

**CHAPTER 6. CONSTRUCTION AND REPAIRS****GENERAL PROVISIONS**

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**APPENDIX****Authority**

The provisions of this Chapter 6 issued under act of June 2, 1913 (P. L. 396, No. 267) (71 P. S. § 1441); and act of May 18, 1937 (P. L. 685, No. 174) (43 P. S. §§ 25-1—25-15), unless otherwise noted.

**Source**

The provisions of this Chapter 6 adopted May 15, 1929; amended through July 1, 1968, unless otherwise noted.

**GENERAL PROVISIONS****§ 6.1. Definitions.**

The following words and terms, when used in this chapter, have the following meanings, unless the context clearly indicates otherwise:

*Brace*—A tie that holds one point in a fixed position with respect to another point. Bracing is a system of braces or ties that prevent distortion of a structure.

*Bracing*—All temporary devices required to be used or installed during construction, repair or revision operations for the purpose of holding in place components of a building or a structure until it and all its components are permanently assembled and connected in ways that insure permanent stability. This term shall include but not be limited to braces, shores, struts, ties, forms, centering, walers, cross arms and any other devices which temporarily hold components in place during the construction of a structure.

*Bricklayers' squares scaffold*—A scaffold, the platform of which is composed of boards supported by "jacks" or "squares" secured to each other by double diagonal bracing.

*Carpenters' bracket scaffold*—A scaffold, the platform of which is composed of boards supported by brackets or that are secured to the side of the building.

*Crawling board* or *Chicken ladder*—A board to which cross strips are nailed or otherwise fastened for use on a ladder.

*Guardrail*—A rail 34 inches in height, erected to protect the workmen as well as to prevent the falling of material from a platform.

*Horse scaffold*—A scaffold, the platform of which is supported by horses.

*Independent scaffold*—A scaffold supported from the base by a double row of uprights, independent of support from the walls and constructed of uprights, ledgers, horizontal platform bearers and diagonal bracing. An independent pole scaffold may also be referred to as a built-up scaffold.

*Ladder jack scaffold*—A scaffold, the platform of which is supported by jacks attached to ladders.

*Lanyard*—A rope, webbed belt or equivalent, suitable for supporting one person. One end is fastened to a safety belt or harness and the other end is secured to a substantial object or a lifeline.

*Ledger* and *stringer*—A scaffold member which extends horizontally from post to post, at right angles to the putlogs, supports the putlogs, forms a tie between the posts, and becomes a part of the scaffold bracing. Ledgers which do not support putlogs are also called stringers.

*Lifeline*—A rope, or cable, to which a lanyard, safety belt or harness is attached.

*Needle beam scaffold*—A scaffold consisting of a plank platform which rests upon two parallel horizontal beams (needle beams) supported at the ends by ropes.

*Outriggers' scaffold*—A scaffold, the platform of which is supported by projecting beams or “thrustouts” that extend from the wall of the building and are firmly held and secured to the framework or flooring inside the building.

*Painters' swinging scaffold*—A scaffold, the platform of which is suspended or swung from overhead supports, and rests on hangers of either iron or steel.

*Plasterers' and decorators' inside scaffold*—A scaffold for use on light work inside a building, the platform of which is supported by ladders, steps or trestles.

*Putlog or Bearer*—A scaffold member upon which the platform rests. In a single pole scaffold the outer end of the putlog rests on a ledger and the inner end rests in the wall. In an independent pole scaffold each end of the putlog rests on a ledger. In an independent pole scaffold a putlog is known as a bearer.

*Roofing bracket*—A bracket (jack) used for shingling and roofing, having sharp points that are thrust into the roof to prevent sliding, or supported by means of ropes passing around or over some permanent or solidly secured object.

*Runway*—A stationary incline provided as a means of ascent and descent from one level to another.

*Safety belt*—A device usually worn around the waist which, by reason of its attachment to a lanyard and lifeline or a structure, acts to prevent a worker from falling.

*Scaffold*—An elevated platform used for supporting workmen or materials in the course of the constructing, altering, repairing, wrecking, painting, cleaning or painting of buildings, or other construction work.

*Single pole scaffold*—A platform resting on putlogs or crossbeams, the outer ends of which are supported on ledgers secured to a single row of posts or uprights and the inner ends on a wall or holes in a wall.

*Suspended scaffold*—A scaffold, the platform of which is suspended from overhead supports by means of cables or steel ribbons and is adjustable.

*Temporary floor*—A floor constructed for use during building operations only.

*Toeboard*—A board six inches in height, erected at right angles to the platform and tightly against it to protect the workmen as well as to prevent the falling of material from a platform.

*Window jack scaffold*—A scaffold, the platform of which is supported by a single jack or “thrustout” which projects through a window opening.

#### Source

The provisions of this § 6.3 amended November 20, 1971, 1 Pa.B. 2166.

### § 6.2. Scope.

This chapter sets forth rules to safeguard the lives, limbs and health of workers who are engaged in construction and repair work, when such work is being done

in this Commonwealth, and places the responsibility of complying with such rules upon both employer and employe.

**§ 6.3. Types of scaffolds.**

Types of scaffolds shall include the following:

- (1) Boatswains' chairs.
- (2) Bricklayers' square scaffolds.
- (3) Carpenters' bracket scaffolds.
- (4) Crawling boards.
- (5) Horse scaffolds.
- (6) Independent pole scaffolds.
- (7) Ladderjack scaffolds.
- (8) Needle beam scaffolds.
- (9) Outriggers' scaffolds.
- (10) Painters' swinging scaffolds.
- (11) Plasterers' and decorators' inside scaffolds.
- (12) Roofing brackets and scaffolds.
- (13) Runways and ramps.
- (14) Single pole scaffolds.
- (15) Suspended scaffolds.
- (16) Window jack scaffolds.

**§ 6.4. Penalty.**

Any person who violates any of the provisions of this chapter or any regulations of the Department, or who interferes with the Department or its duly authorized representative in the enforcement of such provisions or regulations shall be penalized under the provisions of section 15 of act of May 18, 1937 (P. L. 685, No. 174) (43 P. S. § 25-15).

**SPECIFICATIONS**

**§ 6.11. General.**

(a) *Supervision.* The erection, alteration and removal of scaffolds shall be done under the direction and supervision of men thoroughly experienced in scaffold work.

(b) *Lumber sizes.* Lumber sizes, when used in this chapter, refer to nominal sizes except where dimensions other than standard sizes are given.

(c) *Scaffolds to be provided.* Scaffolds constructed in accordance with this Chapter shall be provided for workmen engaged in work that is not possible to do safely from the ground or from solid construction, except such short period work as may be done safely from ladders.

(d) *Strength of lumber.* Lumber used in the construction and erection of scaffolds shall be of sap pine, long leaf yellow pine, spruce, fir, Oregon pine or

equivalent in strength and shall be sound, well-seasoned (except sap pine) and free from strength-reducing defects, such as knots of greater size than consistent with absolute safety, crossgrain, dip grain, shakes, large checks, brashness, rot or dote of worm holes, or other defects impairing its strength or durability. Hemlock shall not be used for scaffolds over 30 feet in height. Hemlock, when used, shall be of larger size than that required for any other species of wood. Reference should be made to the Appendix to this chapter, setting forth rating strength of lumber.

(e) *Inspection of lumber and safety factor.* All lumber shall be thoroughly inspected before use and all scaffolds and their supports shall be capable of supporting the load they are designed to carry with a safety factor of at least four. Scaffolds shall not at any time be overloaded.

(f) *Planks for flooring.* Planks used for flooring shall be of uniform thickness so as not to cause unevenness, and, in laying such planks, care shall be taken to avoid "traps."

(g) *Guardrails and toeboards.* Guardrails and toeboards shall be provided on the outer edges and ends of the platforms of all types of scaffolds six feet or more above the ground (including rails across window openings which extend more than 34 inches above the scaffold platform) except riveters' outrigger scaffolds, window jack scaffolds, and painters' swinging scaffolds used for sign painting at a height not exceeding 7 feet. Toeboards are not required on painters' swinging scaffolds. Guardrails and toeboards shall be securely fastened to the uprights on the side facing the platform.

