Scaffold Safety

The construction world , today , cannot be imagined without scaffolding. Scaffolding has a variety of applications. It is used in construction, alteration, routine maintenance and renovation. Scaffolding offers a safer and more comfortable work arrangement compared to leaning over edges, stretching overhead and working from ladders. Suitable and sufficient scaffolding must be supplied for work at elevations that cannot be accomplished safely by other means.

Scaffolding is a temporary structure used to support people and material in the construction or repair of buildings and other large structures. It is usually a modular system of metal pipes or tubes, although it can be from other materials.

Properly erected and maintained, scaffolding provides workers safe access to work locations, level and stable working platforms, and temporary storage for tools and materials for performing immediate tasks. Accidents involving scaffolding mainly involve people falling, incorrect operating procedures, environmental conditions and falling materials caused by equipment failure. The causes of scaffolding accidents include failures at attachment points, parts failure, inadequate fall protection, improper construction or work rules, and changing environmental conditions (high winds, temperature extremes or the presence of toxic gases). Additionally, overloading of scaffolding is a frequent cause of major scaffold failure.

Individuals exposed to scaffolding hazards include scaffold erectors and dismantlers, personnel working on scaffolds, and employees and the general public near scaffolding. Scaffold erectors and dismantlers are at particular risk, since they work on scaffolds before ladders, guardrails, platforms and planks are completely installed.

Safe Scaffold Erection and Use

Safe scaffold erection and use should begin by developing policy and work rules. Policy and work rules should concentrate on:

- sound design
- selecting the right scaffold for the job
- assigning personnel
- training
- fall protection
- guidelines for proper erection
- guidelines for use
- guidelines for alteration and dismantling
- inspections
- maintenance and storage

Bamboo scaffold

Sound Design

The scaffold should be capable of supporting its own weight and at least four times the maximum intended load to be applied or transmitted to the scaffold and components. Suspension ropes should be capable of supporting six times the maximum intended load. Guardrails should be able to withstand at least 200 pounds of force on the top rail and 100 pounds on the mid rail. On complex systems, the services of an engineer may be needed to determine the loads at particular points.

Selecting the Right Scaffold for the Job

Obtain the owner’s manual prepared by the scaffolding manufacturer, which states equipment limitations, special warnings, intended use and maintenance requirements. Otherwise, begin by reviewing the written requirements (blueprints, work orders, etc.) to determine where scaffolds should be used and the type of scaffolding needed. Make sure that the scaffolds meet all legal and voluntary requirements.

Scaffolds are generally rated light, medium and heavy duty. Light duty scaffolds can support a limited number of employees and hand tools. Medium duty scaffolds must be capable of safely holding workers, hand tools and the weight of construction materials being installed. Heavy duty scaffolds are needed when the scaffold must sustain workers, tools and the weight of stored materials.

Other factors of considerations for scaffold

- experience of erection and working personnel
- length and kind of work tasks to be performed
- weight of loads to be supported
- hazards to people working on and near the scaffolding
- needed fall protection
- material hoists
- rescue equipment (particularly for suspended scaffolds)
- weather and environmental conditions
- availability of scaffolding, components, etc.

Assigning Personnel

Assign a competent person to oversee the scaffold selection, erection, use, movement, alteration, dismantling, maintenance and inspection. Only assign trained and experienced personnel to work on scaffolding. Be certain they are knowledgeable about the type of scaffolding to be used and about the proper selection, care and use of fall protection equipment (perimeter protection, fall protection/work positioning belts and full harnesses, lanyards, lifelines, rope grabs, shock absorbers, etc.).

Training

Employees should receive instruction on the particular types of scaffolds that they are to use. Training should focus on proper erection, handling, use, inspection, removal and care of the scaffolds. Training must also include the installation of fall protection, particularly guardrails, and the proper selection, use and care of fall arrest equipment.

The competent person(s) should receive additional training regarding the selection of scaffolds, recognition of site conditions, scaffold hazard recognition, protection of exposed personnel and the public, repair and replacement options, and requirements of standards.

Site management personnel should also be familiar with correct scaffolding procedures so they can better determine needs and identify deficiencies.

