of special tools & tackles		Vendor's compliance		
34	Documents after placement of Purchase Order	14.2	Vendor's confirmation to furnish all the documents enlisted in Cl.14.2 of specification.		

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BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI-620 014

Handling System/PE(FB)



Title Sheet

Quick Erect Scaffolding System
(Aluminium / Aluminium alloy)

Specification Number: MHS-HEQ-078

Revision No. : 01

01	20-10-2016	Staircase width & angle updated. Peripheral platform width updated. Clause 3.7, 4.4, 6.2, 6.10, 6.11, 6.14, 7.6 & 14.1 modified.	Arul / MTP
Revision No.	Revision Date	Revision statement	Checked & Approved

	Name	Signature	Date
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Checked	D.V.Kumar	-Sd-	06.11.2015
Reviewed	M.Thandapani	-Sd-	07.11.2015
Approved	M.Thandapani	-Sd-	07.11.2015



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1.0 Intent:

The quick erect scaffolding system is intended for carrying out maintenance work inside a boiler furnace which comprises water walls, Burners, Soot blowers, Super heaters, Re-heaters etc. during shut down period. As the name implies, the scaffolding shall be safely erected and dismantled in the shortest possible time with less manpower and with minimum supervision.

The scaffolding system shall be sufficient enough to cover all the water wall areas, in a single set up, including inclined area of the boiler above rear wall and furnace bottom (Bottom hopper).

The system shall be preferably of modular and interchangeable construction and easily and quickly assembled inside the furnace.

2.0 Scope:

This specification covers design, manufacture, inspection and supply of quick erect scaffolding system. The specification is for ensuring a safe and trouble free quick erect scaffolding system used during shutdowns and overhauls, for inspection and maintenance of furnace internals of steam generator like Water walls, Burners, Super heaters etc.,

3.0 Requirements of the system

3.1 Quick erect scaffolding system shall be of fast erecting with suitable connecting/coupling arrangement.

3.2 Codes & standards

All equipment parts, systems and works covered under this specification shall comply with all currently applicable statutory regulations and safety codes of the Republic of India as well as of the Company where they will be installed. The offered system shall conform to national / international standards and the same may be clearly spelt out in the offer.

3.3 Material of construction

3.3.1 The material of construction of various components shall be Aluminium / Aluminium alloy of proven design for Scaffolding application. It is suggested that the selected material shall also be light in weight to hasten the erection of scaffold in the shortest possible time. For general requirements of materials, refer to cl.8.1 of this specification.

3.3.2 All materials used for construction of different components shall individually conform to latest revisions of National / International Standards and it shall be specified in the offer.



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- 3.3.3 All the components of the scaffolding system shall have ***appropriate colour code*** for easy identification. The colour code shall be specified in the offer and will have Purchaser's approval.
- 3.4 The quick erect scaffolding system shall provide flexibility in erection of vertical posts & horizontal / diagonal connecting members.
- 3.5 Vertical posts & horizontal / diagonal connecting members shall have equal spacing for easy erection. Connections of the above shall be with suitable quick connect hardware arrangement. Vertical posts / horizontal / diagonal members shall have equal and standard lengths for easy interchangeability & modular assembly and disassembly.
- 3.6 The vertical posts and horizontal members shall be so designed to fill the space of furnace configuration.
- 3.7 Vendor shall offer a system which is erectable and dismantlable at the quickest possible time. Vendor shall indicate, in the offer, the man-hours required and also manpower (skilled and unskilled) needed to carry out erection and dismantling of the system. Vendor shall also provide the total erection /assembly time of the full scaffold. **The total time required for erection shall not exceed 4 days (96 hours) and dismantling 2 days (48 hours), considering the work force deployed for 24 hrs in 3 shifts a day.**
Vendor shall submit, along with the offer, a user certificate for the time taken for assembly and dismantling of a similar system which is equivalent to or bigger than the offered system. Vendor shall undertake guarantee to demonstrate the same (manpower & man days) during the installation (both erection and dismantling) of scaffold in any one of the shutdown period as and when demanded by the end user within 2 years after commissioning of the boilers or 48 months after completion of supply, whichever is later. The cost of supervisory support at site or any other requirement related to scaffolding system supplied by the vendor for the purpose of demonstration shall be borne by the vendor.
- 3.8 Quick erect scaffolding system shall meet the shape & configuration of the Furnace arrangement to have easy access to all parts of furnace including rear water wall arch. (Ref. Annexure-III).
- 3.9 The requirement of the system, as spelt above, is indicative only. Vendor shall offer the most appropriate system for the intended specification and duty condition. The offered system shall be clearly illustrated with sketches and elaborate details.
- 3.10 All the required materials shall be introduced into the furnace for assembly through the access door opening (Refer Annexure-I) and or furnace bottom opening and all components shall be sized accordingly.
- 3.11 Vendor shall include the required number of Initial Spares in the base offer itself. *Initial spares means the spares required during first erection/commissioning of the system to replace the items that are either damaged or lost during*



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transit/storage. Hence, vendor shall quote for the initial spares along with the base offer. The list of initial spares shall be clearly furnished in the offer.

The spares required for long term usage shall be quoted separately.

4.0 Safety

- 4.1 The locking arrangement shall not call for any welding.
- 4.2 Quick erect scaffolding system shall be arranged in such a manner to remove / erect individually without affecting other components.
- 4.3 Safety accessories like safety belt etc. shall also form part of the offer.
- 4.4 Scaffolds, as per ANSI A10.8-2011- section 4.8, shall be capable of supporting, without failure, their own weight and at-least four times the maximum intended load. In line with this, Scaffolding, which includes work platforms, bracings, and supporting members, shall be designed for a minimum safety factor of '4' which is applied to the design load.

5.0 Load Transfer

Vendor shall clearly spell out in his offer the load that is likely to be transferred to the furnace walls. This load shall include the dead weight of the scaffolding including the platforms and the safe working load that can be loaded on to the platform. With respect to the Load transfer, the following details shall be furnished in the offer.

- The number of support points
- The location of support points
- The load per vertical post at the support points
- The load transfer points shall be clearly marked up in the drawing
- Vendor shall indicate the type of supports proposed with an aid of sketch/drawing. (Load transfer through all supports shall be at the fins zone only and not on the tubes)

6.0 Scaffolding system :

The scaffolding system shall be provided with:

- 6.1 Close access to inspection / maintenance of boiler tubes / water wall & other components.
- 6.2 Stair case with a width of minimum 500 mm and not more than 55° inclination. Staircase shall be provided with hand rails.
- 6.3 System shall have upper / mid guard rail without any special components.
- 6.4 Access to Panel and Platen super heater and rear wall upper arch portion.
- 6.5 Arrangement for stable floor.
- 6.6 Suitable arrangement for supporting at furnace bottom without additional attachment with boiler tubes.



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- 6.7 In total, the assembly shall have amongst other things vertical posts, horizontal members, vertical / horizontal / diagonal bracings, trusses and other fastening arrangements etc.,
- 6.8 Load per square metre (not less than 150 kg/sq.m) on the scaffolding system shall be furnished by vendor. Vendor shall indicate the overall permissible load at any given instant on the scaffolding system offered. (Refer clause 4.4 also)
- 6.9 Handrails shall be with a height between 900 mm to 1000mm.

6.10 Floors

- 6.10.1 Floors are to be provided peripherally at all elevations except at the levels specified in clause 6.10.2 where full planking is required. The elevation levels shall be determined by the vendor. However, the space between two floors shall not exceed 2.5 m below the top of wind box and shall not exceed 3.5 m there after (above windbox). However to provide access to all the areas with in the floor space, suitable ladders shall be provided which can be safely fixed on to the floors. Minimum 6 nos. of such ladders shall be provided.
- 6.10.2 Full platforms/floors (not just peripheral) shall be provided at just below the upper rear arch and below the access door opening in the furnace hopper. The full floor elevation details shall be furnished by the vendor.
- 6.10.3 Floors shall be provided with guard rails, mid rails and toe boards installed on all open sides and ends. Mid-rails and shall be of dismountable type. All rails and posts shall be suitable for easy assembly & disassembly.
- 6.10.4 Toe boards/guards shall extend to a minimum of 150mm above the working surface.
- 6.10.5 Vendor to specify the type of flooring offered. The flooring material offered shall be of non-flammable/ non-combustible material.
- 6.10.6 The width of the floor and gap between the furnace wall and floor shall be clearly specified by the vendor and the same shall be clearly shown in the drawing. Floor width (peripheral) shall be minimum 600 mm.
- 6.10.7 The number of floors offered with "elevation" details shall be clearly mentioned in the drawing.
- 6.10.8 The floor elevations and no. of floors shall be decided in such a way that access is available to all parts (especially burner area) of the water walls. (For burner level elevations refer to Annexure-III).

6.11 Tools and tackles

- The Vendor shall supply with the main equipment, complete set of special tools and tackles required for erection, assembly, dismantling and proper maintenance of the equipment and system. These special tools will also include special material handling equipment such as electrical winches, jigs and fixtures if applicable to meet the erection / dismantling time as per



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clause 3.7. The list of such tools and tackles shall be submitted by the vendor along with the offer.

- The price of each tool/tackle shall be deemed to have been included in the total bid price. These tools and tackles shall be packed and sent to site. All the tools and tackles shall be of reputed make acceptable to the Purchaser.

6.12 Any other items though not specifically mentioned in this specification but needed to complete the equipment and system [unless specifically mentioned under exclusions] shall form part of the offer.

6.13 Vendor shall specify the storage space requirement of the system components and shall furnish suggested storage layout with special instructions, if any, for proper storage of the material.

6.14 Vendor shall furnish reference list for having supplied similar QES system in the past and the same should have been put in use atleast in one thermal power station for a boiler capacity of 210 MW or above for a period of minimum one year and should have been put to use atleast once. Also vendor shall produce the performance certificate for the same from the end user.

6.15 Vendor may also submit necessary documents for justifying the design aspects of the scaffold offered both for stability and safety

7.0 General requirements

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

7.2 The material of construction and its duty class shall be clearly spelt out in the offer and the same shall conform to specified National / International Standards. All materials used for the construction of the equipment shall be new and shall be in accordance with the requirements of this specification. Materials utilised for various components shall be those which have established themselves for use in such applications for atleast a period in excess of 2 years.

7.3 All fasteners used, if applicable, shall be of Metric threads only. (No British / American threads in the inch system is permitted)

7.4 Vendor shall follow International colour Code wherever applicable for various components, assembly and sub-assembly for easy identification of components of the system.

7.5 All assemblies /sub-assemblies and individual components shall bear proper identification numbers. The methodology followed shall be clearly spelt out in the base offer.



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7.6 Training:

- The Vendor shall extend all possible assistance and co-operation to the purchaser regarding the development of expertise in the area of assembly, disassembly, identification, storage & retrieval and safety aspects of the system offered.
- Vendor shall also impart the necessary training - training of personnel for the required days at the job site for the required period by the vendor's representative. This shall be integral part of the offer.

7.7 Drawing and Documents:

- All documents/text information shall be in MSWord 2000 or latest version
- All drawings shall be made in AutoCAD- Release 2000 or latest Version.
- All drawings submitted by the Vendor including those submitted at the time of bid shall be in sufficient detail indicating the type, size, arrangement, weight of each component for packing and shipment, the external connection, fixing arrangement required, the dimensions required for installation and interconnections with other equipment and materials, clearance and spaces required between various portions of equipment and any other information specifically requested in the drawing schedules.
- Each drawing submitted by the Vendor (including those of sub-vendors) shall bear a title block at the right hand bottom corner with clear mention of the name of the Purchaser, the system designation, the specifications title, the specification number, the name of the Project, drawing number and revisions. If standard catalogue pages are submitted the applicable items shall be indicated therein. All titles, notes, markings and writings on the drawing shall be in English. All the dimensions should be in metric units.
- The Vendor shall also furnish a "Master Drawing List" which shall be a comprehensive list of all drawings/documents/calculations envisaged to be furnished by him during the detailed engineering to the Purchaser. Such list should clearly indicate the purpose of submission of these drawings i.e., "FOR APPROVAL" or "FOR INFORMATION ONLY". Similarly, all the drawings/documents submitted by the Vendor during detailed engineering stage shall be stamped "FOR APPROVAL" or "FOR INFORMATION" prior to submission.
- The furnishing of detailed engineering data and drawings by the Vendor shall be in accordance with the time schedule for the project. The review



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of these documents / data /drawings by the Purchaser will cover only general conformance of the data/drawings/documents to the specifications and contract, interfaces with the equipment provided by others. The review by the Purchaser should not be construed to be a thorough review of all dimensions, quantities and details of the equipment, materials, any devices or items indicated or the accuracy of the information submitted. The review and/or approval by the Purchaser shall not relieve the Vendor of any of his responsibilities and liabilities under this contract.

- After the approval of the drawings, further work by the Vendor shall be in strict accordance with these approved drawings and no deviation shall be permitted without the written approval of the Purchaser.
- The Vendor shall submit adequate points of drawing/data/document for Purchaser's review and or approval. When changes are required, drawings shall be resubmitted promptly, with revisions clearly marked, for final review. Any delays arising out of the failure of the Vendor to submit/rectify and resubmit in time shall not be accepted as a reason for delay in the contract schedule.

7.8 Operation & Maintenance (O & M) Manual

Typical O&M manual for the type of system offered shall be submitted along with the offer.

