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HZL Standard

"Scaffolding"

| | Proposed by | Approved by |
|-----------|---|------------------------------------|
| Role | Chairman, Corporate SRP Sub- committee | Chairman, Corporate Safety Council |
| Name | Vinod Jangir | Arun Misra |
| Signature | Diferi | ArmMistra |
| Date | | |

Sensitivity: Internal (C3)

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Documents Issue:-

The Scaffolding Standard is issued by the Corporate Safety Council on behalf of Hindustan Zinc Limited management and form a part of the of HZL Integrated Management System.

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1.0 Purpose

The purpose of this standard is to establish mandatory requirements and advisory guidance for supported and suspended scaffolding used at Zones including Projects. The standard covers only the type of scaffolds that are erected for providing access to people for working at height.

This standard should be used in conjunction with local regulations, agreed standards, manufacturers' recommendations, site specific procedures and training programs to help achieve safe scaffold erection and use.

2.0 Scope

The requirements which have been identified here are equally applicable across all Zones of HZL.

Field of application

As per HSE Policy and Safety Principles.

3.0 References

- Corporate HSE Policy & Principles
- > Corporate Safety Standards
- Scaffolding Guidance Note
- > Working at Height Standard and Procedure
- Work Permit /Procedure
- > JSA/HIRA standard and Procedure
- > Confined Space Entry Standard and Procedure
- Contractor Safety Management System

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Other references

IS: 3696 (Part 1) – 1987 (Scaffolds) Safety code of scaffolds and ladders

IS: 3696 (Part 2) – 1987 (Ladders) Safety code of scaffolds and ladders

IS: 4014 – 1967 – Code of practice for steel tubular scaffoldings

IS: 3521 – 1999 – Industrial safety belts and harnesses

IS: 2750 – 1964 – Specification for steel Scaffolding

IS: 3629 – 1986 – Specification for structural timber in building

Building and Other Construction Workers'. (Regulation of employment and conditions of service) Central Rules, 1998.

4.0 Management Responsibilities

Line management in operating locations and functions has the responsibility to implement this standard.

5.0 Definitions

- **5.1 Competent person:** One who through training and/or experience (a) is knowledgeable of applicable scaffolding regulations; (b) is capable of identifying existing and predictable hazards related to the erection, alteration, dismantlement, storage, and inspection of scaffolding; and (c) has the authority to take prompt corrective actions to eliminate such hazards.
- **5.2** Fabricated-frame scaffold—a scaffold consisting of a platform(s) supported on fabricated end frames with integral posts, horizontal bearers, and intermediate members (also known as welded-frame scaffold and sectional scaffold).
- **5.3 Line Management:** Managers and supervisors who are in the line of command of a primary function of their organization, business, location or site such as the Site / Location Head or Engineering head or the Head of an operations department or Sectional Head or front line supervisors at a manufacturing site or a Manager / Engineer in the maintenance department at a manufacturing site.

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- **5.4 Scaffold**—any temporary elevated platform (suspended or supported) and its supporting structure (including points of anchorage) used for supporting workmen, materials, or both.
- **5.5 Supported scaffold**—one or more platforms supported by outrigger beams, brackets, poles, legs, uprights, posts, frames, castor wheels, or similar rigid support. Examples include fabricated-frame scaffold, system scaffold, tube-and-coupler scaffold, and manually propelled mobile scaffold.
- **5.6 Suspension (suspended) scaffold**—one or more platforms suspended by ropes or other non-rigid means from an overhead structure(s).
- **5.7 System scaffold**—a scaffold consisting of posts with fixed connection points that accept runners, bearers, and diagonals that can be interconnected at predetermined levels.
- **5.8 Tube-and-coupler scaffold** A supported or suspended scaffold consisting of a platform(s)supported by tubing, erected with coupling devices connecting uprights, braces, bearers, and runners (also known as tube-and-clamp scaffold).
- **5.9** Scaffolder A person who through training and/or experience is capable of erecting, moving, modifying and dismantling scaffold. Scaffolder should be trained and certified by OSHA Certified Trainer

6.0 Standards/Guidelines

6.1 General

Sites shall have a procedure for managing scaffolding. This procedure should cover process of scaffold material selection, erection, dismantling, handling, storage, inspection and training.

