

# CHAPTER 6- SCAFFOLDS, STANDARDS & REQUIREMENTS

## Table of Contents

1.1	General Requirements.....	1
1.1.a	Training .....	1
1.1.b	General Reuirements .....	1
1.2	Suitable Materials .....	2
1.3	Light-Trade Wooden Pole Scaffolds. ....	6
1.4	Heavy-Trade Wooden Pole Scaffolds.....	8
1.5	Schedules of Timber Scaffolds up to 60 Feet in Height.....	10
1.6	Scaffolds over 60 Feet in Height.....	10
1.7	Metal Scaffolds. ....	11
1.8	Outrigger and Bracket Scaffolds.....	15
1.9	Tower Scaffolds and Rolling Scaffolds, Wood or Metal. ....	17
1.10	Horse Scaffolds. ....	19
1.11	Ladder-Jack Scaffolds. ....	21
1.12	Bricklayers' Square Scaffolds. ....	21
1.13	Window Jack Scaffolds.....	22
1.14	Pump Jack Scaffolds. ....	23

## 1.1 General Requirements.

### 1.1.a Training

Employees who perform work while on a scaffold must be trained by a qualified person. The training shall include: a) The nature of any electrical hazards, fall hazards and falling object hazards in the work area; b) The correct procedures for dealing with electrical hazards and for erecting, maintaining, and assembling the fall protection systems and falling object protection systems being used; c) The proper use of the scaffold, and the proper handling of materials on the scaffold; d) The maximum intended load and the load-carrying capacities of the scaffolds used; and e) Any other pertinent requirements of the Regulation.

Retaining occurs annually, when a new employee starts, or post-accident where inadequacies in an affected employee's work involving scaffolds indicate that the employee has not retained the requisite proficiency. following situations: a) Where changes at the worksite present a hazard about which an employee has not been previously trained; or b) Where changes in the types of scaffolds, fall protection, falling object protection, or other equipment present a hazard about which an employee has not been previously trained.

### 1.1.b General Requirements

(a) Scaffolds shall be provided for all work that cannot be done safely by employees standing on permanent or solid construction at least 20 inches wide, except where such work can be safely done from ladders.

#### EXCEPTIONS:

1. Work of a limited nature and of short duration when the permanent or solid construction is less than 20 inches in width, and the fall distance does not exceed 15 feet in height, and provided adequate risk control is recognized and maintained under competent supervision.
2. Work of a short duration from joists or similar members at 2 feet or closer centers, planks resting on these members forming a plank platform 12 inches wide or equivalent protection.

#### Inspection

Scaffolds and scaffold components shall be inspected for visible defects by a competent person before each work shift, and after any occurrence that could affect a scaffold's structural integrity. Any part of a scaffold damaged or weakened shall be immediately repaired or replaced, braced, or removed from service until repaired. Unsafe equipment or conditions must be tagged "Out of Service" by our competent person.

A scaffold tag is a label attached to scaffolding structures to indicate their safety status. These tags are prominently placed at access points, making it easy for workers to identify if a scaffold is safe to use.

These tags are color-coded for quick identification and ensure compliance with safety standards. Below are the different types of scaffold tags used in the industry, their meanings, and when they should be used.

**Green** scaffold tags indicate that a scaffold has been inspected and deemed safe for use. **Yellow** scaffold tags indicate that the scaffold is safe to use but has some limitations or potential hazards. **Red** scaffold tags indicate that the scaffold is unsafe for use.

## 1.2 Suitable Materials

Scaffolds shall be constructed of wood or other suitable materials, such as steel or aluminum members of known strength characteristics. Where materials other than wood are used, or where scaffold designs differ from those specified in this outline, the scaffold and its parts must provide a degree of strength, rigidity and safety equivalent to that provided by the described scaffold it replaces.

(a) Anchorage and bracing shall be such that scaffolds and falsework will be prevented from swaying, tipping, or collapsing.

(b) Scaffold lumber, except for planks, used on suspended or ladder-jack Scaffolds shall be the equivalent of "selected lumber," free from damage that affects its strength. (See definitions for lumber specifications.)

(c) (1) Extension planking of the finger type shall be made with at least 5 fingers on each side. These fingers shall be at least 1-inch by 2 1/8-inch selected straight-grained Douglas fir or material of equal strength. All metal fittings shall be adequate to maintain the structural qualities of the device.

(2) The length of the extended planking shall not exceed 12 feet 6 inches, and the actual mechanical overlap between the 2 halves shall be not less than 1/8 of the length of the extended planking. A substantial stop shall be provided to maintain this overlap.

(3) Not more than one employee shall be permitted at one time on any extension planking that is more than 3 feet in height.

(4) Extension planking shall not be used as a platform on ladder-jack,

suspended, or other unstable scaffolds.

(e) (1) Except as specified in other Orders, all planking shall be at least equivalent to 2-inch x 10-inch (nominal) lumber selected for scaffold grade plank as defined Lumber--"Structural Plank."

(2) The maximum permissible spans for 2 x 10-inch (nominal) or 2 x 9-inch (rough) planks shall be as shown in the following:

Working Load (psf) .....	25	50	75
Permissible Span (ft.).....	10	8	7

(3) Manufactured planks with spans more than 10 feet shall be labeled to indicate the maximum safe working load based on a safety factor of four.

(4) All planks shall be capable of safely sustaining the intended load.

(f) Except as specified in other Orders, a scaffold plank shall not overhang its support by more than 18 inches, unless access to this overhanging portion is prevented by a guardrail, or other barrier, or unless the other plank end is securely anchored.

(g) Inspection of Lumber. All scaffold lumber shall be visually inspected for defects before and during use. Defective lumber shall not be used.

(i) (1) Nailing. All nailed joints in scaffolds and wooden falsework must contain enough properly placed nails of ample size to carry the loads they are intended to support.

(2) Nailed joints or connections shall not be used to support concrete hoppers with a capacity more than 1/2 cubic yard.

(3) Double-headed nails shall not be used for attaching railings or in other service where the projections might catch on the clothing of workers or create similar hazards.

(4) No nail smaller than an 8-penny shall be used in the construction of scaffolding.

(5) All nails shall be driven full length or to the first head when double-headed nails are used.

(6) The minimum number of nails per connection shall be in accordance with the following table:

	1" x 6" Material	1" x 8" Material	2" Material
Ledgers	4-8d	5-8d	2-16d
Ribbons	3-8d	3-8d	
Braces	3-8d	3-8d	2-16d
Guardrails	2-8d	2-8d	2-16d

(7) Lubricated or wax-coated nails shall not be used in the construction of scaffolds, falsework, or other temporary installations.

