

# ***Scaffold Depot***

## **Scaffold Erection Procedure and Guidelines**

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## SCAFFOLDS FROM THE BOTTOM UP

### Basic Rules

1. Scaffolds must be erected or dismantled in accordance with WCB Regulations and by qualified workers only.
2. Scaffold components must be inspected prior to being assembled. Defective parts must not be used.
3. Once a scaffold has been erected, the supervisor must inspect it prior to allowing workers to use it.

### Screw Jacks, Casters

1. The purpose of screw jacks is to level the scaffold system, so that:
  - a. the frame is plumb
  - b. the work platform is level
2. Screw jacks shall be installed so that they:
  - c. do not fall out or be inadvertently screwed out from casing.
  - d. do not extend more than 2/3 of their total length.
3. Casters shall be:
  - a. equipped with locking devices and kept locked when workers work on scaffolds 10 or more feet high.
  - b. at least 5 inches in diameter
  - c. fitted with non-conductive resilient tires if scaffold is used in proximity to energized electrical equipment.
4. At least two of the wheels shall be of the caster type (swivel).

### Frames

1. Frames shall be erected in accordance with the manufacturer's recommendations and WCB regulations.

### Cross Braces

The purpose of diagonal cross braces is to support scaffolds in both planes, vertical and horizontal. Cross braces are secured to the frames uprights by locking pins.

There are two types of diagonal cross braces

- a. Vertical cross braces, and
- b. Horizontal cross braces

### Coupling Pins, J-Pins, Worm Pins & Locking Arms

The purpose of coupling pins, locking arms, J-pins and Worm-pins is to hold frame components securely in place.

- a. Coupling pins are used to anchor one standard or end frame on top of another. Coupling pins must have the same separator width.
- b. Locking arms, J-pins and worm-pins are used to lock and secure one end frame on top of another.

**Note:** All coupling devices must be securely in place. Coupling pins must have the same separation width. Do not replace pins with wire.

## SCAFFOLDS FROM THE BOTTOM UP

### Guardrail Systems:

The purpose of the guardrail system is to prevent workers from falling from scaffold work platforms.

- Guardrails must be used if the platform height is 10 feet or more.
- The guardrail system consists of:
  - a. guardrail posts, which are engineered specifically for guardrail systems;
  - b. top rails located 42 inches above the work platform;
  - c. mid rails located at midpoint between the work platform and top rail;
  - d. toe-boards

### Toe-boards:

The purpose of the toe-boards is to prevent tools or materials from falling off the work platform.

- Toe-boards must be installed on all open sides of the scaffold when loose material or tools can fall from the platform.
- Toe-boards should be at least 4 inches in height above the platform.
- There should be no more than a 1/2 inch gap between the toe-board and the work platform.

### Work Platforms (Decks and Plank Type):

The work platform provides a worker with a surface from which to work. The work platform must comply with the following minimum requirements:

- must consist of lumber or manufactured planks placed side by side to provide a work surface with a minimum nominal width of 50cm (20 inches).
- as far as possible completely cover the area between front and rear vertical supports of the rear guardrail, and in no case leave more than one opening in a work platform greater than 10 inches.

### There are two types of work platforms:

#### a. Wooden Planks

Planks must:

- extend no less than 6 inches but no more than 12 inches beyond the supporting member,
- be free of knots, cracks or deformity,
- be the same thickness,
- be inspected and tested on site before every use,
- have cleats on both ends to prevent slipping,
- not be painted, as paint conceals defects,
- stored in a safe manner, on a firm level surface.

#### b. Manufactured Decks

- Decks are usually made of aluminum frames with plywood decking,
- aluminum frame comes c/w support hooks and securing devices which prevent the deck from falling from scaffold frame,
- will help keep scaffold square

The load capacity of manufactured decks is rated by the manufacturer and should be on the frame.

**Note:** *Manufactured decks can be used in lieu of horizontal diagonal cross braces.*

## SETTING UP & DISMANTLING SCAFFOLDS

### Pre-set inspection

#### a. Location

Check the location where the scaffolds will be erected, for:

- ground floor conditions
- overhead hazards (eg. wires, beams, ducts, etc.)
- obstructions (eg. pipes, materials, etc.)
- traffic (ie. people, vehicles)
- access by authorized people

#### b. Scaffolds

Ensure that:

- scaffolds and all components are in good condition (ie. not bent)
- components are not mix-matched
- all required parts on site
- decks or planks are in sufficient number and good condition

#### c. Fall Protection Equipment

- fall protection equipment for every worker to work from the scaffolds is available. (eg. harness, lanyards, lifelines, line grabs etc.)
- every worker required to wear fall protection equipment is trained

#### d. Qualified Workers

Staff to set up, dismantle, and work from the scaffolds are properly trained:

- at least one qualified, experienced worker and an assistant are required to erect and dismantle scaffolds;
- at least one worker is required to work on the platform and one on the ground to attend to equipment and material needs: Fall protection equipment; 1 per worker working on the scaffolds (harness, lanyard, scaffold choker or snap-lifeline).

