

NTPC	LMI	LARA
TITLE	Guide lines for Carrying out Safe Erection of Scaffolding inside Boiler	
REF. NO.	LMI-10-R0/ BMD/ OIN/OPS/MECH/046	

NTPC LIMITED

**LARA SUPER THERMAL POWER PROJECT
LOCATION MANAGEMENT INSTRUCTION**

LMI-10-R0/BMD/ OIN/OPS/MECH/046



***Guide lines for Carrying out Safe Erection of
Scaffolding inside Boiler***

Approved for Implementation by

HOP(LARA)

Date:.....

Enquiries to: HOD (Mechanical Maintenance)

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Guide lines for Carrying out Safe Erection of Scaffolding inside Boiler

1.0 INTRODUCTION

For the purposes of this document scaffolding is defined as:

Any structure or framework, swinging stage, suspended scaffolding, of a temporary nature, used or intended to be used for the support or protection of workers for the purpose of carrying out their work or for the support of materials used in connection with any such work. Scaffolding includes any scaffolding erected as such and not dismantled, whether or not it is being used as scaffolding; and also includes any plank, coupling, fastening, fitting, equipment, item or device used in connection with the construction, erection, dismantling or use of scaffolding.

Different types of scaffolding are being regularly used for inspection and repair of Boiler pressure parts in all the NTPC Plants. It is very important to keep the safety aspect while using the scaffolding system for Boiler inspection and carrying out repair of Boiler during overhauling/planned maint. Hence it is necessary that each and every person who intend to utilize the scaffolding system, take the time to learn the proper and safe methods relating to erection and commissioning. Safety begins with a familiarization, with the functions and limitations of these scaffolding system.

2.0 SUPERSEDED DOCUMENTS – Nil

3.0 REFERENCE DOCUMENT

COS-ISO-00-OGN/OPS/MECH/046, Rev. No.: 0, May 2018

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4.0 SCOPE

Access to all elements of boiler like Reheater, platen SH, water wall or any hanging coils in boiler furnace, goose neck area or second pass, roof tubes for maintenance, Inspection or any other job requiring access at height.

5.0 PERSONNEL SAFETY DURING SCAFFOLDING ERECTION

- All the competent persons who involved in erection and dismantling of scaffolding must fully comprehend and act in accordance with OEM / OES manual and drawings.
- A competent person is a designated person, suitably trained, qualified by knowledge and practical experience to carry out erection and dismantling of scaffolding system.
- Competent persons must be emotionally strong and physically able to withstand the stress of working at high elevations.
- All persons engaged in erection and dismantling of scaffolding system must at all times wear PPE's like safety belts, safety shoes, Helmet etc.
- Maintain communication with the supervisor at ground level continuously.
- Make the copy of OEM / OES manual & drawings available to all concerned supervisors/Area Engineers.

Responsibility: HOD (MM)

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6.0 CHECK POINTS BEFORE USE OF SCAFFOLDING SYSTEM

- Inspect the Scaffolding before use, erection, re-erection and after dismantling and at regular intervals to make sure that it is maintained and in safe workable condition.
- The EIC/Area Engineer should assign a competent person for inspection purpose.
- Availability of OEM/OES guide lines required for working on scaffold.
- Check physically condition of platforms and other members. It should not be damaged. All damage components should be marked, recorded and removed from the lot to be used.
- Determining appropriate control measures for risk in consultation with all relevant persons involved in the work, including the principal contractor, scaffolding contractor, designers, plant operators, safety personnel etc. (as applicable).
- Check for adequate light inside the boiler/area concerned.
- Check bottom hopper, eco hoppers is sealed properly.
- Check for any dangerously hanging clinker/ soots.

A prestart or peruse check may be conducted by an adequately trained/ experienced person/persons (Safety & User department) before a scaffold in use is first used for the day. This must include a visual check. The scaffold must still be checked daily till in use.