(h) *Dimensions of guardrails.* Guardrails shall be the equivalent in strength of wood rails 2 by 4 inches and shall be not less than 34 inches in height and shall extend along the entire length of the outside and ends of platform with only such openings as may be necessary for delivery of materials. They shall be secured to uprights at intervals of not more than 8 feet.

(i) *Dimensions of toeboards.* Toeboards shall project not less than 6 inches above the top of the platform planks and shall be erected so as to leave no space between the platform planks and the toeboards.

(j) *Nails.* All nails shall be of proper size (minimum ten penny) of ample length, and of best quality and be used in sufficient quantities at each connection to develop the designed strength of the scaffold. No nails shall be subjected to a straight pull. All nails shall be driven in full length and the bending over of partly driven nails is prohibited. This subsection shall not be construed to prohibit the proper use of double headed nails.

(k) *Lifelines and safety belts.* Where it is necessary for workmen to crawl out on thrustouts or projecting beams, lifelines and safety belts of approved design shall be worn.

(l) *Sway bracing of members.* The principal members of scaffolds shall be rigidly and securely sway braced to prevent their displacement in any direction.

(m) *Approval of scaffolds.* All scaffolds for which specifications have not been given in this chapter, and all patented or manufactured scaffolds, parts of scaffolds or scaffolding devices and all types of scaffolds developed subsequent to May 15, 1929, shall be of an approved type.

(n) *Repair of damaged scaffolds.* Any scaffold that is damaged or weakened by any cause, shall be immediately repaired and workmen shall not be permitted on such scaffold until repairs have been completed.

(o) *Inspection of scaffolding machine.* The moving parts of scaffolding machines shall be regularly inspected twice a month by the employer of the men using the machine and a record kept of the findings of the inspections. This record shall be accessible to representatives of the Department at all times. The owner of the scaffolding machine shall be notified at once to replace any defective or worn parts and the use of the machines shall be discontinued until such replacements have been made. This record shall also be accessible to representatives of the Department. When a scaffolding machine is removed from a location it shall be thoroughly inspected and overhauled before it is again used.

(p) *Tag line required.* When materials are being hoisted up on a scaffold they shall have a tag line to prevent them from striking against the scaffold unless hoisting equipment is arranged so that there is no danger of material striking the scaffold.

(q) *Work not permitted during storm.* Men shall not be permitted to work on a scaffold during a storm or high wind, or on scaffolds which are covered with ice or snow. Clinging ice shall be removed from all guardrails and uprights and the planking sanded to prevent slipping.

(r) *Working over or near water.* Employes working over or near water, where the danger of drowning exists, shall be provided with United States Coast Guard approved life jackets or bouyant work vests. Life preservers shall be inspected for defects which would alter their strength of bouyancy. Defective units shall not be used. Ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. The distance between ring buoys shall not exceed 200 feet. At least one lifesaving skiff shall be immediately available at locations where employes are working over or adjacent to water.

#### Source

The provisions of this § 6.11 amended November 20, 1971, 1 Pa.B. 2166.

### § 6.12. Single pole scaffolds.

(a) *Classified by type of duty.* Single pole scaffolds shall be classified as either light-duty scaffolds or heavy-duty scaffolds, as follows:

(1) *Light duty.* A light-duty scaffold is a scaffold designed and constructed to carry a working load of 25 pounds per square foot, such as intended for the use of carpenters, painters or others of similar trades, and which supports no

load other than the workmen and a minimum amount of lightweight material. Light-duty scaffolds are further classified as follows:

(i) *Light-duty scaffolds not more than 24 feet.* For light-duty scaffolds not more than 24 feet in height, the following minimum nominal size material and maximum spacing of members shall be used:

- (A) Poles or uprights—2 inches by 4 inches.
- (B) Ledgers supporting putlogs—2 inches by 4 inches.
- (C) Stringers not supporting putlogs—1 inch by 6 inches.
- (D) Putlogs—3 inches by 4 inches.
- (E) Braces—1 inch by 4 inches.
- (F) Planking—2 inches by 10 inches.
- (G) Spacing of poles, measured along platform (maximum)—7 feet, 6 inches.
- (H) Spacing of poles distance from building (maximum)—5 feet.
- (I) Spacing of ledgers vertically—7 feet.

(ii) *Pole scaffolds.* Where pole scaffolds are used for work of a very light nature, the width of the platform may be reduced to a size consistent with the work being done and the safety of the men working on it.

(iii) *Light-duty scaffolds more than 24 feet.* For scaffolds more than 24 feet in height and not more than 40 feet in height, the poles shall be 3 inches by 4 inches in cross section, and for scaffolds more than 40 feet in height, 4 inches by 4 inches in cross section or heavier as required. Other members shall conform with the requirements of subparagraphs (i) and (ii).

(2) *Heavy duty.* A heavy-duty scaffold is a scaffold designed and constructed to carry a working load of 75 pounds per square foot, such as intended for the use of stone masons or others of similar trades, and which supports in addition to the workmen a supply of building material.

(i) *Heavy-duty scaffolds not more than 24 feet.* For heavy-duty scaffolds not more than 24 feet in height, the following minimum nominal size material and maximum spacing of members shall be used:

- (A) Poles or uprights—3 inches by 4 inches or 2 inches by 6 inches.
- (B) Ledgers supporting putlogs—2 inches by 8 inches.
- (C) Stringers not supporting putlogs—1 inch by 6 inches.
- (D) Putlogs—2 inches by 8 inches.
- (E) Braces—1 inch by 6 inches.
- (F) Planking—2 inches by 10 inches.
- (G) Spacing of poles, measured along platform (maximum)—7 feet.
- (H) Spacing of poles distance from building (maximum)—5 feet.
- (I) Spacing of ledgers vertically—4 feet, 6 inches.

(ii) *Heavy-duty scaffolds more than 24 feet.* For scaffolds more than 24 feet in height and not more than 40 feet in height, the poles shall be 4 by 4 inches in cross section, and for scaffolds more than 40 feet in height 4 by 6

inches in cross section or heavier as required. Other members shall conform to the requirements of subparagraph (i).

(b) *Bearing of poles at lower ends.* The lower ends of poles or uprights shall not rest upon the surface of the ground, but shall be firmly embedded to a depth of at least eight inches. Where the soil is of a soft nature, a sound block or piece of plank at least 1 foot square by 2 inches thick shall be placed in the hole and the upright placed squarely on the center of such support and securely nailed to it or otherwise fastened, the hole then being filled and solidly tamped. Where a pole bears directly on a sidewalk or other solid substance, it shall be rigidly secured at the bottom by other effective means.

(c) *Protection against moving equipment.* Where necessary, as a protection against impact of trucks or other heavy moving equipment, the bases of scaffold poles shall be protected from displacement by bumpers (not attached to the scaffold).

(d) *Splicing of poles.* When necessary to increase the height of a pole by splicing, the upper pole shall be set squarely upon the end of the lower one, the abutting ends being square and flat. At least two cleats shall be used to each splice or joint and they shall be of sound wood at least 4 feet long and 1 inch thick and in width not less than the width of the pole. They shall be securely nailed to both poles and shall be placed so as to overlap the abutting ends of each pole at least 2 feet. They shall be fastened to the poles at right angles and not on opposite sides. Two or more consecutive or contiguous uprights shall not be spliced at the same general level.

(e) *Ledgers.* Ledgers shall be long enough to extend over two consecutive pole spaces and shall overlap the poles at each end by at least 4 inches. As the platform is raised with the progress of the work the ledgers upon which it has previously rested shall not be removed but left in position to brace and stiffen the poles. Ledgers shall be level and their top edges at the same height as the bottom of the openings in the wall into which the putlogs are inserted. Ledgers weakened by nail holes or split at ends shall not be used. In putting up new ledgers, cleats of a size at least 1 inch in thickness, 10 inches long, and at least the width of the pole shall be fastened to the poles and upon which the ledgers shall rest.

(f) *Nailing of ledgers.* Unless clamps or thru-bolts are used, ledgers shall be nailed to each pole by at least four ten penny nails. Ledgers shall be fastened to the inside of the poles or uprights. Where two ledgers lap over each other on the same pole, they shall be fastened equally secure, and where two ledgers meet at right angles, one shall be fastened with its end sawed squarely flush with the pole, while the other one overlaps in the usual manner. Nails shall not be driven close to the top edge of a ledger.