Fall Protection

Guardrails must be installed on all scaffold platforms in accordance with required standards and at least consist of top rails, mid rails and toe boards. The top edge height of top rails shall be installed between 38 inches and 45 inches above the platform surface. When it is necessary to remove guardrails (for example, to off-load materials), supervision must ensure that they are replaced quickly. Hard hats should be worn to protect against falling objects. Mesh, screens, intermediate vertical members or solid panels should be used to safeguard employees and the public at lower levels. Ground-level safety can be further provided by erecting canopies; by prohibiting entry into the fall hazard area by policy, barricades and signs; and by the proper placement of materials, tools and equipment on scaffolding. Workers on suspended scaffolds must use a fall arrest system as protection against the failure of the scaffold or its components. This system will usually consist of a full body harness, lanyard (with shock absorber), rope grab, independent vertical lifeline and an independent lifeline anchorage.

Some basic scaffold compor


Scaffold Tube/ Pipe


Single coupler


Swivel Coupler


Sleeve copular


Joint pin


Board Retaining Clamp


Base plate


Caster wheel


Right angle copular


Scaffold clamp


Base jack


u jack


Scaffolding Board/ plank

The **full body** harness is a belt system designed to distribute the impact energy of a fall over the shoulders, thighs and buttocks. A properly designed harness will permit prolonged worker suspension after a fall without restricting blood flow, which may cause internal injuries. Rescue is also aided because of the upright positioning of the worker. A lanyard (fitted with shock absorber)connects the safety harness to the rope grab on the lifeline. Materials should be made of 5/8-inch nylon rope or nylon webbing or as per permitted safety standards. Lanyards shall be kept as short as possible to limit fall distance or rigged such that an employee can never free fall more than 6 feet. It is advised that all personnel engaged in work at height should have special work at height as well as suspension trauma training.

Rope grabs contain a cam device that locks onto a lifeline when there is a hard tug or pull on the lanyard. Care must be taken to ensure that rope grabs are properly connected to lifelines so the cam will work correctly. Rope grabs should be placed at the highest point on the lifeline to reduce the fall distance and unintentional disengagement.

Independent vertical lifelines (not scaffold suspension lines) of fiber rope should be used for each person working on the suspended scaffold. In the presence of flame or heat, wire rope lifelines should be used with lanyards containing shock absorbers. Vertical lifelines should extend from the anchorage point to the ground or a safe landing place above the ground. It is important to remember that fall protection is only as good as its anchorage. The anchorage points are independent points on structures where lifelines are securely attached. These points must be able to support at least 5,000 pounds per employee and preferably 5,400 pounds for a fall of up to 6 feet or 3,000 pounds for a fall of 2 feet or less.

General Guidelines for Proper Erection

Accidents and injuries can be reduced when the guidelines of safe erection, maintenance and inspection are followed.

Supervise the erection of scaffolding- This must be done by a person competent by skill, experience and training to ensure safe installation according to the manufacturer ' s specifications and other requirements.

Near Electrical Source- Know the voltage of energized power lines. Ensure increased awareness of location of energized power lines; maintain safe clearance between scaffolds and power lines (i.e., minimum distance of 3 feet for insulated lines less than 300 volts; 10 feet for insulated lines 300 volts or more).

Be sure that fall protection equipment is available before beginning erection and use it as needed. Have scaffolding material delivered as close to the erection site as possible to minimize the need for manual handling. Arrange components in the order of erection. Ensure the availability of material hoisting and rigging equipment to lift components to the erection point and eliminate the need to climb with components. Examine all scaffold components prior to erection.

Return and tag "Do Not Use" or destroy defective components, if they do not meet requirements

Prohibit or restrict the intermixing of manufactured scaffold components, unless: (1) the components fit together properly, without force, (2) the use of dissimilar metals will not reduce strength, and (3) the design load capacities are maintained.

