DEPARTMENT OF ~~CONSUMER AND INDUSTRY SERVICES~~ **LICENSING AND REGULATORY AFFAIRS**

~~BUREAU OF SAFETY AND REGULATION~~ **DIRECTOR'S OFFICE**

CONSTRUCTION SAFETY STANDARDS ~~COMMISSION~~

Filed with the Secretary of State on April 4, 2013

These rules become effective immediately upon filing with the Secretary of State unless adopted under section 33, 44, or 45a(6) of 1969 PA 306.

Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of ~~consumer and industry services~~ **licensing and regulatory affairs** by sections 19 and 21 of **1974 PA 154 and Executive Reorganization Order Nos. 1996-2, 2003-1, 2008-4, and 2011-4, MCL 445.2001, 445,2011, 445.2025, and 445.2030** ~~Act No. 154 of the Public Acts of 1974, as amended, and Executive Reorganization Order No. 1996-2, being §§408.1019, 408.1021, and 445.2001 of the Michigan Compiled Laws~~)

R 408.41210, R 408.41211, R 408.41215, R 408.4117, R 408.41221, R 408.41222, R 408.41224, R 408.41225, R 408.41226, R 408.41227, R 408.41231, R 408.41232, R 408.41233, R 408.41234, R 408.41235, R 408.41236, R 408.41237, R 408.41243, R 408.41245, R 408.41253, R 408.41254, R 408.41255, R 408.41256, R 408.41261, and R 408.41264 of the Michigan Administrative Code are amended, and R 408.41228, R 408.41244, R 408.41246, R 408.41262, and R 408.41263 of the Code are rescinded, as follows:

PART 12. SCAFFOLDS AND SCAFFOLD PLATFORMS

R 408.41210 Construction and capacity generally**.**

Rule 1210. (1) A scaffold shall be designed, constructed, erected, and used in accordance with the provisions of this part. A scaffold shall be designed by a qualified person.

(2) A scaffold shall not be erected, moved, dismantled, or altered, except under the supervision of a competent person.

(3) A scaffold and its components shall be capable of supporting, without failure, not less than 4 times the maximum intended load.

(4) A specially designed scaffold that utilizes methods of bracing other than cross bracing is acceptable if the scaffold and its components comply with the requirements of this rule.

(5) A scaffold shall not be loaded to more than the designed working load.

(6) 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 scaffold, including accessories such as braces, brackets, trusses, screw legs, ladders, or platforms, that is damaged or weakened from any cause shall be immediately repaired or replaced. Any scaffold or accessories that are repaired shall have at least the original designed strength of the scaffold or accessory.

(7) An employee on a scaffold who is exposed to an overhead hazard of falling material shall be protected with overhead protection that is sufficient to prevent injury.

(8) All load-carrying wood members of scaffold framing shall be a minimum of 1,500 psi fiber stress value.

~~(9) All scaffold dimensions are nominal sizes as provided in the American lumber standards, which are adopted by reference in these rules and are available from the West Coast Inspection Bureau, 6990 S.W. Virne Road, P.O. Box 23145, Portland, Oregon 97223, or from the Michigan Department of Labor and Economic Growth, MIOSHA Standards Division, P.O. Box 30643, Lansing, Michigan 48909, at a cost of $9.50. However, where rough sizes are noted, only rough or undressed lumber of the size specified will satisfy the minimum requirement of that standard.~~

(9) ~~(10)~~ The poles, legs, or uprights of scaffolds shall be plumb and shall be securely and rigidly braced to prevent swaying and displacement.

(10) ~~(11)~~ The support for a scaffold shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Leveling jack adjusting screws, when used, shall not extend more than 18 inches below the base of the scaffold. Unstable objects, such as barrels, boxes, pallets, brick, or concrete blocks, shall not be used to support a scaffold or work platform. Scaffold poles, legs, posts, frames, and uprights shall bear on base plates and mudsills or other adequate firm foundation.

(11) ~~(12)~~ Scaffold components that are not designed to be compatible shall not be intermixed.

(12) ~~(13)~~ A shore or lean-to scaffold shall not be used.

(13) ~~(14)~~ Makeshift devices, such as, but not limited to boxes and barrels, shall not be used on top of scaffold platforms to increase the working level height of employees.

(14) ~~(15)~~ A ladder shall not be used on a scaffold to increase the working level height of employees, except on a large area scaffold where an employer has satisfied all of the following criteria:

(a) When the ladder is placed against a structure that is not a part of the scaffold, the scaffold shall be secured against the sideways thrust exerted by the ladder.
(b) The platform units shall be secured to the scaffold to prevent the units from moving.
(c) Either the ladder legs shall be on the same platform or another means shall be provided to stabilize the ladder against unequal platform deflection.
(d) The ladder legs shall be secured to prevent them from slipping or being pushed off the platform.

R 408.41211 Access to scaffold platforms**.**
Rule 1211. (1) Access to a scaffold platform shall be provided by 1 or more of the following:
(a) A ladder that conforms to R 408.41101 et seq.
(b) Hook-on or attachable metal ladders that are specifically designed for use in construction with manufactured types of scaffolds. If hook-on or attachable metal ladders are used as access to, or egress from, a work platform that is more than 35 feet above the ground or floor level, then a ladder safety device shall be installed or the ladders shall be offset with landing platforms and guardrails that are installed at not more than 35-foot intervals.
(c) Step or hook-on, stair-type accessories that are specifically designed for use with appropriate types of scaffolds.
(d) Direct access from an adjacent scaffold, the structure, or personnel hoist. The direct access to or from another surface shall be used only when the scaffold is not more than 14 inches (36 cm) horizontally and not more than 24 inches (61 cm) vertically from the other surface.
(e) A ramp, runway, or stairway that conforms to R 408.42121 et seq.
(2) The intermediate horizontal members of the frame of a manufactured tubular welded frame scaffold may be used instead of a ladder or stairway for access to, and egress from, the work platform, if all of the following conditions are met:
(a) All the frames and component parts are compatible in design.
(b) The intermediate horizontal members of a frame are a minimum of 11 1/2 inches in length.
(c) The horizontal members of each frame shall be uniformly spaced and shall not be more than 18 inches center to center vertically.
(d) When frames are connected vertically to one another, the distance between the bottom horizontal member of the upper end frame and the top horizontal member of the lower end frame shall be within 3 inches of the uniform spacing of the horizontal members of each frame.
(e) The elevation to the lowest horizontal member of the bottom frame shall not be more than 24 inches from the ground or floor.
(f) Each horizontal member shall be capable of supporting 300 pounds applied at its midpoint without bending or cracking.
(g) Each horizontal member shall be inspected for, and found free of, cracks, bends, or bad welds. Cracks, bends, or bad welds shall be corrected.
(h) Only 1 employee at a time shall use a horizontal member of a frame as access to, or egress from, the workstation.
(i) Cross braces shall not be used as a means of access.
(3) The guardrail system located on the side where horizontal members of the scaffold frame are used for access to, or egress from, a work platform shall be constructed as follows:
(a) The intermediate rail shall be omitted between the corner posts at the access location.
(b) The top rail shall be continuous between posts. A scaffold and its components shall be capable of supporting, without failure, not less than 4 times the maximum intended load.
~~(4) The overhang of a work platform shall not interfere with an employee accessing or leaving a work platform.~~
(4) ~~(5)~~ If horizontal members of scaffold frames are used as access to, or egress from, a work platform which is more than 35 feet above ground or floor level, a ladder safety device shall be installed and used or the horizontal members shall be offset with landing platforms and guardrails that are installed at not more than 30-foot intervals.
(5) ~~(6)~~ Steps and rungs of ladder and stairway-type access shall line up vertically with each other between rest platforms.
(6) ~~(7)~~ All of the following provisions apply to erecting or dismantling a scaffold:
(a) An employer shall provide a safe means of access for each employee erecting or dismantling a scaffold if providing safe access is feasible and does not create a greater hazard. The employer shall have a competent person determine whether it is feasible or would pose a greater hazard to provide, and have employees use, a safe means of access. The determination shall be based on site conditions and the type of scaffold being erected or dismantled.
(b) Hook-on or attachable ladders shall be installed as soon as scaffold erection has progressed to a point that permits safe installation and use.
(c) When erecting or dismantling tubular welded frame scaffolds, endframes, that have horizontal members which are parallel, level, and not more than 22 inches apart vertically as climbing devices for access, the employer shall ensure that the tubular welded frame scaffolds are erected in a manner that creates a usable ladder and provides a good handhold and foot space.
(d) Cross braces on tubular welded frame scaffolds shall not be used as a means of access or egress.

R 408.41215 Powered hoisting machines**.**
Rule 1215. (1) Gears and brakes of a powered hoisting machine shall be enclosed.
(2) In addition to the operating brake, a machine shall have an emergency brake which engages automatically when the normal speed of descent is exceeded.