Sites must comply with applicable Local/National regulations in addition to the mandatory requirements of this standard.



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6.2 Scaffold Material selection

Steel scaffolding Material Specification should be as per IS: 2750-1964. Other scaffolding material Specification should follow the relevant IS codes as mentioned in the references section 3.0.

6.3 Erection, dismantlement, movement, and modification

- 6.3.1 An assessment of hazards shall be made before erecting, dismantling, modifying scaffolding. Examples of hazards to consider include the following:
 - Working at/from heights
 - Confined spaces
 - The presence of nearby electrical lines or process equipment
 - Hazardous area classification
 - The condition of working surfaces
 - The presence and activity of other people in the vicinity of the work
 - The weather (Temperature, Heavy rain, high wind velocity-more than 37 km/hr)
- 6.3.2 Erection during dark hours: This assessment could be part of the site work permit process but should also be extended to the specific job planning of the crew performing the work. Appropriate actions shall be taken to mitigate the hazards identified during the assessment.
- 6.3.3 Scaffolding shall be erected, dismantled, moved, and modified only under the direction of a competent person and by workmen who have received appropriate and specific training for the work they are to perform.
- 6.3.4 Determination and designation of competent persons for scaffold work are the responsibility of the Location Head/ Senior Management.

The site shall

• Decide what training, experience, skills, and documentation are required to substantiate competency.

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- Authorize each competent person to take corrective action to mitigate scaffold safety hazards.
- In determining competency, consideration shall be given to knowledge of scaffold regulations, working experience and knowledge of scaffold erection, and training received.
- 6.3.5 When scaffolding is erected by a contractor, site management shall require documentation and/or demonstration that contractor employees have appropriate training, experience, and skills. Determination and designation of competent persons for contracted scaffold erection are the responsibility of the contractor.
- 6.3.6 Fall protection when erecting, dismantling, and modifying scaffolds shall be under the direction of a competent person. Scaffold erectors shall use personal fall-arrest systems that provide continuous fall protection while erecting, dismantling or modifying scaffolds unless the determination is made by a competent person that fall protection is not feasible or it creates a greater hazard. Fall protection can be accomplished through the use of adequate anchorages that are independent of the scaffold or by using scaffold systems and components that are approved by the manufacturer as adequate anchorages. Employees including Contractor shall use appropriate fall-arrest equipment in accordance with Standard for Work at Height, including personal fall arrest systems.
- 6.3.7 Standard scaffold planks shall not be used for purposes other than scaffold decking.
- 6.3.8 The footing for supported scaffolds shall be sound, rigid, and capable of supporting the maximum intended load, including the weight of the scaffold.
- 6.3.9 Scaffolds shall be secured from tipping when the scaffold height exceeds four times its minimum base dimension.

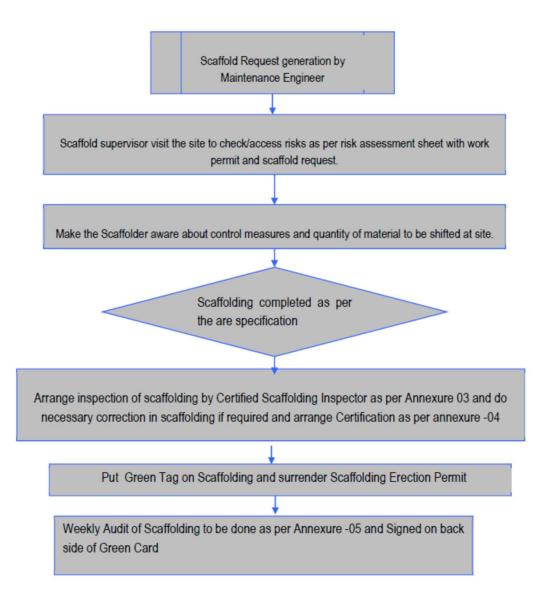
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6.3.10 Scaffolds determined to be unsafe for use shall be tagged or otherwise identified.