(g) *Putlogs.* Putlogs shall be long enough to project over the ledger at least six inches, shall be set squarely in position and the ends shall be built into the wall. They shall not be notched or cut down except on alteration or repair work,



when they may be so treated to fit into a space obtained through the removal of a brick. Other requirements shall be as follows:

(1) *On a brick wall.* When a putlog is notched or cut down to fit into a space obtained through the removal of a brick, the notch shall be on the upper side of the putlog and shall be just deep enough to permit the end of the putlog to be inserted into the hole in the wall and shall not be more than 4 1/2 inches in length. Putlogs shall project into the wall at least four inches and where window openings are utilized instead of the wall proper, the putlogs shall be rigidly secured by effective supports and bracing. There shall be at least three putlogs under every platform plank, one at each end and one in the center, spaced uniformly and bearing upon the ledgers as close to the poles as possible.

(2) *On a frame building.* When attaching putlogs to a frame building, the procedure shall be to notch two pieces of one by eight inch lumber 18 inches long with notches the size of the putlogs so that the putlog bears on the narrow surface. These notched pieces shall then be nailed one upon the other to the side of the building and the putlog nailed to the notched pieces.

(h) *Platforms.* Platform planks shall be of sufficient length to extend over three bearers and all ends shall be lapped over bearers. They shall be laid so that the sides abut and fit "tight". Two successive lengths of planking shall not abut upon a single putlog. If planks are laid end to end, two parallel putlogs shall be provided not more than eight inches apart, and in such a manner that one putlog supports the end of one of the planks and the other putlog supports the abutting end of the other plank. Where platform planks overlap on a single putlog, the lap of both the upper and lower planks shall be at least six inches over the center of the putlog. Platform planks shall project over the last putlog at the end of the scaffold by at least six inches but in no case more than 12 inches.

(i) *Treatment of corners.* Where a scaffold is built around a corner at least one putlog shall be laid and securely fastened diagonally across the corner, so that one end may rest upon each of the two ledgers that meet at the corner. Care shall be taken in laying platform planks, so that no tipping hazard exists. Poles shall be spaced at shorter intervals.

(j) *Bracing.* Pole scaffolds shall be firmly and adequately braced or shored in such a manner as to prevent them from swinging away from the building. Where spring stay braces are used they shall be placed at least in every alternate horizontal row of putlog holes. Diagonal bracing shall be also be provided to prevent the poles from moving parallel to the walls of the building, or from the buckling, whether spliced or not.

(k) *Horses.* Where the use of horses is necessary, they shall conform to the requirements set forth in § 6.24 (relating to horse scaffolds).

(l) *Protection.* Protection shall be afforded as set forth in § 6.32 (relating to protection).

**Cross References**

This section cited in 34 Pa. Code § 6.13 (relating to independent pole scaffolds).

**§ 6.13. Independent pole scaffolds.**

(a) *Reference to other requirements.* The requirements of § 6.12 (a)(1) and (2),(b),(f),(h),(i),(k) and (l) (relating to single pole scaffolds) apply to independent pole scaffolds.

(b) *Light-duty scaffolds.* Light-duty scaffolds shall conform to the following standards:

(1) *Light-duty scaffolds not more than 24 feet in height.* For light-duty scaffolds not more than 24 feet in height, the following minimum nominal size material and spacing of members shall be used:

- (i) Poles or uprights—2 inches by 4 inches.
- (ii) Ledgers supporting bearers—2 inches by 6 inches.
- (iii) Stringers not supporting bearers—1 inch by 6 inches.
- (iv) Bearers—2 inches by 8 inches.
- (v) Braces—1 inch by 4 inches.
- (vi) Planking—2 inches by 10 inches.
- (vii) Spacing of poles, measured along platform (maximum)—7 feet, 6 inches.
- (viii) Spacing of poles distance from building (minimum)—6 feet, 6 inches.
- (ix) Spacing of ledgers vertically—7 feet.

(2) *Light-duty scaffolds more than 24 feet in height.* For scaffolds more than 24 feet in height and not more than 40 feet in height, the poles shall be 4 inches by 4 inches in cross section and for scaffolds more than 40 feet in height 7 feet by 6 inches in cross section or heavier as required. Other members shall conform to the requirements of subsection (a), with the exception that poles shall be spaced 7 feet, 6 inches minimum distance from building.

(c) *Heavy-duty scaffolds.* Heavy-duty scaffolds shall conform the following standards:

(1) *Heavy-duty scaffolds not more than 24 feet in height.* For heavy-duty scaffolds, not more than 24 feet in height, the following minimum nominal size material and spacing of members shall be used:

- (i) Poles or uprights—3 inches by 4 inches.
- (ii) Ledgers supporting bearers—2 inches by 8 inches.
- (iii) Stringers not supporting bearers—1 inch by 6 inches.
- (iv) Bearers—2 inches by 10 inches.
- (v) Braces—1 inch by 6 inches.
- (vi) Planking—2 inches by 10 inches.
- (vii) Spacing of poles, measured along platform (maximum)—7 feet.

(viii) Spacing of poles distance from building (minimum)—6 feet, 6 inches.

(ix) Spacing of ledgers vertically—4 feet, 6 inches.

(2) *Heavy-duty scaffolds more than 24 feet in height.* For heavy-duty scaffolds more than 24 feet in height and not more than 40 feet in height, the following minimum nominal sizes and spacing of members shall be used:

(i) Poles or uprights—4 inches by 4 inches.

(ii) Ledgers supporting bearers—2 inches by 8 inches.

(iii) Stringers not supporting bearers—2 inches by 8 inches.

(iv) Bearers (two)—2 inches by 12 inches.

(v) Braces—1 inch by 6 inches.

(vi) Planking—2 inches by 10 inches.

(vii) Spacing of poles, measured along platform (maximum)—7 feet.

(viii) Spacing of poles distance from building (minimum)—10 feet.

(ix) Spacing of ledgers vertically—4 feet, 6 inches.

(d) *Scaffolds greater than 40 feet in height.* When built-up scaffolds are erected more than 40 feet high, the size of members shall be increased so that a factor of safety of four shall be maintained in the scaffold as a whole and in all its component parts.

(e) *Placement of poles.* The inner row of poles shall be set as near the wall of the building as practical and allow workmen sufficient working space. Each set of poles, outside and inside, shall be provided with its own ledgers.

(f) *Footing of poles.* Particular care shall be taken that the bearing or footing of independent pole scaffolds is solid and firmly secure.

(g) *Bracing.* Adequate diagonal bracing shall be provided and such cross braces shall be nailed to every pole crossed. Cross bracing between front and rear poles shall be provided and the free ends of scaffolds shall be double cross braced.

(h) *Bearers.* Bearers shall be laid on ledgers sidewise, one at each pair of poles (inside and outside) and shall be securely nailed to the poles. They shall be long enough to rest upon both inner and outer ledges and overlap each ledger by at least three inches.

(i) *Horses.* Where the use of horses is necessary they shall conform to the requirements set forth in § 6.24 (relating to horse scaffolds).

(j) *Protection.* Protection shall be afforded as set forth in § 6.32 (relating to protection).

#### Cross References

This section cited in 34 Pa. Code § 6.25 (relating to plasterers' and decorators' inside scaffolds).

**§ 6.14. Suspended scaffolds.**

(a) *Fixtures and appliances.* Only approved scaffold machines shall be used in the erection and use of any scaffold. Where scaffold machines are rented, all the fixtures and appliances received with them shall be erected and used at all times when such scaffolds are in service. The moving parts of scaffold machines shall be frequently inspected and shall be exposed to view at all times so that possible defects may be readily detected, but such moving parts shall be railed off or otherwise guarded to protect workmen from coming into contact with them.

(b) *Suspended scaffolds recommended.* The use of a suspended scaffold is recommended for all buildings more than five stories high, built with a frame to provide overhead support. The parts of the building or structure to which a suspended scaffold is attached shall be examined to determine if such parts are of sufficient strength to support properly the load that may be imposed on the scaffold.

(c) *Safety factor.* A suspended scaffold shall be capable of sustaining a working load of 40 pounds per square foot with a factor of safety of four.

(d) *Suspension supports.* When cables are used they shall conform to the requirements set forth in § 6.31 (relating to cables, ropes, block and tackle). Where steel ribbons or suspension supports other than cables are used, they shall possess a factor of safety in strength of at least eight.