~~(3) Operating controls shall be of a deadman type.~~
~~(4) When a hydraulic or pneumatic system of a powered hoisting machine is bled, the platform supported by this system shall be in the lowered position or blocked in such a manner that the safety of the employee is assured.~~
~~(5) A leak in a hydraulic or pneumatic system shall be repaired before the unit is used.~~
~~(6) A reverse check valve or equivalent means shall be installed in the hydraulic cylinder to prevent uncontrolled fall of the work platform in case of system failure.~~

R 408.41217 Planking and scaffold platforms generally**.**
Rule 1217. (1) If wood planks are used for a work platform, then the planks shall be scaffold-grade lumber that has a minimum of 1,500 pounds per square inch fiber stress value. The planks shall be not less than 2 inches by 10 inches. The platform shall consist of a minimum of 2 planks laid side by side. Each platform on all working levels of scaffolds shall be fully planked or decked between uprights where practicable. Spaces between the platform and the uprights shall not be more than 9 1/2 inches. The maximum permissible spans for 2- by 10-inch or wider planks are as follows:

	Material full thickness undressed lumber	Material nominal thickness lumber
Working load (per square foot)	25 50 62 75	25 37 50 62
Permissible span (feet)	10 8 7 6	8 7 6 4

~~(2) Laminated planks shall meet or exceed the load requirement of regular planking.~~
~~(3) A manufactured work platform shall be tested and listed by an approved nationally recognized testing laboratory.~~
(2) ~~(4)~~ Wood scaffold planks, laminated planks, manufactured work platforms, and picks that are found to be defective shall be removed from service and shall not be used.
(3) ~~(5)~~ A manufactured pick shall be permanently marked or tagged to indicate the maximum working load and shall not be less than 14 inches wide when used in single width, except that a ladder jack scaffold may be used with a minimum 12-inch manufactured pick.
(4) ~~(6)~~ Platform planks shall be laid with their edges together so the platform is tight and does not have spaces through which tools or fragments of materials can fall.
(5) ~~(7)~~ Planking shall be in compliance with all of the following provisions:
(a) Extend over the end bearer not less than 6 inches, but not more than 12 inches.
(b) Be cleated or otherwise fastened to prevent shifting and be uniform in thickness, except where lapped as prescribed in subrule **(8)** ~~(10)~~ of this rule.
(c) Where 16-foot planks are used as prescribed in subrule **(7)** ~~(9)~~ of this rule, tie downs are not required unless wind uplift may occur.
(6) ~~(8)~~ Hook-on-type manufactured work platforms may be used if they are secured to the bearer.
(7) ~~(9)~~ Where planks are lapped, each plank shall lap its bearer not less than 6 inches, which will provide a minimum overlap of 12 inches.
(8) ~~(10)~~ Where a scaffold turns a corner, the planks shall be laid to prevent tipping. The planks that meet the corner bearer at an angle shall be laid first and shall extend over the diagonally placed bearer far enough to have a good bearing, but not far enough to tip. The planks that run in the different direction shall be laid so as to extend over the rest on the first layer of planks.
(9) ~~(11)~~ When moving a platform to the next level, an employee shall leave the old platform undisturbed until the new platform supports have been set in place and are ready to receive the platform planks.
~~(12) When a scaffold is occupied by an employee, a slippery condition that occurs on the scaffold platform shall be eliminated as soon as possible after the condition occurs.~~
(10) ~~(13)~~ A platform shall not deflect more than 1/60 of the span when loaded.
(11) ~~(14)~~ A wood platform shall not be covered with opaque finishes, except that platform edges may be covered or marked for identification. A platform may be coated periodically with wood preservatives, fire-retardant finishes, and slip-resistant finishes; however, the coating may not obscure the top or bottom wood surfaces.
(12) ~~(15)~~ The front of a platform shall be not more than 14 inches from the face of the work unless a guardrail system is erected along the front edge, or unless a personal fall arrest system is used as set forth in R 408.44501 et seq., except that the maximum distance from the face of the work for plastering and lathing operations shall be not more than 18 inches.

R 408.41221 Stilts**.**
Rule 1221. (1) ~~A stilt shall be constructed in accordance with all of the following provisions:~~
~~(a) It shall be able to support 4 times the intended load.~~
~~(b) It shall have a bottom base plate which is not less than 3 1/2 inches by 5 1/2 inches and which is equipped with rubber pads.~~
~~(c) It shall be not more than 20 inches in height from the bottom of the base plate to the foot support.~~

~~(d) It shall be made of metal and remain unpainted.~~
~~(e) It shall be made by a manufacturer of stilts.~~
~~(2)~~ A stilt shall be inspected for damage, wear, and corrosion. A defective stilt, including the pins and straps, shall be repaired or replaced before being placed in use.
~~(3) A stilt shall be kept clean and free of accumulations of paint, plaster, and other debris.~~
(2) ~~(4)~~ Stilts shall be used only if all of the following conditions exist:
(a) Floors are level.
(b) All floor holes are securely covered.
(c) When an employee is using stilts, the top edge height of the top rail, or equivalent member, shall be increased an amount equal to the height of the stilts.
(d) The floor is capable of supporting a load on the stilt's base plate without deformation of more than 1/4 of an inch.
(e) The floor is cleared of debris, materials, or liquids that could cause a slipping or tripping hazard.
~~(5) An employee who is wearing stilts shall not support, lift, or hold a weight of more than 20 pounds.~~
(3) ~~(6)~~ Stilts shall not be used while going from one level to another.
(4) ~~(7)~~ An employee may wear stilts on a scaffold only if it is a large area scaffold.

R 408.41222 Wood pole scaffolds**.**
Rule 1222. (1) Where a pole of a wood pole scaffold is spliced, the ends shall be squared and the upper section shall rest squarely on the lower section. Wood splice plates shall be fastened on not less than 2 adjacent sides, shall be not less than 4 feet in length, shall overlap the abutted ends equally, shall have the same width and same total cross-sectional area of the pole, and shall be capable of preventing displacement of the abutted ends. Splice plates of other materials of equivalent strength may be used.
~~(2) A single pole scaffold shall be securely guyed or tied to the building or structure. Where the height or length exceeds 25 feet, a pole scaffold shall be secured at intervals not greater than 25 feet vertically and horizontally.~~
(2) ~~(3)~~ A bearer shall be set with its greater end dimension vertical and shall be long enough to project over the ledgers not less than 3 inches for proper support.
(3) ~~(4)~~ The inner end of a bearer for a single pole scaffold shall be supported in accordance with 1 of the following:
(a) Rest in a wall of a building with not less than a 40 inch bearing. Notching of the bearer is not permitted.
(b) Rest on a 12- by 2- by 6- inch wood block. The block shall be notched at the center to the width of the bearer and 2 inches deep. The bearer shall be nailed to both the block and the building.
(c) At a wall opening by a plank capable of supporting the loaded bearer and fastened to the building. The bearer shall be braced against displacement.
(4) ~~(5)~~ A ledger shall be long enough to extend over 2 pole spaces. The ledger shall not be spliced between the poles. The ledger shall be reinforced by bearing blocks securely nailed to the side of the pole to form a support for the ledger.
(5) ~~(6)~~ Diagonal bracing shall be provided to prevent the poles of a single pole scaffold from moving in a direction parallel with the wall of the building or from buckling.
(6) ~~(7)~~ Bracing shall be provided between the inner and outer sets of poles in independent pole scaffolds. The free ends of pole scaffolds shall be cross braced.
(7) ~~(8)~~ Full diagonal face bracing, in both directions, shall be erected across both faces of pole scaffold. The braces shall be spliced at the poles.
(8) Pole scaffolds over 60 feet in height shall be designed by a registered professional engineer, and shall be constructed and loaded in accordance with that design. Non-mandatory Appendix A to this standard contains examples of criteria that will enable an employer to comply with design and loading requirements for pole scaffolds under 60 feet in height.
~~(9) A wood pole scaffold shall not exceed 40 feet in height and shall be constructed and erected in accordance with table 2.~~
~~(10) Where the ends of planks abut each other to form a flush floor, the butt joint shall be at the centerline of a pole. The abutted ends shall rest on separate bearers.~~
~~(11) Table 2 reads as follows:~~

~~MINIMUM NOMINAL SIZE AND MAXIMUM SPACING~~
~~OF MEMBERS OF WOOD POLE SCAFFOLDS~~

~~HEIGHT OF SCAFFOLD IN FEET~~								
~~LIGHT~~	~~MEDIUM~~		~~HEAVY~~					
~~UP TO 20~~	~~20 FT. TO 40 FT.~~		~~UP TO 40 FT.~~		~~UP TO 40 FT.~~			
~~Single Pole~~	~~Independent~~	~~Single Pole~~	~~Independent~~	~~Single Pole~~	~~Independent~~	~~Single Pole~~	~~Independent~~	
~~Poles~~								
~~2 in. x 4 in.~~	~~2 in. x 4 in.~~	~~4 in. x 4 in.~~	~~4 in. x 4 in.~~	~~4 in. x 4 in.~~	~~4 in. x 4 in.~~	~~4 in. x 6 in.~~	~~4 in. x 4 in.~~	
~~Pole Spacing Longitudinal~~	~~6 ft~~	~~6 ft~~	~~8 ft~~	~~8 ft~~	~~6 ft~~	~~6 ft~~	~~6 ft~~	~~6ft~~

~~Pole Spacing Traverse 6 ft 10 ft 8 ft 8 ft~~
~~Bearers 2 in. x 6 in. 2 in. x 6 in. 2 in .x 6 in. 2 in. x 10 in. 2 in. x 10 in.~~
~~3 in. x 4 in. 2 in. x 10 in. 2 in. x 10 in.~~
~~3 in. x 4 in. 2 in x 10 in.~~
~~Ledgers~~
~~2 in. x 6 in. 2 in. x 6 in. 2 in. x 10 in 2 in. x 10 in. 2 in. x 10 in. 2 in. x 10 in. 2 in. x 10 in.~~
~~2 in. x 10 in.~~
~~Bracing~~
~~1 in. x 6 in. 1 in. x 6 in. 1 in. x 6 in. 1 in. x 6 in. 1 in. x 6 in. 1 in. x 6 in. 2 in. x 4 in.~~
~~2 in. x 4 in.~~
~~Maximum Width 5 ft 5 ft 5 ft 5 ft~~
~~Tie-ins~~
~~1 in. x 4 in. 1 in. x 4 in. 1 in. x 4 in. 1 in. x 4 in 1 in. x 4 in. 1 in. x 4 in. 1 in. x 4 in.~~
~~1 in. x 4 in.~~
~~ALL MEMBERS SHALL BE USED ON EDGE~~