- 6.3.11 Toe boards should be used where possible on scaffold decks. Toe boards shall be securely attached when used.
- 6.3.12 Scaffolds shall be built with complete decking and railing where possible.
- 6.3.13 Appropriate barricades shall be installed to protect people in the vicinity during scaffold erection, use, modification, and dismantlement.
- 6.3.14 Manufacturer's guidelines for scaffold erection shall be followed unless a competent person approves the variance and provided the variance complies with applicable regulations and generally accepted scaffold engineering practices.
- 6.3.15 Scaffold manufacturer's guidelines for erection and inspection shall be available on site for reference.
- 6.3.16 Each erected scaffold shall be inspected before it is first used, after it is modified, or following any event that places in question the structural integrity of the scaffold. Inspections must be performed by a competent person and must be documented. An inspection tag is an example of documentation.

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Scaffolding Process Flow chart



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NOTE: No modification allowed in Scaffolding after surrendering the Erection Fermit. Green tag is issued only after surrendering Erection Permit. There should be always Separate permit for Scaffolding Erection, Scaffolding Modification and Scaffolding Dismantling

White delay

6.4 Use

-

- 6.4.1 All employees who use scaffolds shall be trained. The scope of the training shall include the appropriate safe working practices for the work to be performed and guidance on assessing hazards and selecting the proper protective measures.
- 6.4.2 Personnel working below, and passersby shall be protected from overhead hazards.
- 6.4.3 Safe access shall be provided for scaffold users. Cross-bracing shall not be used for access.End frames shall not be used for access unless they were designed for use as access.
- 6.4.4 Employees who use scaffolds must assess the hazards posed by working on them and take appropriate precautions to mitigate the hazards.
- 6.4.5 No scaffold shall be loaded beyond the working load for which it is intended.
- 6.4.6 Employees shall use appropriate fall-arrest equipment in accordance with standard when working on scaffolds not equipped with standard top rail, mid rail, and complete decking.

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| 6.4.7 : | andard Rules & Procedure Sub-Committee Duty of Scaffolding | Standard Document No. HZL/ | | SRPSC/02 | |
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| Duty | Use of platform | Distributed load on platforms | | Max. bay lengths | |
| Duty | | Kg/per platform/per bay | | Meters | |
| Light duty | Examples include painting, electrical work, many carpentry tasks and other light tasks. Platforms should be at least two traditional scaffold planks wide (approximately 450 mm). | 225 | | 2.4 | |
| Medium Duty | Examples include general trades work like tiling and light steel framing. Platforms should be at least four traditional scaffold planks wide (approximately 900 mm). | 450 2.1 | | 2.1 | |
| Heavy duty | This is what is needed for concrete block laying, bricklaying, concreting, demolition work and most other work tasks involving heavy loads or heavy impact forces. Platforms should be at least 900 mm wide | 675 2 | | 2 | |

6.5 Storage and inspection of materials

- 6.5.1 Scaffold materials and components should be stored to protect them from mechanical and environmental damage e.g., rain, heat or chemical exposure (like cement and chemicals).
- 6.5.2 Scaffold materials and components shall be inspected before use. They should also be inspected before being returned to storage. Damaged scaffold material shall be segregated, discarded & disposed of. Scaffold material found in good & reusable condition shall only be allowed to be stored.
- 6.5.3 Scaffold planking should be periodically visually inspected. The interval between inspections should be determined by considering planking usage, age, general condition, storage, and other environmental factors of the facility and location.

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| four standare reaseaffotung 's literature | Revision No. | 01 |
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| 6 5 5 Scaffolding material such as tubular planks cl | amps atc shall be inspe | cted annually by |

6.5.5 Scaffolding material such as tubular, planks, clamps etc. shall be inspected annually by the user department to ensure they are free from defects. The visual inspection shall cover 100% scaffold materials. The inspected lot of material shall be suitably painted with the following colors which will be in rotation every 4 years.

| FY-2022 | - Green |
|---------|----------|
| FY-2023 | - Orange |
| FY-2024 | - Yellow |
| FY-2025 | - White |

Information on inspecting scaffold components and testing scaffolds planking can be found in the manufacturer's literature