Manuals generally shall contain the following:

- Brief description
- Assembly drawings with part list, dimensional drawings and other applicable drawings.
- Manuals should pertain only to the type or model supplied for this contract.
- Drawing and catalogues
- Sequence of erection.
- Erection instructions
- Critical checks and permissible deviation/tolerances.
- List of tool, tackles,
- Bill of Materials.
- Procedure for erection and dismantling.
- Procedure for initial checking after erection.
- Procedure /Check list for commissioning of the system.

7.8.1 Format of manuals

- Manuals should be both in printed form and in electronic media with a text font size of 12.



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- The size of manuals should be in correct A4 size with drawings in either A4 or A3 size. Large size drawings (greater than A3 size) should be reduced to A3 size and inserted.
- Drawings shall be of printed or laser printed only.
- Spiral or comb bound copies should be totally avoided.
- If manuals are supplied in folders, the folder shall have 3 hole punching system.
- **No of copies of manuals: 3 Sets + 3 CD –ROMS**
- O & M manuals, should be submitted to BHEL / Tiruchirappalli prior to despatch of the equipment.

8.0 Quality

8.1 General requirements

- ♦ All materials used for equipment construction including plates, pipes, forgings, fittings etc., shall be of tested quality as per relevant codes/standards. All material shall be chosen from the fresh lots and shall be free from defects like scales, seam, lamination, pitting etc., Detail of results of the tests conducted to determine the mechanical properties, chemical analysis and the details of heat treatment procedure shall be recorded on certificates. Tests shall be carried out as per applicable material standards and or agreed details.
- ♦ All plates of thickness more than 21 mm shall be ultrasonically tested.
- ♦ All bar-stock forgings above 21mm diameter shall be ultrasonically tested.
- ♦ All codes standards or specifications with latest editions shall be referred.

8.2 Quality plan

Vendor shall submit along with the offer the quality plan for Purchaser's review / comments / approval to ensure that the equipment and services, under the scope of contract whether manufactured or performed, within the Vendor's works or at his sub-vendor's premises or at the Purchaser's site or at any other place of work are in accordance with the specifications, the Vendor shall adopt suitable quality assurance programme to control such activities at all points, as necessary. Such programmes shall be outlined by the Vendor and shall be finally accepted by the Purchaser/authorised representative after discussions before the award of the contract. The offer which is not complying with this requirement will not be considered for evaluation.

8.3 Quality assurance- general requirements

- ❖ All materials, components and equipment covered under this specification shall be procured, manufactured, erected, commissioned and tested at all



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the stages, as per a comprehensive Quality Assurance Programme which shall be submitted along with the offer. It is the vendor's responsibility to draw up and implement such programme duly approved by the Purchaser. The detailed Quality Plans for manufacturing should be drawn up by the Vendor and will be submitted to Purchaser for approval. Schedule of finalisation of such quality plans will be finalised before award of contract.

- ❖ Manufacturing Quality Plan will detail out for all the components and equipment, various tests/inspection, to be carried out as per the requirements of this specification and standards mentioned therein and quality practices and procedures followed by the Vendor, the relevant reference documents and standards, acceptance norms, inspection documents raised, etc., during all stages of materials procurement, manufacture, assembly and final testing.
- ❖ The Vendor shall also furnish copies of the reference documents/plant standards/acceptance norms/tests and inspection procedure, etc., as referred in Quality Plans along with Quality Plans. These Quality Plans and reference documents/standards, etc. will be subject to Purchaser's approval without which manufacture shall not proceed.
- ❖ These approved documents shall form a part of the contract. In these approved Quality Plans, Purchaser shall identify customer hold points (CHP), i.e., test/checks which shall be carried out in presence of the Purchaser's engineer or his authorised representative and beyond which the work will not proceed without consent of Purchaser/Authorised representative in writing. All deviations to this specification, approved quality plans and applicable standards must be documented and referred to Purchaser along with technical justification for approval and dispositioning.
- ❖ No material shall be despatched from the manufacturer's works before the same is accepted subsequent to pre-despatch final inspection including verification of records of all previous tests/inspections by Purchaser's engineer / Authorised representative.

8.4 Site checks/tests

The Vendor shall prepare and submit detailed field quality plans in the format setting out the quality practice and procedures to be adopted for assuring quality for each equipment of material at this specification from the receipt of material at site, during storage & erection. These procedures shall necessarily include all checks/tests conducted at site for preservation, assembly, alignment, positioning of the equipment etc. The Vendor shall also furnish detailed quality procedure proposed by him for storage & preservation to the Purchaser.



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9.0 Inspection

- 9.1 The complete System has to be offered for inspection by Purchaser / end user and the vendor shall give 30 days advance notice for arranging the inspection after the system is fully ready. After inspection the equipment can be despatched only after obtaining the MDCC (Material Despatch Clearance Certificate). No material shall be despatched without MDCC.
- 9.2 The word "inspector" shall mean the Purchaser and / or his authorised representative and or an outside inspection agency acting on behalf of the Purchaser to inspect and examine the materials and workmanship of the works during its manufacture or erection.
- 9.3 The Purchaser or his duly authorised representative and / or an outside inspection agency acting on behalf of the Purchaser shall inspect the materials and workmanship of the works during its manufacture or erection and its part of the works, if any, being manufactured or assembled at other premises or works. In case of inspection at other premises/ works, the Vendor shall obtain from the sub-vendor permission to inspect as if the works were manufactured or assembled at the Vendor's own premises or works.
- 9.4 The Vendor shall give the Purchaser / inspector fifteen (15) days written notice of any material being ready for testing. Such tests shall be to the Vendor's account except for the expenses of the inspectors. The Inspector, unless the witnessing of the tests is virtually waived, will attend such tests within fifteen (15) days of the date on which the equipment is noticed as being ready for test/inspection, failing which the vendor may proceed with test which shall be deemed to have been made in the inspector's presence and he shall forthwith forward to the inspector duly certified test reports in two (2) copies.
- 9.5 Scaffolds shall be inspected and tested as per approved quality plan. The certificates and documents generated during inspection of above shall be furnished.
- 9.6 The Inspector shall within fifteen (15) days from the date of inspection as defined herein give notice in writing to the Vendor of any objection to any drawings and / or any equipment and workmanship which is in his opinion not in accordance with the contract. The Vendor shall give due consideration to such objections and shall either carry out the necessary modifications as called for by the Purchaser/Inspector or inform in writing to the Purchaser / inspector giving reasons therein that no modifications are necessary to comply with the contract.



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9.7 The inspection by Inspector and issue of inspection certificate thereon shall in no way limit the liabilities and responsibilities of the vendor in respect of the agreed quality assurance programme forming a part of the contract.

9.8 All inspection measuring and test equipment used by vendor shall be calibrated periodically depending on its use and criticality of the test / measurement to be done. The contractor shall maintain all the relevant records of periodic calibration and instrument identification and shall produce the same for inspection by Purchaser. Wherever asked specifically the vendor shall re-calibrate the measuring / test equipment in the presence of Purchaser/ Inspector.

10.0 Protection, preservation, packaging and transportation

10.1 Protection

All coated surfaces shall be protected against abrasion, impact, discoloration and any other damages. All exposed threaded portions shall be suitably protected with non-metallic protection device. The ends of all piping and conduit equipment connections shall be properly sealed with suitable devices to protect them from damage. The parts which are likely to get oxidized or corroded, due to exposure to weather, should also be properly treated and protected in a suitable manner. All primers/paints/coatings shall take into account the hot humid, corrosive & alkaline, over ground environment.

10.2 Preservation

All exposed metallic surfaces subject to corrosion shall be protected by shop application of suitable coatings. All surfaces shall be thoroughly cleaned of all mill scales, oxides and other coatings and prepared in the shop. The surfaces that are to be finish-painted after installation or require corrosion protection until installation, shall be shop painted with at least two coats of primer. *For special painting requirements refer to Annexure-I to this specification.*

10.3 Packaging and transportation

- All the equipment shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at Site till the time of erection.
- The over dimensional consignment (ODC) w.r.t Indian road / rail conditions shall be mutually discussed and finalised during the execution of contract.

11.0 Guarantee / Warranty

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



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date of supply whichever is later against defective design, defective material usage, defective workmanship, defective packaging and forwarding.

12.0 Deviations

Deviations to specification, if any, shall be clearly spelt out in the offer stage itself. During contract/ inspection/ final erection stages, the Purchaser reserves the right to entertain or deny such deviation.

13.0 Exclusions

Any exclusion from scope of supply shall be clearly spelt out in the offer. Exclusion of major / critical items shall make the offer liable for rejection.

14.0 Documents to be submitted by vendor

14.1 Documents to be submitted along with the offer:

- Product literature / catalogue and drawings in support of the offer shall be submitted in three copies along with the quotation to evaluate the offer.
- Sectional arrangement drawing with plan, elevation, and end view along with major dimensions and weight particulars
- Filled in check list. (Annexure-II to this specification)
- Weight and quantity of individual components as per the scope of supply shall be indicated in the drawing as bill of quantity / material.
- The quality plan for the product under supply shall be furnished along with the offer. (This will be amended in consultation with the ultimate customer/end user, if required)
- List of Special tools and tackles
- List of initial spares
- Qualification Requirement: Vendor shall submit the reference list (list shall give the information like, name of customer / power station, name of the contact person, capacity of the power station, size of the scaffolding system offered etc.,) for having supplied similar QES system in the past and the same should have been put in use atleast in one thermal power station for a boiler capacity of 210 MW or above for a period of minimum one year and should have been put to use atleast once. User Certificate: Vendor shall submit a certificate issued by the end user of the equipment under subject item for the satisfactory service and use of the system.
- A certificate for the components from Safety Steward of the country of make shall be provided.
- Document for justifying the design aspects of the offered system both from stability and safety aspects.
- List of Deviations



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- List of Exclusions
- Typical O&M manual of the offered system similar to the earlier job executed by the vendor.(preferably that applicable for the certificate provider)

14.2 Documents to be furnished after award of contract

- The complete arrangement drawing giving particulars like
 - Bill Of Quantity (of all individual components)
 - Weight details of all components individually
 - Identification marks / Numbers
- Packaging procedure detailing the list of components shall be despatched individually with identification and with preservation and storage.
- Test certificates shall be furnished before despatch of components.
- Material test certificate for all the major components.
- Quality control / Inspection documents generated during the stages of inspection, performance inspection and final inspection inline with the final approved quality plan.
- Guarantee certificate shall be furnished by the vendor.
- O & M manual

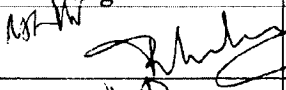
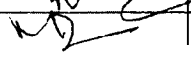
15.0 General

- The language used in offer, O & M manual, Labels, drawings etc. shall be "English only"
- For Equipment and other special requirements pertaining to the contract, refer **Annexure - I** to this specification.
- **Annexure - II** is the Check list to be filled in completely by the vendor and submitted **along with the offer**. Offer with incomplete Check list is liable for rejection.
- **Annexure – III (Drawing)**, Furnace arrangement for Quick Erect Scaffold, contains all details of the requirements like furnace width, depth, height, location of access / manhole doors, goose neck / furnace bottom position, elevations of burners etc.



**Annexure-I to Specification No.
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- 1 Name of Project : GADARWARA 2x800MW**
- 2 Customer No. : 1804**
- 3 Quantity : 1 Set**
- 4 Material of construction : Aluminium / Aluminium alloy**
- 5 Reference Drawing No. : 0-99-501-40290/ 01
(Furnace arrangement for Quick Erect Scaffold)**
- 6 Man Hole (Access Door)
Opening Size in mm : 610x762mm**

	Name	Signature	Date
Prepared & Checked	Gangadhar & R.Arul Prabhu		21-10-2016
Approved	M.Thandapani		21-10-2016

Annexure-II to Specification No.:MHS-HEQ-078/Rev.01

VENDOR'S CHECK LIST

This check list is to be filled up by the vendor and submitted along with the offer. This shall form part of ordering specification and shall be approved by the purchaser incorporating all the comments if any. Vendor to completely fill up the column under "vendor's compliance/confirmation/comments". Non applicability shall be clearly spelt out. Offer with incomplete data sheet/ check list is liable for rejection.