R 408.41224 Tubular welded frame scaffolds (fabricated frame scaffold)**.**
Rule 1224. ~~(1) The spacing of frames of a tubular welded frame scaffold shall be consistent with the provisions of R 408.41223(3).~~
(1) ~~(2)~~ The scaffold shall be braced by cross bracing or diagonal braces, or both, for securing vertical members together laterally. The cross braces shall be of sufficient length so that the erected scaffold is always plumb, square, and rigid. All brace connections shall be made secure.
(2) ~~(3)~~ The frames shall be placed one on top of the other with coupling or stacking pins to provide proper vertical alignment of the legs.
(3) ~~(4)~~ Where uplift may occur, frames shall be locked together vertically by pins or other equivalent suitable means.
(4) ~~(5)~~ A guy, tie, and brace shall be installed according to the scaffold manufacturer's recommendations or at the closest horizontal member to the 4 to 1 ratio height and be repeated vertically at locations of horizontal members every 20 feet (6.1 meters) or less thereafter for a scaffold 3 feet (0.91 meters) wide or less and every 26 feet (7.9 meters) or less thereafter for a scaffold more than 3 feet (0.91 meters) wide. The top guy, tie, or brace of a completed scaffold shall be placed no further than a 4-to-1 ratio height from the top. A guy, tie, and brace shall be installed at each end of the scaffold and at horizontal intervals of not more than 30 feet (9.1 meters) measured from one end, not both, towards the other. Outriggers, when used, may be considered as part of the base dimension when installed on each corner of the long side at intervals of not more than 20 feet.
(5) ~~(6)~~ Drawings and specifications for all tubular welded frame scaffolds over 125 feet in height above the base plates shall be designed by a qualified engineer who is knowledgeable in scaffolding. The plans shall be available at the jobsite.
(6) ~~(7)~~ Brackets used to support cantilevered loads shall be in compliance with all of the following provisions:
(a) Be seated with side brackets parallel to the frames and end brackets at 90 degrees to the frames.
(b) Not be bent or twisted from the positions specified in subdivision (a) of this subrule.
(c) Be used only to support personnel, unless the scaffold has been designed for other loads by a qualified engineer and built to withstand the tipping forces caused by the other loads being placed on the bracket-supported section of the scaffold.

R 408.41225 Horse scaffolds**.**
Rule 1225. (1) ~~The horse for a horse scaffold shall be built of straight grained lumber or material of equivalent strength and braced to resist side thrusts.~~ **Scaffolds shall not be constructed or arranged more than 2 tiers or 10 feet (3.0 m) in height, whichever is less.**
(2) ~~A horse shall not be more than 4 feet in height and length.~~ **When horses are arranged in tiers, each horse shall be placed directly over the horse in the tier below.**
(3) ~~Nailing of extension pieces is prohibited.~~ **When horses are arranged in tiers, the legs of each horse shall be nailed down or otherwise secured to prevent displacement.**
(4) ~~Horses shall not be tiered.~~**When horses are arranged in tiers, each tier shall be crossbraced.**

R 408.41226 Bricklayer's square scaffold**.**
Rule 1226. (1) ~~The squares of a bricklayer's square scaffold shall not be more than 5 feet wide by 5 feet high and set not more than 5 feet apart. The bearers and legs shall be made of 2- by 6-inch material, the corner braces of 1- by 6-inch material, and the diagonal braces of 1- by 8-inch material on both sides running from center to center of each member.~~ **Scaffolds made of wood shall be reinforced with gussets on both sides of each corner.**
(2) ~~Additional 1- by 8-inch bracing shall extend from the bottom of each square to the top of the next square on the front and rear of the scaffold.~~ **Diagonal braces shall be installed on all sides of each square.**

(3) ~~Each platform plank shall be supported by not less than 3 squares.~~ **Diagonal braces shall be installed between squares on the rear and front sides of the scaffold, and shall extend from the bottom of each square to the top of the next square.**

(4) ~~A bricklayer's square scaffold shall not be tiered.~~ **Scaffolds shall not exceed 3 tiers in height, and shall be so constructed and arranged that 1 square rests directly above the other. The upper tiers shall stand on a continuous row of planks laid across the next lower tier, and shall be nailed down or otherwise secured to prevent displacement.**

R 408.41227 Pump jack scaffolds**.**

Rule 1227. (1) Pump jack brackets, braces, and accessories shall be fabricated from metal plates and angles. Each bracket shall have 2 positive gripping mechanisms to prevent any failure or slippage.

~~(2) The platform bracket shall be fully decked.~~

~~(3) Poles that are used for a pump jack shall not be spaced more than 10 feet center to center when wood scaffold planks are used for a platform. The spacing may be more than 10 feet center to center if a manufactured platform meets the requirements of this part.~~

(2) ~~(4)~~ A pole shall be in compliance with ~~all~~ **both** of the following provisions:

~~(a) Not be more than 30 feet in height.~~

(a) ~~(b)~~ Be secured to the structure 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 not less than 225 pounds tension or compression.

(b) ~~(c)~~ Be made of 2, 2 by 4s of Douglas fir, or the equivalent, or 2 continuous lengths made of 2 by 4s spiked together, with the seam parallel to the bracket, with 10D common nails at not more than 12 inches center to center, staggered uniformly from opposite outside edges. Each 2 by 4 may be spliced to make up a pole if the splice is constructed to develop the full strength of the member.

(3) ~~(5)~~ Where the bracket must 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.

~~(6) Occupancy of a pump-jack scaffold shall be limited to 2 employees between any 2 adjacent supports.~~

(4) ~~(7)~~ If poles are made of wood, then the pole lumber shall be straight-grained and free of shakes, large loose or dead knots, and other defects that might impair strength.

R 408.41228 ~~Steel tower scaffolds~~ **Rescinded.**

~~Rule 1228. (1) A steel tower scaffold shall be designed and erected according to the specifications of a qualified engineer who is knowledgeable in the subject.~~

~~(2) The erected scaffold shall meet the general provisions of this part.~~

R 408.41231 Adjustable multipoint suspension scaffolds**.**

Rule 1231. ~~(1) An adjustable multipoint suspension scaffold shall be capable of sustaining a working load of 50 pounds per square foot and shall not be loaded to more than 50 pounds per square foot.~~

~~(2) An outrigger beam that is used for an adjustable multipoint suspension scaffold shall meet all of the following criteria:~~

~~(a) Be made of metal that is equivalent in strength to a standard 7-inch, 15.3-pound steel beam.~~

~~(b) Be not less than 15 feet in length.~~

~~(c) Project not more than 6 feet 6 inches beyond the bearing point.~~

~~(d) Be spaced not more than 7 feet on center.~~

~~(3) The scaffold outrigger beam shall be securely fastened or anchored to the frame or floor system of the building or structure.~~

(1) ~~(4)~~ Only wire rope shall be used for suspending an adjustable multipoint suspension scaffold.

(2) ~~(5)~~ The steel shackles or clevises with which the wire ropes are attached to the outrigger beams shall be placed directly over the hoisting drums.

~~(6) The outrigger beam shall rest on a wood bearing block that is capable of supporting the load without deformation.~~

R 408.41232 Multipoint suspended scaffold**.**

Rule 1232. (1) A multipoint suspended scaffold shall be suspended from structural components that are capable of supporting 4 times the maximum intended load.

(2) A multipoint suspended scaffold shall be light- or medium-duty scaffold only.

(3) If wire rope is used for the suspension of a multipoint suspended scaffold, a minimum of 2 wraps around the supporting structural members and around put logs shall be used and secured with the proper number of wire rope clips or fist grips as prescribed in table 5 of R 408.41261**(5)**~~(11)~~.

(4) Softeners shall be used to prevent damage to wire rope that is used for suspension.

R 408.41233 Two-point adjustable suspension scaffolds (swing stage scaffold)**.**

Rule 1233. (1) A swing stage scaffold platform shall not be less than 20 inches nor more than 36 inches wide overall. The platform shall be securely fastened to the stirrups by U-bolts or by other equivalent means.