(j) Prohibited Types of Scaffolds. Lean-to or jack scaffolds, shore scaffolds, nailed brackets, loose tile, loose brick, loose blocks, stilts, or other similar unstable objects shall not be used as working platforms, or for the support of such a platform.

EXCEPTION: Bricklayer's "jump boards" no higher than 20 inches above the regular scaffold platform are acceptable for such service when supported by piers of carefully piled bricks or concrete blocks.

(k) Erection and Dismantling.

(1) The erection and dismantling of scaffolds or falsework shall be performed under the supervision and direction of a qualified person.

NOTE: In addition to persons meeting the requirements of "qualified persons" or person(s) possessing a certification of competence in scaffold erection, dismantling and use issued by trade associations, State-approved apprenticeship or training programs or other similar training programs shall be considered a "qualified person(s)."

(2) Erection and dismantling of scaffolds shall be performed in accordance with good engineering practice. Where engineering design is required by these orders, the engineering drawings shall be made available at the job site during erection or upon request by the Division.

(3) All required ties to the structure shall be installed as soon as the scaffold has been completed to the tie-in area during erection.

(4) Ties shall only be removed during dismantling as the work progresses downward unless other methods are used to prevent the scaffold from falling over.

(5) No structural members shall be removed from scaffolds during dismantling operations below the level being dismantled.

(6) Where work platforms are proposed, guardrails shall be installed before other work not directly related to scaffold erection is permitted to begin.

(7) The requirements of the General Section (k) (2) through (6), inclusive, may be temporarily suspended for short durations, provided adequate risk control is recognized and maintained under immediate, competent supervision.

(l) Removal of Braces. Scaffolds or falsework installations shall not be altered by removing uprights, braces, or support unless other members providing equivalent strength is substituted.

(m) Loading. Scaffolds shall not be overloaded. Material shall not be allowed to accumulate to the extent that a scaffold is subjected to loading, it is not designed to support.

(n) Access.

(1) A safe and unobstructed means of access, such as a walkway, stair, or ladder

shall be provided to all scaffold platforms.

(2) Climbing ladders or stairways on scaffolds used for access and egress shall be affixed or built into the scaffold by proper design and engineering, and shall be so located that their use will not disturb the stability of the scaffold.

(A) If a ladder is used as a means of access to the scaffold, it shall be securely attached and shall comply with the Section on Ladders.

(B) Permanent stairways shall comply with the applicable provisions of the General Industry Safety Orders. Prefabricated scaffold steps or stairs shall comply with the design, manufacture, and installation requirements of ANSI A10.8-1988, Scaffolding-Safety Requirements, which are hereby incorporated by reference.

(C) Horizontal members of end frames may be designed and used as a climbing device provided that the steps are:

1. Parallel and level.
2. Continuous climb as required in this chapter under the Metal Scaffolds Section (a)(8), using frames of the like configuration.
3. Provided with sufficient clearance to provide a good handhold and foot space.

(o) Sloped Platforms. Platforms shall not be sloped more than 2 feet vertically to 10 feet horizontally and shall be positively secured against slipping from supports.

(p) Slippery Conditions. No worker shall be permitted to work on a scaffold platform where slippery conditions exist unless such conditions are a necessary part of the work.

(q) Overhead Protection. Workers on scaffolds who are exposed to overhead hazards shall be provided with overhead protection or other means that will effectively eliminate the hazard.

(r) Bolted Connections. Bolts used in the construction of scaffolds shall be of a size and in sufficient numbers at each connection to develop the designed strength of the scaffold.

(s) Hoisting of Materials. Where materials are line-hoisted onto a scaffold, a tag line should be used where necessary to control the load.

(t) Platform Planks at Corners. When a scaffold materially changes its direction, the platform planks shall be laid to prevent tipping. The planks that meet the corner ledger at an angle shall be laid first, extending over the diagonally placed ledger far enough to have a good safe bearing, but not far enough to involve any danger from tipping. The planking running opposite direction at an angle shall be laid to extend over and rest on the first layer of planking.

### 1.3 Light-Trade Wooden Pole Scaffolds.

(a) Pole scaffolds to be used by carpenters, lathers, shinglers, painters, plasterers, sheet metal workers, or other trades not using heavy tools or storing heavy materials on the scaffolds shall be constructed as follows:

(b) Light-Trade Exterior Scaffolds.

(1) Uprights. For heights not to exceed 20 feet, the uprights shall be 2-inch by 4-inch lumber or heavier, spaced not more than 3 feet between uprights at right angles to the wall and not more than 10 feet center to center, parallel to the wall. The inside uprights may be omitted and ledgers attached to the permanent structure, provided that the method of attaching the ledgers to the permanent structure will make the connection as secure as though the ledger were nailed to the upright with 5 8-penny nails. The splices of uprights shall be made with square butt joints, and scabs of 1-inch by 4-inch or heavier material at least 48 inches long shall be nailed on 2 sides of each upright with 6 nails in each 1/2 of each scab. If the uprights of the scaffold rest on a surface that might cause slipping, a continuous sill or other means shall be provided to hold the uprights in place. When the scaffold is resting on earth or other such material, the uprights shall rest on and be secured to the equivalent of a 2-inch by 10-inch by 10-inch wooden base.

**NOTE:** 1 1/8-inch by 10-inch by 10-inch piece of exterior grade plywood may be used in lieu of the wooden base mentioned above.

(2) Ledgers and Ribbons. The platforms of the scaffold shall be supported by ledgers. For ledgers spanning not more than 3 feet between uprights, use 2 pieces of 1-inch by 6-inch board, 1 being on each side of the uprights and fastened securely at each point of support. Single 2-inch by 4-inch ledgers are not permitted. Vertical spacing of ribbons and ledgers shall not exceed 7 feet. The ribbons shall be 1-inch by 6-inch or heavier material, placed on the outer uprights, directly under, and in contact with, the ledgers. The ribbons shall be long enough to extend from upright to upright without splices.

**EXCEPTIONS:**

1. When metal ledgers are used or when ledgers are bolted or when a 45-degree angle brace is nailed to the uprights between double ledgers, and ledgers also nailed to this brace, the ribbon may be placed at other elevations such as guardrail height, but they cannot be eliminated from the scaffold.

2. Metal ledgers and ribbons that are part of a patented scaffold system may be used when installed in accordance with the manufacturer's instructions.