S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
1	Name of the equipment	1.0	Quick Erect scaffolding system		
2	Type of system offered		Vendor to specify		
3	Model of the system offered		Vendor to specify		
4	Type of jointing arrangement Provided	3.1	Vendor to specify		
5	Standards / Codes followed	3.2	Vendor to specify		
6	Materials of construction:	3.3.1	Steel / Aluminium		
6.1	Tubes				
6.2	Coupler / Jointing				
6.3	Fastners				
6.4	Stair ways				
6.5	Decking				
6.6	Others				
6.7	Others				
6.8	Others				
7	All components shall have appropriate colour code	3.3.4	Vendor to confirm		
8.0	Quick erect / Quick dismantle	3.7			
8.1			Total Man-hours required for erecting the complete system		
8.2			No. of manpower required for erection:		
8.2.1			Skilled		
8.2.2			Unskilled		
8.3			Total Man-hours required for dismantling the complete system		
8.4			No. of manpower required for dismantling:		
8.4.1			Skilled		

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Vendor's name
Signature & Date
Seal

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VENDOR'S CHECK LIST

S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
8.4.2			Unskilled		
8.5			User certificate for the time taken for assembly and dismantling of a similar system shall be furnished along with the offer.		
8.6	Vendor's confirmation to demonstrate the mandays & man power requirement during the actual installation of QES.		Vendor to confirm		
9	Furnace configuration	3.8	The offered system shall meet the shape and configuration as shown in BHEL drawing.(Refer Annexure-I). Vendor's compliance.		
10	Provision to introduce all materials thro Access door opening	3.10	Opening size given in annexure -I		
11	Spares	3.11			
11.1	Initial spares		Shall be included in the base offer		
11.2	List of initial spares		Vendor to furnish the list of initial spares offered		
11.3	Long term spares		To be quoted separately		
12	Safety Accessories	4.3	Shall form part of the offer. Vendor to furnish the list of accessories supplied.		
13	Factor of safety	4.4	4 times the rated load		
13.1	Maximum intended load of 6 tons		Vendor to confirm for having taken this into the design		
14	Load transfer	5.0			
14.1	No. of support points		Vendor to specify		
14.2	Location of support points		Vendor to furnish		

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VENDOR'S CHECK LIST

S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
14.3	Load per vertical post at support point		Vendor to specify		
14.4	Load transfer points		To be marked up in the drawing		
14.5	Type of support at the furnace hopper		Explain with a drawing. Is the support calling for any welding? If yes, it is accommodated only at the fins and not on the water wall tubes.		
14.6	Maximum safe working load that can be loaded onto the platform		Vendor to specify		
15	Scaffolding System	6.0			
15.1	Staircase width	6.2	Min. 500mm		
15.2	Staircase inclination	6.2	Not more than 55 deg.		
15.3	Provision of upper / mid guardrail	6.3	Vendor to confirm		
15.4	Access to panel and platen superheater and upper rear arch areas	6.4	Vendor to confirm		
15.5	Permissible load on each floor	6.8	Vendor to specify. Shall not be less than 150 kg/sq.m		
15.6	Hand rails height	6.9	900 - 1000mm		
16	Floors	6.10			
16.1	Provision of floor	6.10.1	All floors/ All elevations peripherally only.		
		6.10.2	Full floor platforms shall be provided at just below the upper arch and below the access door opening in the furnace hopper		
16.2	Width of peripheral floor	6.10.6	Min. 600 mm		
16.3	Provision of dismountable midrails	6.10.3	Vendor's compliance		
16.4	Height of Toe boards	6.10.4	Min. 150 mm		
16.5	Materials of construction of floors	6.10.5	Vendor to specify		
16.6	Arrangement drawing of floor	6.10.7	Vendor to enclose		
16.7	No of floors offered	6.10.7	Vendor to specify		

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Signature & Date
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VENDOR'S CHECK LIST

S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
16.8	Elevation details	6.10.7	Vendor to indicate in the drawing. Spacing between two successive floors shall not exceed 2.5 m shall not exceed 3.5m		
16.9	Access to all parts	6.10.8	Vendor to confirm		
17	List of Tools & Tackles	6.11	List to be attached with the offer. If vendor states that special tools are required for the offered system, then the same has to be listed in detail		
18	Storage of scaffold	6.12	Storage volume required and the suggested storage layout		
19	Reference list	6.14	Vendor to submit		
19.1	User certificate	6.14	Vendor to submit		
20	Design justification document	6.15	Vendor to submit		
21	Fasteners with Metric threads	7.3	Vendor to confirm		
22	Applicable colour code	7.4	Vendor to specify		
23	Methodology followed for marking up identification number	7.5	Vendor to specify		
24	Training of purchaser's engineers	7.6	Vendor's compliance		
25	Drawing & documents	7.7	Vendor's compliance		
26	O & M manual	7.8	Vendor to furnish a typical O&M manual of the offered system. Vendor's compliance		
27	Quality plan	8.2	Vendor's compliance		
27.1	Site checks / tests	8.4	Field quality plan - vendor's compliance		
27.2	Inspection	9.0	Vendor's compliance		
28	Packaging and Transportation	10.3	Vendor's compliance		
29	Painting	Annexure-I	Vendor's compliance		
30	Guarantee / Warranty	11.0	Vendor's compliance		

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S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
31	Deviations	12.0	Shall be spelt out in the offer. If there are no deviations, the same shall be confirmed by the vendor		
32	Exclusions	13.0	Shall be spelt out in the offer. If there are no deviations, the same shall be confirmed by the vendor		
33	Documents along with offer	14.1	Vendor to furnish all the documents along with the offer		
33.1	Product literature / catalogue				
33.2	Drawing --- covering:		Specify vendor drawing No.		
33.2.1	General Arrangement		Vendor's compliance		
33.2.2	Sectional arrangement		Vendor's compliance		
33.2.3	Plan view		Vendor's compliance		
33.2.4	Elevation		Vendor's compliance		
33.2.5	Illustrated sketch of coupler / jointing arrangement		Vendor's compliance		
33.2.6	Marking up of load transfer points		Vendor's compliance		
33.2.7	Elevation details of all floor levels		Vendor's compliance		
33.2.8	Weight details		Vendor's compliance		
33.2.9	BOQ covering all components		Vendor's compliance		
33.7	Reference list		Vendor's compliance		
33.8	User certificate		Vendor's compliance		
33.9	Typical O&M manual		Vendor's compliance		
33.3	Deviations		Vendor's compliance		
33.4	Exclusions		Vendor's compliance		
33.5	Quality plan		Vendor's compliance		
33.6	List of special tools & teckles		Vendor's compliance		
34	Documents after placement of Purchase Order	14.2	Vendor's confirmation to furnish all the documents enlisted in Cl.14.2 of specification.		

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- PLATFORM EL.97500 (MBL) → BUCKSTAY EL.96050
- PLATFORM EL.94000 → BUCKSTAY EL.93300
- PLATFORM EL.90400 (MBL) → BUCKSTAY EL.89000
- PLATFORM EL.86700 → BUCKSTAY EL.86800
- BUCKSTAY EL.84750
- PLATFORM EL.82900 (MBL) → BUCKSTAY EL.81750
- BUCKSTAY EL.78750
- PLATFORM EL.78900 → BUCKSTAY EL.75750
- PLATFORM EL.72800 → BUCKSTAY EL.72750
- TV CAMERA (WALL VIEWING) EL.70450 → BUCKSTAY EL.69750
- BUCKSTAY EL.67650
- PLATFORM EL.64100 → BUCKSTAY EL.64990
- PLATFORM EL.60500 (MBL) → BUCKSTAY EL.60150
- EL.55800 → SOFA EL.55904
- TRIPPER FLOOR → PLATFORM EL.54700
- PLATFORM EL.51800 (MBL) → BUCKSTAY EL.51770
- PLATFORM EL.48900 → BUCKSTAY EL.48770
- TOP OF WINDBOX EL.47589
- LOCAL PLATFORM EL.46600
- PLATFORM EL.44800
- PLATFORM EL.41500
- PLATFORM EL.38300
- PLATFORM EL.35100
- PLATFORM EL.31800
- BOTTOM OF WINDBOX EL.30750
- BUCKSTAY EL.30750
- BUCKSTAY EL.28400

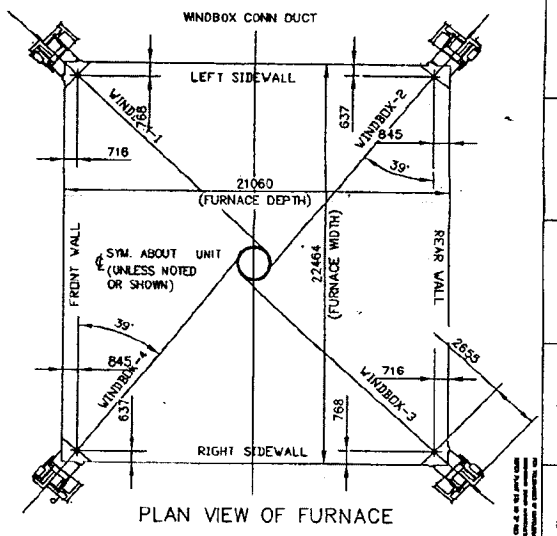
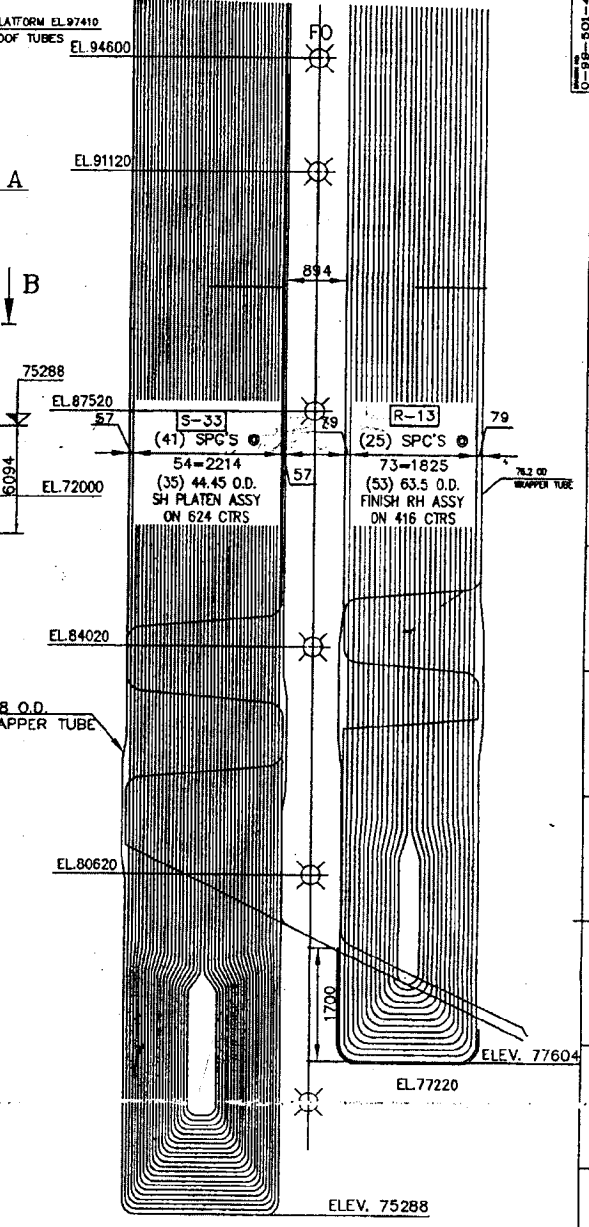
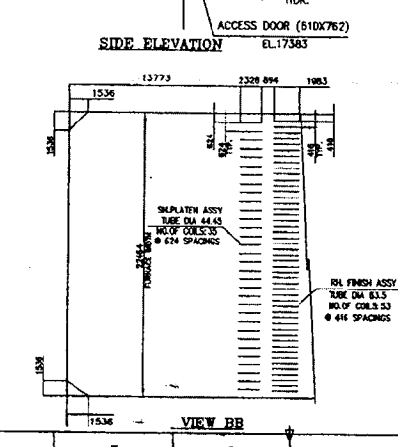
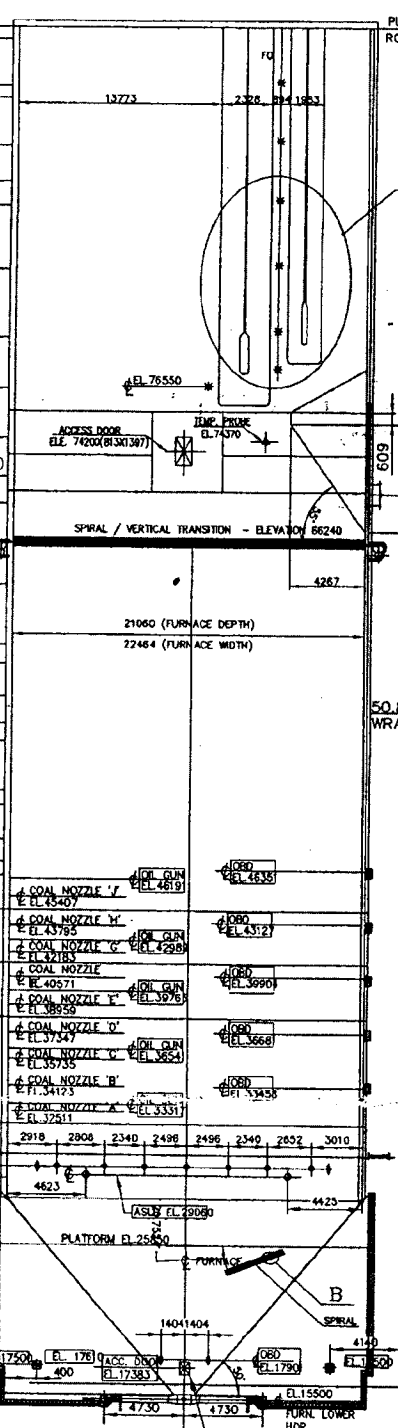
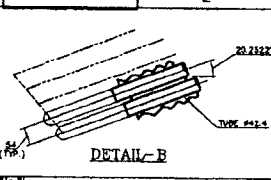
LEGEND

— LONG RETRACTABLE SOOT FLOWER

— LONG RETRACTABLE SOOT BLOWER

— ACCESS DOOR

— ELEVATOR LANDING



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PROJECT	GAJAPATI SUPER THERMAL POWER PROJECT
CLIENT	STATE ELECTRICITY CORPORATION
DESIGNER	SHRI RAVI ELECTRICITY LIMITED
DATE	10/01/2001
SCALE	1:100
BY	SRINIVAS ARABINDHAR
CHECKED BY	SRINIVAS ARABINDHAR
APPROVED BY	SRINIVAS ARABINDHAR
DATE	10/01/2001
PROJECT NO.	0-99-501-40290
10	

REF. DRGS.