~~(2) At the beginning of each new installation, after a swing stage scaffold is completely suspended, the scaffold shall be tested by being set about 1 foot above the lowest elevation and loaded with 2 times the anticipated working load.~~
(2) ~~(3)~~ The stirrups shall be designed with a support for a guardrail, intermediate rails, and toeboard.
(3) ~~(4)~~ Rope and blocks that are used to support a 2-point adjustable scaffold shall have all of the following:
(a) Supporting ropes of 3/4-inch, first-quality manila rope or a synthetic rope of equivalent strength used with at least one 6-inch single and one 6-inch double block.
(b) Blocks that have sheaves which fit the size of the rope the blocks carry.
(c) Live ropes made fast to the scaffold in a manner to prevent displacement.
(d) The dead-end of the supporting rope connected to the block at the stirrup by means of an eye splice incorporating a thimble.
~~(5) Slings, hangers, platforms, and other supporting parts shall be inspected before every installation. Periodic inspections shall be made while the scaffold is in use. For ropes, see R 408.41261, R 408.41262, and R 408.41263.~~
(4) ~~(6)~~ A swing stage scaffold shall be limited to the following number of employees:
(a) For a scaffold designed for a working load of 500 pounds, not more than 2 employees shall be permitted to work at one time.
(b) For a scaffold designed for a working load of 750 pounds, not more than 3 employees shall be permitted to work at one time.
(5) ~~(7)~~ Two or more scaffolds shall not be combined by bridging with planks or similar connecting links.
(6) ~~(8)~~ Rollers or fenders shall be provided to prevent striking the building and to facilitate raising and lowering.
(7) ~~(9)~~ The platform of a swing stage scaffold shall be 1 of the following types:
(a) Ladder-type platforms - The ladder-type platform shall be constructed to meet ANSI standard A10.8-1977 entitled "Scaffolding," which is adopted in these rules by reference and which may be inspected at the Lansing office of the department of **licensing and regulatory affairs** ~~Labor and Economic Growth~~. The standard may be purchased at a cost as of the time of adoption of these rules of **$20.00** ~~$5.00~~ from the American National Standards Institute, 1430 Broadway, New York, New York 10018, or from the Michigan Department of **Licensing and Regulatory Affairs** ~~Consumer and Industry Services~~, MIOSHA Standards **Section** ~~Division~~, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.
(b) Plank-type platform - The plank-type platform shall be composed of not less than two 2 by 10-inch unspliced planks which are laid straight and which are cleated together on the underside, with the cleats starting 6 inches from each end and spaced at 12-inch intervals.
(c) Beam-type platform - The beam platform shall have side stringers made of lumber that is not less than 2 by 6 inches set on edge. The span between hangers shall not be more than 12 feet. The flooring shall be supported on 2 by 6-inch crossbeams which are laid flat, which are set into the upper edge of the stringers with a snug fit at intervals of not more than 4 feet center to center, and which are securely nailed in place. The flooring shall be 1 by 6-inch lumber or 3/4-inch plywood and shall be securely nailed. Floorboards shall not be spaced more than 1/2 of an inch apart.
(d) Manufactured picks - When used, a manufactured pick shall conform to the requirements of R 408.41217**(2) and** (3)~~, (4), and (5)~~.

R 408.41234 Multilevel suspension scaffolds**.**
Rule 1234. (1) A multilevel suspension scaffold shall have a separate fall prevention device that allows a drop of not more than 12 inches installed at each support point connected with a line to the scaffold.
(2) The device shall be attached to a wire rope safety line equivalent to the support rope, and the safety line shall be secured to a substantial member of the structure separate from the support rope and to the ground. If it is not possible to attach a safety line to the structure, then the safety line shall be attached to the outrigger.
~~(3) Each employee shall be protected by a personal fall arrest system as specified in Part 45. Fall Protection, being R 408.44501 et seq. of the Michigan Administrative Code, attached to the scaffold.~~
(3) ~~(4)~~ The multilevel suspension scaffold shall be in compliance with the provisions of R 408.41229 and R 408.41233.
~~(5) At the beginning of each new installation, after a multilevel suspension scaffold is completely suspended, the scaffold shall be tested by being set about 1 foot above the lowest elevation and loaded with 2 times the anticipated working load.~~
(4) ~~(6)~~ A support for a platform shall be attached directly to the support stirrup and not to any other platform.

R 408.41235 Single-point adjustable suspension scaffolds**.**
Rule 1235. ~~(1) A single-point adjustable suspension scaffold shall be raised or lowered by an electrical, air motor-driven, or manual hoisting machine.~~
~~(2)~~ A single-point adjustable suspension scaffold shall travel only in a vertical line.
~~(3) At the beginning of each new installation, after a single-point adjustable suspension scaffold is completely suspended, the scaffold shall be tested by being set about 1 foot above the lowest elevation and loaded with 2 times the anticipated working load.~~
~~(4) The suspension methods shall be as prescribed in R 408.41229.~~

R 408.41236 Needle beam scaffolds**.**
Rule 1236. ~~(1) A needle beam scaffold shall be suspended from a structure that is capable of supporting not less than 4 times the weight of the scaffold and intended load.~~

~~(2) The beams of a needle beam scaffold shall be of wood not less than 4 by 6 inches, with the greater dimension set vertically, or of equivalent structural metal.~~

(1) ~~(3)~~ A needle beam scaffold shall not be altered or moved while in use.

~~(4) The distance between the needle beams shall not be more than 8 feet, the length of needle beams shall be not more than 12 feet, and the needle beams shall be supported at points 12 inches from the ends.~~

~~(5) Rope supports shall be of 1-inch, first-grade manila rope or synthetic rope of equivalent strength and shall be hung vertically. The rope shall be attached to the needle beams in a manner that prevents the needle beams from rolling or otherwise becoming displaced.~~

(2) ~~(6)~~ The scaffold planking shall be ~~in compliance with all of the following provisions:~~

~~(a) Be laid tight between supporting ropes.~~

~~(b) Be~~ secured against displacement. Cleats are not an adequate means of attachment.

~~(c) Extend not more than 6 inches beyond the beam.~~

~~(7) Tools, bolts, and nuts on a needle beam scaffold shall be kept in containers that are properly secured on the scaffold.~~

(3) ~~(8)~~ One end of a needle beam scaffold may be supported by and secured to a permanent structural member.

R 408.41237 Boatswain's chair**.**

Rule 1237. ~~(1) The seat of a boatswain's chair made of wood shall be not less than 12 by 24 inches and 1- inch thick with the underside reinforced by cleats fastened to prevent splitting. Other materials used shall be of equivalent strength and size.~~

(1) ~~(2)~~ Two 5/8-inch, first-quality manila rope slings or synthetic rope of equivalent strength shall be reeved through the 4 seat holes so as to cross each other on the underside. Where an employee is using a heat or spark-producing process, such as gas welding or cutting, a protected 3/8-inch wire rope shall be used in place of fiber rope.

~~(3) An employee shall be protected by a fall arrest system as prescribed in Part 45. Fall Protection, being R 408.44501 et seq. of the Michigan Administrative Code.~~

(2) ~~(4)~~ The tackle shall consist of bearing or bushed blocks and 5/8-inch, first grade manila rope or its equivalent. The block shall be secured to roof irons, hooks, or other objects that are secured. Tiebacks shall be installed at right angles to the face of the building and shall be secured to the roof hooks and the building.

R 408.41243 Rough terrain forklift truck scaffolds; equipment requirements; employee safety requirements**.**

Rule 1243. ~~(1) Before an employee is elevated on a rough terrain forklift truck scaffold, a pre-lift meeting shall be held to review the appropriate requirements and procedures to be followed. The pre-lift meeting shall be attended by all of the following entities:~~

~~(a) The lift operator.~~

~~(b) The signalperson.~~

~~(c) Employees to be lifted.~~

~~(d) The person who is responsible for the task to be performed.~~

(1) ~~(2)~~ The scaffold platform shall be attached to the forks by enclosed sleeves and shall be secured against the back of the forks with a mechanical device so that the platform cannot tip or slip.

~~(3) The lifting carriage and the forks shall be secured to prevent them from tipping upward.~~

~~(4) An employer shall provide protection for an employee on the platform from moving parts and on lift trucks equipped with a lifting mast. The side of the platform adjacent to the mast shall be protected by a solid or mesh guard that is sufficient in height and width to prevent contact with moving parts of the mast. On trucks equipped with rotators, the rotation shall be deactivated.~~

(2) ~~(5)~~ A work platform shall be in compliance with all of the following requirements:

(a) Except for the guardrail system as specified in construction safety standard Part 21. Guarding of Walking and Working Areas, ~~being~~ R 408.42101 et seq. of the Michigan Administrative Code, be of welded mild steel construction that has a minimum safety factor of 4 times the maximum intended load.

(b) Have a continuous guardrail system constructed as follows:

(i) Have a top rail which is located not less than 36 inches, nor more than 42 inches, above the platform floor and which is constructed to withstand a minimum of 200 pounds of force in any direction.

(ii) Have a midrail which is installed at mid-height between the top rail and platform floor and which is constructed to withstand a 200-pound side thrust.

(iii) Have a toeboard which is not less than 4 inches in nominal height and which is installed not more than 1/4 of an inch above the floor around the periphery of the work platform. If the platform has a gate, then the toeboard shall be installed on the gate.

(c) Have a wood planking, steel plate, or a steel grating bolted or welded to the bottom of the platform and be maintained free of slip or trip hazards.

(d) Have a permanently affixed sign on the platform that specifies the maximum number of passengers allowed, the work platform identification number, and the maximum rated load.

(e) Be easily identifiable by high-visibility color or marking.

~~(6) An employee on a scaffold who is exposed to an overhead hazard of falling material or overhead projections shall be protected with overhead protection that is sufficient to prevent injury.~~

~~(7) The lifting mechanism shall operate smoothly through its entire lift range, both empty and loaded, and all lift-limiting devices and latches, if provided, shall be functional.~~

(3) ~~(8)~~ The work platform shall be level when in use.

(4) ~~(9)~~ If an employee is elevated in a platform on a variable reach lift truck, a personal fall arrest system, including the anchorage required in Part 45. Fall Protection, ~~being~~ R 408.44501 et seq., of the Michigan Administrative Code and Part 6. Personal Protective Equipment, ~~being~~ R408.40601 et seq., of the Michigan Administrative Code, is required and shall be worn when an employee is elevated.

(5) ~~(10)~~ The rough terrain fork truck or the lift truck shall rest on firm footing. Leveling devices and outriggers shall be used where provided on equipment.

(6) ~~(11)~~ A trained operator shall remain at the operator station of a lift truck to control the lift truck while an employee is elevated. The lift truck control or controls shall be in neutral and the parking brake set. The operator of the lift truck scaffold platform shall be able to see the elevated platform at all times.