(e) *Thrustouts.* Thrustouts shall consist of steel I-beams or, in the case of the overhand type of machine, steel channel beams, which project at least one foot beyond the outer edge of the suspended platform, and shall be securely anchored and fastened to the steel frame work of the building by means of U-bolts and anchor plates tightened by the use of jam or lock nuts or, where building conditions prevent, by other approved equally effective means. I-beam thrustouts shall be equipped with a stop bolt rigidly fastened and of adequate size to prevent the shackle from slipping over the edge of the beam. Channel beam thrustouts shall be parallel and secured to each other by a bolt at least 3/4 inch in diameter over which thimbles of iron pipe shall be slipped to keep the beams the necessary distance apart.

(f) *Putlogs.* Putlogs shall be securely fastened to the scaffold fixtures and spaced not more than 8 feet apart.

(g) *Platforms.* Platform planks shall be laid so that their edges abut and fit "tight." Planks shall be not less than 10 inches wide and 2 inches thick. The platform planks shall overlap putlogs by at least 1 foot but not more than 2 feet at the ends of the scaffold.

(h) *Prevention of swaying.* Ropes or hooks shall be used and fastened to the platform of the scaffold and to the building in such a manner and at such intervals as to prevent the scaffold from swinging away from the building. Likewise, fenders shall be provided to prevent the scaffold from swinging against the building.

(i) *Protection.* Protection shall be afforded as set forth in § 6.32 (relating to protection).

**§ 6.15. Painters' swinging scaffolds.**

(a) *Platform planks.* The platform planks shall be laid together and shall overlap the stirrup or hanger by at least 12 inches. A bar, strip or other device shall be permanently attached to the platform outside the hanger to prevent the platform from slipping off the hanger.

(b) *Stirrups or hangers.* The iron stirrups or hangers shall be of a strength at least equal to wrought iron or steel 3/4 inch in diameter and shall be so formed that guardrails may easily be secured to them. For painters' swinging scaffolds used for sign painting at a height not exceeding 7 feet, hangers constructed of rope may be used. In such cases rope shall conform to the specifications set forth in § 6.31 (relating to cables, ropes, block and tackle). The distance between hangers shall not exceed 14 feet.

(c) *Hooks.* The hooks used to support the scaffold shall be of a strength at least equal to wrought iron or steel of a cross section 5/8 inch by 2 inches. They shall be securely anchored and supported. Care shall be taken that the eaves or cornices of a building are of assured soundness. Hooks, cornice irons, outlookers or other devices for fastening to the building shall be securely fastened to the eaves, cornices or other equally reliable object of support, and shall be frequently inspected. Hooks shall be tied to prevent slipping off the cornices or eaves.

(d) *Testing strength.* Swinging scaffolds shall be constructed to bear at least four times the maximum weight to be placed on them. Every time the scaffold is erected it shall be tested by raising the platform about one foot from the ground and loading it with at least four times the maximum weight that will be imposed upon it.

(e) *Blocks and ropes.* Blocks and ropes shall conform to the requirements set forth in § 6.31, and ropes shall be double lashed at each point of suspension.

(f) *Permissible load.* Not more than two men shall be permitted on this type of scaffold at one time except where more than two stirrups with corresponding hooks, blocks and ropes are used, in which case one additional man may be permitted for each additional stirrup.

(g) *Combining two scaffolds.* Two or more swinging scaffolds shall not, at any time, be combined into one by bridging the distance between them with planks or similar connecting links.

(h) *When not in use.* When leaving a swinging scaffold the men shall lash it securely to the building. Buckets or other loose objects shall be removed from such scaffold immediately upon the cessation of work by the men.

(i) *Prevention of swaying.* Ropes or hooks shall be used and fastened to the platform of the scaffold and to the building in such a manner and at such inter-

vals as to prevent the scaffold from swinging away from the building. Likewise, fenders shall be provided to prevent the scaffold from swinging against the building.

**§ 6.16. Carpenters' bracket scaffolds.**

(a) *Platforms.* Platform boards shall be laid tightly together and shall overlap the brackets by at least 4 inches but not more than 6 inches. The boards shall be heavy enough to prevent springiness of the platform.

(b) *Brackets.* Brackets shall be spaced at intervals not greater than 4 feet. There shall be at least three brackets underneath each board. In the erection of the brackets, provision shall be made for the placement of guardrails and toeboards.

(c) *Bolts.* The brackets shall have their supporting bolts near the top and such bolts shall be securely anchored and fastened. The practice of merely passing the bolt through the sheathing is prohibited and some additional means of anchorage shall be improvised depending upon the type of building. The bolt shall be at least 3/4 inch in diameter and shall be long enough to project at least 1 inch beyond the nut when in place.

(d) *Protection.* Protection shall be afforded as set forth in § 6.32 (relating to protection).

**§ 6.17. Bricklayers' squares scaffolds.**

(a) *Planking.* Platform boards shall be at least two inches in thickness by 10 inches wide and shall overlap the squares by at least 4 inches but not more than 6 inches. All planks shall extend over three squares.

(b) *Distance between squares.* Squares shall be placed at intervals not greater than 5 feet if used as a heavy-duty scaffold and 7 feet 6 inches if used as a light-duty scaffold. Platform boards shall be laid so that they bear on all of the squares under the platform planks.

(c) *Bracing.* Squares shall be diagonally braced both from the front and rear, and from the top and bottom; that is, from the top and bottom of one to the bottom and top of the next adjacent one.

(d) *Pyramiding.* When pyramided, one square shall be placed directly above another, the braces shall be used to prevent the scaffold from pulling away from the building. Diagonal bracing for each tier shall be in accordance with subsection (c). Scaffolds shall not be built more than four tiers in height. The upper tiers shall stand on continuous rows of planks laid across the lower tier, nailed down and cleated on the underside on each side of the supporting square to prevent movement of the planks and prevent swaying of the scaffold.

(e) *Size of squares.* The squares shall have no side larger than 5 feet.

(f) *Size of lumber.* The side members of jacks shall be at least 2 by 4 inch lumber and shall abut one another. Supporting blocks 2 by 1 inches and 6 inches long shall be nailed 4 inches from the ends of the two longer side members,

so as to support the shorter of the other two side members. The corners shall then be braced on both sides with braces one inch in thickness, cut in the form of right angle triangles, the legs of which shall be 14 inches long. These braces shall be securely nailed to both abutting side members. This type of square may be used with the sides and bottom and top reversible.

(g) *Protection.* Protection shall be afforded as set forth in § 6.32 (relating to protection).

#### § 6.18. Outriggers' scaffolds.

(a) *Platforms.* The platform of outriggers' scaffolds shall consist of planks at least ten inches in width and two inches in thickness. They shall be laid tightly together and shall overlap their supports by at least 4 inches, but not more than 6 inches. In building the platform, provision shall be made for the erection of guardrails and toeboards.

(b) *Thrustouts.* Thrustouts shall not be built into a wall and left with no other support but shall project entirely through the wall or through windows and be solidly supported, braced, anchored, and fastened inside of the building. They shall be no less than 3 inches by 10 inches, set on edge, spaced no greater than 6 feet on centers and shall be rigidly held against turning or buckling. External supports shall be provided but shall not be depended upon as the main support.

(c) *Suspended platforms below thrustouts.* Where the platform is suspended below the thrustouts, it should be supported by vertical hangers of not less than 2 by 6 inch lumber and not more than 10 feet in length. The platform should be supported by 2 by 6 inch bearers, nailed to the vertical hangers and reinforced by cleats beneath the bearers. The suspended platform should be braced to prevent swaying.

(d) *Horse scaffolds.* Horse scaffolds shall not be erected upon the platform of an outrigger scaffold to gain additional height.

(e) *Protection.* Protection shall be afforded as set forth in § 6.32 (relating to protection).

#### § 6.19. Needle beam scaffolds.

(a) *Platforms.* Where the space between needle beams is 12 feet or less, the platform shall be composed of planks at least 10 inches wide and 2 inches thick. Where the span is over 12 feet the cross section of the two planks shall be increased in proportion. Platforms shall not be more than 6 feet in width. In all cases where not nailed or otherwise secured, planks shall be at least 2 feet longer than the span bridged and a hole shall be bored through both ends of every plank. The hole shall be not less than 6 inches from the end and a 5/8 inch bolt at least 8 inches in length shall be placed in it and provided with a tightly fitting nut. The planks shall be laid on the beams with the bolts outside. Where the planks are to be used in a steeply inclined position, they shall be provided with cleats at least

1 3/4 by 2 inches in cross section, spaced not more than 8 inches apart. Provision shall be made for the use of guardrails and toeboards.