- 0-00-027-46828 PPA SEC. SEC. ELEVATION UPPER FURNACE
- 0-00-027-46830 PPA SEC. SEC. ELEVATION LOWER FURNACE
- E29-00011-E101 W B ARRANGEMENT - SHZ (PLAN)

BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI-620 014

Handling System/PE(FB)



Title Sheet

Quick Erect Scaffolding System
(Aluminium / Aluminium alloy)

Specification Number: MHS-HEQ-078

Revision No. : 01

01	20-10-2016	Staircase width & angle updated. Peripheral platform width updated. Clause 3.7, 4.4, 6.2, 6.10, 6.11, 6.14, 7.6 & 14.1 modified.	Arul / MTP
Revision No.	Revision Date	Revision statement	Checked & Approved

	Name	Signature	Date
Prepared	D.V.Kumar	-Sd-	06.11.2015
Checked	D.V.Kumar	-Sd-	06.11.2015
Reviewed	M.Thandapani	-Sd-	07.11.2015
Approved	M.Thandapani	-Sd-	07.11.2015



**Specification for
Quick Erect Scaffolding System**

MHS-HEQ-078

Revision No.:01

Contents

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3.0	Requirements of the system
4.0	Safety
5.0	Load transfer
6.0	Scaffolding system
6.11	Tools and Tackles
7.0	General requirements
7.6	Training
7.7	Drawings and Documents
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8.0	Quality
9.0	Inspection
10.0	Protection, Preservation, Packaging & Transportation
11.0	Guarantee / Warranty
12.0	Deviations
13.0	Exclusions
14.0	Documents to be submitted by the vendor
14.1	Documents to be submitted by vendor along with offer
14.2	Documents to be submitted by vendor after award of contract
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Annexure – I ----- Specific Project Requirements

Annexure – II ----- Check list

Annexure – III ----- Copy of Drawing (Furnace Arrangement for Quick Erect Scaffold)



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1.0 Intent:

The quick erect scaffolding system is intended for carrying out maintenance work inside a boiler furnace which comprises water walls, Burners, Soot blowers, Super heaters, Re-heaters etc. during shut down period. As the name implies, the scaffolding shall be safely erected and dismantled in the shortest possible time with less manpower and with minimum supervision.

The scaffolding system shall be sufficient enough to cover all the water wall areas, in a single set up, including inclined area of the boiler above rear wall and furnace bottom (Bottom hopper).

The system shall be preferably of modular and interchangeable construction and easily and quickly assembled inside the furnace.

2.0 Scope:

This specification covers design, manufacture, inspection and supply of quick erect scaffolding system. The specification is for ensuring a safe and trouble free quick erect scaffolding system used during shutdowns and overhauls, for inspection and maintenance of furnace internals of steam generator like Water walls, Burners, Super heaters etc.,

3.0 Requirements of the system

3.1 Quick erect scaffolding system shall be of fast erecting with suitable connecting/coupling arrangement.

3.2 Codes & standards

All equipment parts, systems and works covered under this specification shall comply with all currently applicable statutory regulations and safety codes of the Republic of India as well as of the Company where they will be installed. The offered system shall conform to national / international standards and the same may be clearly spelt out in the offer.

3.3 Material of construction

3.3.1 The material of construction of various components shall be Aluminium / Aluminium alloy of proven design for Scaffolding application. It is suggested that the selected material shall also be light in weight to hasten the erection of scaffold in the shortest possible time. For general requirements of materials, refer to cl.8.1 of this specification.

3.3.2 All materials used for construction of different components shall individually conform to latest revisions of National / International Standards and it shall be specified in the offer.



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- 3.3.3 All the components of the scaffolding system shall have **appropriate colour code** for easy identification. The colour code shall be specified in the offer and will have Purchaser's approval.
- 3.4 The quick erect scaffolding system shall provide flexibility in erection of vertical posts & horizontal / diagonal connecting members.
- 3.5 Vertical posts & horizontal / diagonal connecting members shall have equal spacing for easy erection. Connections of the above shall be with suitable quick connect hardware arrangement. Vertical posts / horizontal / diagonal members shall have equal and standard lengths for easy interchangeability & modular assembly and disassembly.
- 3.6 The vertical posts and horizontal members shall be so designed to fill the space of furnace configuration.
- 3.7 Vendor shall offer a system which is erectable and dismantlable at the quickest possible time. Vendor shall indicate, in the offer, the man-hours required and also manpower (skilled and unskilled) needed to carry out erection and dismantling of the system. Vendor shall also provide the total erection /assembly time of the full scaffold. **The total time required for erection shall not exceed 4 days (96 hours) and dismantling 2 days (48 hours), considering the work force deployed for 24 hrs in 3 shifts a day.**
Vendor shall submit, along with the offer, a user certificate for the time taken for assembly and dismantling of a similar system which is equivalent to or bigger than the offered system. Vendor shall undertake guarantee to demonstrate the same (manpower & man days) during the installation (both erection and dismantling) of scaffold in any one of the shutdown period as and when demanded by the end user within 2 years after commissioning of the boilers or 48 months after completion of supply, whichever is later. The cost of supervisory support at site or any other requirement related to scaffolding system supplied by the vendor for the purpose of demonstration shall be borne by the vendor.
- 3.8 Quick erect scaffolding system shall meet the shape & configuration of the Furnace arrangement to have easy access to all parts of furnace including rear water wall arch. (Ref. Annexure-III).
- 3.9 The requirement of the system, as spelt above, is indicative only. Vendor shall offer the most appropriate system for the intended specification and duty condition. The offered system shall be clearly illustrated with sketches and elaborate details.
- 3.10 All the required materials shall be introduced into the furnace for assembly through the access door opening (Refer Annexure-I) and or furnace bottom opening and all components shall be sized accordingly.
- 3.11 Vendor shall include the required number of Initial Spares in the base offer itself. *Initial spares means the spares required during first erection/commissioning of the system to replace the items that are either damaged or lost during*



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transit/storage. Hence, vendor shall quote for the initial spares along with the base offer. The list of initial spares shall be clearly furnished in the offer.

The spares required for long term usage shall be quoted separately.

4.0 Safety

- 4.1 The locking arrangement shall not call for any welding.
- 4.2 Quick erect scaffolding system shall be arranged in such a manner to remove / erect individually without affecting other components.
- 4.3 Safety accessories like safety belt etc. shall also form part of the offer.
- 4.4 Scaffolds, as per ANSI A10.8-2011- section 4.8, shall be capable of supporting, without failure, their own weight and at-least four times the maximum intended load. In line with this, Scaffolding, which includes work platforms, bracings, and supporting members, shall be designed for a minimum safety factor of '4' which is applied to the design load.

5.0 Load Transfer

Vendor shall clearly spell out in his offer the load that is likely to be transferred to the furnace walls. This load shall include the dead weight of the scaffolding including the platforms and the safe working load that can be loaded on to the platform. With respect to the Load transfer, the following details shall be furnished in the offer.

- The number of support points
- The location of support points
- The load per vertical post at the support points
- The load transfer points shall be clearly marked up in the drawing
- Vendor shall indicate the type of supports proposed with an aid of sketch/drawing. (Load transfer through all supports shall be at the fins zone only and not on the tubes)

6.0 Scaffolding system :

The scaffolding system shall be provided with:

- 6.1 Close access to inspection / maintenance of boiler tubes / water wall & other components.
- 6.2 Stair case with a width of minimum 500 mm and not more than 55° inclination. Staircase shall be provided with hand rails.
- 6.3 System shall have upper / mid guard rail without any special components.
- 6.4 Access to Panel and Platen super heater and rear wall upper arch portion.
- 6.5 Arrangement for stable floor.
- 6.6 Suitable arrangement for supporting at furnace bottom without additional attachment with boiler tubes.



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- 6.7 In total, the assembly shall have amongst other things vertical posts, horizontal members, vertical / horizontal / diagonal bracings, trusses and other fastening arrangements etc.,
- 6.8 Load per square metre (not less than 150 kg/sq.m) on the scaffolding system shall be furnished by vendor. Vendor shall indicate the overall permissible load at any given instant on the scaffolding system offered. (Refer clause 4.4 also)
- 6.9 Handrails shall be with a height between 900 mm to 1000mm.

6.10 Floors

- 6.10.1 Floors are to be provided peripherally at all elevations except at the levels specified in clause 6.10.2 where full planking is required. The elevation levels shall be determined by the vendor. However, the space between two floors shall not exceed 2.5 m below the top of wind box and shall not exceed 3.5 m there after (above windbox). However to provide access to all the areas within the floor space, suitable ladders shall be provided which can be safely fixed on to the floors. Minimum 6 nos. of such ladders shall be provided.
- 6.10.2 Full platforms/floors (not just peripheral) shall be provided at just below the upper rear arch and below the access door opening in the furnace hopper. The full floor elevation details shall be furnished by the vendor.
- 6.10.3 Floors shall be provided with guard rails, mid rails and toe boards installed on all open sides and ends. Mid-rails shall be of dismountable type. All rails and posts shall be suitable for easy assembly & disassembly.
- 6.10.4 Toe boards/guards shall extend to a minimum of 150mm above the working surface.
- 6.10.5 Vendor to specify the type of flooring offered. The flooring material offered shall be of non-flammable/ non-combustible material.
- 6.10.6 The width of the floor and gap between the furnace wall and floor shall be clearly specified by the vendor and the same shall be clearly shown in the drawing. Floor width (peripheral) shall be minimum 600 mm.
- 6.10.7 The number of floors offered with "elevation" details shall be clearly mentioned in the drawing.
- 6.10.8 The floor elevations and no. of floors shall be decided in such a way that access is available to all parts (especially burner area) of the water walls. (For burner level elevations refer to Annexure-III).

6.11 Tools and tackles

- The Vendor shall supply with the main equipment, complete set of special tools and tackles required for erection, assembly, dismantling and proper maintenance of the equipment and system. These special tools will also include special material handling equipment such as electrical winches, jigs and fixtures if applicable to meet the erection / dismantling time as per



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clause 3.7. The list of such tools and tackles shall be submitted by the vendor along with the offer.

- The price of each tool/tackle shall be deemed to have been included in the total bid price. These tools and tackles shall be packed and sent to site. All the tools and tackles shall be of reputed make acceptable to the Purchaser.

6.12 Any other items though not specifically mentioned in this specification but needed to complete the equipment and system [unless specifically mentioned under exclusions] shall form part of the offer.

6.13 Vendor shall specify the storage space requirement of the system components and shall furnish suggested storage layout with special instructions, if any, for proper storage of the material.

6.14 Vendor shall furnish reference list for having supplied similar QES system in the past and the same should have been put in use atleast in one thermal power station for a boiler capacity of 210 MW or above for a period of minimum one year and should have been put to use atleast once. Also vendor shall produce the performance certificate for the same from the end user.

6.15 Vendor may also submit necessary documents for justifying the design aspects of the scaffold offered both for stability and safety

7.0 General requirements

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

7.2 The material of construction and its duty class shall be clearly spelt out in the offer and the same shall conform to specified National / International Standards. All materials used for the construction of the equipment shall be new and shall be in accordance with the requirements of this specification. Materials utilised for various components shall be those which have established themselves for use in such applications for atleast a period in excess of 2 years.

7.3 All fasteners used, if applicable, shall be of Metric threads only. (No British / American threads in the inch system is permitted)

7.4 Vendor shall follow International colour Code wherever applicable for various components, assembly and sub-assembly for easy identification of components of the system.

7.5 All assemblies /sub-assemblies and individual components shall bear proper identification numbers. The methodology followed shall be clearly spelt out in the base offer.



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7.6 Training:

- The Vendor shall extend all possible assistance and co-operation to the purchaser regarding the development of expertise in the area of assembly, disassembly, identification, storage & retrieval and safety aspects of the system offered.
- Vendor shall also impart the necessary training - training of personnel for the required days at the job site for the required period by the vendor's representative. This shall be integral part of the offer.

7.7 Drawing and Documents:

- All documents/text information shall be in MSWord 2000 or latest version
- All drawings shall be made in AutoCAD- Release 2000 or latest Version.
- All drawings submitted by the Vendor including those submitted at the time of bid shall be in sufficient detail indicating the type, size, arrangement, weight of each component for packing and shipment, the external connection, fixing arrangement required, the dimensions required for installation and interconnections with other equipment and materials, clearance and spaces required between various portions of equipment and any other information specifically requested in the drawing schedules.
- Each drawing submitted by the Vendor (including those of sub-vendors) shall bear a title block at the right hand bottom corner with clear mention of the name of the Purchaser, the system designation, the specifications title, the specification number, the name of the Project, drawing number and revisions. If standard catalogue pages are submitted the applicable items shall be indicated therein. All titles, notes, markings and writings on the drawing shall be in English. All the dimensions should be in metric units.
- The Vendor shall also furnish a "Master Drawing List" which shall be a comprehensive list of all drawings/documents/calculations envisaged to be furnished by him during the detailed engineering to the Purchaser. Such list should clearly indicate the purpose of submission of these drawings i.e., "FOR APPROVAL" or "FOR INFORMATION ONLY". Similarly, all the drawings/documents submitted by the Vendor during detailed engineering stage shall be stamped "FOR APPROVAL" or "FOR INFORMATION" prior to submission.
- The furnishing of detailed engineering data and drawings by the Vendor shall be in accordance with the time schedule for the project. The review



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of these documents / data /drawings by the Purchaser will cover only general conformance of the data/drawings/documents to the specifications and contract, interfaces with the equipment provided by others. The review by the Purchaser should not be construed to be a thorough review of all dimensions, quantities and details of the equipment, materials, any devices or items indicated or the accuracy of the information submitted. The review and/or approval by the Purchaser shall not relieve the Vendor of any of his responsibilities and liabilities under this contract.

