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Standards for Protection Against Radiation (10 CFR part 20), relating to protection against occupational radiation exposure, shall apply.

(b) Any activity which involves the use of radioactive material, whether or not under license from the Nuclear Regulatory Commission, shall be performed by competent persons specially trained in the proper and safe operation of such equipment. In the case of materials used under Commission license, only persons actually licensed, or competent persons under direction and supervision of the licensee, shall perform such work.

Subpart E—Scaffolds, Ladders and Other Working Surfaces

§ 1915.71 Scaffolds or staging.

(a) *Scope and application.* The provisions of this section shall apply to all ship repairing, shipbuilding and shipbreaking operations except that paragraphs (b)(8) through (b)(10) and paragraphs (c) through (f) of this section shall only apply to ship repairing and shipbuilding operations and shall not apply to shipbreaking.

(b) *General requirements.* (1) All scaffolds and their supports whether of lumber, steel or other material, shall be capable of supporting the load they are designed to carry with a safety factor of not less than four (4).

(2) All lumber used in the construction of scaffolds shall be spruce, fir, long leaf yellow pine, Oregon pine or wood of equal strength. The use of hemlock, short leaf yellow pine, or short fiber lumber is prohibited.

(3) Lumber dimensions as given in this subpart are nominal except where given in fractions of an inch.

(4) All lumber used in the construction of scaffolds shall be sound, straight-grained, free from cross grain, shakes and large, loose or dead knots. It shall also be free from dry rot, large checks, worm holes or other defects which impair its strength or durability.

(5) Scaffolds shall be maintained in a safe and secure condition. Any component of the scaffold which is broken, burned or otherwise defective shall be replaced.

(6) Barrels, boxes, cans, loose bricks, or other unstable objects shall not be used as working platforms or for the support of planking intended as scaffolds or working platforms.

(7) No scaffold shall be erected, moved, dismantled or altered except under the supervision of competent persons.

(8) No welding, burning, riveting or open flame work shall be performed on any staging suspended by means of fiber rope.

(9) Lifting bridles on working platforms suspended from cranes shall consist of four legs so attached that the stability of the platform is assured.

(10) Unless the crane hook has a safety latch or is moused, the lifting bridles on working platforms suspended from cranes shall be attached by shackles to the lower lifting block or other positive means shall be taken to prevent them from becoming accidentally disengaged from the crane hook.

(c) *Independent pole wood scaffolds.* (1) All pole uprights shall be set plump. Poles shall rest on a foundation of sufficient size and strength to distribute the load and to prevent displacement.

(2) In light-duty scaffolds, not more than 24 feet in height, poles may be spliced by overlapping the ends not less than 4 feet and securely nailing them together. A substantial cleat shall be nailed to the lower section to form a support for the upper section except when bolted connections are used.

(3) All other poles to be spliced shall be squared at the ends of each splice, abutted, and rigidly fastened together by not less than two cleats securely nailed or bolted thereto. Each cleat shall overlap each pole end by at least 24 inches and shall have a width equal to the face of the pole to which it is attached. The combined cross sectional area of the cleats shall be not less than the cross sectional area of the pole.

(4) Ledgers shall extend over two consecutive pole spaces and shall overlap the poles at each end by not less than 4 inches. They shall be left in position to brace the poles as the platform is raised with the progress of the work. Ledgers shall be level and shall be securely nailed or bolted to each pole and shall be placed against the inside face of each pole.

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(5) All bearers shall be set with their greater dimension vertical and shall extend beyond the ledgers upon which they rest.

(6) Diagonal bracing shall be provided between the parallel poles, and cross bracing shall be provided between the inner and outer poles or from the outer poles to the ground.

(7) Minimum dimensions and spacing of members shall be in accordance with Table E-1 in § 1915.118.

(8) Platform planking shall be in accordance with the requirements of paragraph (i) of this section.

(9) Backrails and toeboards shall be in accordance with the requirements of paragraph (j) of this section.

(d) *Independent pole metal scaffolds.* (1) Metal scaffold members shall be maintained in good repair and free of corrosion.

(2) All vertical and horizontal members shall be fastened together with a coupler or locking device which will form a positive connection. The locking device shall be of a type which has no loose parts.