(b) *Needle beams.* All needle beams shall be plainly marked to prevent their use for any other purpose. Care shall be taken in handling them to prevent falls and ensuing defects. When the space between needle beams is 12 feet or less, wood needle beams shall be at least 3 inches by 8 inches in cross section with the longer dimension vertical and shall be increased in size when longer or when required for the loads they are to support. Needle beams shall always be in one length, and spliced or built-up beams shall not be used. Provision shall be made to prevent the supporting ropes from slipping over the ends of the beams.

(c) *Pipe needle beams.* Pipe needle beams shall be of unspliced wrought iron or steel pipe, painted and free from rust or scale. When the scaffold span is not more than 12 feet, the pipe shall be at least 3 1/2 inches in diameter; if the span is more than 12 feet and not more than 16 feet, the pipe shall be at least 4 inches in diameter; over 16 feet, the diameter of the pipe shall be correspondingly increased.

(d) *Ropes.* The ropes shall be attached to the needle beams by what is known as a "scaffold hitch" or some other equally effective method, the loose end being firmly tied to a supporting rope by a bowline knot. The rope shall be at least 1 inch in diameter and shall be increased proportionately to the size of the load. The supporting rope shall not be attached to the needle beam at a point less than 1 foot from the end of the beam. In other respects the rope shall conform with the requirements set forth in § 6.31 (relating to cables, ropes, block and tackle).

(e) *Protection.* Protection shall be afforded as set forth in § 6.32 (relating to protection).

### § 6.20. Roofing brackets and scaffolds.

(a) *Bracket supports.* Roofing brackets used for shingling and roofing shall be securely supported by means of ropes fastened to a hook securely hooked over the ridgepole of the roof, and to a 5/8 inch eye bolt securely screwed into the roofing bracket, or by means of pointed projectors driven their full length in the frame or woodwork of the roof.

(b) *Ropes.* The ropes may also be secured to some permanent part of the roof, such as the chimney or cupola, or to some solidly fixed object on the farther side of the building; or by 5/8 inch eye bolts, solidly screwed into sound, heavy timber. Ropes shall conform to the requirements set forth in § 6.31 (relating to cables, ropes, block and tackle).

(c) *Horizontal scantling.* Where horizontal scantling with shingles nailed to it is used, the scantling shall be at least 2 inches by 4 inches in cross section, and the shingles shall be securely nailed to the roof. Where the scantling is fastened to the roof by means of strips of sheet zinc or other material being nailed to the under sides of the scantling and to the roof, the nails used shall be of ample length and sufficient in number to insure safe working conditions.



(d) *Protection.* When work is done on roofs where there is no parapet wall at the eaves, and such roof has a slope greater than 6 inches in 1 foot, a substantial catch platform or scaffold platform is required of sufficient width to extend at least 2 feet beyond the outer edge of the eaves projection, and such platform should be equipped with a guardrail. As an alternative to such a platform, each man working on the roof should be provided with a lifeline securely fastened to a safe anchorage.

**§ 6.21. Crawling boards or chicken ladders.**

(a) *Construction.* Crawling boards shall be at least 10 inches in width and not less than 1 inch thick. The cross strips shall be as long as the width of the board, at least 1 1/2 inches wide and not less than 1 inch thick.

(b) *Fastenings.* Where crawling boards are double, they shall be securely bolted together by a hinge bolt, with the hinge resting on the peak or ridgepole of the roof. Where single, they shall be provided with hooks, bolts or solidly fastened cleats on the underside of the board at the upper end, so arranged as to hook or catch over the peak or ridgepole of the roof. If bolts or cleats are used, the upper end of the board shall also be nailed to the roof to prevent the board from slipping in an upward direction, thus disengaging the hold.

(c) *Protection.* When crawling boards are used on roofs where the slope is more than 6 inches in 1 foot, a catch platform or lifelines shall be used.

**§ 6.22. Ladder jack scaffolds.**

(a) *Platforms.* Platform planks shall be at least 2 inches in thickness and 10 inches in width and shall extend over the full bearing surface of the ladder jack. Platform planks shall overlap the bearing surface by at least 4 inches, but not more than 6 inches. Platform planks shall not have a span of more than 10 feet unless provided with a truss in the center when the span shall not exceed 15 feet.

(b) *Height limit.* No ladder jack shall be used at a height greater than 22 feet above the ground or working level, and in no case shall ladder jacks be used with extension ladders.

(c) *Persons permitted.* Not more than one person shall be allowed on a ladder jack scaffold at any one time unless the platform plank is trussed in the center.

(d) *Approval.* All ladder jacks shall be of approved type. The ladder jack shall be clamped or otherwise securely fastened to the ladder and shall bear on the side rails.

(e) *Construction of ladders.* All ladders used in conjunction with ladder jacks shall be designed, constructed and maintained according to the requirements of Chapter 21 (relating to ladders).

(f) *Prevention of slipping.* All ladders used in conjunction with ladder jacks shall be equipped with approved devices or shall be so placed, fastened or held as to prevent slipping.

**§ 6.23. Window jack scaffold.**

(a) *Use.* Window jacks shall be constructed to sustain a working load of 200 pounds with a safety factor of four and shall be used only for the purpose of working at the window through which the jack is placed. The placing of planks between one window jack and a jack in an adjacent window is prohibited. Window jacks shall not act as the supporting elements for other scaffolding.

(b) *Persons permitted.* Not more than one person shall be permitted to be on a window jack scaffold at any one time.

(c) *Approval.* Window jacks shall be of an approved type.

**§ 6.24. Horse scaffolds.**

(a) *Foundations.* When horse scaffolds are used inside a building, the horses shall be set squarely upon the floor or, if no floor has been erected, a substantial temporary floor shall be constructed for this purpose. The practice of placing bricks, blocks, tiles or similar loose objects under the legs of horses to bring their upper parts to a certain desired level is prohibited. When a horse is not quite high enough to afford proper support to the planking, a wood strip of the proper thickness shall be securely nailed to the top of the horse. On outside work, the legs of horses shall not bear directly on the ground itself, but a solid planking shall be laid upon which they shall rest. The practice of supporting horses upon thrustouts is prohibited. The nailing of extension pieces on the legs of horses to increase the height shall be prohibited.

(b) *Construction of horses.* Horses shall be solid in construction and care shall be taken that their legs are built at the proper angles, avoiding a spread of either too little or too great a distance. The lumber used in the construction of a horse shall be not less than 1 inch in thickness, and 6 inches in width, except that for the top horizontal supporting member the dimensions shall be at least 2 inches by 4 inches. If the length of the horse exceeds 5 feet or if designed for heavy duty, these lumber sizes shall be proportionately increased. Inside bracing shall be provided by nailing two boards at least one inch in thickness to the underside of the top horizontal supporting member, dropping them at an angle from there and nailing one to the top of the cross bracing on each pair of legs, or by other equivalent bracing.

(c) *Platforms.* Platform planks shall be at least two inches in thickness and shall be laid with their edges abutting. The distance between horses shall not exceed 5 feet for a heavy-duty scaffold and shall not exceed 7 feet, 6 inches for a light-duty scaffold. Care shall be taken that the planks rest properly upon each horse, thus eliminating springiness in the platform. Where any space between the platform and horse is apparent it shall be overcome by following out the provisions of subsection (a). Care shall be taken that the platforms are not overloaded.

(d) *Horses in tiers.* In erecting horse scaffolds, the horses of each tier shall be placed directly over the horses of the tier next below. Where more than two

tiers are built, every horse shall be nailed to the planks it supports as well as to those upon which it rests. Scaffolds shall not be built to a height in excess of 21 feet.

(e) *Bracing*. Where horse scaffolds are more than two tiers in height, braces shall be provided between all horses used.

(f) *Guardrails and toeboards*. Guardrails and toeboards shall be provided for all horse scaffolds over 6 feet in height. Protection shall be furnished as set forth in § 6.32 (relating to protection).