- After the approval of the drawings, further work by the Vendor shall be in strict accordance with these approved drawings and no deviation shall be permitted without the written approval of the Purchaser.
- The Vendor shall submit adequate points of drawing/data/document for Purchaser's review and or approval. When changes are required, drawings shall be resubmitted promptly, with revisions clearly marked, for final review. Any delays arising out of the failure of the Vendor to submit/rectify and resubmit in time shall not be accepted as a reason for delay in the contract schedule.

7.8 Operation & Maintenance (O & M) Manual

Typical O&M manual for the type of system offered shall be submitted along with the offer.

Manuals generally shall contain the following:

- Brief description
- Assembly drawings with part list, dimensional drawings and other applicable drawings.
- Manuals should pertain only to the type or model supplied for this contract.
- Drawing and catalogues
- Sequence of erection.
- Erection instructions
- Critical checks and permissible deviation/tolerances.
- List of tool, tackles,
- Bill of Materials.
- Procedure for erection and dismantling.
- Procedure for initial checking after erection.
- Procedure /Check list for commissioning of the system.

7.8.1 Format of manuals

- Manuals should be both in printed form and in electronic media with a text font size of 12.



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- The size of manuals should be in correct A4 size with drawings in either A4 or A3 size. Large size drawings (greater than A3 size) should be reduced to A3 size and inserted.
- Drawings shall be of printed or laser printed only.
- Spiral or comb bound copies should be totally avoided.
- If manuals are supplied in folders, the folder shall have 3 hole punching system.
- **No of copies of manuals: 3 Sets + 3 CD –ROMS**
- O & M manuals, should be submitted to BHEL / Tiruchirappalli prior to despatch of the equipment.

8.0 Quality

8.1 General requirements

- ♦ All materials used for equipment construction including plates, pipes, forgings, fittings etc., shall be of tested quality as per relevant codes/standards. All material shall be chosen from the fresh lots and shall be free from defects like scales, seam, lamination, pitting etc., Detail of results of the tests conducted to determine the mechanical properties, chemical analysis and the details of heat treatment procedure shall be recorded on certificates. Tests shall be carried out as per applicable material standards and or agreed details.
- ♦ All plates of thickness more than 21mm shall be ultrasonically tested.
- ♦ All bar-stock forgings above 21mm diameter shall be ultrasonically tested.
- ♦ All codes standards or specifications with latest editions shall be referred.

8.2 Quality plan

Vendor shall submit along with the offer the quality plan for Purchaser's review / comments / approval to ensure that the equipment and services, under the scope of contract whether manufactured or performed, within the Vendor's works or at his sub-vendor's premises or at the Purchaser's site or at any other place of work are in accordance with the specifications, the Vendor shall adopt suitable quality assurance programme to control such activities at all points, as necessary. Such programmes shall be outlined by the Vendor and shall be finally accepted by the Purchaser/authorised representative after discussions before the award of the contract. The offer which is not complying with this requirement will not be considered for evaluation.

8.3 Quality assurance- general requirements

- ❖ All materials, components and equipment covered under this specification shall be procured, manufactured, erected, commissioned and tested at all



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the stages, as per a comprehensive Quality Assurance Programme which shall be submitted along with the offer. It is the vendor's responsibility to draw up and implement such programme duly approved by the Purchaser. The detailed Quality Plans for manufacturing should be drawn up by the Vendor and will be submitted to Purchaser for approval. Schedule of finalisation of such quality plans will be finalised before award of contract.

- ❖ Manufacturing Quality Plan will detail out for all the components and equipment, various tests/inspection, to be carried out as per the requirements of this specification and standards mentioned therein and quality practices and procedures followed by the Vendor, the relevant reference documents and standards, acceptance norms, inspection documents raised, etc., during all stages of materials procurement, manufacture, assembly and final testing.
- ❖ The Vendor shall also furnish copies of the reference documents/plant standards/acceptance norms/tests and inspection procedure, etc., as referred in Quality Plans along with Quality Plans. These Quality Plans and reference documents/standards, etc. will be subject to Purchaser's approval without which manufacture shall not proceed.
- ❖ These approved documents shall form a part of the contract. In these approved Quality Plans, Purchaser shall identify customer hold points (CHP), i.e., test/checks which shall be carried out in presence of the Purchaser's engineer or his authorised representative and beyond which the work will not proceed without consent of Purchaser/Authorised representative in writing. All deviations to this specification, approved quality plans and applicable standards must be documented and referred to Purchaser along with technical justification for approval and dispositioning.
- ❖ No material shall be despatched from the manufacturer's works before the same is accepted subsequent to pre-despatch final inspection including verification of records of all previous tests/inspections by Purchaser's engineer / Authorised representative.

8.4 Site checks/tests

The Vendor shall prepare and submit detailed field quality plans in the format setting out the quality practice and procedures to be adopted for assuring quality for each equipment of material at this specification from the receipt of material at site, during storage & erection. These procedures shall necessarily include all checks/tests conducted at site for preservation, assembly, alignment, positioning of the equipment etc. The Vendor shall also furnish detailed quality procedure proposed by him for storage & preservation to the Purchaser.



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9.0 Inspection

- 9.1 The complete System has to be offered for inspection by Purchaser / end user and the vendor shall give 30 days advance notice for arranging the inspection after the system is fully ready. After inspection the equipment can be despatched only after obtaining the MDCC (Material Despatch Clearance Certificate). No material shall be despatched without MDCC.
- 9.2 The word "inspector" shall mean the Purchaser and / or his authorised representative and or an outside inspection agency acting on behalf of the Purchaser to inspect and examine the materials and workmanship of the works during its manufacture or erection.
- 9.3 The Purchaser or his duly authorised representative and / or an outside inspection agency acting on behalf of the Purchaser shall inspect the materials and workmanship of the works during its manufacture or erection and its part of the works, if any, being manufactured or assembled at other premises or works. In case of inspection at other premises/ works, the Vendor shall obtain from the sub-vendor permission to inspect as if the works were manufactured or assembled at the Vendor's own premises or works.
- 9.4 The Vendor shall give the Purchaser / inspector fifteen (15) days written notice of any material being ready for testing. Such tests shall be to the Vendor's account except for the expenses of the inspectors. The Inspector, unless the witnessing of the tests is virtually waived, will attend such tests within fifteen (15) days of the date on which the equipment is noticed as being ready for test/inspection, failing which the vendor may proceed with test which shall be deemed to have been made in the inspector's presence and he shall forthwith forward to the inspector duly certified test reports in two (2) copies.
- 9.5 Scaffolds shall be inspected and tested as per approved quality plan. The certificates and documents generated during inspection of above shall be furnished.
- 9.6 The Inspector shall within fifteen (15) days from the date of inspection as defined herein give notice in writing to the Vendor of any objection to any drawings and / or any equipment and workmanship which is in his opinion not in accordance with the contract. The Vendor shall give due consideration to such objections and shall either carry out the necessary modifications as called for by the Purchaser/Inspector or inform in writing to the Purchaser / inspector giving reasons therein that no modifications are necessary to comply with the contract.



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9.7 The inspection by Inspector and issue of inspection certificate thereon shall in no way limit the liabilities and responsibilities of the vendor in respect of the agreed quality assurance programme forming a part of the contract.

9.8 All inspection measuring and test equipment used by vendor shall be calibrated periodically depending on its use and criticality of the test / measurement to be done. The contractor shall maintain all the relevant records of periodic calibration and instrument identification and shall produce the same for inspection by Purchaser. Wherever asked specifically the vendor shall re-calibrate the measuring / test equipment in the presence of Purchaser/ Inspector.

10.0 Protection, preservation, packaging and transportation

10.1 Protection

All coated surfaces shall be protected against abrasion, impact, discoloration and any other damages. All exposed threaded portions shall be suitably protected with non-metallic protection device. The ends of all piping and conduit equipment connections shall be properly sealed with suitable devices to protect them from damage. The parts which are likely to get oxidized or corroded, due to exposure to weather, should also be properly treated and protected in a suitable manner. All primers/paints/coatings shall take into account the hot humid, corrosive & alkaline, over ground environment.

10.2 Preservation

All exposed metallic surfaces subject to corrosion shall be protected by shop application of suitable coatings. All surfaces shall be thoroughly cleaned of all mill scales, oxides and other coatings and prepared in the shop. The surfaces that are to be finish-painted after installation or require corrosion protection until installation, shall be shop painted with at least two coats of primer. *For special painting requirements refer to Annexure-I to this specification.*

10.3 Packaging and transportation

- All the equipment shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at Site till the time of erection.
- The over dimensional consignment (ODC) w.r.t Indian road / rail conditions shall be mutually discussed and finalised during the execution of contract.

11.0 Guarantee / Warranty

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

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date of supply whichever is later against defective design, defective material usage, defective workmanship, defective packaging and forwarding.

12.0 Deviations

Deviations to specification, if any, shall be clearly spelt out in the offer stage itself. During contract/ inspection/ final erection stages, the Purchaser reserves the right to entertain or deny such deviation.

13.0 Exclusions

Any exclusion from scope of supply shall be clearly spelt out in the offer. Exclusion of major / critical items shall make the offer liable for rejection.

14.0 Documents to be submitted by vendor

14.1 Documents to be submitted along with the offer:

- Product literature / catalogue and drawings in support of the offer shall be submitted in three copies along with the quotation to evaluate the offer.
- Sectional arrangement drawing with plan, elevation, and end view along with major dimensions and weight particulars
- Filled in check list. (Annexure-II to this specification)
- Weight and quantity of individual components as per the scope of supply shall be indicated in the drawing as bill of quantity / material.
- The quality plan for the product under supply shall be furnished along with the offer. (This will be amended in consultation with the ultimate customer/end user, if required)
- List of Special tools and tackles
- List of initial spares
- Qualification Requirement: Vendor shall submit the reference list (list shall give the information like, name of customer / power station, name of the contact person, capacity of the power station, size of the scaffolding system offered etc.) for having supplied similar QES system in the past and the same should have been put in use atleast in one thermal power station for a boiler capacity of 210 MW or above for a period of minimum one year and should have been put to use atleast once. User Certificate: Vendor shall submit a certificate issued by the end user of the equipment under subject item for the satisfactory service and use of the system.
- A certificate for the components from Safety Steward of the country of make shall be provided.
- Document for justifying the design aspects of the offered system both from stability and safety aspects.
- List of Deviations



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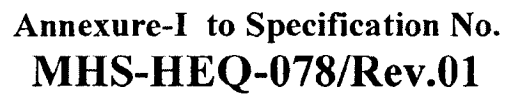
- List of Exclusions
- Typical O&M manual of the offered system similar to the earlier job executed by the vendor.(preferably that applicable for the certificate provider)

14.2 Documents to be furnished after award of contract

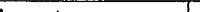
- The complete arrangement drawing giving particulars like
 - Bill Of Quantity (of all individual components)
 - Weight details of all components individually
 - Identification marks / Numbers
- Packaging procedure detailing the list of components shall be despatched individually with identification and with preservation and storage.
- Test certificates shall be furnished before despatch of components.
- Material test certificate for all the major components.
- Quality control / Inspection documents generated during the stages of inspection, performance inspection and final inspection inline with the final approved quality plan.
- Guarantee certificate shall be furnished by the vendor.
- O & M manual

15.0 General

- The language used in offer, O & M manual, Labels, drawings etc. shall be "English only"
- For Equipment and other special requirements pertaining to the contract, refer **Annexure - I** to this specification.
- **Annexure - II** is the Check list to be filled in completely by the vendor and submitted **along with the offer**. Offer with incomplete Check list is liable for rejection.
- **Annexure - III (Drawing)**, Furnace arrangement for Quick Erect Scaffold, contains all details of the requirements like furnace width, depth, height, location of access / manhole doors, goose neck / furnace bottom position, elevations of burners etc.



1	Name of Project	: DARLIPALI 2x800MW
2	Customer No.	: 1806
3	Quantity	: 1 Set
4	Material of construction	: Aluminium / Aluminium alloy
5	Reference Drawing No.	:0-99-501-40303/ 01 (Furnace arrangement for Quick Erect Scaffold)
6	Man Hole (Access Door) Opening Size in mm	: 610x762mm

	Name	Signature	Date
Prepared & Checked	Shankar & R.Arul Prabhu		21-10-2016
Approved	M.Thandapani		21-10-2016

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VENDOR'S CHECK LIST

This check list is to be filled up by the vendor and submitted along with the offer. This shall form part of ordering specification and shall be approved by the purchaser incorporating all the comments if any. Vendor to completely fill up the column under "vendor's compliance/confirmation/comments". Non applicability shall be clearly spelt out. Offer with incomplete data sheet/ check list is liable for rejection.