All scaffold decks should be planked as fully as possible (beginning at the work surface face) with gaps between planks no more than 1 inch wide (to account for plank warp and wane). The remaining space on bearer member (between the last plank and guardrail) cannot exceed 91/2 inches (the space required to install an additional plank). Guardrail systems are not required on the building side when the platform is less than 16 inches from the building, except for suspended scaffolds where the maximum distance is 12 inches. In addition, scaffold setbacks will depend upon the needs of the trade. As an example, masons require the scaffold platform to be as close to the wall as possible (within 6 inches), while lathers and plasterers using spraying apparatus must stand back (and prefer a setback distance of at least 18 inches). Platform units must not extend less than 6 inches over their supports unless they are cleated or contain hooks or other restraining devices.

Basic Scaffolding

The basic lightweight tube scaffolding that became the standard and revolutionized scaffolding, becoming the baseline for decades, was invented and marketed in the mid-1950s. With one basic 24 pound unit a scaffold of various sizes and heights could be assembled easily by a couple of laborers without the nuts or bolts previously needed

Couplers are the fittings which hold the tubes together. The most common are called scaffold couplers, and there are three basic types: *right-angle couplers*, *putlog couplers* and *swivel couplers*. To join tubes end-to-end *joint pins* (also called spigots) or *sleeve couplers* are used. Only right angle couplers and swivel couplers can be used to fix tube in a 'load-bearing connection'. Single couplers are not load-bearing couplers and have no design capacity.

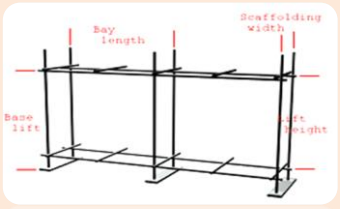
Other common scaffolding components include base plates, ladders, ropes, anchor ties, reveal ties, gin wheels, sheeting, etc. Most companies will adopt a specific colour to paint the scaffolding, for quick visual identification. All components that are made from metal can be painted but items that are wooden should never be painted as this could hide defects. Despite the metric measurements given, many scaffolders measure tubes and boards in imperial units, with tubes from 21 feet down and boards from 13 ft down. Bamboo scaffolding is widely used in Hong Kong and some Asian countries, with nylon straps tied into knots as couplers.

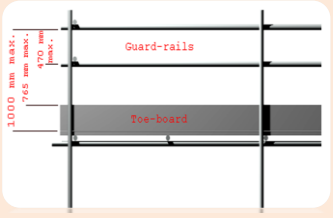
Basic scaffolding

The key elements of a scaffold are *standards*, *ledgers* and *transoms*. The standards, also called uprights, are the vertical tubes that transfer the entire mass of the structure to the ground where they rest on a square *base plate* to spread the load. The base plate has a shank in its centre to hold the tube and is sometimes pinned to a *sole board*. Ledgers are horizontal tubes which connect between the standards. Transoms rest upon the ledgers at right angles. *Main transoms* are placed next to the standards, they hold the standards in place and provide support for boards; *intermediate transoms* are those placed between the main transoms to provide extra support for boards.

As well as the tubes at right angles there are *cross braces* to increase rigidity, these are placed diagonally from ledger to ledger, next to the standards to which they are fitted. If the braces are fitted to the ledgers they are called ledger braces. To limit sway a *facade brace* is fitted to the face of the scaffold every 30 metres or so at an angle of 35°-55° running right from the base to the top of the scaffold and fixed at every level.

Of the couplers previously mentioned, right-angle couplers join ledgers or transoms to standards, putlog or single couplers join board bearing transoms to ledgers - Non-board bearing transoms should be fixed using a right-angle coupler. Swivel couplers are to connect tubes at any other angle. The actual joints are staggered to avoid occurring at the same level in neighbouring standards.





When platform units are abutted together or overlapped to make a long platform, each end should rest on a separate support or equivalent support. Wood preservatives, fire retardant finishes and slip-resistant finishes can be applied to platform units; however, no coating should obscure the top and bottom of wooden surfaces. If fire retardants are used, an engineer should ensure that the plank(s) will carry the required load since fire retardants can reduce the plank load capacity.

Provide suitable access to and between scaffolds Access can be provided by portable ladders; hook-on ladders; attachable ladders; stairway-type ladders; integral prefabricated scaffold rungs; direct passage from another scaffold, structure or personnel hoist; ramps; runways; or similar adequate means.