(g) *Ladders*. Where ladders are used to gain access to horse scaffolds they shall conform with the requirements set forth in § 6.30 (relating to ladders); also, the plank upon which the top of the ladder rests shall be nailed to its supporting horse and such supporting horse shall be nailed to the lower planks upon which it rests, these planks in turn being nailed to the lower horses supporting them.

#### Cross References

This section cited in 34 Pa. Code § 6.12 (relating to single pole scaffolds); 34 Pa. Code § 6.13 (relating to independent pole scaffolds); and 34 Pa. Code § 6.25 (relating to plasterers' and decorators' inside scaffolds).

### § 6.25. Plasterers' and decorators' inside scaffolds.

(a) *Trestle*. The use of ladders which lean against the wall, barrels, boxes or other similar unstable objects as support for planking is prohibited. Platform planks shall be at least two inches in thickness and shall not have a span of more than ten feet. Where or trestle ladders are used to support planking they shall conform to the requirements set forth in Chapter 21 (relating to ladders). The ladder shall be spread before placing the planking on it. The trestle or horses shall not be more than two tiers high and shall be built as specified in § 6.24 (relating to horse scaffolds).

(b) *Larger scaffolds*. Where it is necessary to use larger scaffolds for inside work, only such scaffolds as have been approved for such work shall be used, or they shall be constructed according to the specifications contained in § 6.13 (relating to independent pole scaffolds). Where it is necessary to build the scaffold to an unusual height, the poles shall be of proportionately heavier material. Since plasterers' and decorators' inside scaffolds are frequently built not only lengthwise but also deep, the diagonal cross bracing shall, in such cases, be provided in both directions. Provisions shall be made for equipping the scaffolds with guardrails and toeboards on the outside edges of the various platforms.

(c) *Short cut passageways*. Short cut connection between different parts of the same scaffold by means of unprotected planks is prohibited. Where such connection is made it shall be by a properly constructed and substantially supported passageway or temporary platform, and such passageway or platform shall be equipped with guardrails.

(d) *Protection.* Protection shall be afforded as set forth in § 6.32 of this Title (relating to protection).

**§ 6.26. Boatswain's chairs.**

(a) *Construction.* Boatswain's chairs or seats, attached by means of a sling to a suspended rope, used for painting, cleaning or other small operations, shall be constructed and erected with the greatest possible care. Boatswain's chairs shall have a seat of at least ten inches by 18 inches.

(b) *Fastening of ropes.* The suspended rope shall either be securely fastened to a fixed object above the operation or passed through an overhead block, the free end being securely fastened to some fixed and easily accessible object, except where either of these methods of construction are impossible, as in the case of a flagpole, when the rope may be secured to the pole by means of suitable and safe hitch.

(c) *Stirrups.* When the suspension rope is attached to a pole by means of a hitch, the workman shall be provided with stirrups upon which he will be able to rest his weight while he is shifting the hitch by which the chair is made fast, and the stirrups shall be supported independently of the chair itself. The same care shall be exercised in supporting the stirrups as in fastening the chair.

(d) *Safety belt.* Every workman using a boatswain's chair shall be provided with a safety belt secured to the supporting tackle to provide safety in case he falls from the chair.

(e) *Wire rope.* All ropes shall conform to the requirements set forth in § 6.31 (relating to cables, ropes, block and tackle). When a boatswain's chair is used by a workman using a blow torch, or any open flame, fiber rope slings shall not be used. The slings shall be at least 3/8 inch wire rope.

**§ 6.27. Runways and ramps.**

(a) *Planks and supports.* Runways and ramps, where used in scaffold work, shall be substantially constructed and supported. Runways shall be composed of planks, each at least 10 inches in width. The minimum width of runways shall be 30 inches. They may be laid so that their edges abut, but in that case a wide, solid bearing shall be provided. When the planks overlap, the plank that runs from below shall be placed so that it laps over the one running from above. The planks of runways and ramps shall be securely nailed in position and the supports shall be well-braced.

(b) *Inclines and cleats.* The construction of runways and ramps at an incline greater than 1 foot rise in 3 feet is prohibited. Runways and ramps constructed at a greater incline than 1 foot rise in 6 feet shall be provided with cleats running crosswise and flush with the edges of the inclined platform. The cleats shall be of ample size, spaced not more than eight inches apart and securely fastened into position. They may be laid in sections across the platform so as to form a barrow

track. Runways and ramps shall be kept free from snow and ice in the winter and, if necessary, treated with sand and ashes.

(c) *Guardrails and toeboards.* Where runways or ramps are more than 10 feet in height the outside edges at least shall be provided with guardrails and toeboards. Where such runways pass near deep holes, railroad tracks, high tension wires, mortar beds or similar dangerous places, guardrails and toeboards shall be provided on both sides of the runways or the dangerous points effectively guarded.

### § 6.28. Temporary floors.

(a) *Second floor to be covered.* The first floor above the street floor shall be completely planked over as soon as practicable leaving only such openings as are reasonably necessary, and such openings shall thereafter be kept covered throughout the entire period of construction. This does not apply to buildings less than three stories in height.

(b) *Working floor.* The working floor shall be completely planked over, except openings which are reasonably necessary.

(c) *Unprotected floors.* A floor not more than three stories below the working floor shall be completely planked over, except openings that are necessary, and shall have guardrails and toeboards or other equivalent protection at all openings and outside edges, except that where this is impracticable, safety nets or catch platforms shall be provided. Such temporary floors shall not be removed until a permanent floor is laid.

(d) *Construction.* Temporary floors shall consist of sound commercial lumber at least two inches in thickness, with spans not greater than 8 feet. Where the beams are more than 8 feet apart, temporary intermediate joists shall be provided of sufficient strength to carry a live load of at least 50 pounds per square foot with a factor of safety of four. Planks shall extend at least 1 foot past the support or shall be nailed or otherwise securely fastened. Planks shall have no unsupported projection greater than 1 foot, 6 inches.

(e) *Openings in floors.* All openings in floors, temporary or permanent, shall be enclosed by guardrails and toeboards. Such guardrails and toeboards shall be constructed as soon as the flooring around the openings is laid and shall be left in place until the operation is completed. Workmen are prohibited from working on any floor of a building unless all openings on such floors are closed by guardrails and toeboards. All unused openings in floors, temporary or permanent, shall be completely planked over until such time as they are used.

(f) *Lifelines.* Lifelines, safety belts and lanyards shall be used only for employes safeguarding. Lifelines shall be secured above the point of operation to an anchorage or structural member capable of supporting a minimum dead weight of 5,400 pounds.

(g) *Safety nets.* Safety nets shall be provided when workplaces are more than 25 feet above the ground or water surface, or other surfaces where the Depart-

ment determines that the use of ladders, scaffolds, catch platforms, temporary floors, safety lines or safety belts are unfeasible. This requirement shall be reflected in bid specifications. Where safety net protection is required by this Part, operations shall not be undertaken until the net is in place and has been adequately secured and inspected. Nets shall extend 8 feet beyond the edge of the work surface where employees are exposed. The maximum mesh size of the nets shall be 6 inches by 6 inches of 3/8 inch diameter, number one grade, pure manila, 1/4 inch nylon, or 5/16 inch polypropylene rope. Forged steel safety hooks or shackles shall be used to fasten the net to its supports. Nets shall meet these specifications and shall be so tagged. Connections between net panels shall develop the full strength of the net.

**Source**

The provisions of this § 6.28 amended November 20, 1971, 1 Pa.B. 2166.

**§ 6.29. Stairways.**

(a) *Construction.* Stairways used during construction work shall be strongly built and shall have treads of full width and depth. The treads shall be spaced so as to afford easy ascent and descent. The stairs and landings of stairways shall be solid and shall be provided with guardrails at exposed sides.

(b) *Clear passage.* Stairways used during construction work shall be kept clear of debris and other obstructing materials at all times and shall be maintained so as to always insure safe passage. Where temporary stair treads are placed over finished or unfinished stairs, such treads shall be securely fastened.

(c) *Use.* Stairways shall be used instead of ladders wherever practicable to do so.

**§ 6.30. Ladders.**

(a) *Where required.* When a runway, stairway or safe inside means of access to a scaffold is not provided, a ladder shall be provided for all such scaffold platforms more than 45 inches above the ground or floor.