(7) ~~(12)~~ A lift truck platform shall be returned to the ground before a lift truck is repositioned. The forklift shall be moved as close to the work area as possible for final positioning. An employee shall exit the landed platform and reboard the platform only after the lift truck repositioning is completed.

~~(13) The path that a lift truck platform travels shall be clear of hazards, such as storage racks, scaffolds, overhead obstructions, and electrical lines. Distances shall be maintained from electrical lines as specified in R 408.41212(4),(5), and (6).~~

~~(14) A lift truck operator shall keep his or her hands and feet clear of the controls that are not in use.~~

~~(15) A lift truck operator shall lift and lower an employee smoothly, with caution, and either at the employee's request or after alerting the elevated employee of intended movement. An operator of a lift truck that has a telescopic boom shall extend or retract the boom only at idle or near idle speed.~~

(8) ~~(16)~~ The combined mass weight of the platform, load, and the employee shall not be more than 1/3 of the rated capacity of the rough terrain forklift truck on which the platform is used.

(9) ~~(17)~~ An employee shall maintain firm footing on the platform floor. Railings, planks, ladders, or other materials shall not be used on the platform to achieve reach or height.

(10) ~~(18)~~ The guardrail system of the platform shall not be used to support any of the following:

(a) Materials.

(b) Other work platforms.

(c) Employees.

(11) ~~(19)~~ The platform shall be lowered to ground level for an employee to enter or exit, except where elevated work areas are inaccessible or hazardous to reach. An employee may exit the platform with the knowledge and consent of the employer. When exiting to unguarded work areas, fall protection shall be provided and used as required in construction safety standard, Part 45. Fall Protection, being R 408.44501 et seq. of the Michigan Administrative Code. An employee shall not climb on any part of a lift truck when attempting to enter or exit the platform.

(12) ~~(20)~~ A platform shall not be modified if the modification is detrimental to its safe use.

(13) ~~(21)~~ Floor dimensions parallel to the truck longitudinal centerline shall not be more than 2 times the load center distance listed on the rough terrain forklift truck nameplate. The floor dimension width shall not be more than the overall width of the truck measured across the load-bearing tires plus 10 inches (250 mm) on either side. The minimum space for each employee on the platform shall be not less than 18 inches (450 mm) in either direction.

(14) ~~(22)~~ A wood pallet shall not be used as a platform for lift truck scaffolds.

(15) ~~(23)~~ If arc welding is performed by an employee on the platform, then the electrode holders shall be protected from contact with the metal components of the work platform.

~~(24) The only tools that are permitted on the work platform are hand tools and portable powered tools. Materials and tools shall be secured to prevent displacement. The total weight of compressed gas cylinders shall not be more than 20 pounds.~~

(16) ~~(25)~~ A work platform shall not be used during high winds, electrical storms, snow, ice, sleet, or other adverse weather conditions that could affect the safety of the employees on the work platform or the operator of the truck.

~~(26) An employee shall keep all parts of his or her body inside the platform during raising, lowering, or repositioning of the platform.~~

~~(27) There shall be a communication system between an employee on the work platform and the operator of the rough terrain forklift truck or a fork lift truck.~~

R 408.41244 ~~Inspection and maintenance of rough terrain forklift trucks.~~ **Resinded.**

~~Rule 1244. (1) Before an employee is elevated on a rough terrain forklift truck platform, a trained operator or other qualified personnel shall inspect all of the following items:~~

~~(a) Tires and their inflation pressure.~~

~~(b) Warning devices.~~

~~(c) Lights.~~

~~(d) Lift and tilt mechanisms, load engaging means, chains, cables, and limit switches.~~

~~(e) Brakes.~~

~~(f) Steering mechanism.~~

~~(g) Fuel systems.~~
~~(2) A forklift truck shall not be operated if an unsafe condition is found before or during use until the truck has been restored to a safe operating condition.~~
~~(3) A rough terrain forklift truck and forklift trucks shall be maintained according to the manufacturer's recommendations.~~

R 408.41245 Operator training**.**
Rule 1245. ~~(1)~~ An employer shall ensure that an employee has been trained before the employee's assignment as an operator of a rough terrain forklift truck that is used to elevate employees. An employee shall be trained in all of the following areas:
(a) The capabilities of the equipment and its attachments.
(b) The purpose, use, and limitations of the controls.
(c) How to make daily checks.
~~(2) An employee shall practice operating an assigned vehicle and perform the functions necessary for a particular job.~~

R 408.41246 ~~Operator permits.~~ **Rescinded.**
~~Rule 1246. (1) An employer shall ensure that an operator has a valid permit to operate a rough terrain forklift or a forklift truck for elevating an employee. The operator shall carry the permit or shall have the permit available if it is requested by a department representative, during working hours.~~
~~(2) A permit to operate a rough terrain forklift truck or a forklift truck is valid only for work performed for the employer who issued the permit. A permit may be issued for a period of not more than 3 years. A permit shall contain all of the following information:~~
~~(a) Firm name.~~
~~(b) Operator's name.~~
~~(c) Date issued.~~
~~(d) Date expiring.~~
~~(e) Operator restrictions, if any. If a restricted permit to operate is issued, then the permit shall state the nature of the restriction.~~
~~(f) The type of truck an operator has been trained on and is qualified to operate~~

R 408.41253 Roofing brackets and crawling boards**.**
Rule 1253. (1) A roofing bracket shall be installed in a manner to maintain a level working surface.
~~(2) Spacing between the brackets supporting a work plank shall not be more than 8 feet.~~
~~(3) The working plank shall not be less than 2 by 6 inches.~~
(2) ~~(4)~~ In addition to the pointed metal projections, the brackets shall be secured in place by nailing. When it is impractical to nail brackets, rope supports shall be used. When rope supports are used, they shall consist of first-quality manila rope of at least 3/4-inch diameter or its equivalent.
(3) ~~(5)~~ A crawling board shall not be less than 1 by 10 inches, shall extend from the eave to the ridge of the roof, and shall be secured against displacement.
~~(6) Cleats shall be secured to the board by nails which are driven through, and clinched to, the underside.~~
~~(7) The cleats shall be not less than 1 by 1 1/2 inches, shall be equal in length to the width of the crawling board, and shall be spaced not more than 24 inches center to center.~~
~~(8) When a crawling board is used and a catch platform is provided, a lifeline of not less than 3/4-inch diameter rope, or its equivalent, shall be strung beside the board for a handhold.~~

R 408.41254 Carpenter's bracket scaffold**.**
Rule 1254. (1) ~~The supporting brackets of a carpenter's bracket scaffold shall be made of metal.~~ **Each bracket, except those for wooden bracket-form scaffolds, shall be attached to the supporting formwork or structure by means of 1 or more of the following:**
(a) Nails.
(b) A metal stud attachment device.
(c) Welding, hooking over a secured structural supporting member, with the form wales either bolted to the form or secured by snap ties or tie bolts extending through the form and securely anchored.
(d) For carpenters' bracket scaffolds only, by a bolt extending through to the opposite side of the structure's wall.
(2) The supporting brackets shall be fastened to the structure by 1 of the following:
(a) Three-eights-inch diameter bolts extending through the studs at the top of the bracket and projecting 3/4 inch beyond the nut and washer when in place.
(b) Welding to a metal tank.
(c) Hooked over a secured supporting member of the structure.
~~(3) The supporting brackets shall be not more than 8 feet apart to support 1 employee and not more than 75 pounds of material, or 4 feet apart to support 2 employees and not more than 75 pounds of material.~~

R 408.41255 Form Scaffolds**.**

Rule 1255. ~~(1) A form scaffold shall be used to support a maximum intended load of not more than 25 pounds per square foot.~~
~~(2) Form scaffold brackets shall be spaced not more than 8 feet on center and shall be constructed of the following:~~
~~(a) Bearers of not less than 2- by 4-inch wood or materials of equivalent strength which are secured horizontally to the side of a vertical form support and which extend not more than 6 inches beyond the outer edge of the platform, but the total length of the bearer shall be not more than 42 inches.~~
~~(b) A diagonal brace placed at a 45-degree angle from and below the outer end of the bearer to the vertical form support.~~
~~(3)~~ Metal brackets that are an integral part of the form shall be bolted or welded to the form. A folding-type bracket shall be secured by bolts or locking pins when in the extended position. Clip-on hook-on brackets may be used if the form walers are bolted to the form or secured by snap ties or shea-bolts extending through the form and anchored.

R 408.41256 Ladder jack scaffolds**.**
Rule 1256. (1) A ladder jack scaffold shall be used only for light duty on type I manufactured ladders at heights not more than 20 feet from the ground or floor level. The ladder shall be used as prescribed in Part 11. Fixed and Portable Ladders, ~~being~~ R 408.41101 et seq. of the Michigan Administrative Code.
~~(2) The span of a wood plank shall be not more than 8 feet between ladder jacks and the planking shall be as prescribed in R 408.41217.~~
~~(3) The span of a pick shall not exceed 24 feet.~~
~~(4) A ladder jack scaffold using planks shall be limited to 2 employees at any one time, except that if 3 ladders support the plank, 3 employees may occupy the plank. Not more than 1 employee shall occupy any given 4 feet of plank at any one time.~~
~~(5) A ladder jack scaffold using a pick shall be limited to 2 employees at any one time, except that if 3 ladders support the pick, 3 employees may occupy the pick. Not more than 1 employee shall occupy any given 6 feet of pick at any one time.~~
(2) ~~(6)~~ All bearing points of a ladder jack shall be designed to bear on the side rails and the rungs, but if bearing on the rungs only, the bearing area shall be not less than 10 lineal inches per rung.