Responsibility: HOD (MM)

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7.0 CHECK POINTS DURING SCAFFOLDING ERECTION

- Area should be properly lighted and ventilated.
- All persons involved in work should always wear PPE
- All footings should be sound, rigidly set and levelled by plumb/ spirit level.
- Scaffolding should be able to bear two times the maximum intended load.
- Periodical inspection by competent persons for proper scaffolding erection with respect to drawing, safety and rigidity of structure.
- Only healthy/standard components of scaffolding system should be used.
- All damage components should be marked, recorded and removed from site.
- For making any working/ load bearing platform, only heavy duty scaffolding pipes should be used, medium duty pipes may be used for hand rails, bracing and strutting.
- In case of round the clock working, workers should change every shift.
- Availability of First Aid Box/ Ambulance at site.
- Scaffolding should be provided with safe means of access such as stairs, ladders and ramps. Guard rail and toe boards shall be fitted in position.
- All guard rails shall be provided with mid rails.
- Avoid overloading. The load on shaft (load bearing element) be evenly distributed as far as practicable.
- Do not use ladders and make shift devices on top of scaffold to increase height.

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- Scaffold should be used only after complete erection and certification by competent persons.

Note: In case of any problem at height ask for help of competent persons. Do not try to modify/rectify/alter it yourself.

Any joints in the scaffolding arrangement are being welded, then, ensure full welding (Stitch welding not allowed).

Responsibility: HOD (MM)

8.0 INSPECTION REPORTS

It is recommended that all scaffolds should be inspected using the appropriate inspection report to show that best practices and minimum requirements have been met. It is also recommended that Deptt. Inspectors, Site Safety Officers and the like use the inspection reports when inspecting scaffolds for compliance.

The inspection reports can also be used when checking scaffolds for their register checks.

Responsibility: HOD (MM)

9.0 SCAFFOLD REGISTER/ INSPECTION RECORD REQUIREMENTS

- For scaffolding erected in Boiler, a scaffold register be kept on site and be available for inspection.
- When complete, the inspection records should show:
 - Project name, address, or other clear, identification.

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- The location of the scaffold with respect to site coordinates or the location at the Boiler or structure, so that the scaffolding can be clearly located.
 - Miscellaneous details of the scaffold.
 - A record of each inspection carried out.
- The inspections must be carried out at the following intervals:
- Before the scaffold is first put to into use.
 - On each day while the scaffold is in use.
 - After each structural alteration or addition.
 - Weekly while the scaffold is set up but not in use.
- The inspection must be carried out by either:
- A certificated scaffolder of the appropriate class; or
 - A competent person.

The entries of each inspection in the scaffold register must be made and signed by the person who carried out the inspection.

Responsibility: HOD (MM)

10.0 MAINTENANCE OF SCAFFOLDING EQUIPMENT

- Never drop any scaffolding material from height.
- Paint all scaffolding material (if required) once in a year after duly cleaning the same of rusts etc.

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- Different colour codes may be used for different types of scaffolding items.
- Store scaffolding material when not in use in a shade/ covered area and stack on raised platform so that stored material do not get affected by rain/ weather.
- Scaffold accessories such as coupler, joint pins, spigots etc. must be cleaned and greased at nut/bolts after every use.

➤ **Responsibility: HOD (MM)**

11.0 RECORDS AND PROTOCOLS

- A record of the trained persons should be kept at site as per **Annexure A**.
- Protocol as per **Annexure B** should be signed by BMD and Safety department before use of Scaffolding.

➤ **Responsibility: HOD (MM)**

12.0 REVIEW

The HOD (Mech Maint.) will be responsible for reviewing this document on a three (3) yearly basis, or as and when required.

13.0 DISTRIBUTION LIST

SL NO.	DATE OF ISSUE	ISSUED TO
1		AGM (MM)
4		DGM (EEMG)
5		GM (Maint.)
6		GM (O&M)
7		HOP (LARA)
8		NTPC Lara Intranet

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Annexure B

Protocol for Use of scaffolding

The following protocol should be signed by User deptt. and Safety department before use of scaffolding.