(3) Posts shall be kept plumb during erection and the scaffold shall be subsequently kept plumb and rigid by means of adequate bracing.

(4) Posts shall be fitted with bases supported on a firm foundation to distribute the load. When wooden sills are used, the bases shall be fastened thereto.

(5) Bearers shall be located at each set of posts, at each level, and at each intermediate level where working platforms are installed.

(6) Tubular bracing shall be applied both lengthwise and crosswise as required.

(7) Platform planking shall be in accordance with the requirements of paragraph (h) of this section.

(8) Backrails and toeboards shall be in accordance with the requirements of paragraph (j) of this section.

(e) *Wood trestle and extension trestle ladders.* (1) The use of trestle ladders, or extension sections or base sections of extension trestle ladders longer than 20 feet is prohibited. The total height of base and extension may, however, be more than 20 feet.

(2) The minimum dimensions of the side rails of the trestle ladder, or the

base sections of the extension trestle ladder, shall be as follows:

(i) Ladders up to and including those 16 feet long shall have side rails of not less than $1\frac{5}{16} \times 2\frac{3}{4}$ inch lumber.

(ii) Ladders over 16 feet long and up to and including those 20 feet long shall have side rails of not less than $1\frac{5}{16} \times 3$ inch lumber.

(3) The side rails of the extension section of the extension trestle ladder shall be parallel and shall have minimum dimensions as follows:

(i) Ladders up to and including 12 feet long shall have side rails of not less than $1\frac{5}{16} \times 2\frac{1}{4}$ inch lumber.

(ii) Ladders over 12 feet long and up to and including those 16 feet long shall have side rails of not less than $1\frac{5}{16} \times 2\frac{1}{2}$ inch lumber.

(iii) Ladders over 16 feet long and up to and including those 20 feet long shall have side rails of not less than $1\frac{5}{16} \times 2\frac{3}{4}$ inch lumber.

(4) Trestle ladders and base sections of extension trestle ladders shall be so spread that when in an open position the spread of the trestle at the bottom, inside to inside, shall be not less than $5\frac{1}{2}$ inches per foot of the length of the ladder.

(5) The width between the side rails at the bottom of the trestle ladder or of the base section of the extension trestle ladder shall be not less than 21 inches for all ladders and sections 6 feet or less in length. For longer lengths of ladder, the width shall be increased at least 1 inch for each additional foot of length. The width between the side rails of the extension section of the trestle ladder shall be not less than 12 inches.

(6) In order to limit spreading, the top ends of the side rails of both the trestle ladder and of the base section of the extension trestle ladder shall be beveled, or of equivalent construction, and shall be provided with a metal hinge.

(7) A metal spreader or locking device to hold the front and back sections in an open position, and to hold the extension section securely in the elevated position, shall be a component of each trestle ladder or extension ladder.

(8) Rungs shall be parallel and level. On the trestle ladder, or on the base section of the extension trestle ladder,

rungs shall be spaced not less than 8 inches nor more than 18 inches apart; on the extension section of the extension trestle ladder, rungs shall be spaced not less than 6 inches nor more than 12 inches apart.

(9) Platform planking shall be in accordance with the requirements of paragraph (i) of this section, except that the width of the platform planking shall not exceed the distance between the side rails.

(10) Backrails and toeboards shall be in accordance with the requirements of paragraph (j) of this section.

(f) *Painters' suspended scaffolds.* (1) The supporting hooks of swinging scaffolds shall be constructed to be equivalent in strength to mild steel or wrought iron, shall be forged with care, shall be not less than $\frac{7}{8}$ inch in diameter, and shall be secured to a safe anchorage at all times.

(2) The ropes supporting a swinging scaffold shall be equivalent in strength to first-grade $\frac{3}{4}$ inch diameter manila rope properly rigged into a set of standard 6 inch blocks consisting of at least one double and one single block.

(3) Manila and wire ropes shall be carefully examined before each operation and thereafter as frequently as may be necessary to ensure their safe condition.

(4) Each end of the scaffold platform shall be supported by a wrought iron or mild steel stirrup or hanger, which in turn is supported by the suspension ropes.

(5) Stirrups shall be constructed so as to be equivalent in strength to wrought iron $\frac{3}{4}$ inch in diameter.