6.6 Scaffolding Related Check sheets: Annexures

Scaffolds and scaffold material used at site shall be inspected as per the check sheets attached in Annexure.

| Annexure 1 | Scaffold Safety Sign Boards |
|------------|--|
| Annexure 2 | Scaffolding request |
| Annexure 3 | Scaffolding Inspection Check List |
| Annexure 4 | Certificate of Fitness of Scaffolding |
| Annexure 5 | Weekly Recertification for Fitness of Scaffolding |
| Annexure 6 | Scaffolding Audit Check List |
| Annexure 7 | Scaffold pipes, clamps, planks, toe guards check list. |





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SCAFFOLD SAFETY SIGN BOARDS :

SCAFFOLDING INCOMPLETE DO NOT USE





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| I hereby request that the scaffolding may please be erected Light duty (150 kg/m2)/ Medium Duty (200 kg/m2)/ Heavy duty (250 kg /m2) / Masonry or special duty (tick whatever applicable) fit for a load of kg/ sq. meter (KN/ sq.m). (Location & completion date/time may also be specified) | | | |
| Request Date: Unit: | - | d Erection Date : | |
| Equipment (Where scaffoldin Dimensions Required (In Meter | ng to be erected) | | |

Job over Scaffolding Completion Date (To ensure Scaffolding removal) :

Name of Requester

Sign of Requester



Annexure-3



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| | SCAFFOLDING INSPECTION ate Standard Rules & Procedure Sub-Committee | CATECK LIST | 01.01.2023 | |
|-------|---|-------------------------------|---------------|--------|
| orpor | ate Standard Rules & Procedure Sub-Committee | Standard Document No. | HZL/SRPSC/ | |
| SN | Checks Points | Revision No. | Yes/No/NA | Remarl |
| 1. | Standard for Scaffolding Are the scaffoldings erected as per the load duty requested? | Page No. | Page 17 of 24 | ~ |
| 2. | Is every work platform fitted with handrail (top rail 1050 m mm high) and a toe board 150 mm secured to the platform s | n and mid rail at 580 | | |
| 3. | Are the scaffolding plumb and level ? | | | |
| 4. | Are the Planks/gratings placed in order without undue gaps | and anchored? | | |
| 5. | Are the footing / anchorage for scaffolds sound and the bay per the maximum Intended load? | lengths maintained as | | |
| 6. | Are the poles, legs or uprights of scaffolding are securely bra / displacement? | iced to prevent swaying | | |
| 7. | Are the base plates (150 x 150 x 6 mm) provided for scaffold | ing posts? | | |
| 8. | Are the base plates are supported by sole plate of Wooden: " unpaved area? | | | |
| 9. | If the scaffolding is erected above walkways or work areas, a boards and railings screened? | | | |
| 10. | If work is done over men who are working on scaffolding, is provided? | overhead protection | | |
| 11. | Has the scaffolding area suitably barricaded during erection | / usage / dismantling? | | |
| 12. | Are free standing scaffolding towers protected from tipping means? | by guying or other | | |
| 13. | Is there a safe and convenient means of access? If a ladder is 1050mm above the platform? | s used, is it rising at least | | |
| 14. | Are relevant status boards (tags) attached to the scaffolding erection as applicable? | completed / under | | |
| 15. | Is safe access to equipment or emergency egress restricted b | | | |
| 16. | Are scaffolding anchored every 10m of length and 8m of height | ght? ,if applicable | | |
| 17. | Are landing platforms provided for access ladders more than | n 6 meters height? | | |
| 18. | If two pipes are connected, are they overlapped at least 600 clamps are used? | mm and at least two | | |

Remark: I have Checked and suggest necessary correction in Scaffolding. After Necessary Correction Scaffolding

checked and found ok as per Annexure -03

Certified Scaffolding Inspector

Sign of Scaffolding Inspector Date

(Check list be signed by the person verifying its status)

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Annexure 4

CERTIFICATE OF FITNESS OF SCAFFOLDING

Name of Scaffolding Inspector

Sign. of Scaffolding Inspector

Name of Scaffolding Supervisor

Sign. of Scaffolding Supervisor

User Department:

Scaffolding Contractor: M/S Maintenance Contractor: M/S

Date:



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Annexure 5

WEEKLY RECERTIFICATION FOR FITNESS OF SCAFFOLDING

(APPLICABLE TO LONG DURATION WORK OR ELSE MAY BE SPECIFIED)

| Certification for | Date | Scaffolding is inspected as Annexure -03 | Scaffolding is safe for use | Name and sign of scaffolding | Name and sign of maintenance |
|-----------------------|------|---|-----------------------------------|------------------------------------|------------------------------------|
| 2 nd week | | | (Yes/No) | Inspector | engineer |
| 3 rd week | | | | | |
| 4 th week | | | | | |
| 5 th week | | | | | |
| 6 th week | | | | | |
| 7 th week | | | | | |
| 8 th week | | | | | |
| 9 th week | | | | | |
| 10 th week | | | | | |
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Annexure 6

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Scaffolding Audit check list

Scaffolding Audit should be done as per <u>HZL Audit Standard</u> (Available with Audit Standard Champion /Webportal) & Audit report to be submitted by audit team to respective SBU/UIC and UIC team should take actions on all observations.

Annexure 7 Scaffold Pipe, Ladder, Plank/ Jali, Clamps, Base Plate Check list

| Material | Checklist | Observation |
|--------------|---|-------------|
| Pipes | - Rust Free Pipes | |
| | - No Bends, Cuts, Holes, sharp edge | |
| | - Pipe thickness minimum 3.2 mm | |
| | - Painted or galvanized pipes | |
| Ladder | - Rail Damaged (cracks, deformation etc.) | |
| | - Rust free & Properly Painted Ladder. | |
| | - No Cut, Hole or any Physical damage. | |
| | - Equal spacing between rungs (max 30 cm). | |
| | - Ladder width greater than = 30 cm. | |
| | - No Bent, Broken, loose Rungs, No Sharp Edge | |
| | - No Oil, Grease and other slippery items | |
| | - Bottom non-skid pad damaged/missing | |
| | - Top and bottom rung tie rod provided | |
| Plank/Jali | - Gap between two plank Max should be 25 mm | |
| | - Plank all 4 hooks not damaged. | |
| | - No Cut or any other Physical damage. | |
| | - Not depressed beyond 15 mm. | |
| | - Rust free and properly painted. | |
| | - Flat Thickness 3mm internal and 5mm outer | |
| Clamps | - Rust free and properly painted. | |
| | - No cut/cracks or physical damage. | |
| | - No lubrication, No Eyebolts bent. | |
| | - Thread condition/Nut condition. | |
| | - No welding / local repair | |
| Base Plate & | - Rust free and properly painted. | |
| Sole Plate | - No bend, No Cut, Hole or physical damage. | |
| | - Flat Bottom portion. | |
| | - Any other(Specify) | |

Inspected by: Name & Sign:

Date:

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Annexure 8

Dos for scaffold users:

- ▶ Use only certified scaffolding, tagged with −Scaffolding Complete, Ready for Use
- > Maintain three-point-contact while climbing up or down the ladder.
- > Use rope or container or other suitable means for carrying material from or to ground.
- > Maintain good housekeeping, especially at elevated working platform and near the access.
- > Do take special precautions while working in vicinity of mobile cranes or electrical overhead lines.
- ➢ Wear full body safety harness with double lanyard/ personal fall arrest system or other equally effective means while ascending or descending the ladder or scaffolding working platform is not fully guarded.
- > Do check for emergency approach/ evacuation, especially adequacy means of egress.
- > Use safe material handling ways while shifting the material.
- ➢ Do report −At-risk conditions e.g., missing ladder, incomplete decking, improper guarding, no landing platform, loosely clamped ladder, etc. to your supervisor.
- > Do check weekly certification of scaffold at random

Don'ts for scaffold users

- > Do not use any part of operational line or pressurized piping as a support, or tie point for scaffolds or staging. Do not permit mixing of scaffold types in any one structure (e.g., steel/aluminium couplers).
- During the possibility of a thunderstorm, no work shall be executed at a height where a person can be exposed to lightning.
- > Never keep loose tools, materials etc at height in a way it may roll off and fall from height.
- > Do not use cross-bracing or end-frame (unless specially designed) for access.
- Do not use Wooden Plank
- > Avoid overloading and impact loading
- Never alter or modify or dismantle any part of the scaffold without permission from scaffolding supervisor or concerned Maintenance /Project Engineer.
- > Do not throw tools or scaffolding materials from height.
- ➢ Do not use −Incomplete Scaffold.