(BMD)

(Safety)

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Annexure C

Scaffolding Register/ Inspection record

Project/station detail	
Date /Location of scaffolding erected	
Reference of Drawings/sketch	
Safe working load intended	
Type of inspection (first use ,daily use, after alteration etc.)	
Date /Inspection report/Remark	As per check list as Annex.D
Name and Sign of Inspecting authority	

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Annexure D

CHECKLIST

S. No.	Activity/ Procedural Step	Status	Remark
01	Adequacy of scaffoldings & Safe accessibility arrangements.	YES/NO/NA	
02	Suitability & soundness of material used for supports & scaffoldings.	YES/ NO/NA	
03	Adequacy of Bracing & strutting to ensure stability.	YES/ NO/NA	
04	Adequacy of Fastening to prevent toppling.	YES/ NO/NA	
05	Proximity of platform at working place.	YES/ NO/NA	
06	Ensure daily routine Checks & record keeping of observations	YES/ NO/NA	
07	Whether any moving/ rotating part is rubbing against the scaffolding?	YES/ NO/NA	
08	Are access & way out to/from working Platforms is free from obstructions?	YES/ NO/NA	
09	Removal of unwanted loose material from the working platforms.	YES/ NO/NA	
10	Check for loose or hanging members.	YES/ NO/NA	
11	Check for Guard Rails and Toe Boards.	YES/ NO/NA	
12	All working platforms are adequately Guarded by providing handrails & toe guards.	YES/ NO/NA	

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S. No.	Activity/ Procedural Step	Status	Remark
13	Any joints in the scaffolding arrangement are being welded? If yes, ensure full welding (Stitch welding not allowed)	YES/ NO/NA	
14	Ensure that locking joints are pinned at each joint.	YES/ NO/NA	
15	Check all staircases & objects being erected for overhead projections.	YES/ NO/NA	
16	Check for withdrawal of persons from heights during storms or high winds.	YES/ NO/NA	
17	Whether all footings of scaffoldings are firmly positioned on preferably steel base.	YES/ NO/NA	
18	Maximum allowable persons/load limit display.	YES/ NO/NA	
19	Provision of fall arrestors /safety nets.	YES/ NO/NA	
20	Label/ Display of safe to work.	YES/ NO/NA	

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Annexure-E

Standards to be consulted along with this LMI

- IS-456:2000: General guidelines about the time of [Page 25] removal of formwork for different structural elements.
- IS-2750:1964: Steel Scaffolding & Scaffolding Fittings [Reaffirmed- 2001]
- IS-4014[Part-I]: Code of practice for steel tubular 1967 Scaffolding.[Reaffirmed – 2001] Part – I : Definitions and materials.
- IS-4014 [Part- II]: Safety regulations for scaffolding 1967 [Reaffirmed – 2000]
- IS-3696 [Part-I]: Safety code for scaffolds and ladders. 1987 [Reaffirmed – 2002] Scaffold and Ladders
- IS-3696 [Part-II]: Code of Safety. 1991: [Reaffirmed-2002]
- BS-5973 [1981] Code of practice for access and working scaffolds and special scaffolds structures in steel.
- BS-5974: Recommendations for suspended scaffolds.
- BS-5975: Recommendations for false work [i.e. temporary works for the support of permanent work.]
- BS-1139: Tubes, scaffolds and fittings. [1990]
- EN-74: The members of European Union follow these codes of practices mainly for scaffold tubes, couplers and other fittings.

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Annexure-F

DOs & DON'Ts

1. Use appropriate tools & tackles for erection of scaffolding.
2. O&M manual/ EIC instructions to be followed for erection of scaffolding.
3. All person involve in erection of scaffolding must use proper PPEs.
4. Before start of any work all person involve must be given instructions through pep-talk about risk/ hazards of the task.
5. Only standard/ healthy components should be used for scaffolding erection.
6. Ensure availability of first aid box/ Ambulance at site.