(6) The stirrups shall be formed with a horizontal bottom member to support the platform, shall be provided with means to support the guardrail and midrail and shall have a loop or eye at the top for securing the supporting hook on the block.

(7) Two or more swinging scaffolds shall not at any time be combined into one by bridging the distance between them with planks or any other form of platform.

(8) No more than two persons shall be permitted to work at one time on a swinging scaffold built to the minimum specifications contained in this paragraph. Where heavier construction

is used, the number of persons permitted to work on the scaffold shall be determined by the size and the safe working load of the scaffold.

(9) Backrails and toeboards shall be in accordance with the requirements of paragraph (j) of this section.

(10) The swinging scaffold platform shall be one of the three types described in paragraphs (f)(11), (12), and (13) of this section.

(11) The ladder-type platform consists of boards upon a horizontal ladder-like structure, referred to herein as the ladder, the side rails of which are parallel. If this type of platform is used the following requirements shall be met.

(i) The width between the side rails shall be no more than 20 inches.

(ii) The side rails of ladders in ladder-type platforms shall be equivalent in strength to a beam of clear straight-grained spruce of the dimensions contained in Table E-2 in § 1915.118.

(iii) The side rails shall be tied together with tie rods. The tie rods shall be not less than $\frac{5}{16}$ inch in diameter, located no more than 5 feet apart, pass through the rails, and be riveted up tight against washers at both ends.

(iv) The rungs shall be of straight-grained oak, ash, or hickory, not less than $1\frac{1}{2}$ inches diameter, with $\frac{7}{8}$ inch tenons mortised into the side rails not less than $\frac{7}{8}$ inch and shall be spaced no more than 18 inches on centers.

(v) Flooring strips shall be spaced no more than $\frac{5}{8}$ inch apart except at the side rails, where 1 inch spacing is permissible.

(vi) Flooring strips shall be cleated on their undersides.

(12) The plank-type platform consists of planks supported on the stirrups or hangers. If this type of platform is used, the following requirements shall be met:

(i) The planks of plank-type platforms shall be of not less than 2×10 inch lumber.

(ii) The platform shall be no more than 24 inches in width.

(iii) The planks shall be tied together by cleats of not less than 1×6 inch lumber, nailed on their undersides at intervals of not more than 4 feet.

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(iv) The planks shall extend not less than 6 inches nor more than 18 inches beyond the supporting stirrups.

(v) A cleat shall be nailed across the platform on the underside at each end outside the stirrup to prevent the platform from slipping off the stirrup.

(vi) Stirrup supports shall be not more than 10 feet apart.

(13) The beam-type platform consists of longitudinal side stringers with cross beams set on edge and spaced not more than 4 feet apart on which longitudinal platform planks are laid. If this type platform is used, the following requirements shall be met:

(i) The side stringers shall be of sound, straight-grained lumber, free from knots, and of not less than 2 × 6 inch lumber, set on edge.

(ii) The stringers shall be supported on the stirrups with a clear span between stirrups of not more than 16 feet.

(iii) The stringers shall be bolted to the stirrups by U-bolts passing around the stirrups and bolted through the stringers with nuts drawn up tight on the inside face.

(iv) The ends of the stringers shall extend beyond the stirrups not less than 6 inches nor more than 12 inches at each end of the platform.

(v) The platform shall be supported on cross beams of 2 × 6 inch lumber between the side stringers securely nailed thereto and spaced not more than 4 feet on centers.

(vi) The platform shall be not more than 24 inches wide.

(vii) The platform shall be formed of boards ¾ inch in thickness by not less than 6 inches in width, nailed tightly together, and extending to the outside face of the stringers.

(viii) The ends of all platform boards shall rest on the top of the cross beams, shall be securely nailed, and at no intermediate points in the length of the platform shall there be any cantilever ends.

(g) *Horse scaffolds.* (1) The minimum dimensions of lumber used in the construction of horses shall be in accordance with Table E-3 in §1915.118.

(2) Horses constructed of materials other than lumber shall provide the strength, rigidity and security required of horses constructed of lumber.

(3) The lateral spread of the legs shall be equal to not less than one-third of the height of the horse.