(3) Ties and Braces. The scaffold shall be securely tied to the building or structure by means of a double looped No. 12 iron wire, or single looped No. 10 iron wire or 1-inch by 4-inch boards with at least 2 nails at each connection or equivalent means. Ties shall connect to the inside uprights and shall not be more than 20 feet apart horizontally and vertically. The outside line of uprights shall contain sufficient diagonal bracing of 1-inch by 6-inch material in a vertical plane across the entire face of the scaffold in both directions to prevent swaying, tipping, or collapsing. (See Appendix Plate B-18).

**EXCEPTION:** Bracing of 2-inch by 4-inch material may be used provided that the bracing extends from ledger to next higher or lower ledger or from ledger to sill in the form of an "X" in the end bays and in every third bay in between so that the "X" bracing also extends from the upper-most ledger to the sill, vertically, in each of these bays.

(4) Railing. Open sides and ends of intermediate working levels 7 1/2 feet or more above grade shall be guarded by a 2-inch by 4-inch top rail nailed to the uprights so that the top edge is between 42 inches and 45 inches above the platform. Midrails of at least 2-inch by 4-inch material are required at all work levels. The uppermost platform shall be protected by a top rail consisting of double 2-inch by 4-inch members. One member shall be fastened in a flat position on top of the uprights and the other member shall be fastened in an edge-up position to the inside of the uprights and at the side of the top member. A single 2-inch by 4-inch member having an allowable bending stress of at least 1,900 psi may be used as a top rail.

(5) Platforms.

(A) Platform planks shall be of 2-inch by 10-inch or larger material and of such length that they overlap the ledgers at each end by at least 6 inches. A plank shall not overlap an unsupported end of another plank. The working platform shall cover the entire space between scaffold uprights, except for the open area under the back railing, which shall not be more than 8 inches wide. Platforms shall be at least 20 inches wide and within 14 inches of the structure wall.

When moving platforms to the next level, the old platform shall be left undisturbed until the new ledgers have been set in place ready to receive the platform planks.

**EXCEPTION:** A single 2-inch by 10-inch plank may be used for light trades work up to a height of 4 feet.

(B) Working platforms for light-trades work may be made of 3/4-inch Douglas fir plywood instead of 2-inch plank if the platform is at least 2 feet wide, nailed in place and supported on cross members at 4-foot or closer intervals along its length.

(C) Light-Trade Interior Scaffolds.

(1) Loading. For scaffolds of the following design the imposed load on the platform area shall not apply more than 1,500 pounds to any 1 ledger or a single upright, and the total load on the whole platform area shall not average more than 15 pounds per square foot.

(2) Uprights.

(A) For heights not to exceed 20 feet the uprights shall be 2-inch by 4-inch lumber, or heavier. For heights between 20 feet and 60 feet, the uprights shall be 3-inch by 4-inch lumber, or heavier, except for the top 20 feet which may be 2-inch by 4-inch material. The horizontal distance between uprights shall not exceed 10 feet measured either parallel or at right angles to the direction of the platform planks.

(B) If uprights are spliced, the joints must conform to that described in subsection 1640(b)(1), and they shall be located near a point where ribbons are attached or where equivalent lateral support is provided. Pairs of horizontal

ribbons at right angles to one another are required at vertical intervals of 7 feet, or less.

(3) Ledgers and Ribbons. The platform of the scaffold shall be supported by ledgers made of one piece of 2-inch by 10-inch or heavier material, placed with the edge upward. The ribbons shall be 1-inch by 6-inch or heavier material, placed on all uprights directly under and in contact with the ledgers. Additional horizontal ribbons, in pairs at right angles to one another, shall be provided at lower levels to provide lateral support for all uprights at vertical intervals not greater than 7 feet.

(4) Diagonal Braces. Each line of uprights shall contain sufficient diagonal bracing of 1-inch by 6-inch material in vertical planes, lengthwise and crosswise, to prevent swaying, tipping, or collapsing. If the scaffold extends to and bears against the walls of the building, the horizontal ribbons and ledgers may provide adequate support without diagonal braces, but provision must always be made for adequate lateral stability.

(5) Platforms.

(A) The platform shall consist of 2-inch by 10-inch or larger planks laid closely together. There shall be no other openings in the platform except those necessary for the passage of employees and material. Unless nailed in place, planks shall be of such length that they overlap the ledgers at each end by at least 6 inches. A plank shall not overlap an unsupported end of another plank.

(B) Working platforms shall cover the entire space between scaffold uprights, except for the open area under the back railing which shall not be more than 8 inches.

(C) Platforms shall extend within 14 inches of the finished face of the building.

(D) Douglas fir plywood that is 3/4 inch thick, or thicker, may be used for platforms if the panels are 4 feet wide, or wider, and are supported on ledgers or crossmembers at 4-foot or closer intervals.

(6) Railings. Open sides of working levels 7 1/2 feet or more above grade shall be provided with top rails and midrails as specified in Light Trade Wooden Pole Scaffolds Subsection (b)(4).

When scaffold platforms are erected in sections it is necessary for workers to travel between these sections, such sections shall be provided with connecting runways equipped with railings as described in the Standard Railing Section.

#### 1.4 Heavy-Trade Wooden Pole Scaffolds.

(a) Pole scaffolds to be used by bricklayers, stonemasons, concrete workers, or other trades using heavy tools or storing heavy material on the scaffold shall be constructed as follows:

(b) When buggies are used on scaffolds to transport concrete, a strong scaffold shall be designed that can support a concentrated load equal to the weight of a loaded buggy at any point on girders, beams, or planking.

(c) Uprights. For heights not to exceed 20 feet, the uprights shall be of 4-inch by 4-inch lumber or heavier material, with a space of 4 feet between uprights at right angle to the wall and not more than 7 feet, center to center, parallel to the wall. The splices of 4-inch by 4-inch uprights shall be made with square butt joints, and scabs of 2-inch by 4-inch material at least 48 inches long shall be nailed in place on 2 sides with 6 nails in each 1/2 of each scab. Uprights laminated from 2-inch by 4-inch material are acceptable if the joints of each lamination are staggered, and either reinforced by scabs or so arranged that they occur at or near ribbon attachment points. If the uprights rest on a surface that might cause slipping, a continuous sill or other means shall be provided to hold the uprights in place. When the scaffold is resting on earth or other such material, the uprights shall rest on and be secured to the equivalent of a 2-inch by 10-inch wooden base.

**Note:** A 1 1/8-inch by 10-inch by 10-inch piece of exterior grade plywood may be used in lieu of the wooden base mentioned above.

(d) Ledgers and Ribbons.