S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
1	Name of the equipment	1.0	Quick Erect scaffolding system		
2	Type of system offered		Vendor to specify		
3	Model of the system offered		Vendor to specify		
4	Type of jointing arrangement Provided	3.1	Vendor to specify		
5	Standards / Codes followed	3.2	Vendor to specify		
6	Materials of construction:	3.3.1	Steel / Aluminium		
6.1	Tubes				
6.2	Coupler / Jointing				
6.3	Fastners				
6.4	Stair ways				
6.5	Decking				
6.6	Others				
6.7	Others				
6.8	Others				
7	All components shall have appropriate colour code	3.3.4	Vendor to confirm		
8.0	Quick erect / Quick dismantle	3.7			
8.1			Total Man-hours required for erecting the complete system		
8.2			No. of manpower required for erection:		
8.2.1			Skilled		
8.2.2			Unskilled		
8.3			Total Man-hours required for dismantling the complete system		
8.4			No. of manpower required for dismantling:		
8.4.1			Skilled		

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Vendor's name
Signature & Date
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VENDOR'S CHECK LIST

S.No.	Description	Spec. Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
8.4.2			Unskilled		
8.5			User certificate for the time taken for assembly and dismantling of a similar system shall be furnished along with the offer.		
8.6	Vendor's confirmation to demonstrate the mandays & man power requirement during the actual installation of QES.		Vendor to confirm		
9	Furnace configuration	3.8	The offered system shall meet the shape and configuration as shown in BHEL drawing.(Refer Annexure-I). Vendor's compliance.		
10	Provision to introduce all materials thro Access door opening	3.10	Opening size given in annexure -I		
11	Spares	3.11			
11.1	Initial spares		Shall be included in the base offer		
11.2	List of initial spares		Vendor to furnish the list of initial spares offered		
11.3	Long term spares		To be quoted separately		
12	Safety Accessories	4.3	Shall form part of the offer. Vendor to furnish the list of accessories supplied.		
13	Factor of safety	4.4	4 times the rated load		
13.1	Maximum intended load of 6 tons		Vendor to confirm for having taken this into the design		
14	Load transfer	5.0			
14.1	No of support points		Vendor to specify		
14.2	Location of support points		Vendor to furnish		

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Signature & Date
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VENDOR'S CHECK LIST

S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
14.3	Load per vertical post at support point		Vendor to specify		
14.4	Load transfer points		To be marked up in the drawing		
14.5	Type of support at the furnace hopper		Explain with a drawing. Is the support calling for any welding? If yes, it is accommodated only at the fins and not on the water wall tubes.		
14.6	Maximum safe working load that can be loaded onto the platform		Vendor to specify		
15	Scaffolding System	6.0			
15.1	Staircase width	6.2	Min. 500mm		
15.2	Staircase inclination	6.2	Not more than 55 deg.		
15.3	Provision of upper / mid guardrail	6.3	Vendor to confirm		
15.4	Access to panel and platen superheater and upper rear arch areas	6.4	Vendor to confirm		
15.5	Permissible load on each floor	6.8	Vendor to specify. Shall not be less than 150 kg/sq.m		
15.6	Hand rails height	6.9	900 - 1000mm		
16	Floors	6.10			
16.1	Provision of floor	6.10.1	All floors/ All elevations peripherally only.		
		6.10.2	Full floor platforms shall be provided at just below the upper arch and below the access door opening in the furnace hopper		
16.2	Width of peripheral floor	6.10.6	Min. 600 mm		
16.3	Provision of dismountable midrails	6.10.3	Vendor's compliance		
16.4	Height of Toe boards	6.10.4	Min. 150 mm		
16.5	Materials of construction of floors	6.10.5	Vendor to specify		
16.6	Arrangement drawing of floor	6.10.7	Vendor to enclose		
16.7	No. of floors offered	6.10.7	Vendor to specify		

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Signature & Date
Seal

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VENDOR'S CHECK LIST

S.No.	Description	Spec. Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
16.8	Elevation details	6.10.7	Vendor to indicate in the drawing. Spacing between two successive floors shall not exceed 2.5 m shall not exceed 3.5m		
16.9	Access to all parts	6.10.8	Vendor to confirm		
17	List of Tools & Tackles	6.11	List to be attached with the offer. If vendor states that special tools are required for the offered system, then the same has to be listed in detail		
18	Storage of scaffold	6.12	Storage volume required and the suggested storage layout		
19	Reference list	6.14	Vendor to submit		
19.1	User certificate	6.14	Vendor to submit		
20	Design justification document	6.15	Vendor to submit		
21	Fasteners with Metric threads	7.3	Vendor to confirm		
22	Applicable colour code	7.4	Vendor to specify		
23	Methodology followed for marking up identification number	7.5	Vendor to specify		
24	Training of purchaser's engineers	7.6	Vendor's compliance		
25	Drawing & documents	7.7	Vendor's compliance		
26	O & M manual	7.8	Vendor to furnish a typical O&M manual of the offered system. Vendor's compliance		
27	Quality plan	8.2	Vendor's compliance		
27.1	Site checks / tests	8.4	Field quality plan - vendor's compliance		
27.2	Inspection	9.0	Vendor's compliance		
28	Packaging and Transportation	10.3	Vendor's compliance		
29	Painting	Annexure-I	Vendor's compliance		
30	Guarantee / Warranty	11.0	Vendor's compliance		

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Vendor's name
Signature & Date
Seal

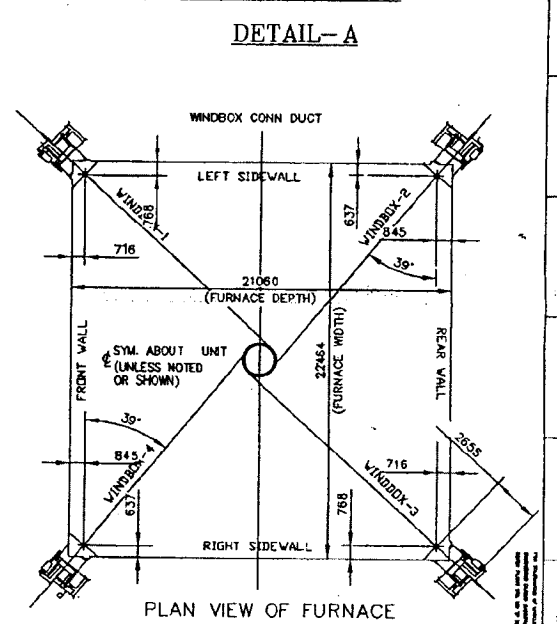
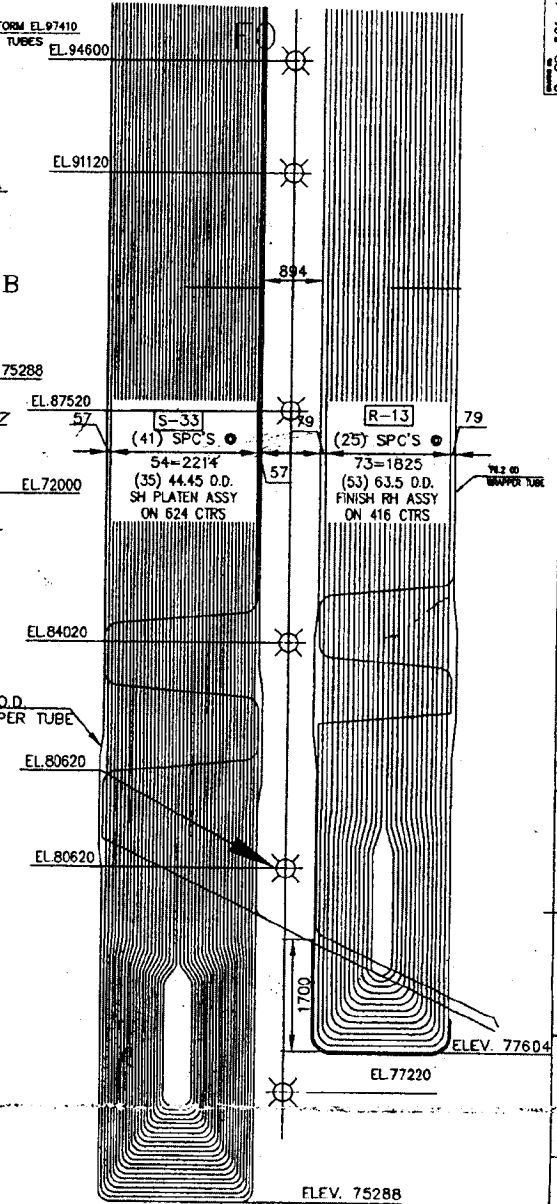
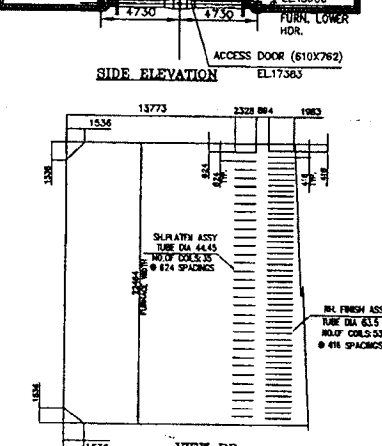
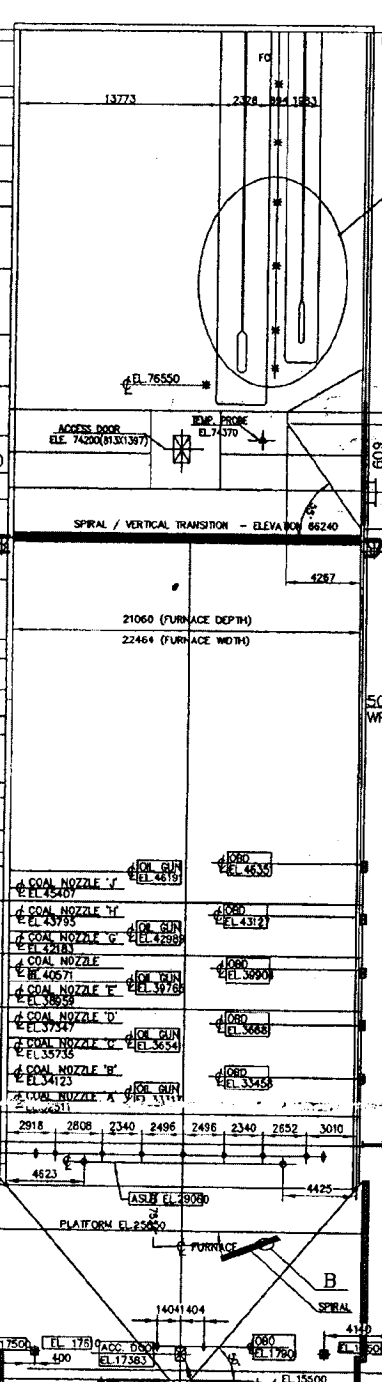
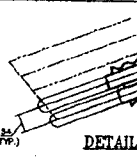
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VENDOR'S CHECK LIST

S.No.	Description	Spec.Clause No.	As per specification	Compliance / confirmation / particulars(to be filled up by vendor)	Remarks
31	Deviations	12.0	Shall be spelt out in the offer. If there are no deviations, the same shall be confirmed by the vendor		
32	Exclusions	13.0	Shall be spelt out in the offer. If there are no deviations, the same shall be confirmed by the vendor		
33	Documents along with offer	14.1	Vendor to furnish all the documents along with the offer		
33.1	Product literature / catalogue				
33.2	Drawing --- covering:		Specify vendor drawing No.		
33.2.1	General Arrangement		Vendor's compliance		
33.2.2	Sectional arrangement		Vendor's compliance		
33.2.3	Plan view		Vendor's compliance		
33.2.4	Elevation		Vendor's compliance		
33.2.5	Illustrated sketch of coupler / jointing arrangement		Vendor's compliance		
33.2.6	Marking up of load transfer points		Vendor's compliance		
33.2.7	Elevation details of all floor levels		Vendor's compliance		
33.2.8	Weight details		Vendor's compliance		
33.2.9	BOQ covering all components		Vendor's compliance		
33.7	Reference list		Vendor's compliance		
33.8	User certificate		Vendor's compliance		
33.9	Typical O&M manual		Vendor's compliance		
33.3	Deviations		Vendor's compliance		
33.4	Exclusions		Vendor's compliance		
33.5	Quality plan		Vendor's compliance		
33.6	List of special tools & tackles		Vendor's compliance		
34	Documents after placement of Purchase Order	14.2	Vendor's confirmation to furnish all the documents enlisted in Cl.14.2 of specification.		

