

BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI-620 014
Fuel Systems/PE(FB)



Title Sheet

Quick Erect Scaffolding System

(Material: Aluminium / Aluminium alloy)

Specification Number: MHS-HEQ-078

Revision No. : 03

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Tender documents in addition to this specification

Annexure – I ----- Specific Project Requirements

Annexure – II ----- Check list (To be filled in by the Vendor)

Annexure – III -----BHEL 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/Country where they will be installed. The offered system shall conform to national / international standards and the same are listed below:

BS EN 12811-1		Temporary works equipment. Scaffolds. Performance requirements and general design
BS 1139-1.2		Metal Scaffolding – Specification for Aluminium tubes
ANSI/ASSE A10.8		American national standard construction & demolition Operations – Scaffold Safety Requirements
EN 1999-1-1		Eurocode 9: Design of aluminium structures

3.3 Material of construction

3.3.1 The material of construction of various components including floors shall be Aluminium / Aluminium alloy of proven design for Scaffolding application. It is suggested that the selected



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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.

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 can be dismantled 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.** In support of the above, vendor shall furnish erection & dismantling schedule.

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). The corner design of the scaffolding shall conform to the cut corner requirement of the boiler (in burner region) and wherever there are no cut corners, the scaffolding should meet the shape & configuration as shown in Annexure-III.

3.9 The requirement of the system, as spelt above, is minimal and 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 which shall be subject to purchaser's review and acceptance.

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.



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Initial spares mean the spares required during first erection/commissioning of the system to replace the items that are either damaged or lost during 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 and Design Requirements

- 4.1 The general requirements for scaffold should be as per ANSI A10.8-2011/Section 4.
- 4.2 The locking arrangement for the scaffolding shall not call for any welding.
- 4.3 Quick erect scaffolding system shall be arranged in such a manner to remove /erect individually without affecting other boiler components.
- 4.4 Safety accessories like safety belt, safety helmet, safety shoes, gloves etc. shall also form part of the offer.
- 4.5 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** of **6000 Kg**.
- 4.6 Also, as per ANSI A10.8-2011 / Section 5.1.2.3.4, the platforms & scaffold decks shall be rated for medium-duty capacity, designed to withstand a **Uniformly distributed load**, not less than **245 kg/sq. m**.
- 4.7 Intended load and uniformly distributed load are not cumulative but the requirement which is most restrictive shall govern the design of scaffold deck / platform. 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 intended load.
- 4.8 Vendor shall indicate the overall permissible load and Load per square metre in their G.A drawing at any given instant on the scaffolding system offered.

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 no 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
- No load shall be transferred onto the Windbox / burner.



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- 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, burner & other components including boiler furnace roof.
- 6.2 Stair case with a width of minimum 500mm and not more than 55° inclinations. Staircase shall be provided with hand rails. However, for stairs within the braced towers, when flights of stairs are interrupted by platforms at less than or equal to 2.1 m intervals, the handrails may be omitted if due care is taken in design for safety of personnel. The number of staircases in a particular scaffold level shall be such that - quick access to all corners of subsequent work platforms is available from any point of that scaffold level.
- 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 to be envisaged.
- 6.5 The scaffolding shall also have access to horizontal pass up to the level where transverse tube pitching in the direction of gas flow path is equal to and greater than 600 mm.
- 6.6 Arrangement for stable floor.
- 6.7 Suitable arrangement for supporting at furnace bottom without additional attachment with boiler tubes.
- 6.8 In total, the assembly shall have amongst other things – vertical posts, horizontal members, vertical /horizontal / diagonal bracings, trusses and other fastening arrangements etc.

6.10 Handrails and guardrails

- 6.10.1 Handrails / guardrails shall be with a height between 900 mm to 1000mm.
- 6.10.2 Handrails / guardrails and components shall be of sufficient strength to withstand a 90kg force applied at any point, in any outward or downward direction, except upwards, without failure.
- 6.10.3 Handrails / guardrails system shall not be required on the furnace wall side when the space between platform/scaffold and furnace walls is less than 200 mm. However, toe boards as per 6.11.5 shall be envisaged everywhere to prevent accidental rolling down of tools.

6.11 Floors

- 6.11.1 Floors are to be provided peripherally at all elevations except at the levels specified in clause 6.11.3 where full planking is required. The elevation levels shall be determined by



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the vendor. However, the space between two floors shall be preferably 2.5 m below the top of wind box and shall not exceed 3.5 m there after (above wind box). Nowhere the space between the working floors be less than 1.8 m, so as to provide comfortable headroom.

6.11.2 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.

6.11.3 Full platforms/floors (not just peripheral) shall be provided at just below the access door near upper rear arch and below the access door opening in the furnace hopper. The full floor elevation details shall be furnished by the vendor.

6.11.4 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.

6.11.5 Toe boards/guards shall extend to a minimum of 150mm above the working surface.

6.11.6 The material of construction of the flooring shall be of Aluminium / Aluminium Alloy as indicated in clause 3.3.1.

6.11.7 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 600mm.

6.11.8 The number of floors offered with “elevation” details shall be clearly mentioned in the drawing.

6.11.9 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).