### Components Required

#### a. Base level:

- **Screw jacks**, one per leg
- **Base plates** to fit all screw jacks (stationary Scaffolds)
- **Casters** to fit all screw jacks (rolling scaffolds). Wheels to be equipped with locking devices.
- **Frames**, as required
- **Sway** (horizontal) diagonal cross-braces (one per every third level).
- **Vertical diagonal cross-braces** (two level, for every length)
- **Coupling pins** (two per frame)
- **Locking pins** (to lock all levels)
- **Guardrails** for every level where work is to be performed over 10'
- **Platform(s)** for every level where work is being performed
- **Rope** lift to lower materials or equipment
- **Bucket(s)** to lift or lower tools, materials

#### b. Subsequent levels

- frames, coupling pins, vertical cross braces, locking pins, etc., as required
- guardrail system for the last work deck
- the maximum height of a free standing scaffolds is three times the width of the smallest dimension of the base
- scaffolds height can be increased by using outriggers.

**Note:** *Outriggers must be equipped with the same type of screw jacks, plates or casters as the frame.*

## STEP BY STEP SCAFFOLD ASSEMBLY

**Note:** Every component must be inspected prior to installation, by an experienced employee.

### a. Starting Level

- install screw-jacks in every frame leg
- install caster or wheels, as required, in the screw-jacks
- install the horizontal (sway) diagonal cross braces on one frame first and then on the other one(s)
- install the vertical diagonal cross braces on both sides of the scaffolds

**i** Do not force braces into place as you may damage the brace eyes, the pin or both, and you may bend the braces.

- check for squareness, alignment, and level
- place coupling-pins in each standard (upper frame end). Ensure that the thickness of the frame separator is identical on each coupling-pin.

**i** Place deck immediately. You will need it to install the next level (frames & braces) or guardrail system. It will also make it easier to move deck to the next level.

- place the work platform

**i** Wooden planks must be tested prior to installing them.

### b. Second and Subsequent Levels

- a frame is placed on top of a base frame by placing the frame legs onto the already installed coupling pins

**Note:** One worker can work from the ground and the other on the deck.

- once a second frame is placed for the upper level, the vertical, diagonal cross braces are installed
- once the vertical braces are in place, the locking pins are put in place to secure the upper frame to the lower frame
- the deck can now be transferred to the upper level
- once the desired height is reached, the guardrail system is installed in place, complete with the toe-boards.

**i** If two workers must work at two different levels on the same scaffold, both levels must be equipped with guard rails.

- fall protection equipment must be used when guardrails are not in place.
- prior to climbing on a scaffold, the wheels must be locked to prevent movement.

**Note:** Dismantle scaffolds using the exact reverse process to setting it up.

## SAFE PRACTICES

### DO

- inspect every component piece. Tag defective parts and replace them immediately.
- ensure that components are uniform. This means, components are of the same type and from the same manufacturer
- inspect scaffolds frequently and after every break, particularly locking devices
- ensure that each wheel is locked (has brakes on) before climbing the scaffold
- use a ladder to climb the scaffold. Keep a 3 point contact while climbing
- complete the work platform before working on the next level
- use a rope to hoist tools, materials or equipment onto the work platform
- keep the work platform clean and free of obstacles and slipping or tripping hazards at all times
- remove or firmly secure materials and equipment before moving scaffolds
- when dismantling, remove jammed or rusted components carefully. Tugging or pulling of stuck parts may tip the scaffold over or damage the components
- when moving a scaffold always push toward the bottom
- wear fall protection equipment when there is improper guardrails.