- PLATFORM EL 97500 (MBL)
- BUCKSTAY EL 96050
- PLATFORM EL 94000
- BUCKSTAY EL 93500
- PLATFORM EL 90400 (MBL)
- BUCKSTAY EL 90400
- BUCKSTAY EL 89000
- PLATFORM EL 86700 (MBL)
- BUCKSTAY EL 86800
- BUCKSTAY EL 84750
- PLATFORM EL 82900 (MBL)
- BUCKSTAY EL 81750
- PLATFORM EL 78900 (MBL)
- BUCKSTAY EL 78750
- PLATFORM EL 75800 (MBL)
- BUCKSTAY EL 75750
- PLATFORM EL 72800 (MBL)
- BUCKSTAY EL 72750
- TV CAMERA (WALL VIEWING)
- EL 70450
- BUCKSTAY EL 69750
- BUCKSTAY EL 67650
- PLATFORM EL 64100
- BUCKSTAY EL 64900
- PLATFORM EL 60500 (MBL)
- BUCKSTAY EL 60150
- EL 55800
- TRIPPER FLOOR
- PLATFORM EL 54700
- PLATFORM EL 51800 (MBL)
- BUCKSTAY EL 51770
- PLATFORM EL 48900
- BUCKSTAY EL 48770

- LEGEND:
- LONG RETRACTABLE SCOT BLOWER
- LONG RETRACTABLE SCOT BLOWER
- ACCESS DOOR
- ELEVATOR LANDING



- REF. DROS.
1. D-00-027-34002 PPA SEC. SIDE ELEVATION UPPER FURNACE
 2. D-00-027-34004 PPA SEC. SIDE ELEVATION LOWER FURNACE
 3. 65-10-102-PMA-B-071 W 3 ARRANGEMENT - SH2 (74M)

DESIGNED BY	100 & 1007
CHECKED BY	
APPROVED BY	
DATE	
PROJECT	BRIGANT HEAVY ELECTRICALS LIMITED
CLIENT	BRIGANT HEAVY ELECTRICALS LIMITED
PROJECT ADDRESS	QUICK STREET BRIGANT
PROJECT NO.	0-90-501-0503



An ISO 9001
Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)
Tiruchirappalli-620 014, Tamil Nadu, India
Dept: MATERIALS MANAGEMENT/BOI

ANNEXURE-A –General Terms and Conditions (INDIGENOUS VENDOR)

ACCEPTANCE OF TECHNO - COMMERCIAL TERMS AND CONDITIONS BY THE BIDDERS
(To be Filled and submitted along with techno commercial offer for evaluation and to consider for Bid opening)

Description of the Equipment:		Quick Erect Scaffolding –Aluminium
Project		Mouda 2 x 660 MW , Nabinagar 3 x 660 MW , Gadarwara 2 x 800MW, Darlipali 2 x 800 MW
BHEL Tender No. & Date		1801601357-14 dated 31.10.2016
Sl. No.	Terms and conditions	Vendor's confirmation
1	Technical: Supply shall be as per BHEL's Specification enclosed along with NIT.	
2	Firm Price: The quoted / finalised rates shall be Firm till execution of the supplies. Offer with PVC clause will not be considered.	
3	The tender will be operated on two part bid basis and you are requested to submit techno commercial bid and price bid in separate sealed cover put together in a single cover.	
4	FOR Basis: The quote shall be on FOR respective project destination basis as indicated in enquiry, inclusive of Packing, forwarding, Freight & Transit Insurance also to yours account. Please quote Lumpsum charge for freight and insurance. If vendor passing transit insurance under BHEL scope. Offer will be loaded 0. 1064 % of (Basic material value + ED + Forwarding & Packing + Freight charge).	
5 (a)	Payment terms: 100% direct payment after 45 days against site acknowledgement LR copy along with 10%PBG valid for the Guarantee / Warranty period.	
5 (b)	<u>Loading Criteria :</u> Payment Terms: Any deviation in the BHEL payment terms will attract loading as per below. "Base rate of SBI (As applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought	

	by bidders”. Payment through bank is not acceptable. If still demanded by vendor, loading will be 3% on the offered material value. If the Payment term is 90% direct payment after 45 days from the date of dispatch against submission of dispatch documents and balance 10% against site acknowledgement. For this option a loading of 2% on the 90% of the offered materials value shall be made. LC will not be operated for Indigenous vendors. Offers with payment terms as LC from indigenous vendors will be rejected.	
6 (a)	<u>Liquidated damages:</u> Delivery of the goods specified in the purchase order should be made within the time prescribed. Failure to dispatch the materials in the time as per the delivery quoted in our Purchase Order would make the supplier liable to an un-conditional LD at the rate of ½% of the value of goods for each week of delay subject to a maximum of 10% of the Purchase Order value on part there off.	
6 (b)	<u>Loading Criteria</u> <u>LD / Penalty:</u> Any deviation on BHEL LD / Penalty clause, loading (Basic material Value) will be applied to the extent to which it is not agreed by the bidder.	
7 (a)	<u>Guarantee / Warranty Period:</u> Guarantee clause 24 months from the date of supply or 18 months from the date of actual put in use / Commissioning, whichever is earlier.	
7 (b)	<u>Loading Criteria:</u> <u>Guarantee / Warranty Period:</u> No Deviation is permitted. If still vendor offered any deviation on the Guarantee / warranty period it may leads to rejection of offer.	
8	<u>Performance Bank Guarantee:</u> BHEL require a performance Bank Guarantee to a value of 10% of supply value covering the guarantee period. The PBG shall be in BHEL format (Format attached) which is to be opened in any one of the first class India banks. All banks charges shall be to vendor account only. If still vendor offered any deviation on PBG leads to rejection of offer.	
9	<u>Taxes & Duties:</u> All Taxes, Duties, Service Taxes etc. payable as extra to the quoted price should be specifically stated in offers along with CST & TIN No / Tariff No. etc., failing which the purchaser will not be liable for payment of such Taxes and Duties. Our TIN No. 33243560005, TNGST No. 3560005, CST. No. 239383 Dt. 11-06-1991 & BHEL ECC No. AAACB4146PXM012, Assessment circle Tiruverambur.	

10	Risk purchase: If the supplier fails to deliver the goods within the delivery specified in the Purchase Order, BHEL will be entitled to terminate the contract and to Purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or despatch within the delivery period mentioned in the Purchase Order.	
11	Delivery Period: 16 Weeks from the Data sheet , QP approval by BHEL / Customer	
12	Validity: 120 days minimum from techno commercial bid opening (Part-1)	
13	Vendor shall quote as per attached Price and Unprice Schedule format only.	
14	Package: Total requirement will be considered as package for evaluation and ordering of project wise basis.	
15	O & M manuals: BHEL require 1 sets of printed O & M manuals with 3 soft copies in CD-ROM at no cost to be sent to BHEL/ Trichy and 3 sets of printed O &M manuals to be sent along with valves directly to site.(for each boiler)	
16	Repair & replacements: Within the guarantee period vendor has to replace / rectify the defective/ damaged items on free of cost within a reasonable time of reporting from our end.	
17	Inspection and testing requirements: Inspection and testing requirements are to be carried out as per the specification and BHEL /Customer approved QAP and all test certificates are to be submitted in complete set as indicated in our specification / QAP	
18	Test certificate shall be submitted prior to despatch for our review and approval. Shipment shall be made only after obtaining despatch clearance from BHEL	
19	In case of order, Documents (Drawings, Data sheet & Quality plan in triplicate) shall be submitted within two weeks from the receipt of order	
20	Mouda, Nabinagar, Gadarwara, Darlipali comes under Mega power project category. Excise Duty is exempted against the applicable documents for Main supply.	
21	MSME Clause as per Annexure-C	
22	Documents are to be submitted along with technical bid (Part-1) 01. Covering letter 02. Unpriced offer as per BHEL format 03. Filed technical specification –project wise 04. Filed BHEL Terms and condition sheet 05. Filed Qualification requirement along with supporting documents 06. Catalogue's 07. MSME Documents (If applicable) 08. Vendor registration documents	

	Documents are to be submitted along with Price bid (Part-2) 01. Priced offer as per BHEL format Note: All the pages of documents are to be signed and stamped by authorized signatory of the company.	
23	Vendor who are not registered with BHEL –Trichy for supply of valves as a permanent vendor, those vendors are requested to submit the vendor registration through online and submit the registration application number along all the necessary documents. (available in http://www.bheltry.co.in/- Online Vendor Registration- Material Management) Note : Vendor have to submit all the documents duly filled in “Supplier Registration Forms” through online (available in http://www.bheltry.co.in/- Online Vendor Registration- Material Management). Duly filled-in Supplier Registration Forms, along with all credentials and supporting documents, Certificate of Rating from D&B (Dun & Brad) sheet or equivalent agencies (For Foreign vendors), Financial Performance / Profit & Loss Account / Balance sheet for last three years etc. (With Techno-Commercial Bid). Availability of minimum manufacturing, handling, testing and measuring facilities, to be detailed are to be mentioned clearly. All the documents to be uploaded. Apart from Qualifying the Techno-Commercial requirements of the enquiry, BHEL has the right for spot assessment of the facilities for evaluation, approval and for registration.	



An ISO 9001
Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)
Tiruchirappalli-620 014, Tamil Nadu, India
Dept: MATERIALS MANAGEMENT/BOI

ANNEXURE-A General Terms and Conditions (IMPORT VENDOR)

ACCEPTANCE OF TECHNO - COMMERCIAL TERMS AND CONDITIONS BY THE BIDDERS
(To be Filled and submitted along with techno commercial offer for evaluation and to consider for Bid opening)

Description of the Equipment:		Quick Erect Scaffolding –Aluminium
Project		Mouda 2 x 660 MW , Nabinagar 3 x 660 MW , Gadarwara 2 x 800MW, Darlipali 2 x 800 MW
BHEL Tender No. & Date		1801601357 -14 dated 31.10.2016
Sl. No.	Terms and conditions	Vendor's confirmation
1	Technical: Supply shall be as per BHEL's Specification enclosed along with NIT.	
2	Firm Price: The quoted / finalised rates shall be Firm till execution of the supplies. Offer with PVC clause will not be considered.	
3	The tender will be operated on two part bid basis and you are requested to submit techno commercial bid and price bid in separate sealed cover put together in a single cover.	
4	Delivery term: Offer shall be submitted on CFR Chennai Port / INDIA basis. It is requested to indicate the Freight amount separately as per Price / Unpriced format attached.	
5 (a)	BHEL Payment terms: BHEL Payment term is 100% payment on CAD basis after 45 days from the date of receipt of documents at BHEL bank along with 10% PBG valid for the Guarantee / Warranty Period. Respective bank charges to respective account.	
5 (b)	<u>Loading Criteria :</u> <u>Payment Terms:</u> Any deviation in the BHEL payment terms will attract loading as per below. Any deviation in the above BHEL payment term will attract loading as mentioned below. "Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders. i) In the case of Usance LCs the loading will be considered @ 1.5% on the offered Value. ii) For LC at sight the loading will be considered @ 3.5%	

	on the offered Value.	
	iii) Normally CAD at sight and Confirmed LCs are liable for rejection BHEL will evaluate the offers and consider the ranking after the loading is applied as referred above wherever deviations are observed.	
6 (a)	<u>Liquidated damages:</u> Delivery of the goods specified in the purchase order should be made within the time prescribed. Failure to dispatch the materials in the time as per the delivery quoted in our Purchase Order would make the supplier liable to an un-conditional LD at the rate of ½% of the value of goods for each week of delay subject to a maximum of 10% of the total ordered Purchase Order value on part there off.	
6 (b)	<u>Loading Criteria</u> <u>LD / Penalty:</u> Any deviation on BHEL LD / Penalty clause, loading (Basic material Value) will be applied to the extent to which it is not agreed by the bidder.	
7 (a)	<u>Guarantee / Warranty Period:</u> Guarantee clause 24 months from the date of supply or 18 months from the date of actual put in use / Commissioning, whichever is earlier.	
7 (b)	<u>Loading Criteria:</u> <u>Guarantee / Warranty Period:</u> No Deviation is permitted. If still vendor offered any deviation on the Guarantee / warranty period leads to rejection of offer.	
8	<u>Performance Bank Guarantee:</u> BHEL require a performance Bank Guarantee to a value of 10% of supply value covering the guarantee period. The PBG shall be in BHEL format (Format attached) which is to be opened in any one of the first class India banks. All banks charges shall be to vendor account only. If still vendor offered any deviation on PBG leads to rejection of offer.	
9	<u>Risk purchase:</u> If the supplier fails to deliver the goods within the delivery specified in the Purchase Order, BHEL will be entitled to terminate the contract and to Purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or despatch within the delivery period mentioned in the Purchase Order.	
10	<u>Delivery Period:</u> 16 Weeks from the Data sheet approval by BHEL / Customer	
11	<u>Validity:</u> 120 days minimum from techno commercial bid opening (Part-1)	

12	Vendor shall quote as per attached Price and Unprice Schedule format only.	
13	Package: Project wise total requirement will be considered as package for evaluation and ordering.	
14	O & M manuals: BHEL require 1 sets of printed O & M manuals with 3 soft copies in CD-ROM at no cost to be sent to BHEL/ Trichy and 3 sets of printed O &M manuals to be sent along with valves directly to site.(for each boiler)	
15	Repair & replacements: Within the guarantee period vendor has to replace / rectify the defective/ damaged items on free of cost within a reasonable time of reporting from our end.	
16	Please inform the Net , Gross weight , Size (L x B x H) of the consignment	
17	Inspection and testing requirements: Inspection and testing requirements are to be carried out as per the specification and BHEL /Customer approved QAP and all test certificates are to be submitted in complete set as indicated in our specification / QAP.	
18	For Evaluation, exchange rate (TT selling rate of State Bank of India) as on scheduled date of tender opening (part –I bid in case of two part bid) shall be considered.	
19	Test certificate shall be submitted prior to despatch for our review and approval. Shipment shall be made only after obtaining despatch clearance from BHEL	
20	In case of order, Documents (Drawings, Data sheet & Quality plan in triplicate) shall be submitted within two weeks from the receipt of order	
22	Mouda, Nabinagar, Gadarwara, Darlipali comes under Mega power project category. Excise Duty is exempted against the applicable documents for Main supply.	
23	MSME Clause as per Annexure-C	
24	Documents are to be submitted along with technical bid (Part-1) 01. Covering letter 02. Unpriced offer as per BHEL format 03. Filed technical specification –project wise 04. Filed BHEL Terms and condition sheet 05. Filed Qualification requirement along with supporting documents 06. Catalogue's 07. MSME Documents (If applicable) 08. Vendor registration documents Documents are to be submitted along with Price bid (Part-2) 01. Priced offer as per BHEL format Note: All the pages of documents are to be signed and stamped by	

	authorized signatory of the company.	
25	Vendor who are not registered with BHEL –Trichy for supply of valves as a permanent vendor, those vendors are requested to submit the vendor registration through online and submit the registration application number along all the necessary documents. (available in http://www.bheltry.co.in/- Online Vendor Registration- Material Management) Note : Vendor have to submit all the documents duly filled in “Supplier Registration Forms” through online (available in http://www.bheltry.co.in/- Online Vendor Registration- Material Management). Duly filled-in Supplier Registration Forms, along with all credentials and supporting documents, Certificate of Rating from D&B (Dun & Brad) sheet or equivalent agencies (For Foreign vendors), Financial Performance / Profit & Loss Account / Balance sheet for last three years etc. (With Techno-Commercial Bid). Availability of minimum manufacturing, handling, testing and measuring facilities, to be detailed are to be mentioned clearly. All the documents to be uploaded. Apart from Qualifying the Techno-Commercial requirements of the enquiry, BHEL has the right for spot assessment of the facilities for evaluation, approval and for registration.	