R 408.41261 Wire rope ~~generally~~**.**
Rule 1261. (1) A wire rope shall be inspected for defects by a competent person before each work shift and after every occurrence could affect a rope's integrity. A rope shall be replaced if any of the following conditions exist:
(a) Physical damage that impairs the function and strength of the rope.
(b) Kinks that might impair the tracking or wrapping of rope around the drum or sheaves.
(c) Six randomly distributed broken wires in 1 rope lay or 3 broken wires in 1 strand in 1 rope lay.
(d) Abrasion, corrosion, scrubbing, flattening, or peening that has caused the loss of more than 1/3 of the original diameter of the outside wires.
(e) Heat damage caused by a torch or any damage caused by contact with electrical wires.
(f) Evidence that the secondary brake has been activated during an overspeed condition and has engaged the suspension rope.
(2) Wire rope that is bent to form an eye over a bolt or rod which has a diameter of less than 4 times the rope diameter shall be equipped with a metal thimble.
(3) Swaged attachments or spliced eyes on wire suspension ropes shall not be used unless they are made by the wire rope manufacturer or a qualified person.
(4) If wire rope clips are used on suspension scaffolds, then all of the following provisions apply:
(a) Clips shall be installed according to the manufacturer's recommendations.
(b) Clips shall be retightened to the manufacturer's recommendations after the initial loading.
(c) Clips shall be inspected and retightened to the manufacturer's recommendations at the start of each work shift.
(d) U-bolt clips shall not be used at the point of suspension for any scaffold hoist.
(e) If U-bolt clips are used, then the U-bolt shall be placed over the dead end of the rope and the saddle shall be placed over the live end of the rope.
~~(5) Wire ropes shall be stored in a manner to prevent damage or deterioration.~~
~~(6) Before cutting wire rope, an employee shall place a seizing on each side of the cut on preformed wire rope.~~
~~(7) Wire rope shall be maintained in a lubricated condition over its entire length with the same type lubricant used by the manufacturer.~~
~~(8) Seizing or an equivalent protection shall be provided at all wire rope ends.~~
(5) ~~(9)~~ Wire rope shall not come in contact with sharp edges.
~~(10) Wire rope used to suspend scaffolds shall not be spliced.~~
~~(11) Table 5 reads as follows:~~

TABLE 5
NUMBER AND SPACING OF U-BOLT WIRE ROPE CLIPS

Improved plow steel, rope Diameter (inches)	Number of Clips		Minimum Spacing (inches)
	Drop Forged	Other Material	
5/16	3	4	3
3/8	3	4	3
½	3	4	3
5/8	3	4	3 ¾
¾	4	5	4 ½
7/8	4	5	5 ¼
1	5	6	6
1 1/8	6	6	6 ¾
1 ¼	6	7	7 ½
1 3/8	7	7	8 ¼
1 ½	7	8	9

R 408.41262 **Rescinded** Fiber rope generally**.**

Rule 1262. (1) A fiber rope shall be inspected visually for the following conditions before the start of each work shift:
(a) Externally, for abrasions, cut or broken fibers, decay, burns, lack of strength, softness, and variation in size or roundness of the strands.
(b) Internally, by separating the strands for broken fibers, presence of grit, mildew or mold, color change of the fibers, or powdering and short loose fibers.
(2) A rope having any of the conditions specified in subrule (1) of this rule shall be replaced or returned to the manufacturer for repair.
(3) A fiber rope shall be stored in a dry room in coils or on a reel.
(4) A wet fiber rope shall be dried by placing it in the sunshine or by hanging it loosely over a rounded peg or hook in a warm room.
(5) A fiber rope shall not be kinked, run over sharp corners, used when frozen, or left in freezing temperatures when wet.
(6) A fiber rope subjected to an impact load equal to more than its rated capacity shall be replaced.
(7) A thimble shall be used with fiber rope pursuant to R 408.41261(2).

R 408.41263 **Rescinded** Synthetic rope**.**

Rule 1263. (1) A synthetic rope shall be inspected visually before the start of each job for abrasions, cut or broken fibers, burns, melted fibers, and variation in size or roundness of the strands. A rope having any of these conditions shall be replaced or returned to the manufacturer for repair.
(2) Because of the variance in manufacturing methods, the manufacturer's recommendations shall be followed.
(3) A synthetic rope shall not be kinked, run over sharp corners, used when frozen, or left in freezing temperatures when wet.
(4) A synthetic rope subjected to an impact load equal to or more than its rated capacity shall be replaced.
(5) A thimble shall be used with synthetic rope pursuant to R 408.41261(2).

R 408.41264 Window jack scaffolds**.**

Rule 1264. (1) A window jack scaffold shall be used as a work platform for not more than 1 employee and only for the purpose of working at the window opening through which the jack is placed.
(2) A window jack scaffold shall consist of a work platform that is secured to the structure with braces that run from a point not more than 4 inches from the end of the platform to the structure at an angle of not less than 45 degrees to the horizontal.
(3) An interior horizontal brace which extends not less than 12 inches beyond the vertical edges of the opening and which is capable of supporting not less than 4 times the intended load shall be secured to the work platform, tight to the interior surface of the wall, to prevent the outward movement of the platform.
(4) A window jack scaffold shall be provided with guardrails unless a harness that has a lifeline is attached and provided by the employer for the employee as required in Part 45. Fall Protection, being R 408.44501 et seq. of the Michigan Administrative Code.
(2) (5) A window jack shall not be used to support planks placed between one window jack and another or for other elements of scaffolding.

Non-mandatory Appendix A

This Appendix provides non-mandatory guidelines to assist employers in complying with the requirements of MIOSHA Construction Safety Standard Part 12. Scaffolds and Scaffold Platforms. An employer may use these guidelines and tables as a starting point for designing scaffold systems. However, the guidelines do not provide all the information necessary to build a complete system, and the employer is still responsible for designing and assembling these components in such a way that the completed system will meet the requirements of R 408.41210(3), except as provided in R 408.41213(1) and (2), R 408.41214(4), R 408.41229(1), and R 408.41229(17). Scaffold components which are not selected and loaded in accordance with this Appendix, and components for which no specific guidelines or tables are given in this Appendix (e.g., joints, ties, components for wood pole scaffolds more than 60 feet in height, components for heavy-duty horse scaffolds, components made with other materials, and components with other dimensions, etc.) must be designed and constructed in accordance with the capacity requirements of R 408.41210(3), except as provided in R 408.41213(1) and (2), R 408.41214(4), R 408.41229(1), and R 408.41229(17), and loaded in accordance with R 408.41229(2).

Index to Appendix A for Subpart L

1. General Guidelines and Tables

(a) The following tables, and the tables in Part 2 -- Specific guidelines and tables, assume that all load-carrying timber members (except planks) of the scaffold are a minimum of 1,500 lb-f/in(2) (stress grade) construction grade lumber. All dimensions are nominal sizes as provided in the American Softwood Lumber Standards, dated January 1970, except that, where rough sizes are noted, only rough or undressed lumber of the size specified will satisfy minimum requirements.

(b) Solid sawn wood used as scaffold planks shall be selected for such use following the grading rules established by a recognized lumber grading association or by an independent lumber grading inspection agency. Such planks shall be identified by the grade stamp of such association or agency. The association or agency and the grading rules under which the wood is graded shall be certified by the Board of Review, American Lumber

Standard Committee, as set forth in the American Softwood Lumber Standard of the U.S. Department of Commerce.

(i) Allowable spans shall be determined in compliance with the National Design Specification for Wood Construction published by the National Forest Products Association; paragraph 5 of ANSI A10.8-1988 Scaffolding-Safety Requirements published by the American National Standards Institute; or for 2-x 10-inch (nominal) or 2-x 9-inch (rough) solid sawn wood planks, as shown in the following table:

Maximum intended nominal load (lb/ft(2))	Maximum permissible span using full thickness undressed lumber (ft)	Maximum permissible span using nominal thickness lumber (ft)
25	10	8
50	8	6
75	6	

(ii) The maximum permissible span for 1 1/4 x 9-inch or wider wood plank of full thickness with a maximum intended load of 50 lb/ft.(2) shall be 4 feet.

(c) Fabricated planks and platforms may be used in lieu of solid sawn wood planks. Maximum spans for such units shall be as recommended by the manufacturer based on the maximum intended load being calculated as follows:

Rated load capacity	Intended load
Light-duty	* 25 pounds per square foot applied uniformly over the entire span area.
Medium-duty	* 50 pounds per square foot applied uniformly over the entire span area.
Heavy-duty	* 75 pounds per square foot applied uniformly over the entire span area.
One-person	* 250 pounds placed at the center of the span (total 250 pounds).
Two-person	* 250 pounds placed 18 inches to the left and right of the center of the span (total 500 pounds).
Three-person	* 250 pounds placed at the center of the span and 250 pounds placed 18 inches to the left and right of the center of the span (total 750 pounds).

Note: Platform units used to make scaffold platforms intended for light-duty use shall be capable of supporting at least 25 pounds per square foot applied uniformly over the entire unit-span area, or a 250-pound point load placed on the unit at the center of the span, whichever load produces the greater shear force.

(d) Guardrails shall be as follows:

(i) Toprails shall be equivalent in strength to 2-inch by 4-inch lumber; or 1 ¼-inch x 1/8-inch structural angle iron; or 1-inch x .070-inch wall steel tubing; or 1.990-inch x .058-inch wall aluminum tubing.

(ii) Midrails shall be equivalent in strength to 1-inch by 6-inch lumber; or 1 ¼-inch x 1 ¼-inch x 1/8-inch structural angle iron; or 1-inch x .070-inch wall steel tubing; or 1.990-inch x .058-inch wall aluminum tubing.

