Scaffolds - Supported

Supported scaffolds are temporary structures consisting of one or more elevated platforms used when work cannot be safely performed from the ground or a permanent structure. These scaffolds are supported by rigid elements such as outrigger beams, poles, legs, base plates, sills, and posts. Proper selection, design, erection, and dismantling of supported scaffolds are critical to preventing accidents such as scaffold failure, falls from heights, instability, collapse, or falling objects.

Hazards Associated with Supported Scaffolds

- Structural Failure: Due to improper design, overloading, or use of substandard materials.
- Falls from Heights: Workers may fall if guardrails or fall protection systems are not in place.
- Instability: Scaffolds may become unstable if not properly braced or secured.
- Collapse: Overloading or improper erection can lead to scaffold collapse.
- Falling Objects: Tools or materials may fall from the scaffold, posing risks to workers below.

General Requirements for Supported Scaffolds

- Competent Workers: All activities related to scaffold selection, erection, and dismantling must be performed by competent workers with the necessary knowledge, training, and expertise.
- Design and Load Capacity:
  - Scaffolds must be designed to support or resist at least twice the maximum load they are likely to carry without exceeding allowable material stresses.
  - They must resist four times the maximum load without overturning.
  - If scaffold components can only be tested for capacity, they must resist three times the maximum load without failure.
- Materials: Scaffolds must be constructed of suitable structural materials. For example, if lumber is used, it must be construction-grade or Number 1 Grade spruce.
- Professional Engineering Design: Scaffolds exceeding the following dimensions must be designed by a professional engineer:
  - Supported scaffolds over 15 meters in height (or 10 meters for tube and clamp systems).
  - Suspended scaffolds with more than one platform.
  - Suspended platforms weighing more than 525 kg.
  - Multi-point suspended work platforms.

Types of Supported Scaffolds

Supported scaffolds include:

- Frame Scaffolds: Composed of standard metal frames of various widths, heights, and load capacities.
- Tube and Clamp Scaffolds: Constructed using tubes and clamps for flexibility in design.
- System Scaffolds: Prefabricated modular systems with interchangeable components.
- Mobile Scaffolds: Portable scaffolds mounted on castors or wheels with braking devices.
- Pump Jack Scaffolds: Supported by poles and adjustable brackets.
- Ladder Jack Scaffolds: Supported by ladders and used for light-duty work.
- Wood Scaffolds: Constructed using wooden planks and supports.

Structural Requirements for Scaffolds and Platforms

Stability:

- Uprights must be braced diagonally in horizontal and vertical planes to prevent lateral movement.
- Horizontal members must be adequately secured without splices between support points.
- Footings, sills, or supports must be sound, rigid, and capable of supporting at least twice the maximum load without settlement or deformation.
- Fittings and Gear: Base plates, wheels, and connecting devices must be installed according to manufacturer instructions.
- Rated Loads: The design drawings must specify the rated loads for the scaffold.

Scaffold Platform Requirements

- Load Capacity: Platforms must be designed to support at least 2.4 kilonewtons per square meter.
- Dimensions: Platforms must be at least 460 mm wide.
- Guardrails: Platforms higher than 2.4 meters must have guardrails.
- Openings: All openings must be guarded to prevent falls.
- Access: Safe means of access (e.g., ladders, stairs) must be provided if the platform cannot be moved to ground level.
- Component Security: Each platform component must be secured against slipping from its support.

Wood Platform Requirements

- Materials: Planks must be made from Number 1 Grade spruce and bear legible identification.
- Dimensions: Planks must be at least 48 mm thick and 248 mm wide.
- Securing: Planks must be cleated or secured against slipping and must extend over their supports by at least 150 mm but no more than 300 mm.

Mobile Scaffolds

- Design: Mobile scaffolds must be equipped with braking devices on each wheel.
- Stability: If the platform height exceeds three times the scaffold's lateral dimension, guy wires or outriggers must be used.
- Movement: Mobile scaffolds must not be moved with a worker on board unless the worker uses a fall arrest system and the ground is firm.

NCC T&D Project Leaders Key Responsibilities

Project Leaders must ensure:

- Competent Workers: Only trained and competent personnel are involved in scaffold erection, use, and dismantling.
- Inspections: Scaffolds are inspected before use and periodically as required.
- Documentation: Maintain records of inspections, design certifications, and load ratings.
- Training: Provide comprehensive training on scaffold safety and fall protection.
- Defect Management: Address and report any scaffold defects immediately.

Worker Responsibilities

Workers must:

- Follow Instructions: Adhere to manufacturer’s instructions and safety guidelines.
- Pre-Use Inspection: Inspect scaffolds and platforms before each use.
- Load Limits: Avoid overloading scaffolds and follow specified load capacities.
- Fall Protection: Use fall arrest systems when working at heights.
- Incident Reporting: Immediately report any scaffold-related incidents or near-misses.

Key Takeaways

- Design and Load Capacity: Scaffolds must be designed to support at least twice the maximum load.
- Materials: Use suitable structural materials, such as Number 1 Grade spruce for wood planks.
- Stability: Ensure scaffolds are properly braced and secured.
- Inspections: Conduct pre-use and periodic inspections.
- Training: Workers must be trained in scaffold safety and fall protection.
- Documentation: Maintain all inspection and design records.

For more information, refer to NCC T&D's relevant HSE procedures or consult the HSE Department for expert guidance and training resources.