Cross braces and scaffold frames shall not be used for access scaffold platforms unless they are equipped with a built-in ladder specifically designed for such purpose. All ladders in use must meet legal specifications, designed according to standards and secured against displacement. The bottom steps of ladders must not be more than 2 feet from the supporting level. Rest platforms are recommended for at least every 30-36 feet of elevation. When direct access is used, spacing between scaffold and another surface should be no more than 14 inches horizontally and 2 feet vertically.

Guidelines for Use

- Be certain that scaffolds and components are not loaded beyond their rated and maximum capacities.
- Prohibit the movement of scaffolds when employees are on them.
- Maintain a safe distance from energized power lines.
- Prohibit work on scaffolds until snow, ice and other materials that could cause slipping and falls are removed.
- Protect suspension ropes from contact with sources of heat (welding, cutting, etc.) and from acids and other corrosive substances.
- Prohibit scaffold use during storms and high winds.
- Remove debris and unnecessary materials from scaffold platforms.
- Prohibit the use of ladders and other devices to increase working heights on platforms.

Guidelines for Alteration and Dismantling

- Require that scaffolds be altered, moved and dismantled under the supervision of a competent person.
- Alteration and dismantling activities should be planned and performed with the same care as with erection.
- Tag any incomplete scaffold or damaged component out of service.

The spacing of the basic elements in the scaffold are fairly standard. For a general purpose scaffold the maximum bay length is 2.1 m, for heavier work the bay size is reduced to 2 or even 1.8 m while for inspection a bay width of up to 2.7 m is allowed.

Foundations

Good foundations are essential. Often scaffold frameworks will require more than simple base plates to safely carry and spread the load. Scaffolding can be used without base plates on concrete or similar hard surfaces, although base plates are always recommended. For surfaces like pavements or tarmac base plates are necessary, in many cases the ground could be compacted to meet the required ground strength. For softer or more doubtful surfaces sole boards must be used, beneath a single standard a sole board should be at least 1,000 cm^2 with no dimension less than 220 mm, the thickness must be at least 35 mm. For heavier duty scaffold much more substantial baulks set in concrete can be required. On uneven ground steps must be cut for the base plates, a minimum step size of around 450 mm is recommended. A working platform requires certain other elements to be safe. They must be close-boarded, have double guard rails and toe and stop boards. Safe and secure access must also be provided.

Scaffolding showing required protection of a working platform with maximum dimensions.

The scaffolding width is determined by the width of the boards, the minimum width allowed is 600 mm but a more typical four-board scaffold would be 870 mm wide from standard to standard. More heavy-duty scaffolding can require 5, 6 or even up to 8 boards width. Often an *inside board* is added to reduce the gap between the inner standard and the structure.

The lift height, the spacing between ledgers, is 2 m, although the base lift can be up to 2.7 m. Transom spacing is determined by the thickness of the boards supported, 38 mm boards require a transom spacing of no more than 1.2 m while a 50 mm board can stand a transom spacing of 2.6 m and 63 mm boards can have a maximum span of 3.25 m. The minimum overhang for all boards is 50 mm and the maximum overhang is no more than 4x the thickness of the board.

NOTE: *Typically, all of these standard elements should meet the legal technical requirements. And all these standards may vary, depending on manufacturer guidelines as well as depending on legal and technical requirements.*

Ties

Scaffolds are only rarely independent structures. To provide stability for a scaffolding framework ties are generally fixed to the adjacent building/fabric/steelwork.

Sometimes it is possible to use *anchor ties* (also called *bolt ties*), these are ties fitted into holes drilled in the structure. A common type is a ring bolt with an expanding wedge which is then tied to a node point. General practice is to attach a tie every 4m on alternate lifts (traditional scaffolding). Prefabricated System scaffolds require structural connections at all frames - ie.2-3m centres (tie patterns must be provided by the System manufacturer/supplier). The ties are coupled to the scaffold as close to the junction of standard and ledger (node - point) as possible. Scaffolding ties must support +/- loads (tie/butt loads) and lateral (shear) loads.

Due to the different nature of structures there is a variety of different ties to take advantage of the opportunities.