(iii) Toeboards shall be equivalent in strength to 1-inch by 4-inch lumber; or 1 ¼-inch x 1 ¼-inch structural angle iron; or 1-inch x .070-inch wall steel tubing; or 1.990-inch x .058-inch wall aluminum tubing.

(iv) Posts shall be equivalent in strength to 2-inch by 4-inch lumber; or 1 ¼-inch x 1 ¼-inch x 1/8-inch structural angle iron; or 1-inch x .070-inch wall steel tubing; or 1.990-inch x .058-inch wall aluminum tubing.

(v) Distance between posts shall not exceed 8 feet.

(e) Overhead protection shall consist of 2-inch nominal planking laid tight, or 3/4-inch plywood.

(f) Screen installed between toeboards and midrails or toprails shall consist of No. 18 gauge U.S. Standard wire one inch mesh.

2. Specific guidelines and tables.

(a) Pole Scaffolds.

Single Pole Wood Pole Scaffolds

	Light duty up to 20 feet high	Light duty up to 60 feet high	Medium duty up to 60 feet high	Heavy duty up to 60 feet high
Maximum intented load (lbs/ft^2)	25	25	50	75
Poles or uprights	2x4 in.	4x4 in.	4x4 in.	4x6 in.
Maximum pole spacing (longitudinal)	6 feet	10 feet	8 feet	6 feet
Maximum pole spacing (transverse)	5 feet	5 feet	5 feet	5 feet
Runners	1x4 in.	1 ¼ x 9 in.	2x10 in.	2x10 in.
Bearers and maximum spacing of bearers:				
3 feet	2x4 in.	2x4 in.	2x10 in. or 3x4 in.	2x10 in. or 3x5 in.
5 feet	2x6 in. or 3x4 in.	2x6 in. or 3x4 in. (rough)	2x10 in. or 3x4 in.	2x10 in. or 3x5 in.
6 feet			2x10 in. or 3x4 in.	2x10 in. or 3x5 in.
8 feet			2x10 in. or 3x4 in.	
Planking	1 ¼ x 9 in.	2x10 in.	2x10 in.	2x10 in.
Maximum vertical spacing of horizontal members	7 feet	9 feet	7 feet	6 ft. 6 in.
Bracing horizontal	1x4 in.	1x4 in.	1x6 in. or 1 ¼ x 4 in.	2x4 in.
Bracing diagonal	1x4 in.	1x4 in.	1x4 in.	2x4 in.
Tie-ins	1x4 in.	1x4 in.	1x4 in.	1x4 in.

Note: All members except planking are used on edge. All wood bearers shall be reinforced with 3/16-x 2-inch steel strip, or the equivalent, secured to the lower edges for the entire length of the bearer.

Independent Wood Pole Scaffolds

	Light duty up to 20 feet high	Light duty up to 60 feet high	Medium duty up to 60 feet high	Heavy duty up to 60 feet high
Maximum intended load	25 lbs/ft^2	25 lbs/ft^2	50 lbs/ft^2	75 lbs/ft^2
Poles or uprights	2x4 in.	4x4 in.	4x4 in.	4x4 in.
Maximum pole spacing (longitudinal)	6 feet	10 feet	8 feet	6 feet
Maximum (transverse)	6 feet	10 feet	8 feet	8 feet
Runners	1 ¼ x4 in.	1 ¼ x 9 in.	2x10 in.	2x10 in.
Bearers and maximum spacing or bearers:				
3 feet	2x4 in.	2x4 in.	2x10 in.	2x10 in. (rough).
6 feet	2x6 in. or 3x4 in.	2x10 in.(rough) or 3x8 in.	2x10 in.	2x10 in. (rough).
8 feet	2x6 in. or 3x4 in.	2x10 in.(rough) or 3x8 in.	2x10 in. or 3x4 in.	
10 feet	2x6 in. or 3x4 in.	2x10 in.(rough) or 3x3 in.		
Planking	1 ¼ x 9 in.	2x10 in.	2x10 in.	2x10 in.

Maximum vertical spacing of horizontal members	**7 feet**	**7 feet**	**6 feet**	**6 feet**
Bracing horizontal	**1x4 in.**	**1x4 in.**	**1x6 in. or 1 ¼ x 4 in.**	**2x4 in.**
Bracing diagonal	**1x4 in.**	**1x4 in.**	**1x4 in.**	**2x4 in.**
Tie-ins	**1x4 in.**	**1x4 in.**	**1x4 in.**	**1x4 in.**

Note: All members except planking are used on edge. All wood bearers shall be reinforced with 3/16-x 2-inch steel strip, or the equivalent, secured to the lower edges for the entire length of the bearer.

(b) Tube and coupler scaffolds.

Minimum Size of Members

	Light Duty	**Medium Duty**	**Heavy Duty**
Maximum intended load	**25 lbs/ft^2**	**50 lbs/ft^2**	**75 lbs/ft^2**
Posts, runners and braces	**Nominal 2 in. (1.90 inches) OD steel tube or pipe**	**Nominal 2 in. (1.90 inches) OD steel tube or pipe.**	**Nominal 2 in. (1.90 inches) OD steel tube or pipe.**
Bearers	**Nominal 2 in. (1.90 inches) OD steel tube or pipe and a maximum post spacing of 4 ft.x10 ft.**	**Nominal 2 in. (1.90 inches) OD steel tube or pipe and a maximum post spacing of 4 ft.x7 ft. or, Nominal 2 ½ in. (2.375 in.) OD steel tube or pipe and a maximum post spacing of 6 ft.x8 ft.***	**Nominal 2 ½ in. (2.375 in.) OD steel tube or pipe and a maximum post spacing of 6 ft.x6 ft.**
Maximum runner spacing vertically	**6 ft. 6 in.**	**6 ft. 6 in.**	**6 ft. 6 in.**

***Bearers shall be installed in the direction of the shorter dimension.**
Note: Longitudinal diagonal bracing shall be installed at an angle of 45 deg. (+/- 5 deg.).

Maximum Number of Planked Levels

Number of working levels:	**Maximum number of additional planked levels**			**Maximum height of scaffold (in feet)**
	Light duty	**Medium duty**	**Heavy duty**	
1	**16**	**11**	**6**	**125**
2	**11**	**1**	**0**	**125**
3	**6**	**0**	**0**	**125**
4	**1**	**0**	**0**	**125**

(c) "Fabricated frame scaffolds." Because of their prefabricated nature, no additional guidelines or tables for these scaffolds are being adopted in this Appendix.

(d) "Plasterers', decorators', and large area scaffolds." The guidelines for pole scaffolds or tube and coupler scaffolds (Appendix A (a) and (b)) may be applied.

(e) "Bricklayers' square scaffolds."

Maximum intended load: 50 lb/ft.(2)(*)
Maximum width: 5 ft.
Maximum height: 5 ft.
Gussets: 1 x 6 in.
Braces: 1 x 8 in.
Legs: 2 x 6 in.
Bearers (horizontal members): 2 x 6 in.

Footnote(*) The squares shall be set not more than 8 feet apart for light duty scaffolds and not more than 5 feet apart for medium duty scaffolds.

(f) Horse scaffolds.

Maximum intended load (light duty): 25 lb/ft.(2)(**)
Maximum intended load (medium duty): 50 lb/ft.(2)(**)
Footnote(**) Horses shall be spaced not more than 8 feet apart for light duty loads, and not more than 5 feet apart for medium duty loads.

Horizontal members or bearers:

Light duty: 2 x 4 in.
Medium duty: 3 x 4 in.

Legs: 2 x 4 in.
Longitudinal brace between legs: 1 x 6 in.
Gusset brace at top of legs: 1 x 8 in.
Half diagonal braces: 2 x 4 in.

(g) "Form scaffolds and carpenters' bracket scaffolds."

(1) Brackets shall consist of a triangular-shaped frame made of wood with a cross-section not less than 2 inches by 3 inches, or of 1 ¼-inch x 1 ¼-inch x 1/8-inch structural angle iron.

(2) Bolts used to attach brackets to structures shall not be less than 5/8 inches in diameter.

(3) Maximum bracket spacing shall be 8 feet on centers.

(4) No more than two employees shall occupy any given 8 feet of a bracket or form scaffold at any one time. Tools and materials shall not exceed 75 pounds in addition to the occupancy.

(5) Wooden figure-four scaffolds:

Maximum intended load: 25 lb/ft.(2)
Uprights: 2 x 4 in. or 2 x 6 in.
Bearers (two): 1 x 6 in.
Braces: 1 x 6 in.
Maximum length of bearers (unsupported): 3 ft. 6 in.

(i) Outrigger bearers shall consist of 2 pieces of 1-x 6-inch lumber nailed on opposite sides of the vertical support.

(ii) Bearers for wood figure-four brackets shall project not more than 3 feet 6 inches from the outside of the form support, and shall be braced and secured to prevent tipping or turning. The knee or angle brace shall intersect the bearer at least 3 feet from the form at an angle of approximately 45 degrees, and the lower end shall be nailed to a vertical support.

(6) Metal bracket scaffolds:

Maximum intended load: 25 lb/ft.(2)
Uprights: 2 x 4 inch
Bearers: As designed.
Braces: As designed.

(7) Wood bracket scaffolds:

Maximum intended load: 25 lb/ft.(2)
Uprights: 2 x 4 in or 2 x 6 in
Bearers: 2 x 6 in
Maximum scaffold width: 3 ft 6 in
Braces: 1 x 6 in

(h) "Roof bracket scaffolds." No specific guidelines or tables are given.

(i) "Outrigger scaffolds (single level)." No specific guidelines tables are given.