(1) The platform shall be supported by ledgers and ribbons, nailed or bolted to the uprights. For ledgers spanning not more than 4 feet between uprights, use either 1 piece of 2-inch by 6-inch lumber securely fastened at each point of support or 2 pieces of 1-inch by 6-inch board, 1 being on each side of the uprights and fastened securely at each point of support.

(2) Ribbons shall be 1-inch by 6-inch or heavier material securely fastened to both inside and outside uprights directly under and in contact with the ledgers. Vertical spacing of ribbons and ledgers shall not exceed 7 feet. Ribbons shall be long enough to extend from upright to upright without splices.

(e) Railing. Open sides and ends of working levels 7 1/2 feet or more above grade shall be provided with top rails and midrails as specified in the Light Trade Wooden Pole Scaffolds subsection (b)(4).

**EXCEPTION:** That side of bricklayers' and masons' scaffolds adjacent to the work under construction provided that the wall is higher than the adjacent work platform.

(f) Ties and Braces.

(1) The scaffold shall be rigidly tied to the building or structure by means of a double looped No. 12 iron wire, or single looped No. 10 iron wire or equivalent or stronger material used in combination with spacer blocks between inside uprights and the structure. Ties shall connect to the inside uprights, and they shall be not more than 15 feet apart vertically or horizontally.

(2) The entire scaffold shall be rigidly braced with 1-inch by 6-inch boards, and every part thereof so secured as to prevent swaying, tipping, or collapsing. The diagonal bracing shall extend in both directions across the entire outside vertical face.

(g) Platforms.

(1) The platform shall be not more than 4 feet wide, constructed of planks at

at least 2 inches thick and 10 inches wide, laid closely together. Platform planks that are butt-ended (not overlapped) must be nailed to ledgers consisting of 2-inch by 6-inch or heavier material. If the planks are not nailed, they shall be of such length that they overlap the ledgers at each end by at least 6 inches. A plank shall not overlap an unsupported end of another plank. The working platform shall cover the entire space between scaffold uprights except for the open area under the back railing, which shall not be more than 8 inches.

(2) Platforms shall extend within 14 inches of the finished face of the building, except those used primarily by bricklayers and stonemasons shall extend to within 7 inches of the finish face of the building on which the work is being performed.

(3) When moving platforms to the next level, the old platform shall be left undisturbed until the new ledgers have been set in place ready to receive the platform planks.

### 1.5 Schedules of Timber Scaffolds up to 60 Feet in Height.

(Listed lumber sizes are those required for the specified spans; other sizes may be used for different spans if equivalent strength is provided.)

	Light Interior	Heavy Trades	Trades
Uprights for scaffolds not over 20'in height.....	2"x4"	2"x4"	4"x4"
Uprights for scaffolds 20' to 60'in height.....	3"x4"	3"x4"	4"x6"
Ribbons directly under ledgers..	1"x6"	1"x6"	1"x6"
Ledgers.....	2"x10"	2--1"x6"	2--1"x6" or 1--2"x6"
Spacing uprights, transverse, at right angles to platform planks.....	10'	3' in clear	4' in clear
Spacing uprights, longitudinal, parallel to direction of platform planks.....	10'	10'	7'
Spacing ribbons or ledgers, vertical.....	7'0" max.	7'0" max.	7'0" max.
Splice pieces 48" long (for uprights).....	2--1"x4"	2--2"x4"	(2--2"x4")
Braces.....	1"x6"	1"x6"	1"x6"
Railing.....	2"x4"	2"x4"	2"x4"
Toeboard.....	1"x4"	1"x4"	1"x4"
Width of platform.....	10'	3' max.	4' max.
Planking	2" thick and at least 10" wide		

### 1.6 Scaffolds are over 60 Feet in Height.

All wooden pole scaffolds over 60 feet in height shall be designed by a Civil Engineer currently registered in this State and constructed and erected in accordance with such design.

## 1.7 Metal Scaffolds.

(a) General.

(1) Metal scaffolds shall be designed to support all dead, live, and wind loads to which they will be subjected.

(2) No metal scaffold equipment that is broken or deteriorated to the extent that its section is structurally weakened shall be used.

(3) All stationary scaffold legs, including those of outriggers, shall rest upon base plates available from the manufacturer for this service. Each base plate shall have support adequate to sustain the load and prevent horizontal movement.

When the scaffold or outrigger is resting on earth or soft material, the base plate shall rest on and be secured to the equivalent of a 2-inch by 10-inch by 10-inch wooden base.

**NOTE:** A 1 1/8-inch by 10-inch by 10-inch piece of exterior grade plywood may be used in lieu of the wooden base mentioned above.

(4) Platform planks shall not be placed on guardrails to obtain greater height.

(5) Metal scaffolds shall be securely tied to the building or structure by means of a double looped No. 12 iron wire, or single looped No. 10 iron wire or equivalent at intervals not to exceed 30 feet horizontally and subject to the following:

(A) Ties shall be required at the free ends of the scaffold when the height of the scaffold platform exceeds 3 times the least base dimension. The remaining ties of the first row shall be required when the height of the scaffold platform is four times the least base dimensions.

(B) Ties for subsequent levels shall be installed at 26-foot intervals vertically, with the last tie no further from the top than four times the least base dimension.

(C) As an alternate means, scaffolds shall be guyed or outriggers shall be used to prevent tipping or upsetting.

(D) Wind Loading. When scaffolds are partially or fully enclosed, specific precautions shall be taken to ensure the frequency and adequacy of ties attaching the scaffolding to the building.

(6) Securely attached railings as provided by the scaffold manufacturer, or other material equivalent in strength to the standard 2- by 4-inch wood railing made from "selected lumber" (see definition), shall be installed on open sides and ends of work platforms 7 1/2 feet or more above grade. The top rail shall be located at a height of not less than 42 inches nor more than 45 inches measured from the upper surface of the top rail to the platform level. A midrail shall be provided halfway between the top rail and the platform.

**NOTE:** Toeboards or side screens may also be required.

(A) "X" bracing is acceptable as a top rail if the intersection of the "X" occurs

at 45 inches (plus or minus 3 inches) above the work platform, provided a horizontal rail is installed as a midrail between 19 and 25 inches above the work platform. The maximum vertical distance between the "X" brace members at the uprights shall not exceed 48 inches.

(B) "X" bracing is acceptable as a midrail if the intersection of the "X" falls between 20 inches and 36 inches above the work platform.

**EXCEPTIONS:**

(1) Railings are not required on that side of bricklayers' and masons' scaffold adjacent to the work under construction provided the wall is higher than the adjacent work platform.