Through ties are put through structure openings such as windows. A vertical inside tube crossing the opening is attached to the scaffold by a transom and a crossing horizontal tube on the outside called a bridle tube. The gaps between the tubes and the structure surfaces are packed or wedged with timber sections to ensure a solid fit. *Box ties* are used to attach the scaffold to suitable pillars or comparable features. Two additional transoms are put across from the lift on each side of the feature and are joined on both sides with shorter tubes called tie tubes. When a complete box tie is impossible a **I-shaped** *lip tie* can be used to

Inspections

Inspect all scaffolds and components upon receipt at the erection location. Return, tag "Do Not Use" and destroy defective components. Inspect scaffolds before use and attach a tag stating the time and date of inspection.

Inspect scaffolds before each work shift and especially after changing weather conditions and prolonged interruptions of work. Check for such items as solid foundations, stable conditions, complete working and rest platforms, suitable anchorage points, required guardrails, loose connections, tie-off points, damaged components, proper access, and the use of fall protection equipment.

Maintenance and Storage

Maintain scaffolds in good repair. Only replacement components from the original manufacturer should be used. Intermixing scaffold components from different manufacturers should be avoided. Fabricated scaffolds should be repaired according to the manufacturer's specifications and guidance. Job-built scaffolds should not be repaired without the supervision of a competent person. Store all scaffolding parts in an organized manner in a dry and protected environment. Examine all parts and clean, repair or dispose of them as necessary.

Types of Scaffolds

There are many different types of scaffolds, each with unique features. Because of this distinctiveness, procedures for safe erection and use maybe unique to the particular scaffold. They can be grouped under three categories:

- self-supporting scaffolds,
- suspension scaffolds and
- special use scaffolds.

Self-Supporting Scaffolds

A self-supporting scaffold is one or more work platforms supported from below by outriggers, brackets, poles, legs, uprights, posts, frames or similar supports.

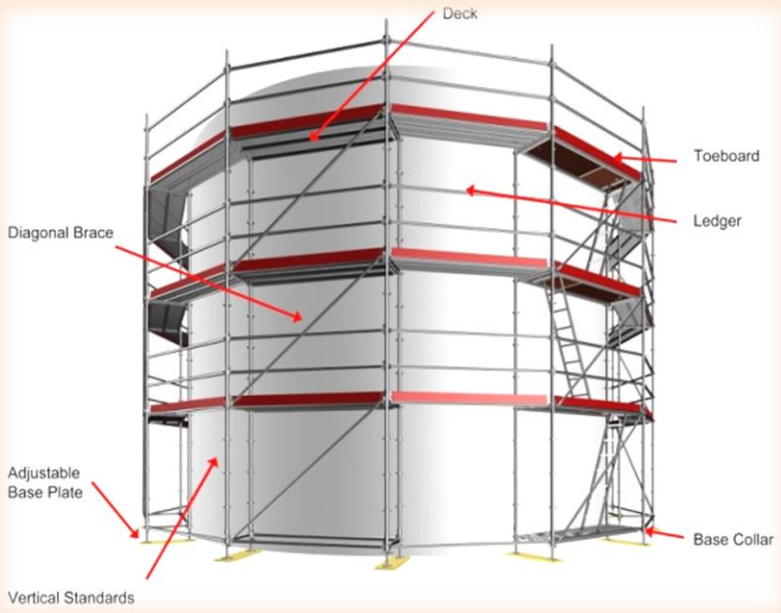
General Requirements

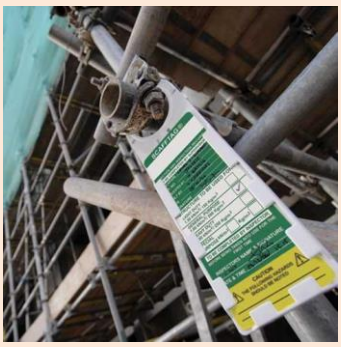
Confirm that scaffold and assembly are capable of supporting their own weight and at least four times the maximum intended load applied or transmitted to the scaffold and components. Ensure that poles, legs, posts, frames and uprights bear on base plates and mud sills or other adequately firm foundations. Footings must be level, sound and able to support the loaded scaffold without settlement or displacement. Plumb or brace poles, legs, posts, frames and uprights to prevent swaying or displacement. Any supported scaffold with a height of more than four times the minimum width of the base, also known as safety factor of 4:1, must be restrained from tipping by guying, tying, bracing or other suitable means. Restraints are needed for every 26 feet (vertically), with the top restraint as close to the top platform as possible (but not further from the top than four times the least base dimension).

