

## Work at Height

**Q: Define Work at height?**

**Ans:** Any work above 1.8 meters from the surface of ground is called work at height.

### Scaffolding

**Q: What is Scaffolding?**

**Ans:** It is a temporary platform which is used to protect workers and materials from falling while they are working at height.

### Types of Scaffolding

1. **System Scaffold**
2. **Tower Scaffold**
3. **Mobile Scaffold**
4. **Fixed Scaffold**
5. **Hanging Scaffold**
6. **Suspended Scaffold**
7. **Dependent**
8. **Independent**

- **System Scaffold** – A modular scaffolding system with pre-made components for easy assembly and high stability.
- **Tower Scaffold** – A standalone, vertical scaffold structure used for working at height, often with wheels for mobility.
- **Mobile Scaffold** – A lightweight scaffold with casters or wheels, allowing easy movement across a worksite.
- **Fixed Scaffold** – A permanently secured scaffold attached to a structure, providing stable working platforms.
- **Hanging Scaffold** – A scaffold that is suspended from an overhead structure, commonly used for bridge or high-rise work.
- **Suspended Scaffold** – A platform hanging from ropes or cables, often used for window cleaning and exterior building work.
- **Dependent Scaffold** – A scaffold that relies(depend) on another structure for support, typically attached to an existing building.
- **Independent Scaffold** – A self-supporting scaffold with its own vertical standards, not attached to a building for stability.

## Components of System Scaffolding

1. Sole board
2. Base plate
3. Standard
4. Coupler
  - Swivel coupler (45 angle).
  - Right angle coupler or fixed coupler (90 angle)
5. Transverse Bracing
6. Base left or kicker left
7. Runner (ledger)
8. Bearer (Transom)
9. Longitudinal Bracing
10. Toe Board
11. Scaffold Planks
12. Ladder Camp
13. Drop Bar
14. Guard Rails
  - Top Rail
  - Mid Rail

**Q: What are the standard height requirements for top rail, mid rail, and toe board in scaffolding?**

**Ans:**

- **Top Rail:** 38 inches – 45 inches
- **Mid Rail:** 19 inches – 23 inches
- **Toe Board:** 3 ½ inches

**Q: What are Standard Rules for Ladders in Scaffolding?**

**Ans:**

- **Proper Angle:** Maintain a **4:1 ratio** (for every 4 feet of height, place the base 1 foot away from the wall).
- **Secure Placement:** Ladders must be placed on **stable, level ground** and secured to prevent movement.
- **Three-Point Contact:** Always maintain **three-point contact** (two hands and one foot or two feet and one hand).
- **Proper Access:** Ensure ladders provide **safe access** to scaffolding platforms.

- **One Person at a Time:** Avoid **multiple workers** using the same ladder unless it's a designed stairway.
- **Inspect Before Use:** Check for **damage, cracks, or defects** before climbing.
- **No Metal Ladders Near Power Lines:** Use **fiberglass or wooden ladders** near electrical hazards.
- **No Carrying Heavy Loads:** Use a tool belt or hoist system instead of carrying materials by hand.
- **Proper Storage:** Store ladders in a **dry and secure place** to prevent damage.

**Q: What is Scaffold Tag System?**

**Ans:** The **Scaffold Tag System** uses color-coded tags to show scaffold safety status, ensuring only inspected and approved scaffolds are used.

- **Green Tag** – Safe for use.
- **Yellow Tag** – Use with restrictions (e.g., full-body harness required).
- **Red Tag** – Unsafe, do not use (under construction or not inspected).

### **Hazards in Scaffolding**

- Overloading on Scaffolding
- Collapse of Scaffold
- Falling Persons
- Falling Objects
- Improper Installation
- Loose Couplers & Materials
- Weak or Improper Bracing
- Unstable or Uneven Surface
- Improper Guardrails
- Improper Access & Entry Points
- Overhead Powerline Contact (Electric Shock)
- Use of Damaged Tools & Components
- Scaffolding Erection Errors
- Uncertified Scaffolders
- Lack of Full-Body Harness Above 6m
- Poor Supervision
- Weak or Loose Fastening
- Environmental & Weather Impact

- Lack of Regular Inspections
- Instability Due to Ground Conditions

### **Precautions in Scaffolding**

- **Obtain Work Permit** before starting scaffolding activities.
- JSA and Attached document stable ground
- Do not used welded materials
- **Barricade 1.5 to 2 meters** away from scaffolding. In high-risk zones (e.g., near heavy traffic or where materials are being lifted), barricades may be extended to **4 meters or more** depending on site conditions and regulations.
- Keep scaffolding at least **3 meters (10 feet)** away from power lines carrying up to **50 kV**.
- Increase the distance for higher voltage lines (e.g., **5 meters for 132 kV lines**). Contact the **electricity authority** to **de-energize or insulate** overhead lines before starting work.
- **First Aid Kit**
- **Check Underground utilities**
- **Ensure Competent Scaffolders** for erection, modification, and dismantling.
- **Use Standard & Sound Materials** – Check all pipes, clamps, and boards for defects.
- **Avoid Loose Materials** on the platform to prevent falling hazards.
- **Install Proper Guardrails & Toe Boards** to prevent falls.
- **Provide Safe Access & Egress** – Use ladders, stair towers, or ramps.
- **Follow Scaffolding Tag System (Green, Yellow, Red)** – Ensure scaffolding is properly inspected and tagged.
- **Mandatory Safety Harness** for workers above **6 feet**.
- **Supervisor Approval** required up to **6 meters**, and above **6 meters**, both supervisor and inspector must sign off.
- **Install Safety Nets** to catch falling objects or workers.
- **Stop Work if Wind Speed Exceeds 65 km/h** to prevent instability.
- **Do Not Paint Wooden Boards** – Paint can hide cracks and defects.
- **Inspect Boards for Cracks & Bending** – Ensure thickness of **3.4 cm** and no bending.
- **Check Pipes & Clamps for Rust** – Replace damaged components immediately.
- **Maintain Strong & Rigid Construction** – Secure bracing and proper support.
- **Ensure Proper Tie & Stability** – Secure scaffolding to a stable structure.
- **Use Certified Chains & Ropes** for suspension scaffolds.
- **Never Throw Materials from Height** – Always lower materials safely.
- **Keep Vertical Poles Not More Than 6 Feet Apart** for stability.
- **Conduct Regular Inspections & Maintenance** – Replace defective parts immediately.