6.12 Tools and tackles

6.12.1 The Vendor shall supply with the main equipment one 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, jigs and fixtures if applicable. The list of such tools and tackles shall be submitted by the vendor along with the offer.

6.12.2 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.

6.13 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].



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6.14 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.

6.15 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. All material shall be supplied as per vendor's bill of quantity document and if any shortage of material found later or during installation of the scaffolding system at site, Vendor is responsible for the same and shall agree to supply the additional material at free of cost.

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 at least 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.

7.6 Supervision & Training:

7.6.1 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.

7.6.2 Vendor shall also impart the necessary training - training of personnel for the required days at the vendor's engineering/manufacturing facility - training at the job site for the required period by the vendor's representative.

7.6.3 Vendor shall undertake guarantee to demonstrate clause 3.7 (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.



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7.6.4 The cost applicable for clauses 7.6.2 & 7.6.3 shall be indicated separately in the offer as supervision and training charges. The above charges shall be paid only after site/ end-user certification on installation / dismantling as per clause 3.7 and training as described above.

7.7 Drawing and Documents:

7.7.1 All documents/text information shall be in MSWord 2000 or above version.

7.7.2 All drawings shall be made in AutoCAD- Release 2016 or above version.

7.7.3 All vendor documents & BHEL filled in datasheets that form the part of offer shall be duly filled, signed with vendor seal before submission. However, care should be taken to ensure legibility.

7.7.4 The vendor drawings shall include – scaffold general arrangement inside boiler, floor elevations with floor numbers, space between floors, plan view for each floor, access door elevation and size, space between furnace wall & floor end.

7.7.5 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.

7.7.6 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. If standard BHEL title block is furnished, the same shall be incorporated in vendor's drawings.

7.7.7 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.

7.7.8 The furnishing of detailed engineering data and drawings by the Vendor shall be in accordance with the time schedule for the project. The review 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



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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.

7.7.9 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.

7.7.10 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/checklist for commissioning of the system.
- Procedure for initial checking after erection.
- Maximum permissible load and load per square metre at any given instant on the scaffolding system.

7.8.1 Format of manuals

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



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- b) 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.
- c) Drawings shall be of printed or laser printed only.
- d) Spiral or comb bound copies should be totally avoided.
- e) If manuals are supplied in folders, the folder shall have 3 hole punching system.
- f) No of copies of manuals: 3 Sets + 3 CD –ROMS**
- g) O & M manuals, should be submitted to BHEL / Tiruchirappalli prior to despatch of the equipment.

8.0 Quality

8.1 General requirements

8.1.1 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.

8.1.2 All plates of thickness more than 21mm shall be ultrasonically tested.

8.1.3 All bar-stock forgings above 21mm diameter shall be ultrasonically tested.

8.1.4 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 Purchase'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

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



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8.3.2 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.

8.3.3 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.

8.3.4 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.

8.3.5 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.

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.



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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.

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



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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

10.3.1 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.

10.3.2 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 24 months from the date on which the equipment / system is put into use (by the end user) or 48 months from the date of supply whichever is earlier 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:

14.1.1 Product literature / catalogue and drawings in support of the offer shall be submitted in three copies along with the quotation to evaluate the offer.

14.1.2 Sectional arrangement drawing with plan, elevation, and end view along with major dimensions and weight particulars.



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14.1.3 Filled in check list. (Annexure-II to this specification)

14.1.4 Weight and quantity of individual components as per the scope of supply shall be indicated in the drawing as bill of quantity / material. Also total weight of scaffold per boiler to be furnished.

14.1.5 Design Calculation:

Vendor shall submit the design calculation to satisfy the specification clause:4.5. Also, the permissible load on any scaffold vertical should be always greater than actual maximum load on that vertical due to the sum of scaffold self-weight and intended / distributed loads.

14.1.6 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).

14.1.7 List of Special tools and tackles.

14.1.8 List of initial spares.

14.1.9 A certificate for the components from Safety Steward/ Authority/ Body of the country of make shall be provided.

14.1.10 Document for justifying the design aspects of the offered system both from stability and safety aspects.

14.1.12 List of Deviations or no deviation declaration.

14.1.13 List of Exclusions.

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

14.1.15 Erection & dismantling schedule as per clause 3.7 of this document.

14.2 Documents to be furnished after award of contract

14.2.1 Complete arrangement drawings giving particulars like:

- a) Bill of Quantity (of all individual components)
- b) Weight details of all components individually
- c) Identification marks / Numbers

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

14.2.3 Test certificates shall be furnished before despatch of components.

14.2.4 Material test certificate for all the major components.

14.2.5 Quality control / Inspection documents generated during the stages of inspection, performance inspection and final inspection in line with the final approved quality plan.

14.2.6 Guarantee certificate shall be furnished by the vendor.

14.2.7 Loading Schedule of the scaffolding indicating the safe working load in each floor level (including the number of persons allowed) shall be submitted by the Vendor.

14.2.8 O& M manual.



Specification for Quick Erect Scaffolding System

MHS-HEQ-078

Revision No.:03

15.0 General

15.1 The language used in offer, O & M manual, Labels, drawings etc. shall be in “English only.”

15.2 For Equipment and other special requirements pertaining to the contract, refer **Annexure-I** to this specification.

15.3 **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.

15.4 **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, elevation of burners etc.