(2) For end rail openings less than 3 feet, double wrapped iron wire at least No. 12 gauge in thickness, or wire rope at least ¼ inch minimum diameter is permitted, provided the wire or wire rope is securely fastened.

(7) Platform planks shall be of 2-inch by 10-inch or wider material and of such length that they overlap the ledgers at each end by at least 6 inches.

A plank shall not overlap an unsupported end of another plank.

The working platform shall cover the entire space between scaffold uprights, except for the open area under the back railing. Such open area shall not exceed 10 inches in width.

The inboard edge of the work platform shall be no more than 16 inches from the building or structure wall except for those scaffolds used by bricklayers and stonemasons the platforms of which shall extend to within 7 inches of the finish face of the building or structure on which the work is being performed.

(8) All ladders used for access shall conform to ladders. When only a part of the width of the metal scaffold frame conforms to ladder spacing, then these frames must be erected in a manner that makes a continuous ladder bottom to top, with ladder sides of the frames in a vertical line.

(b) Tube and Coupler Scaffolds.

(1) A light duty tube and coupler scaffold shall have all posts, ledgers, ribbons and bracing of nominal 2-inch O. D. steel tubing. The posts shall be spaced no more than 6 feet apart by 10 feet along the length of the scaffold. Other structural metals when used must be designed to carry an equivalent load. No dissimilar metals shall be used together.

(2) A medium duty tube and coupler scaffold shall have all posts, ribbons and bracing of nominal 2-inch O. D. steel tubing. Posts spaced not more than 6 feet apart by 8 feet along the length of the scaffold shall have ledgers of nominal 2 1/2-inch O. D. steel tubing. Posts spaced not more than 5 feet apart by 8 feet along the length of the scaffold shall have ledgers of nominal 2-inch O. D. steel tubing. Other structural metals, when used, must be designed to carry an equivalent load. No dissimilar metals shall be used together.

(3) A heavy-duty tube and coupler scaffold shall have posts, ribbons, and bracing of nominal 2-inch O. D. steel tubing, with the posts spaced not more than 6 feet by 6 feet 6 inches. Other structural metals, when used, must be designed to carry an equivalent load. No dissimilar metals shall be used together.

(4) Tube and coupler scaffolds shall be limited in heights and working levels to those permitted in Tables 1, 2, and 3. Drawings and specifications of all tube and coupler scaffolds above the limitations in Tables 1, 2, and 3 shall be designed by a Civil Engineer currently registered in this State.

(5) All tube and coupler scaffolds shall be constructed and erected to support 4 times the maximum intended loads as set forth in Tables 1, 2, and 3, or as set forth in the specifications by a Civil Engineer currently registered in this State.

Table 1

Light Duty Tube and Coupler Scaffolds

---

Uniformly distributed load.....	Not to exceed 25 p.s.f.
Post spacing (longitudinal).....	10'0"
Post spacing (transverse).....	6'0"

---

Working Levels	Additional Planked Levels	Maximum Height
1	8	125'
2	4	125'
3	0	91'0"

Table 2

Medium Duty Tube and Coupler Scaffolds

---

Uniformly distributed load.....	Not to exceed 50 p.s.f.
Post spacing (longitudinal).....	8'0"
Post spacing (transverse).....	6'0"

---

Working Levels	Additional Planked Levels	Maximum Height
1	6	125'
2	0	78'0"

Table 3

Heavy Duty Tube and Coupler Scaffolds

---

Uniformly distributed load.....	Not to exceed 75 p.s.f.
Post spacing (longitudinal).....	6'6"

Post spacing (transverse)..... 6'0"

Working Levels	Additional Planked Levels	Maximum Height
1	6	125'

(6) Posts shall be accurately spaced, erected on suitable bases, and maintained plumb.

(7) Ribbons shall be erected along the length of the scaffold, located on both the inside and the outside posts at even height. Ribbons shall be interlocked to the inside and the outside posts at even heights. Ribbons shall be interlocked to form continuous lengths and coupled to each post. The bottom ribbons shall be located as close to the base as possible. Ribbons shall be placed not more than 6 feet 6 inches on centers.

(8) Ledgers shall be installed transversely between posts and shall be securely coupled to the posts bearing on the ribbon coupler. When coupled directly to the ribbons, the coupler must be kept as close to the posts as possible.

(9) Ledgers shall be at least 4 inches but not more than 12 inches longer than the post spacing or ribbon spacing.

(10) Cross bracing shall be installed across the width of the scaffold at least every third set of posts horizontally and every fourth ribbon vertically. Such bracing shall extend diagonally from the inner and outer ribbons upward to the next outer and inner ribbons.

(11) Longitudinal diagonal bracing on the inner and outer rows of poles shall be installed at a 45-degree angle from near the base of the first outer post upward to the extreme top of the scaffold. Where the longitudinal length of the scaffold permits, such bracing shall be duplicated beginning at every fifth post. In a similar manner, longitudinal diagonal bracing shall also be installed from the last post extending back and upward toward the first post. Where conditions preclude the attachment of this bracing to the posts, it may be attached to the ribbons.

(c) Tubular Welded Frame Scaffolds.

(1) Metal tubular frame scaffolds, including accessories such as braces, brackets, trusses, screw legs, ladders, etc., shall be designed, constructed, and erected to safely support four times the maximum rated load. The scaffold manufacturer's erection instructions shall be followed on all installations.

(2) Spacing of panels or frames shall be consistent with the loads imposed.

(3) Panels or frames shall be braced by horizontal bracing, cross bracing, diagonal bracing or any combination thereof for securing vertical members together laterally, and the cross braces shall be of such length as will automatically square and align vertical members so that the erected scaffold is always plumb, square, and rigid. All brace connections shall be made secure.

(4) Panel or frame legs shall be set on adjustable bases or plain bases placed

on mud sills or other foundations adequate to support the maximum anticipated load.

(5) Panels or frames shall be placed one on top of the other with coupling or stacking pins to provide proper vertical alignment of the legs.

NOTE: Where an intervening ledge prevents the vertical stacking of legs, the ledge may be used as a base provided that an equally safe installation is obtained.

(6) Where uplift may occur, panels shall be locked together vertically by pins or other equivalent suitable means.

(7) Drawings and specifications for all frame scaffolds over 125 feet in height above the base plates shall be designed by a Civil Engineer currently registered in This State.

## 1.8 Outrigger and Bracket Scaffolds.

(a) Heavy Trades.