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Annexure-9

SCAFFOLDING DAILY INSPECTION CHECK LIST

Daily checklist should be filled by Job supervisor, whose team is working over Scaffolding for any maintenance

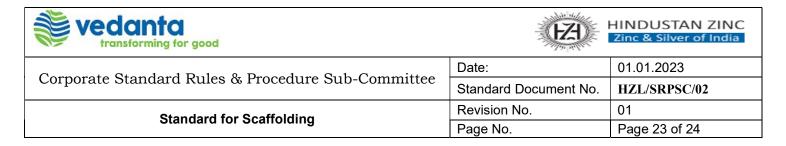
or operation job

| SN | Checks Points | Yes/ No | Remarks |
|----|---|---------|---------|
| 1 | Are the scaffoldings erected having green tag, which is certified by Scaffolding Inspector | | |
| 2 | Is Mid rail and top rail being fix | | |
| 3 | Are the Planks/gratings placed in order without undue gaps and anchored? | | |
| 4 | Is scaffolding barricading done from all sides | | |
| 5 | Is Scaffolding base plate /sole board are clearly visible | | |
| 6 | Is scaffolding re-certified again on 7th day after first green tag certification | | |
| 7 | Are the base plates (150 x 150 x 6 mm) provided for scaffolding posts? | | |
| 8 | Are the base plates are supported by sole plate of Wooden: "300x450x40) at unpaved area and not having any cracks or damaged | | |
| 9 | Is scaffolding free from any liquid or solution to avoid slip trip hazard | | |

Inspected by:

Job Supervisor Name & Sign:

Date:



7.0 Management Systems

7.1 Support Resources

Site Apex and Standard, Rules and Procedures subcommittee are available to assist with implementation of this standard.

7.2 Management Records

Records shall be retained in compliance with Integrated Management System requirements

7.3 Audit Requirements

Each site or region should audit compliance with this standard as part of its HSE audit protocol.

7.4 Standard Renewal Process

This standard shall be reviewed and revised as necessary and, at a minimum, not later than 5 years from the date of the last revision.

7.5 Deviation Process

Deviations from this standard must be authorized by the Location Head for the relevant zone after consultation with the Zone Apex and approval from the HSE Council. Deviations must be documented, and documentation must include the relevant facts supporting the deviation decision. Deviation authorization must be renewed every year.

7.6 Training and Communications Requirements

Each Zone should provide training as appropriate to comply with this standard.

7.7 Contact

The contact for this standard is the Corporate Standards Rules & Procedures (SRP) Subcommittee.

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|--|--|---------------|
| Compareto Standard Dulas & Presedure Sub Committee | Date: | 01.01.2023 |
| Corporate Standard Rules & Procedure Sub-Committee | Standard Document No. | HZL/SRPSC/02 |
| Standard for Scaffolding | Revision No. | 01 |
| Standard for Scanolding | Page No. | Page 24 of 24 |

8.0 Document Control Details

| Revision | Date | Reason for issue | Compiled by | Major Change | Approved by |
|----------|------------|----------------------------|------------------------------|---|----------------|
| 1 | 01/12/2022 | Corporate Guidance Note | Standard Champion- HZL | ✓ Removal of Term "Moving " from 6.3.1 | HZL APEX |
| | | | | ✓ Introduction of Colour coding | |
| | | | | ✓ Definition of Scaffolder | |
| | | | | ✓ Addition of Scaffolding Annexures | |
| | | | | ✓ Scaffolding Process Flow chart | |
| | | | | ✓ Scaffolding duty categorization | |
| | | | | ✓ Introduction of Daily checklist for Scaffolding being under use | |
| | | | | ✓ Change of Scaffolding duty as per Guidance Note | |
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