(b) *Construction.* Ladders for scaffolds shall be built according to Chapter 21 (relating to ladders), except where such construction is conclusively provided impracticable by reason of unusual working conditions. Particular care shall be taken regarding the quality of wood used in the construction of all ladders.

(c) *Location and guardrails.* When practicable all ladders shall be placed on the outside of a scaffold. If the landing is on a platform extending from the scaffold platform or building, such landing shall be provided with guardrails. If the ladder is built inside of a scaffold the opening in the flooring through which it comes shall be protected by guardrails.

(d) *Single pole ladders.* The use of single pole ladders is prohibited.

(e) *Fastenings and placement.* Ladders shall be securely fastened at the top and bottom. The top shall extend not less than 36 inches above the platform or

floor served and the landing rung shall be as close to the level of the floor or platform as possible. Ladders shall not be placed on boxes or other insecure footings to bring them up to a desired height.

(f) *Length.* The ladder shall not exceed 30 feet in length except when it is absolutely necessary.

(g) *Extended ladders.* The extended ladder shall be securely fastened to the lower ladder by means of two iron rungs, threaded at both ends, placed firmly in the slots provided for such purpose and held in place by tight-fitting nuts and washers. The side bars at the base of the slots shall be additionally strengthened to prevent splitting of the wood.

(h) *Number of persons on ladder.* When workmen carry material up or down a ladder not more than one workman shall be permitted on a single ladder at one time. Where work being done necessitates frequent use of a ladder for this purpose, the remaining alternative is to build two ladders, one for up travel and one for down travel.

(i) *Bracing.* When ladders are of a length sufficient to possess a tendency toward springiness when sustaining weight, bracing shall be provided to overcome such springiness. This particularly applies to extended ladders.

(j) *Trestle ladders.* Where "A" or trestle ladders are used to support planking, they shall be constructed according to Chapter 21.

#### Cross References

This section cited in 34 Pa. Code § 6.24 (relating to horse scaffolds).

### § 6.31. Cables, ropes, block and tackle.

(a) *Cables.* Cables for scaffolds and hoists shall not be less than 1/4 inch in diameter, and shall possess a factor of safety of at least eight. A metal tag shall be placed on all cables at a point readily accessible to inspection showing the size and material of the cable, including the maximum safe load and the date of renewal. There shall be compliance with the following additional requirements:

(1) *Cable fastenings.* The fastenings of all cables shall be of an approved type. Particular care shall be taken in the pouring of sockets, and the metal used shall be zinc. Where thimbles and clamps are used the fastenings shall be made under the supervision of a competent man and not less than three approved clamps or clips shall be used at each fastening. Clamps shall be installed with the U-bolt on the dead end of the cable.

(2) *Splicing.* The splicing of cables is prohibited.

(3) *Maintenance and inspection.* Cables shall at all times be maintained in a perfectly safe operating condition and frequent inspections shall be made.

(4) *Riding of cables.* Where "riding" of the cable on the drum occurs, it shall be adjusted immediately but the adjustment shall only be done by someone thoroughly familiar with the machine and experienced in such work.

(b) *Ropes.* For all other lifeline applications, rope of a minimum of 3/4 inch manila or equivalent, with a minimum breaking strength of 5,400 pounds, shall be used. A tag shall be placed on all ropes readily accessible to inspection, showing the size and material of the rope, including the minimum breaking strength in pounds. In addition, the following requirements shall be met:

(1) *Fastenings of ropes.* Ropes shall be at least double lashed at each point of suspension. Lifelines used on rockscaling operations, or cut in areas where the lifeline may be subjected to cutting or abrasion, shall be a minimum of 7/8 inch wire core manila rope.

(2) *Splicing.* The splicing of ropes is prohibited.

(3) *Knots.* Rope knots shall have their free ends lashed to the standing part to prevent their becoming untied. All knots shall be tested and made secure before the rope is used.

(c) *Block and tackle.* Block and tackle shall fit the size of the rope they carry and shall be so constructed that they do not chafe or abrade the ropes running through them.

(d) *Inspection and storage.* All ropes, slings, and tackle shall be thoroughly and frequently inspected. When not in use they shall be stored in a dry place.

(e) *Protection of rope or cable when using acid.* Wherever any solution containing acid, caustic or any other substance injurious to hemp rope fibre or iron or steel cables is to be used to clean buildings or other structures, the hangers and falls of the scaffold shall be protected to a height of at least six feet above the platform with acid-resisting material, and further provided that the ropes or cables shall hang over the outside edge of the scaffold platform. Solutions containing acid or caustics shall not be stored in the same room with scaffolding equipment.

(f) *Builders' hoists.* Builders' hoists shall comply with all the requirements of Chapter 7 (relating to elevators, lifts, escalators, dumbwaiters, hoists, and tramways), and shall not be operated without a "State Certificate of Operation" on display in or adjacent to the hoist shaftway.

#### Source

The provisions of this § 6.31 amended November 20, 1971, 1 Pa.B. 2166.

#### Cross References

This section cited in 34 Pa. Code § 6.14 (relating to suspended scaffolds); 34 Pa. Code § 6.15 (relating to painters' swinging scaffolds); 34 Pa. Code § 6.19 (relating to needle beam scaffolds); 34 Pa. Code § 6.20 (relating to roofing brackets and scaffolds); and 34 Pa. Code § 6.26 (relating to boatswain's chair).

### § 6.32. Protection.

(a) *Catch platform.* When a scaffold is erected over or near a space traversable by workmen or the public, protection shall be provided underneath the scaffold. Such protection shall consist of a suitable catch platform well supported and without openings in the flooring or some other equally effective means of over-



head protection. Such platform shall be strong enough to afford protection not only to those below, but also to the workmen above in case of a fall. Where such platform extends from a building it shall slope toward the building and be flush with the wall. In operations where considerable material is handled on the scaffold, the outer edge of the catch platform shall be provided with a fence or wire screen to prevent fallen objects from rebounding over the edge. In order to provide proper protection for workers in case of fall, safety nets as specified in this subsection shall be required directly below where workmen are performing their duties. These net requirements shall be reflected in bid specifications. This rule will apply to three stories or more in height.

(b) *Overhead protection.* Where workmen are working above other workmen or where there is a likelihood of objects falling from above, the latter workmen shall be protected by plank, wire or expanded metal shields strong enough to catch and retain any weight liable to fall from above. Such overhead protection shall be located not more than ten feet above the platform or working floor. If wire mesh or expanded metal is used the openings shall be not greater than 1/2 inch and the construction shall be not less than No. 10 steel wire gauge for wire and No. 13 U.S. gauge for expanded metal. If safety net protection is required, above operation shall not be undertaken until the net is in place and has been adequately secured and inspected by the Department.

(1) Nets shall extend 8 feet beyond the perimeter of building directly below the workmen.

(2) The maximum mesh size of the nets shall be 6 inches by 6 inches of 3/8 inch diameter, No. 1 grade, pure manila 1/4 inch nylon or 5/16 inch polypropylene rope.

(c) *Successive scaffolds.* Where two or more separate scaffolds are used simultaneously one above the other, overhead protection similar to that required in subsection (b) shall be provided for the men on the lower scaffolds in addition to the catch platform.

(d) *Sidewalk protection.* When construction operations are adjacent to a sidewalk, alley, street or other thoroughfare which is not closed to traffic, a substantial "sidewalk shed" or "bridge" shall be constructed.

(e) *Side screens.* Whenever the material on a scaffold is piled higher than the toeboard and when the scaffold is suspended or built over exposed sidewalks, streets or other thoroughfares, the openings between the toeboard and guardrail shall be covered by means of expanded metal or wire netting of mesh not greater than 1/2 inch, or other equivalent side screen may be provided.

(f) *Flues from stoves or salamanders.* In confined or unventilated areas in rooms or buildings under construction or repairs where a stove, furnace or salamander, burning coal, coke, gas or oil is used for the purpose of drying or heating, such stove shall have a pipe or flue ventilated direct to the outside for the purpose of removing obnoxious or poisonous gases, fumes or smoke. Each stove or salamander shall be set on a noncombustible base of such a size as to extend

outward a distance of 3 feet in all directions from the stove or salamander. No stove or salamander shall be located nearer than 5 feet from any wooden partition or other combustible material.