(1) Outrigger beams of outrigger scaffolds for use by bricklayers, stonemasons, or other heavy trades shall be made of "selected lumber," or better. Those of the following sizes shall not project more than 6 feet beyond the outer support. shall be securely anchored and braced to prevent tipping or turning; and shall be spaced at centers of 7 feet 6 inches, or closer.

The inboard end of outrigger beams, measured from the fulcrum point to anchorage point, shall not be less than 1 1/2 times the outboard end in length. The fulcrum point of the beam shall rest on a secure bearing at least 6 inches square.

(2) On continuous scaffolds, where the beams may receive load from work platforms on each side, such beams shall not be less than 3 inches by 16 inches in cross section. For single scaffolds, consisting of a platform between 2 beams, the outrigger beams may have a smaller cross section, but not less than 3 inches by 12 inches. The platforms shall consist of planks, at least 2 inches by 10 inches, covering the full width of the projection. Planking shall be nailed or bolted or otherwise secured to outriggers.

The ends of the planks shall not project more than 18 inches beyond the outrigger, and not less than 6 inches, unless they are nailed in place. Every outrigger scaffold 7 1/2 feet or more in height shall be provided with a railing and toeboard. The top rail shall consist of double 2-inch by 4-inch members. One member shall be fastened in a flat position on top of the posts and the other member shall be fastened in an edge-up position to the inside of the posts and at the side of the top rail.

Additional protection in the form of screen enclosing the opening between rail and toeboard shall be provided if material on the scaffold is piled higher than the toeboard.

(3) Where additional working levels are required to be supported by the outrigger method, the plans and specifications of the outrigger and scaffolding structure shall be prepared by a Civil Engineer currently registered in this State.

(b) Figure Four or Light Outrigger Scaffolds. Figure Four or light outrigger frames shall be spaced not more than 10 feet apart, and shall be constructed as follows from sound lumber:

The outrigger ledger shall consist of 2 pieces of 1-inch by 6-inch or heavier material nailed on opposite sides of the vertical and angle braces. Ledgers shall project not more than 3 feet 6 inches from the outside wall line and shall be braced and secure to prevent tipping or turning. The knee or angle brace shall intersect the beam at least 3 feet from the wall at an angle of 45 degrees, and the lower end shall be nailed to a vertical brace near the point where it contacts the wall. The platform shall consist of 2 or more 2-inch by 10-inch planks, which shall be of such length that they extend at least 6 inches beyond ledgers at each end. Unsupported projecting ends of planks shall be limited to an overhang of 18 inches, or less.

Each wooden bracket shall be hooked over a well-secured and adequately strong supporting member.

Every Figure Four or light outrigger scaffold 7 1/2 feet or more in height shall be provided with a railing and toeboard. The top rail shall consist of double 2-inch by 4-inch members. One member shall be fastened in a flat position on top of the posts, and the other member shall be fastened in an edge-up position to the inside of the posts and at the side of the top member.

(c) Stud Jacks. Stud-jack scaffold supports shall have ledgers of at least 2-inch by 6-inch materials, or equal, not longer than 5 feet, and each jack shall attach to not less than 2 sound, adequately fastened, 2-inch by 4-inch wall studs of normal length. Stud-jack scaffolds shall not be used at elevations of 7 1/2 feet or higher above the ground, unless so designed that a substantial back rail may be easily attached.

(d) Bracket Scaffolds. The use of bracket scaffolds shall be permitted only when through-bolted to walls, with at least 5/8-inch diameter bolts; welded to steel tanks; secured with a metal stud attachment device; or, hooked over a well-secured and adequately strong supporting member.

NOTE: This Order does not prohibit the use of bracket scaffolds that are an integral part of movable form panels or similar construction.

All form scaffolds shall be designed and erected with a minimum safety factor of 4, computed based on the maximum rated load, i.e., the total of all loads including the working load, the weight of the scaffold, and such other loads as may be anticipated.

(1) Spacing of brackets shall be such that they are not more than 10 feet apart horizontally.

(2) If brackets are secured to walers held by snap-tie or she-bolts, they must extend through both wall forms and be properly secured.

(3) Railings shall be installed on bracket scaffolds for all heights 7 1/2 feet

or more above the ground.

(4) The platform shall consist of two or more 2-inch by 10-inch planks, laid closely together, and shall be of such length that they overlap the ledgers at each end by at least 6 inches. Unsupported projecting ends of planks shall be limited to an overhang of 18 inches or less.

(5) Wooden bracket form scaffolds shall be an integral part of the form panel and shall not be used to support loads exceeding 25 pounds per square foot, unless specifically designed for a heavier loading. Ledgers shall be made from 2-inch by 6-inch or heavier material and shall not project more than 3 feet 6 inches from the form panel. Uprights shall consist of 2-inch by 4-inch or heavier material. Scaffold planks shall be either nailed, wired or bolted to the ledgers. Planks shall overlap the ledgers at each end by at least 6 inches. Unsupported projecting ends of platform planks shall be limited to a maximum overhang of 18 inches. Ledgers shall not be spaced more than 8 feet on centers.

(6) Bracket scaffolds installed on metal tanks larger than 40 feet in diameter for the use of those engaged in tank erection operations, shall have platforms that are at least 30 inches wide, with the open ends and sides protected by a substantial railing, with midrail, which may be altered by the substitution of 3/8-inch wire rope for the top and middle rails. Platforms on 40-foot or smaller diameter tanks will be acceptable if not less than 24 inches in width, consisting normally of two 2-inch by 12-inch planks side by side, protected by railings as described above.

(e) Carpenters' Bracket Scaffolds.

(1) The brackets shall consist of a triangular wood frame not less than 2 x 3 inches in cross section, or of metal of equivalent strength. Each member shall be properly fitted and securely joined.

(2) Each bracket shall be attached to the structure by means of one of the following:

(A) A bolt, no less than 5/8-inch in diameter, which shall extend through to the inside of the building wall.

(B) A metal stud attachment device.

(C) Welding steel tanks.

(D) Hooking over a well-secured and adequately strong supporting member.

(3) The brackets shall be spaced no more than 10 feet apart.

(4) No more than two employees shall occupy any given 10 feet of a bracket scaffold at any one time. Tools and materials shall not exceed 75 pounds in addition to the occupancy.

(5) The platform shall consist of not less than two 2- x 10-inch nominal size planks extending not more than 18 inches or less than 6 inches beyond each end support.

## 1.9 Tower Scaffolds and Rolling Scaffolds, Wood, or Metal.

(a) The minimum dimension of the base of any free-standing tower or rolling scaffold shall not be less than 1/3 the height of the scaffold unless such

scaffold is securely guyed or tied. For restrictions when worker rides scaffold see paragraph (f) following.