### DON'T

- do not mix-match components, as it may affect the structural integrity of the scaffold
- do not use defective parts, even if slightly damaged
- do not leave scaffolds unattended, particularly around schools/ parks
- do not wire in place of locking devices
- do not over extend screw jacks
- never climb or stand on cross braces or guardrails, as you may fall over or bend them
- never use makeshift (bricks, boxes, scrap lumber, etc.) or ladders on a work platform. If you need to reach a higher elevation install another scaffold level
- never exceed 3 times the smallest base of a scaffold
- never reset or hang materials or equipment from the guardrails
- never ride on a scaffold. Get down, help relocating to the desired location and climb up again
- when cleaning the work platform, never throw leftover material or scraps to the ground. Use a bucket and hoist down
- never jump onto decks or planks

<b>SCAFFOLD INSPECTION CHECK LIST</b>	
<b>1.</b>	Inspect the scaffold on which you are to work to make certain they are safe and that they remain safe.
<b>2.</b>	Any damage to scaffolds, false work or other supporting structures must be reported promptly to the foreman.
<b>3.</b>	Scaffolds planks are to be carefully selected, and made secure to prevent slipping by using cleats, and wiring in open windy conditions. Planks must extend no less than 6" and no more than 12" beyond the center of the support.
<b>4.</b>	As far as safety is concerned there is no such thing as a "temporary scaffold". Build all scaffolds with the safety in mind, as the "temporary scaffold" many times is used for longer than originally anticipated.
<b>5.</b>	Never overload a scaffold. All scaffolds should be designed and built to take the maximum material load that may be placed on them as well as the weight of the workmen.
<b>6.</b>	Safe access and egress to all scaffolds must be accomplished via properly secured ladders or stairway systems.
<b>7.</b>	Guardrail, intermediate rail and toe boards must be installed on all scaffolds and/ or working platforms over 10ft high as per O.H.&S regulations 13.21 (1)
<b>8,</b>	All scaffolds must be adequately supported in both directions by a system of diagonal cross braces.
<b>9.</b>	Scaffold towers must be secured at vertical intervals not more than 15 feet and horizontally at not more than 21 feet.
<b>10.</b>	Scaffold platforms must be a minimum 19" wide, but where more than 8" from the ground or floor the platform must be full width of the scaffold.
<b>11.</b>	All components of a rolling scaffold must be properly secured or locked together.
<b>12.</b>	All scaffold wheels must have proper braking devices locked when scaffold is not being moved.
<b>13.</b>	No rolling tower scaffold shall be higher than three times its least lateral dimension including outrigger when used.
<b>14.</b>	Rolling towers are not to be moved with workers on top
<b>15.</b>	Use adjusting screwjacks instead of blocking to adjust to uneven grade conditions.
<b>16.</b>	Plumb and level all scaffolds as the erection proceeds. Do not force braces to fit.
<b>17.</b>	Do not climb braces.

<b>SCAFFOLD INSPECTION CHECK LIST</b>		<b>Yes</b>	<b>No</b>
<b>1.</b>	Scaffold erection coordinated by a competent worker.		
<b>2.</b>	Scaffold is square, straight, and plumb in all directions.		
<b>3.</b>	All scaffold components present, tight and secure		
<b>4.</b>	No tubes or members over extended and hazardous		
<b>5.</b>	Base plates and screws firmly supported on all legs		
<b>6.</b>	Screw jack base plates not extended more than 16"		
<b>7.</b>	Tower tied to rigid support horizontally every 20' and vertically every 15'		
<b>8.</b>	Free standing tower scaffold steadied with guy wire every 30' in height		
<b>9.</b>	Platform planking pleated on underside at each end with wood or angle iron		
<b>10.</b>	Platform planking tied down securely		
<b>11.</b>	Platform planking maximum span 7' for heavy duty and 10' for light duty		
<b>12.</b>	Vertical ladder securely fastened in place		
<b>13.</b>	Safety cage needed around vertical ladder if it is more than 30' in height		
<b>14.</b>	Perimeter handrail 36" to 44" high with a mid rail all around work platforms.		
<b>15.</b>	Separate roped off or hand line in place at all platforms to raise and lower tools or materials.		
<b>16.</b>	Warning devices/ signs provided if erected over walkways or roadways (flashing lights, reflective tape streamers, or area is roped off)		
<b>17.</b>	Minimum clearance from overhead power lines maintained as per occupational health and safety regulations.		
<b>18.</b>	Rolling scaffold wheel brakes locked and outriggers extended to maintain maximum height of 3 times the smallest base dimensions.		
<b>19.</b>	Separate ladders being used for scaffold access.		
<b>20.</b>	Scaffold constructed and maintained according to certified engineering drawings.		