hook the scaffold to the structure, to limit inward movement an additional transom, a *butt transom*, is place hard against the outside face of the structure.

The least 'invasive' tie is a *reveal tie*. These use an opening in the structure but use a tube wedged horizontally in the opening. The reveal tube is usually held in place by a reveal screw pin (an adjustable threaded bar) and protective packing at either end. A transom ties tube links the reveal tube to the scaffold. Reveal ties are not well regarded, they rely solely on friction and need regular checking so it is not recommended that more than half of all ties be reveal ties.

If it is not possible to use a safe number of ties *rakers* or outriggers can be used. These are single tubes attached to a ledger extending out from the scaffold at an angle of less than 75° and securely founded. A transom at the base then completes a triangle back to the base of the main scaffold.





Suspension Scaffolds

A suspension scaffold is one or more platforms suspended by ropes or other non-rigid means from an overhead structure(s).

General Requirements

Each **scaffold** and scaffold component **must be capable of supporting**, without failure, its own weight and **at least four times the maximum intended load** applied or transmitted to it. Each **suspension rope**, including connecting hardware, used on non-adjustable suspension scaffold **must be capable of supporting**, without failure, **at least six times the maximum intended load applied or transmitted** to that rope. The stall load of any scaffold must not exceed three times its rated load.

Criteria for suspension scaffolds- All suspension scaffold support devices must rest on surfaces capable of supporting at least four times the load imposed on them by the scaffold operating at the rated load of the hoist (or at least 1.5 times the load imposed on them by the scaffold at the stall capacity of the hoist, whichever is greater). The scaffold support devices are those such as outrigger beams, cornice hooks, parapet clamps and similar devices. Suspension scaffold outrigger beams, when used, must be made of structural metal or equivalent strength material and must be restrained to prevent movement. The inboard ends of suspension scaffold outrigger beams must be stabilized by bolts or other direct connections to the floor or roof deck, or they must have their inboard ends stabilized by counterweights. However, masons' multi-point adjustable suspension scaffold outrigger beams must not be stabilized by counterweights.

Suspension scaffold power-operated hoists and manual hoists must be tested and listed by a qualified testing laboratory. Gasoline powered equipment and hoists must not be used on suspension scaffolds. Gears and brakes of power-operated hoist used on suspension scaffolds must be enclosed. In addition to the normal operating brake, suspension scaffold power-operated hoists and manually operated hoists must have a braking device or locking pawl that engages when the hoist exceeds normal descent speed (makes either an instantaneous change in momentum or an accelerated over-speed).

Special Use Scaffolds

Scaffolds and assembly must be capable of supporting their own weight and at least four times the maximum intended load applied or transmitted to the scaffold and components.

Aerial Lifts

General requirements: Aerial lifts include the following types of vehicle-mounted aerial devices used to elevate personnel to job-sites above ground: extensible boom platforms, aerial ladders, articulating boom platforms, vertical towers and a combination of any of this equipment. Aerial equipment may be made of metal, wood, fiberglass reinforced plastic (FRP) or other material. It may be powered or manually operated. Such equipment and/or devices are deemed to be aerial lifts whether or not they are capable of rotating about a substantially vertical axis.

Aerial lifts may be "field modified" for uses other than those intended by the manufacturer provided the modification has been certified in writing by the manufacturer or by any other equivalent entity (such as a nationally recognized testing laboratory). The modification(s) to aerial lifts should be done in manner to be in conformity with all applicable provisions mentioned in manufacturers manual

Specific requirements:

Ladder trucks and tower trucks. Aerial ladders must be secured in the lower traveling position by the locking device on top of the truck cab/and the manually operated device at the base of the ladder before the truck is removed for the highway travel.