(g) *Fire extinguishers.* An approved type of fire extinguisher shall be provided on all construction jobs over three stories in height. They shall be of at least 1 gallon capacity and at least one extinguisher shall be so located that the workmen need not go more than one story either up or down to reach it. They shall be plainly marked and readily accessible.

(h) *Safe footing for workmen.* In order to assure safe footing for workmen who walk on structural members, no employer shall erect any structural member with studs, reinforcing shear connectors or similar projecting materials, unless adequate temporary walking surfaces or decking are installed on such members prior to erection. However, nothing in this section shall be construed to prohibit the attachment of studs or other protrusions after the erection of all structural members or forming or decking of a particular floor or deck level or span of a bridge or area between traverse floor beams is completed.

#### Source

The provisions of this § 6.32 amended through December 7, 1973, 3 Pa.B. 2791. Immediately preceding text appears at serial page (8034)

#### Cross References

This section cited in 34 Pa. Code § 6.12 (relating to single pole scaffolds); 34 Pa. Code § 6.13 (relating to independent pole scaffolds); 34 Pa. Code § 6.14 (relating to suspended scaffolds); 34 Pa. Code § 6.16 (relating to carpenters' bracket scaffolds); 34 Pa. Code § 6.17 (relating to bricklayers' square scaffolds); 34 Pa. Code § 6.18 (relating to outriggers' scaffolds); 34 Pa. Code § 6.19 (relating to needle beam scaffolds); 34 Pa. Code § 6.24 (relating to horse scaffolds); and 34 Pa. Code § 6.25 (relating to plasterers' and decorators' inside scaffolds).

### § 6.33. Sanitation.

(a) *Sanitary closets.* Approved sanitary chemical or water closets shall be provided during building operations and shall be so located that workmen are not obliged to walk more than three stories, either up or down, to reach them. Approved sanitary closets shall be provided in accordance with the following ratio, and for each additional 50 persons employed, or fractional part thereof, at least one additional closet shall be provided:

| <i>Number of Persons</i> | <i>Number of Closets</i> |
|--------------------------|--------------------------|
| 1—15                     | 1                        |
| 15—30                    | 2                        |
| 30—60                    | 3                        |
| 60—100                   | 4                        |
| 100—150                  | 5                        |

(b) *Special conditions.* Where the ratio specified in subsection (a) does not provide a sufficient number of chemical or water closets to permit them to be located as required, additional closets shall be provided.

(c) *Approval.* When chemical closets are provided they shall be of a type approved by the Board, equipped with agitators and maintained with chemicals of ascertained efficiency.

(d) *Protection.* All toilet facilities shall be properly protected from weather conditions and screened from public view.

(e) *Drinking water.* Pure and wholesome drinking water of a quality approved by the Department of Health of the Commonwealth shall be supplied at all times in places accessible to employes.

#### § 6.34. First aid.

(a) *First aid kit.* At all places where building construction or demolition work is being done, the contractor or other person or persons responsible for the work shall provide and maintain on the premises at all times when persons are employed on such premises, a cabinet of first aid equipped for prompt treatment in case of accident.

(b) *Emergency equipment.* Where substantial stairways to all floors of buildings under construction have not been completed, the contractor or other person or persons responsible for the work being done shall provide one or more cots, hammocks, or other effective means for moving or lowering injured employes without undue suffering and delay. Suitable methods of moving and caring for injured men shall be provided at all times during construction or demolition work.

#### § 6.35. Bracing.

(a) *When required.* Adequate bracing shall be installed to support walls, arches, piers, columns or any other structural elements; the failure to provide such adequate bracing is a violation of this section and results in a hazard to the safety of workmen engaged in construction, repair or maintenance operations and to other nearby persons.

(b) *Approval.* All bracing for which specifications are not given in this chapter and all patented or manufactured bracings, parts of braces or bracing devices and all types of braces that are developed shall be of an approved type and it shall be strong and stiff enough to safely perform its function.

(c) *Supervision.* The erection, alteration, transfer or removal of bracing shall be done under the direction and supervision of men thoroughly experienced in bracing work.

APPENDIX  
Strength of Lumber

| <i>Common Name</i>        | <i>Botanical Name</i>             | <i>Strength Rating</i> |          | <i>Seasoned<br/>Weight<br/>(pounds per<br/>cubic foot)</i> |
|---------------------------|-----------------------------------|------------------------|----------|--|
| Ash, white                | <i>Fraxinus americana</i>         |                        |          | 40   |
| Ash, green                | <i>Fraxinus lanceolata</i>        | 12,500                 | (12,700) | 39   |
| Ash, blue                 | <i>Fraxinus<br/>quadrangulata</i> |                        |          | 40   |
| Ash, black                | <i>Fraxinum nigra</i>             | 10,500                 |          | 34   |
| Beech                     | <i>Fagus atropunica</i>           | 12,500                 | (12,600) | 41   |
| Birch, sweet              | <i>Betula lenta</i>               | 13,500                 |          | 45   |
| Birch, yellow             | <i>Betula lutea</i>               |                        |          | 44   |
| Cedar, Port               | <i>Chamaceyparis</i>              |                        |          |  |
| Oxford                    | <i>lawsoniana</i>                 | 10,000                 | (10,300) | 31   |
| Cedar, Western red        | <i>Thuja plicata</i>              | 6,500                  | (6,400)  | 23   |
| Cypress, bald             | <i>Taxodium distichum</i>         | 8,500                  | (8,800)  | 31   |
| Elm, rock                 | <i>Ulmus racenosa</i>             | 12,500                 |          | 44   |
| Fir, amabilis             | <i>Abies amabilis</i>             |                        |          | 27   |
| Fir, grand                | <i>Abies grandis</i>              | 9,000                  |          | 27   |
| Fir, noble                | <i>Abies nobilis</i>              |                        |          | 26   |
| Fir, Douglas              | <i>Pseudotsuga</i>                |                        |          |  |
| (Pacific coast type)      | <i>taxifolia</i>                  | 9,500                  | (9,700)  | 34   |
| Hickory, pignut           | <i>Hicoria glabra</i>             |                        |          | 53   |
| Hickory, shellbark        | <i>Hicoria laciniosa</i>          | 16,000                 | (16,300) | 48   |
| Hickory, mockernut        | <i>Hicoria alba</i>               |                        |          | 50   |
| Hickory, shagbark         | <i>Hicoria ovata</i>              |                        |          | 50   |
| Locust, black             | <i>Robinia pseudacacin</i>        | 16,000                 |          | 48   |
| Maple, hard (or<br>sugar) | <i>Acer saccharum</i>             | 12,500                 | (12,900) | 42   |
| Oak, white                | <i>Quercus alba</i>               |                        |          | 48   |
| Oak, bur                  | <i>Quercus macrocarpa</i>         |                        |          | 45   |
| Oak, post                 | <i>Quercus minor</i>              | 12,000                 |          | 47   |
| Oak, cow                  | <i>Quercus michauxii</i>          |                        |          | 47   |
| Oak, chestnut             | <i>Quercus prinus</i>             |                        |          | 46   |
| Oak, red                  | <i>Quercus rubra</i>              | 11,000                 |          | 44   |
| Pine, sugar               | <i>Pinus lambertiana</i>          |                        | (7,400)  | 27   |
| Pine, northern white      | <i>Pinus strobus</i>              | 7,500                  | (7,400)  | 27   |
| Pine, western white       | <i>Pinus monticola</i>            |                        | (7,800)  | 29   |
| Pine, Norway              | <i>Pinus resinosa</i>             | 11,000                 | (10,900) | 33   |

|  |  |        |         |    |
|--|--|--------|---------|----|
| Pine, southern<br>yellow:<br>Dense grade | <i>Pinus palustris</i>                         | 12,000 |         | 42 |
| Sound grade                              | <i>Heterophylla<br/>echinata and<br/>taeda</i> | 10,000 |         | 38 |
| Spruce, red,<br>Northern                 | <i>Picea rubens</i>                            |        |         | 28 |
| Spruce, white,<br>Northern               | <i>Picea canadensis</i>                        | 8,000  | (7,900) | 28 |
| Spruce, sitka                            | <i>Picea sitchensis</i>                        |        |         | 26 |

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**Note:** Note: Figure given in column headed "Strength Rating" is the modulus of rupture in bending (pounds per square inch) for sound clear wood with slant of grain not over two degrees.

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