ANNEXURE-B (Import)

Loading factors for the tender enquiry (Import Vendor)

Sl No.	BHEL Commercial terms	Vendor Confirmation to BHEL Commercial terms	Loading Criteria for Deviations
1	Payment terms: BHEL Payment term is 100% payment on CAD basis after 45 days with 10% PBG valid for the warranty period. Respective bank charges to respective account.		Any deviation in the above payment term will attract loading as mentioned below. “Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.
2	Liquidated damages: Liquidated damages shall be 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value.		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).
3.	Guarantee: Guarantee clause 24 months from the date of supply or 18 months from the date commissioning, whichever is earlier.		No deviation permitted and the deviated offers are liable for rejection.
	<u>Important Note:</u> i) In the case of Usance LCs the loading will be considered @ 1.5% on the offered Value. ii) For LC at sight the loading will be considered @ 3.5% on the offered Value. iii) Normally CAD at sight and Confirmed LCs are liable for rejection iv) BHEL will evaluate the offers and consider the ranking after the loading is applied as referred above wherever deviations are observed. v) PBG deviation is not acceptable and liable for rejection.		

ANNEXURE-B

Loading factors for the tender enquiry (Indigenous Vendor)

Sl No.	BHEL Commercial terms	Vendor Confirmation to BHEL Commercial terms	Loading Criteria for Deviations
1	Payment terms: Payment term is 100% direct payment after 45 days from the date of dispatch against site acknowledgement with 10% PBG valid for the warranty period		Any deviation in payment term will attract loading as mentioned below. “Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.
2	Liquidated damages: Liquidated damages shall be 0.5% per week or part there of subject to to a maximum of 10% for the total order value.		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).
3.	Guarantee: Guarantee clause 24 months from the date of supply or 18 months from the date commissioning, whichever is earlier.		No deviation permitted and the deviated offers are liable for rejection.
	<u>Important Note:</u> i) Payment through Bank is not preferred. In case of Payment through Bank is opted by Supplier, BHEL prefers documents submission through bank with copy of LR and door delivery of Goods to Stores with Consignee copy attached. In this case Loading will be 3% on the offered value. In case of despatches Direct to Site (DTS), only 90% through bank will be considered. ii) BHEL will evaluate the offers and consider the ranking after the loading is applied as referred above wherever deviations are observed. iii) Offers of indigenous Suppliers with payment terms as LC/Advance Payment are liable for rejection. iv) PBG deviation is not acceptable and liable for rejection.		

ANNEXURE-C

Clause: Special provisions for Micro & Small Enterprises (MSE)

1. In case L1 vendor is an MSE (Micro Small Enterprise) vendor entire project package will be ordered on L1 vendor.
2. If a Non MSE vendor is coming as L1, then L1 prices will be counter offered on MSE vendor who is quoting price within the price band of L1+15% and if they are agreeing, purchase order will be awarded for full / complete supply of total tendered value to MSE.
3. If more than one MSE vendors are available in the L1+15% price band then lowest of the MSE vendor will be selected for counter-offering. If lowest MSE vendor is not accepting it will be counter offered to the next MSE vendor in the price band and so on.
4. Finally if none of the MSE vendor in the price band is not accepting L1 rates, it will be ordered on L1 non MSE vendor. These condition will be incorporated in the enquiry terms and condition.
5. MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (Two years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with CA certificate (Format enclosed) applicable for the year, certifying quantum of investment in plant and machinery within the permissible limit as per the act for relevant status (Micro or small) where the deemed validity of EM II is over. Date to be reckoned for determining the deemed validity will be the last date of technical bid submission. Non submission of such documents will lead to consideration of their bids at par with other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier till the supplier submits these documents.

PACKAGE NO : 1 —SUPPLY OF QUICK ERECT SCAFFOLDING - ALUMINIUM FOR MOUDA 2 x 660 MW PROJECT									
Enquiry Sl. No	Items Details / Description	Qty	Net Weight	Gross weight	size	Unit Rate	Total Material Cost	Sea Freight Charge	Total Value (CFR)/ CHENNAI
			Kgs	Kgs	L x B x H	Currency -Type	Currency -Type	Currency -Type	Currency -Type
10	Quick Erect Scaffolding Assembly - Aluminium	1 SET							
Note : Vendor shall quote See freight amount. Don't indicate freight are Inclusive/ Zero Value.									
								TOTLA PRICE - FOB / Nearest Sea Port	
								TOTAL SEA FREIGHT CHAGES	
								TOTAL PRICE - CFR / CHENNAI PORT	
OPTIONAL PRICE									
1	Quote the Optional Price for Training , Installation Supervision at site with a valldity period of 2 years from the date of supply.								

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PACKAGE NO : 2 —SUPPLY OF QUICK ERECT SCAFFOLDING - ALUMINIUM FOR NABINAGAR 3 x 660 MW PROJECT									
Enquiry Sl. No	Items Details / Description	Qty	Net Weight	Gross weight	size	Unit Rate	Total Material Cost	Sea Freight Charge	Total Value (CFR)/ CHENNAI
			Kgs	Kgs	L x B x H	Currency -Type	Currency -Type	Currency -Type	Currency -Type
20	Quick Erect Scaffolding Assembly - Aluminium	1 SET							
Note : Vendor shall quote See freight amount. Don't Indicate freight are inclusive/ Zero Value.									
								TOTLA PRICE - FOB / Nearest Sea Port	
								TOTAL SEA FREIGHT CHAGES	
								TOTAL PRICE - CFR / CHENNAI PORT	
OPTIONAL PRICE									
1	Quote the Optional Price for Training , Installation Supervision at site with a valldity period of 2 years from the date of supply.								

PACKAGE NO : 3 —SUPPLY OF QUICK ERECT SCAFFOLDING - ALUMINIUM FOR GADARWARA 2 x 800 MW PROJECT									
Enquiry Sl. No	Items Details / Description	Qty	Net Weight	Gross weight	size	Unit Rate	Total Material Cost	Sea Freight Charge	Total Value (CFR)/ CHENNAI
			Kgs	Kgs	L x B x H	Currency -Type	Currency -Type	Currency -Type	Currency -Type
30	Quick Erect Scaffolding Assembly - Aluminium	1 SET							
Note : Vendor shall quote See freight amount. Don't Indicate freight are inclusive/ Zero Value.									
								TOTLA PRICE - FOB / Nearest Sea Port	
								TOTAL SEA FREIGHT CHAGES	
								TOTAL PRICE - CFR / CHENNAI PORT	
OPTIONAL PRICE									
1	Quote the Optional Price for Training , Installation Supervision at site with a validity period of 2 years from the date of supply.								

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PACKAGE NO : 4 ---SUPPLY OF QUICK ERECT SCAFFOLDING - ALUMINIUM FOR DARALIPALI 2 x 800 MW PROJECT									
Enquiry Sl. No	Items Details / Description	Qty	Net Weight	Gross weight	size	Unit Rate	Total Material Cost	Sea Freight Charge	Total Value (CFR)/ CHENNAI
			Kgs	Kgs	L x B x H	Currency -Type	Currency -Type	Currency -Type	Currency -Type
40	Quick Erect Scaffolding Assembly - Aluminium	1 SET							
Note : Vendor shall quote See freight amount. Don't indicate freight are inclusive/ Zero Value.									
								TOTLA PRICE - FOB / Nearest Sea Port	
								TOTAL SEA FREIGHT CHAGES	
								TOTAL PRICE - CFR / CHENNAI PORT	
OPTIONAL PRICE									
1	Quote the Optional Price for Training , installation Supervision at site with a validity period of 2 years from the date of supply.								

PACKAGE NO : 1 ---SUPPLY OF QUICK ERECT SCAFFOLDING - ALUMINIUM FOR MOUDA 2 x 660 MW PROJECT								
Enquiry Sl. No	Items Details	Qty	Unit Rate	Total Material Cost	Excise Duty	Sales Tax	Freight & Insurance Charge	Total Value (FOR)
			Rs	Rs	%	%	Rs	Rs
10	Quick Erect Scaffolding Assembly - Aluminium	1 SET			Exempted			
Note : Vendor shall quote freight and insurance amount. Don't indicate freight & Insurance are inclusive/ Zero Value.								
OPTIONAL PRICE								
1	Quote the Optional Price for Training , Installation Supervision at site with a validity period of 2 years from the date of supply.							

PACKAGE NO : 2 ---SUPPLY OF QUICK ERECT SCAFFOLDING - ALUMINIUM FOR NABINAGAR 3 x 660 MW PROJECT								
Enquiry Sl. No	Items Details	Qty	Unit Rate	Total Material Cost	Excise Duty	Sales Tax	Freight & Insurance Charge	Total Value (FOR)
			Rs	Rs	%	%	Rs	Rs
20	Quick Erect Scaffolding Assembly - Aluminium	1 SET			Exempted			
Note : Vendor shall quote freight and insurance amount. Don't indicate freight & Insurance are inclusive/ Zero Value.								
OPTIONAL PRICE								
1	Quote the Optional Price for Training , Installation Supervision at site with a validity period of 2 years from the date of supply.							

PACKAGE NO : 3 ---SUPPLY OF QUICK ERECT SCAFFOLDING - ALUMINIUM FOR GADARWARA 2 x 800 MW PROJECT								
Enquiry Sl. No	Items Details	Qty	Unit Rate	Total Material Cost	Excise Duty	Sales Tax	Freight & Insurance Charge	Total Value (FOR)
			Rs	Rs	%	%	Rs	Rs
30	Quick Erect Scaffolding Assembly - Aluminium	1 SET			Exempted			
Note : Vendor shall quote freight and Insurance amount. Don't indicate freight & Insurance are inclusive/ Zero Value.								
OPTIONAL PRICE								
1	Quote the Optional Price for Training , Installation Supervision at site with a validity period of 2 years from the date of supply.							

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PACKAGE NO : 4 ---SUPPLY OF QUICK ERECT SCAFFOLDING - ALUMINIUM FOR DARALIPALI 2 x 800 MW PROJECT								
Enquiry Sl. No	Items Details	Qty	Unit Rate	Total Material Cost	Excise Duty	Sales Tax	Freight & Insurance Charge	Total Value (FOR)
			Rs	Rs	%	%	Rs	Rs
40	Quick Erect Scaffolding Assembly - Aluminium	1 SET			Exempted			
Note : Vendor shall quote freight and Insurance amount. Don't indicate freight & Insurance are Inclusive/ Zero Value.								
OPTIONAL PRICE								
1	Quote the Optional Price for Training , installation Supervision at site with a validity period of 2 years from the date of supply.							

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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 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 IPC/ PC 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 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.

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 Bidder(s)/ Contractor(s) undertake(s) to obtain from all subcontractors a commitment consistent with this Integrity Pact and report Compliance to the Principal. This commitment shall be taken only from those sub-contractors whose contract value is more than 20 % of Bidder's/ Contractor's contract value with the Principal. The Bidder(s)/ Contractor(s) shall continue to remain responsible for any default by his Sub-contractor(s).
- 6.2 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.
- 6.3 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 /Sub-contractors

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.
- 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 As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or heal the situation, or to take other relevant action. The Monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.
- 8.6 The Monitor will submit a written report to the CMD, BHEL within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.
- 8.7 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.
- 8.8 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant IPC / PC 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.

8.9 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.

8.10 The word 'Monitor' would include both singular and plural.

Section 9 – Pact Duration

9.1 This Pact begins and shall be binding on and from the submission of bid(s) by bidder(s). It expires for the Contractor 12 months after the last payment under the respective contract and for all other Bidders 6 months after the contract has been awarded.

9.2 If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified as 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.

For & On behalf of the Principal

(Office Seal)

For & On behalf of the Bidder/ Contractor

(Office Seal)

Place-----

Date-----

Witness: _____

(Name & Address) _____

Witness: _____

(Name & Address) _____