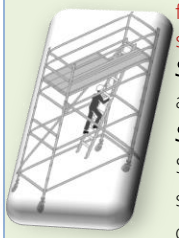
Extensible and articulating boom platforms. Lift controls must be tested each day prior to use to determine that such controls are in safe working condition. Only authorized individuals can operate an aerial lift. Belting off to an adjacent pole, structure or equipment while working from an aerial lift is not permitted. Employees are required to always stand firmly on the floor of the basket. The employee must not sit or climb on the edge of the basket or use planks, ladders or other devices for a work position. A body belt safety harness with shock absorber must be worn and a lanyard attached to the boom or basket when working from an aerial lift.

Boom and basket load limits specified by the manufacturer must not be exceeded. The brakes must be set and when outriggers are used, they must be positioned on pads or a solid surface. Wheel chocks must be installed before using an aerial lift on an incline, provided they can be safely installed. An aerial lift truck must not be moved when the boom is elevated in a working position with men in the basket, except for equipment that is specifically designed for this type of operation.

Articulating boom and extensible boom platforms, primarily designed as personnel carriers, must have both platform (upper) and lower controls. Upper controls must be in or beside the platform within easy reach of the operator. Lower controls must provide for overriding the upper controls. Controls must be plainly marked as to their function. Lower level controls must not be operated unless permission has been obtained from the employee in the lift, except in case of emergency.

TOOL BOX TALK Scaffold Safety

Definition: A **scaffold** is a temporary structure, either supported from below or suspended from above, support access or working platforms, on which workers sit or stand when performing tasks at heights above the ground.



Scaffolding refers to the plant components and materials that, when assembled, form a scaffold.

Scaffolding work means the erection, alteration and dismantling of a Scaffolds are commonly used in construction work so that workers have a safe, stable platform on which to work when work cannot be done at ground level or on a finished floor.

Scaffolds, once properly erected, are a control measure to prevent the risk of persons and objects falling when working at height.

Scaffolding has been one of the primary tools used to perform elevated work in the construction industry. Scaffolds are very useful because they allow you to gain access to work areas that are above floor level while providing a work platform. However, because of some silly mistakes , incompetent scaffold erectors and lack of proper training (erection , inspection and use), can become life threatening. Serious injury and in some cases death, have been known to result from failure to recognize known hazards and guard against them. There are a number of different scaffold types, having different rules and regulations surrounding their assembly, fall prevention requirements, and inspection procedures. Falls of both persons and objects from scaffolding are a major cause of accidents in the construction industry, and in some cases the scaffold itself falls! All are preventable.

Scaffolding has a variety of applications. It is used in construction, alteration, routine maintenance and renovation. Scaffolding offers a safer and more comfortable work arrangement compared to leaning over edges, stretching overhead and working from ladders. Suitable and sufficient scaffolding must be supplied for work at elevations that cannot be accomplished safely by other means. Properly erected and maintained, scaffolding provides workers safe access to work locations, level and stable working platforms, and temporary storage for tools and materials for performing immediate tasks.

Accidents involving scaffold mainly involve people falling, incorrect operating procedures, environmental conditions, falling materials caused by equipment failure, failures at attachment points, parts failure, inadequate fall protection, improper construction or work rules, and changing environmental conditions (high winds, temperature extremes or the presence of toxic gases). Additionally, overloading of scaffolding is a frequent cause of major scaffold failure.

Individuals exposed to scaffolding hazards include scaffold erectors and dismantlers, personnel working on scaffolds, and employees and the general public near scaffolding. Scaffold erectors and dismantlers are at particular risk, since they work on scaffolds before ladders, guardrails, platforms and planks are completely installed.

Guidelines for Use

- Be certain that scaffolds and components are not loaded beyond their rated and maximum capacities.
- Prohibit the movement of scaffolds when employees are on them.
- Maintain a safe distance from energized power lines.
- Prohibit work on scaffolds until snow, ice and other materials that could cause slipping and falls are removed.
- Protect suspension ropes from contact with sources of heat (welding, cutting, etc.) and from acids and other corrosive substances.
- Prohibit scaffold use during storms and high winds.
- Remove debris and unnecessary materials from scaffold platforms.
- Prohibit the use of ladders and other devices to increase working heights on platforms.