(b) Construction and Erection.

(1) The uprights, ledgers, ribbons, braces, and splices shall be equivalent to the standards specified in other applicable Sections of these Orders. Railings are required if the platform is 7 1/2 feet or more above grade. Railings shall be installed in accordance with the provisions of Section Metal Scaffolds(a)(6).

NOTE: Toeboards or side screens may also be required.

(2) The screw jack shall extend into its leg tube at least 1/3 its length, but in no case shall the exposed thread exceed 12 inches.

(3) The uprights (legs of rolling scaffolds) shall not exceed 24 inches without being braced according to the manufacturer's specifications.

(c) Wheels or casters of rolling scaffolds shall be provided with an effective locking device, and kept locked when workers are climbing or working on the scaffold. At least 2 of the 4 casters or wheels shall be a swivel type. All wheels or casters shall be properly designed for strength and dimension to support at least 4 times the maximum intended load.

(d) Joints of metal scaffolds shall be locked together with lock pins, bolts or equivalent fastening, including caster joints. Lock pins used must be of a locking type.

EXCEPTION: Screw jacks and guardrail posts.

(e) Platform planks on rolling or tower scaffolds shall not project farther than 18 inches past supports at the edges of the scaffold. An effective method of preventing platform planks on rolling scaffolds from slipping off must be provided. The nailing of cleats of 1-inch material on the underside of each projecting end, or other equivalent means, will be acceptable. Platforms shall be tightly planked for the full width of the scaffold except for any necessary entrance openings.

NOTE: Refer to Standard Railings and Scaffolds – General Requirements (f) for regulations on required plank and platform sizes.

(f) Riding. Employees may ride on rolling scaffold moved by others below if the following conditions exist:

(1) The floor or surface is within 3 degrees of level, and free from pits, holes, or obstructions.

(2) The minimum dimension of the scaffold base, when ready for rolling, is at least 1/2 of the height. Outriggers, if used, shall be installed on both sides of staging.

(3) The wheels are equipped with rubber or similar resilient tires. For towers 50 feet or over metal wheels may be used.

(g) Ladders. Ladders or other unstable objects shall not be placed on top of rolling scaffolds to gain greater height.

(h) Scaffolds on Vehicles. When scaffolds are built on motor trucks or vehicles, they must be rigidly attached to the truck or vehicle. The attachment must be made in a manner that will develop the full strength of the scaffold in resisting an overturning force.

(i) Trucks or vehicles that have scaffolds attached to them shall have a device in use whenever employees are on the scaffold that prevents swaying or listing of the platforms.

### 1.10 Horse Scaffolds.

(a) General. (1) Lumber for construction of scaffolded horses shall be of "Selected lumber" grade.

NOTE: The lumber sizes specified are nominal sizes for which standard finished sizes may be substituted.

(2) The members of horses used for scaffolds shall be securely nailed or bolted together, and well braced to prevent collapse.

(3) The distance between the bottoms of adjacent legs measured perpendicular to the ledger shall be approximately 1/2 the horse height.

(4) The shimming of horse ledgers to obtain added height is prohibited.

(5) Horses or parts which have become weak or defective shall not be used.

(6) When horse legs are extended by splicing, the joints must be butt-ended, and scabs are not less than 18 inches long and of the same cross section as the leg shall be nailed on each side of the joint. As an alternative, new legs of adequate length may be installed, if they completely overlap the original legs and are well secured to them from top to bottom. Vertical extensions shall not be used to extend height of metal folding horses if the stability of the horse is impaired.

(7) When arranged in tiers, each horse shall be placed directly over the horse in the tier below.

(8) On all scaffolds arranged in tiers, the legs shall be nailed down or otherwise secured to the planks to prevent displacement or thrust and each tier shall be cross braced.

(9) Railings meeting the requirements shall be installed on all open sides and ends of work platforms 7 1/2 feet or more above the ground, floor, or level underneath.

(b) Light Trades.

(1) Horses for light-trade scaffolds shall have top horizontal members or ledgers of 2-inch by 4-inch lumber or material of equivalent strength, if the distance between the leg connections is 4 feet or less. Ledgers of 2-inch by 6-inch lumber or material of equivalent strength are required if the distance between the leg connections is greater than 4 feet but does not exceed 8 feet.

If the distance between leg connections exceeds 8 feet, the ledger strength must be increased in proportion to the amount by which the 8-foot distance is exceeded.

(2) The legs of horses for light-trade scaffolds shall be 1-inch by 6-inch lumber or material of equivalent strength for horses not exceeding 4 feet in height and 2-inch by 4-inch lumber or material of equivalent strength for horses between 4 feet and 10 feet in height. Horse scaffolds shall not be constructed or arranged more than two tiers or 10 feet in height.

(c) Heavy Trades.

(1) Horses for heavy-trade scaffolds shall have top horizontal members or ledgers of 3-inch by 4-inch lumber or material of equivalent strength, if the distance between the leg connections is 4 feet or less. Ledgers of 2-inch by 6-inch lumber or material of equivalent strength are required if the distance between the leg connections is greater than 4 feet but does not exceed 8 feet. If the distance between leg connections exceeds 8 feet, the ledger strength must be increased in proportion to the amount by which the 8-foot distance is exceeded.

(2) The legs of horses for heavy-trade scaffolds shall be 1-inch by 8-inch lumber or material of equivalent strength, for horses not exceeding 4 feet in height, and 2-inch by 4-inch lumber or material of equivalent strength, for horses between 4 feet and 10 feet in height.

(d) Collapsible Types.

(1) Collapsible horses constructed of well-braced frames hinged at the top may be used in place of the specified rigid horses if construction is such that equivalent strength is provided.

(2) Adjacent legs of a collapsible horse shall be connected near the bottom with securely attached chains, hinged brackets, or other suitable links to prevent the legs from spreading beyond the distance intended. The height of collapsible horse scaffolds shall not exceed 6 feet.

(e) Platforms.

(1) Scaffold platforms shall not be supported by single horses having a total height exceeding 10 feet. Tiered horse scaffolds shall be limited to 10 feet in height made from no more than 2 tiers of horses. All horse scaffolds shall be substantially constructed and braced both transversely and laterally.

(2) Platforms shall be not less than 20 inches wide for light trades, and 4 feet wide for bricklayers, stonemasons, stone cutters, or concrete workers. Platforms used primarily by bricklayers or stonemasons shall extend to within 5 inches of the building face upon which the work is being performed. A single 2-inch by 10-inch plank may be used for light trades up to a height of 4 feet.