(j) "Pump jack scaffolds." Wood poles shall not exceed 30 feet in height. Maximum intended load -- 500 lbs between poles; applied at the center of the span. Not more than 2 employees shall be on a pump jack scaffold at one time between any two supports. When 2 x 4's are spliced together to make a 4-x 4-inch wood pole, they shall be spliced with "10 penny" common nails no more than 12 inches center to center, staggered uniformly from the opposite outside edges.

(k) "Ladder jack scaffolds." Maximum intended load -- 25 lb/ft(2). However, not more than 2 employees shall occupy any platform at any one time. Maximum span between supports shall be 8 feet.

(l) "Window jack scaffolds." Not more than 1 employee shall occupy a window jack scaffold at any one time.

(m) "Crawling boards (chicken ladders)." Crawling boards shall be not less than 10-inches wide and 1-inch thick, with cleats having a minimum 1-x 1 ½-inch cross-sectional area. The cleats shall be equal in length to the width of the board and spaced at equal intervals not to exceed 24 inches.

(n) "Step, platform, and trestle ladder scaffolds." No additional guidelines or tables are given.

(o) "Single-point adjustable suspension scaffolds." Maximum intended load -- 250 lbs. Wood seats for boatswains' chairs shall be not less than 1-inch thick if made of non-laminated wood, or 5/8-inches thick if made of marine quality plywood.

(p) "Two-point adjustable suspension scaffolds." (1) In addition to direct connections to buildings (except window cleaners' anchors) acceptable ways to prevent scaffold sway include angulated roping and static lines. Angulated roping is a system of platform suspension in which the upper wire rope sheaves or suspension points are closer to the plane of the building face than the corresponding attachment points on the platform, thus causing the platform to press against the face of the building. Static lines are separate ropes secured at their top and bottom ends closer to the plane of the building face than the outermost edge of the platform. By drawing the static line taut, the platform is drawn against the face of the building.

(2) On suspension scaffolds designed for a working load of 500 pounds, no more than 2 employees shall be permitted on the scaffold at one time. On suspension scaffolds with a working load of 750 pounds, no more than 3 employees shall be permitted on the scaffold at one time.

(3) Ladder-type platforms. The side stringer shall be of clear straight-grained spruce. The rungs shall be of straight-grained oak, ash, or hickory, at least 1 1/8 inches in diameter, with 7/8-inch tenons mortised into the side stringers at least 7/8 inch. The stringers shall be tied together with tie rods not less than 1/4 inch in diameter, passing through the stringers and riveted up tight against washers on both ends. The flooring strips shall be spaced not more than 5/8 inch apart, except at the side rails where the space may be 1 inch. Ladder-type platforms shall be constructed in accordance with the following table:

Schedule for Ladder-Type Platforms

Length of Platform	12 feet	14 & 16 feet	18 & 20 feet
Side stringers, minimum cross section (finished sizes):			
At ends	1 ¾ x 2 ¾ in.	1 ¾ x 2 ¾ in.	1 ¾ x 3 in.
At middle	1 ¾ x 3 ¾ in.	1 ¾ x 3 ¾ in.	1 ¾ x 4 in.
Reinforcing strip (minimum)	A 1/8-x 7/8-inch steel reinforcing strip shall be attached to the side or underside, full length.		
Rungs	Rungs shall be 1 1/8-inch minimum diameter with at least 7/8-inch diameter tenons, and the maximum spacing shall be 12 inches to center.		
Tie rods:			
Number (minimum)	3	4	4
Diameter(minimum)	¼ inch	¼ inch	¼ inch
Flooring, minimum finished size	½ x 2 ¾ in.	½ x 2 ¾ in.	½ x 2 ¾ in.

Schedule for Ladder-Type Platforms

Length of Platform	22 & 24 feet	28 & 30 feet
Side stringers, minimum cross section (finished sizes):		
At ends	1 ¾ x 3 in.	1 ¾ x 3 ½ in.
At middle	1 ¾ x 4 ¼ in.	1 ¾ x 5 in.
Reinforcing strip (minimum)	A 1/8-x 7/8-inch steel reinforcing strip shall be attached to the side or underside, full length.	
Rungs	Rungs shall be 1 1/8-inch minimum diameter with at least 7/8-inch diameter tenons, and the maximum spacing shall be 12 inches to center.	
Tie rods:		
Number (minimum)	5	6
Diameter(minimum)	¼ inch	¼ inch
Flooring, minimum finished size	½ x 2 ¾ in.	½ x 2 ¾ in.

(4) Plank-Type Platforms. Plank-type platforms shall be composed of not less than nominal 2-x 8-inch unspliced planks, connected together on the underside with cleats at intervals not exceeding 4 feet, starting 6 inches from each end. A bar or other effective means shall be securely fastened to the platform at each end to prevent the platform from slipping off the hanger. The span between hangers for plank-type platforms shall not exceed 10 feet.

(5) Beam-Type Platforms. Beam platforms shall have side stringers of lumber not less than 2-x 6-inches set on edge. The span between hangers shall not exceed 12 feet when beam platforms are used. The flooring shall be supported on 2-x 6-inch cross beams, laid flat and set into the upper edge of the stringers with a snug fit, at intervals of not more than 4 feet, securely nailed to the cross beams. Floor-boards shall not be spaced more than 1/2 inch apart.

(q)(1) "Multi-point adjustable suspension scaffolds and stonesetters' multi-point adjustable suspension scaffolds." No specific guidelines or tables are given for these scaffolds.

(q)(2) "Masons' multi-point adjustable suspension scaffolds." Maximum intended load -- 50 lb/ft(2). Each outrigger beam shall be at least a standard 7-inch, 15.3 pound steel I-beam, at least 15 feet long. Such beams shall not project more than 6 feet 6 inches beyond the bearing point. Where the overhang exceeds 6 feet 6 inches, outrigger beams shall be composed of stronger beams or multiple beams.

(r) "Catenary scaffolds."

(1) Maximum intended load -- 500 lbs.

(2) Not more than 2 employees shall be permitted on the scaffold at one time.

(3) Maximum capacity of come-along shall be 2,000 lbs.

(4) Vertical pickups shall be spaced not more than 50 feet apart.

(5) Ropes shall be equivalent in strength to at least 1/2 inch (1.3 cm) diameter improved plow steel wire rope.

(s) "Float (ship) scaffolds."

(1) Maximum intended load -- 750 lbs.

(2) Platforms shall be made of ¾-inch plywood, equivalent in rating to American Plywood Association Grade B-B, Group I, Exterior.

(3) Bearers shall be made from 2-x 4-inch, or 1-x 10-inch rough lumber. They shall be free of knots and other flaws.

(4) Ropes shall be equivalent in strength to at least 1-inch (2.5 cm) diameter first grade manila rope.

(t) Interior hung scaffolds.

Bearers (use on edge): 2 x 10 in.
Maximum intended load: Maximum span
25 lb/ft.(2): 10 ft.
50 lb/ft.(2): 10 ft.
75 lb/ft.(2): 7 ft.

(u) "Needle beam scaffolds."

Maximum intended load: 25 lb/ft.(2)
Beams: 4 x 6 in.
Maximum platform span: 8 ft.
Maximum beam span: 10 ft.

(1) Ropes shall be attached to the needle beams by a scaffold hitch or an eye splice. The loose end of the rope shall be tied by a bowline knot or by a round turn and a half hitch.

(2) Ropes shall be equivalent in strength to at least 1-inch (2.5 cm) diameter first grade manila rope.

(v) "Multi-level suspension scaffolds." No additional guidelines or tables are being given for these scaffolds.

(w) "Mobile Scaffolds." Stability test as described in the ANSI A92 series documents, as appropriate for the type of scaffold, can be used to establish stability for the purpose of 1926.452(w)(6).

(x) "Repair bracket scaffolds." No additional guidelines or tables are being given for these scaffolds.

(y) "Stilts." No specific guidelines or tables are given.

(z) "Tank builder's scaffold."

(1) The maximum distance between brackets to which scaffolding and guardrail supports are attached shall be no more than 10-feet 6-inches.

(2) Not more than 3 employees shall occupy a 10-feet 6-inch span of scaffold planking at any time.

(3) A taut wire or synthetic rope supported on the scaffold brackets shall be installed at the scaffold plank level between the innermost edge of the scaffold platform and the curved plate structure of the tank shell to serve as a safety line in lieu of an inner guardrail assembly where the space between the scaffold platform and the tank exceeds 12 inches (30.48 cm). In the event the open space on either side of the rope exceeds 12 inches (30.48 cm), a second wire or synthetic rope appropriately placed, or guardrails in accordance with 1926.451(e)(4), shall be installed in order to reduce that open space to less than 12 inches (30.48 cm).

(4) Scaffold planks of rough full-dimensioned 2-inch (5.1 cm) x 12-inch (30.5 cm) Douglas Fir or Southern Yellow Pine of Select Structural Grade shall be used. Douglas Fir planks shall have a fiber stress of at least 1900 lb/in(2) (130,929 n/cm(2)) and a modulus of elasticity of at least 1,900,000 lb/in(2) (130,929,000 n/cm(2)), while Yellow Pine planks shall have a fiber stress of at least 2500 lb/in(2) (172,275 n/cm(2)) and a modulus of elasticity of at least 2,000,000 lb/in(2) (137,820,000 n/cm(2)).

(5) Guardrails shall be constructed of a taut wire or synthetic rope, and shall be supported by angle irons attached to brackets welded to the steel plates. These guardrails shall comply with 1926.451(e)(4). Guardrail supports shall be located at no greater than 10-feet 6-inch intervals.