BASICS OF SAFE SCAFFOLDING

Safe scaffold erection and use should begin by developing rules. These rules should concentrate on:

- sound design
- selecting the right scaffold for the job
- assigning personnel
- training
- fall protection
- guidelines for proper erection
- guidelines for use
- guidelines for alteration and dismantling
- inspections
- maintenance and storage

My safety Responsibility

Who has health and safety duties relating to scaffolds and scaffolding work ?

A person conducting a business or undertaking has the primary duty to ensure, as far as reasonably practicable, that workers and other persons at the workplace are not exposed to health and safety risks arising from the business or undertaking.

Designers of plant and structures must ensure, so far as is reasonably practicable, that the plant or structure is without risks to health and safety when used for a purpose for which it was designed. Pre-fabricated scaffolding requires design registration under the plant regulations.

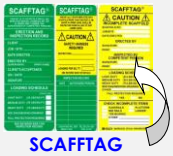
Manufacturers, importers and suppliers must ensure, so far as is reasonably practicable, that plant or structures they manufacture, import or supply are without risks to health and safety.

Installers must ensure, so far as is reasonably practicable, that the way the plant or structure is installed is without risks to the health and safety of persons who install, use, decommission or dismantle the plant or structure and others who are at or in the vicinity of the workplace.

Workers have a duty to take reasonable care for their own health and safety and that they do not adversely affect the health and safety of other persons. Workers must comply with any reasonable instruction and cooperate with any reasonable policy or procedure relating to health and safety at the workplace.

SCAFFOLD Do's & Don'ts

- Never use any scaffolds that do not meeting the following requirements, and report any deficiencies to your supervisor.
- The footing or anchorage for scaffolding shall be sound, rigid and capable of carrying at least four times the maximum intended load without settling or displacement.
- Unstable objects such as barrels, boxes, loose bricks, or concrete blocks shall not be used to support scaffolds or planks.
- Use approved levelling devices, not makeshift piers to plumb the scaffolding.
- For maximum strength always erect scaffolding plumb and level.
- Be sure to use all required bracing and accessories per engineer or manufacturer's instructions.
- Guardrails and toe boards shall be installed on all open sides and ends of scaffold platforms 10 feet or more above ground or floor level.
- Scaffolds 4 feet to 10 feet, with a platform less than 45 inches wide will have guardrails installed on all open sides and ends.
- Where persons are required to work or pass under any scaffold, a mesh screen shall be provided between the toe board and the top guardrail.
- All wood planking used for scaffold platforms shall be scaffold grade..
- Where scaffold platforms are constructed of single lengths of plank that are not secured by overlapping, planks will be secured by cleating, tying, or otherwise secured to the scaffold.
- Where planks are overlapped on scaffold platforms, they shall not overlap less than 12 inches and be secured to prevent movement.
- Planks shall overlap so that both planks are bearing on a scaffold support at the point of overlap.
- Planks shall not extend over the end supports less than 6 inches or more than 12 inches.
- The maximum permissible span for planking used for scaffold platforms is 10 feet.
- All parts and accessories designed for use with metal scaffolds shall be installed as intended prior to use of the scaffold.



- Tiered scaffolds erected adjacent to any structure shall be secured and braced to that structure at intervals not to exceed 30 feet horizontal and 26 feet vertically.
- Free-standing mobile scaffold towers shall not be higher than four times the maximum base dimension.
- Outriggers may be used to increase the base dimension and provide stability to the tower.
- Wheels and casters on mobile scaffolds shall be provided with locking devices.
- Locking devices shall be set when the scaffold is in use.
- Overhead protection shall be provided for employees on scaffolds exposed to overhead hazards.
- An access ladder or equivalent safe access shall be provided for all scaffolds.
- Use a tag line when hoisting materials from a scaffold.
- Keep scaffold platforms clean to prevent trips and slips.
- Never work on scaffolds during storms or high winds.

Reference

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