(3) Planks used for platforms shall not be less than 2 inches by 10 inches, and the distance between supports shall not exceed 10 feet for light trades and 7 feet 6 inches for heavy trades.

(4) For horse scaffolds up to a height of 6 feet, platform planks shall not be

more than 2 inches apart. Platform planks on higher scaffolds shall be laid closely together. Planks shall be of such length that they overlap the supports at each end by at least 6 inches. A plank shall not overlap an unsupported end of another plank. Unsupported projecting ends of planks shall be limited to an overhang of 18 inches or less.

(5) Douglas fir plywood that is 3/4 inch thick or thicker may be used for platforms if the panels are 4 feet wide or wider and are supported on cross members at 4-foot or closer intervals for light trades and 2-foot intervals for heavy trades.

(6) Provide standard ladder or other safe, unobstructed means of access to all

### 1.11 Ladder-Jack Scaffolds.

(a) Ladder-jack scaffolds shall not be used when the platform is over 16 feet above the ground. Not more than two employees shall be allowed on a scaffold of this type. The ladders shall be secured against displacement.

(b) The platform shall be at least 14 inches wide consisting of ladder staging, "structural plank" or equivalent, free from damage that affects the strength. The ladders shall not be placed over 16 feet center to center, and where the platform consists of a single-dressed 2-inch by 14-inch plank, the spacing shall not be greater than 12 feet. Both metal and wood platform planks shall overlap the bearing surface by at least 12 inches.

(c) Drop lines of at least 3/4-inch diameter Manila rope or other rope of equivalent diameter and strength shall hang from secure overhead anchorages where the working platform is 7 1/2 feet high or more. An independently anchored line shall be provided for and used by each employee in accordance with the provisions of Safety Belts and Nets of this manual.

(d) All ladders used in connection with ladder jack scaffolds shall be heavy-duty ladders and shall be designed and constructed in accordance with the General Industry Safety Orders, Job-built ladders shall not be used for this purpose.

(e) The ladder jack shall be so designed and constructed that it will bear on the side rails in addition to the ladder rungs, or if bearing on rungs only, the bearing area shall be at least 10 inches on each rung.

### 1.12 Bricklayers' Square Scaffolds.

(a) The squares shall not exceed 5 feet in width and 5 feet in height.

(b) Members shall be not less than those specified in the Schedule below:

Minimum Dimensions for  
Bricklayers' Square Scaffold Members

Members	Dimensions
Ledgers or horizontal members.....	2 x 6 in.
Legs.....	2 x 6 in.
Braces at corners.....	1 x 6 in.
Braces diagonally from center frame.....	1 x 8 in.

(c) The squares shall be reinforced on both sides of each corner with 1- x 6-inch gusset pieces. They shall also have diagonal braces 1 x 8 inches on both sides running from center to center of each member, or other means to secure equivalent strength and rigidity.

(d) The squares shall be set not more than 5 feet apart for medium duty scaffolds, and not more than 8 feet apart for light duty scaffolds. Bracing, 1 x 8 inches, extending from the bottom of each square to the top of the next square, should be provided on both front and rear sides of the scaffold.

(e) Platform planks shall be at least 2- x 10-inch nominal size. The ends of the planks shall overlap the ledgers of the squares and each plank shall be supported by not less than three squares.

(f) Bricklayers' square scaffolds shall not exceed three tiers in height and shall be so constructed and arranged that one square shall rest directly above the other. The upper tiers shall stand on a continuous row of planks laid across the next lower tier and be nailed down or otherwise secured to prevent displacement.

(g) Scaffolds shall be level and set upon a firm foundation.

(h) For guardrailing requirements see Standard Railings.

1.13 Window Jack Scaffolds.

(a) Window jack scaffolds shall be used only for the purpose of working at the window opening through which the jack is placed.

(b) Window jacks shall not be used to support planks placed between one window jack and another or for other elements of scaffolding.

(c) Window jack scaffolds shall be provided with guardrails unless safety belts and lanyards are provided for and used by employees.

(d) Not more than one employee shall occupy a window jack scaffold at any one time.

## 1.14 Pump Jack Scaffolds.

(a) Pump jack scaffolds shall:

- (1) Be limited to a maximum working load of 500 pounds; and
- (2) Have a Safety Factor of at least four times the maximum intended load.
- (3) The manufactured components shall not be loaded more than the manufacturer's recommended limits.

(b) Pump jack brackets, braces, and accessories shall be fabricated from metal plates and angles. Each pump jack bracket shall have two positive gripping mechanisms to prevent any failure or slippage.

(c) The platform bracket shall be fully decked and the planking secured. Planking, or equivalent, shall conform with the section in this chapter on General Requirements.

(1) When wood scaffold planks are used as platforms, poles used for pump jacks shall not be spaced more than 10 feet from center to center. When fabricated platforms are used that fully comply with all other provisions of this Order, Pole spacing may exceed 10 feet center to center.

(2) Poles shall not exceed 30 feet in height.

(3) Poles shall be secured to the work wall by rigid triangular bracing, or equivalent, at the bottom, top, and other points as necessary, to provide a maximum vertical spacing of not more than 10 feet between braces. Each brace shall be capable of supporting a minimum of 225 pounds tension or compression.

(4) For the pump jack bracket to pass bracing already installed, an extra brace shall be used approximately 4 feet above the one to be passed until the original brace is reinstalled.

(d) All poles shall bear on mud sill or other adequate firm foundations.

(e) Pole lumber shall be two 2 x 4's of Douglas fir, or equivalent, straight-grained, clear, free of cross-grain, shakes, large loose or dead knots, and other defects which might impair strength.

(f) When poles are constructed of two continuous lengths, they shall be 2 x 4's, spiked together with the seam parallel to the bracket, and with 10d common nails, no more than 12 inches center to center, staggered uniformly from opposite outside edges.

(g) If 2 x 4's are spliced to make up the pole, the splices shall be so constructed as to develop the full strength of the member.

(h) Not more than two employees shall be permitted at one time upon a pump jack scaffold between any two supports.

(i) Pump jacks' scaffolds shall be provided with standard guardrails as described

in Article 16 but no guardrail is required when safety belts with lanyards are provided for and used by employees.

(j) When a work bench is used at an approximate height of 42 inches, the top guardrail may be eliminated, if the work bench is fully decked, the planking secured, and can withstand 200 pounds load in any direction.

(k) Employees shall not be permitted to use a work bench as a scaffold platform.