(4) All horses shall be kept in good repair, and shall be properly secured when used in staging or in locations where they may be insecure.

(5) Platform planking shall be in accordance with the requirements of paragraph (i) of this section.

(6) Backrails and toeboards shall be in accordance with paragraph (j) of this section.

(h) *Other types of scaffolds.* (1) Scaffolds of a type for which specifications are not contained in this section shall meet the general requirements of paragraphs (b), (i), and (j) of this section, shall be in accordance with recognized principles of design and shall be constructed in accordance with accepted standards covering such equipment.

(i) *Scaffold or platform planking.* (1) Except as otherwise provided in paragraphs (f)(11) and (13) of this section, platform planking shall be of not less than 2 × 10 inch lumber. Platform planking shall be straight-grained and free from large or loose knots and may be either rough or dressed.

(2) Platforms of staging shall be not less than two 10 inch planks in width except in such cases as the structure of the vessel or the width of the trestle ladders make it impossible to provide such a width.

(3) Platform planking shall project beyond the supporting members at either end by at least 6 inches but in no case shall project more than 12 inches unless the planks are fastened to the supporting members.

(4) Table E-4 in §1915.118 shall be used as a guide in determining safe loads for scaffold planks.

(j) *Backrails and toeboards.* (1) Scaffolding, staging, runways, or working platforms which are supported or suspended more than 5 feet above a solid surface, or at any distance above the water, shall be provided with a railing which has a top rail whose upper surface is from 42 to 45 inches above the upper surface of the staging, platform, or runway and a midrail located halfway between the upper rail and the staging, platform, or runway.

(2) Rails shall be of 2 × 4 inch lumber, flat bar or pipe. When used with rigid

supports, taut wire or fiber rope of adequate strength may be used. If the distance between supports is more than 8 feet, rails shall be equivalent in strength to 2 × 4 inch lumber. Rails shall be firmly secured. Where exposed to hot work or chemicals, fiber rope rails shall not be used.

(3) Rails may be omitted where the structure of the vessel prevents their use. When rails are omitted, employees working more than 5 feet above solid surfaces shall be protected by safety belts and life lines meeting the requirements of §§1915.159 and 1915.160, and employees working over water shall be protected by buoyant work vests meeting the requirements of §1915.158(a).

(4) Employees working from swinging scaffolds which are triced out of a vertical line below their supports or from scaffolds on paint floats subject to surging, shall be protected against falling toward the vessel by a railing or a safety belt and line attached to the backrail.

(5) When necessary, to prevent tools and materials from falling on men below, toeboards of not less than 1 × 4 inch lumber shall be provided.

(k) *Access to staging.* (1) Access from below to staging more than 5 feet above a floor, deck or the ground shall consist of well secured stairways, cleated ramps, fixed or portable ladders meeting the applicable requirements of §1915.72 or rigid type non-collapsible trestles with parallel and level rungs.

(2) Ramps and stairways shall be provided with 36-inch handrails with midrails.

(3) Ladders shall be so located or other means shall be taken so that it is not necessary for employees to step more than one foot from the ladder to any intermediate landing or platform.

(4) Ladders forming integral parts of prefabricated staging are deemed to meet the requirements of these regulations.

(5) Access from above to staging more than 3 feet below the point of access shall consist of a straight, portable ladder meeting the applicable requirements of §1915.72 or a Jacob's ladder properly secured, meeting the requirements of §1915.74(d).

[47 FR 16986, Apr. 20, 1982, as amended at 67 FR 44542, July 3, 2002]

§ 1915.72 Ladders.

The provisions of this section shall apply to ship repairing, shipbuilding and shipbreaking.

(a) *General requirements.* (1) The use of ladders with broken or missing rungs or steps, broken or split side rails, or other faulty or defective construction is prohibited. When ladders with such defects are discovered, they shall be immediately withdrawn from service. Inspection of metal ladders shall include checking for corrosion of interiors of open end, hollow rungs.

(2) When sections of ladders are spliced, the ends shall be abutted, and not fewer than 2 cleats shall be securely nailed or bolted to each rail. The combined cross sectional area of the cleats shall be not less than the cross sectional area of the side rail. The dimensions of side rails for their total length shall be those specified in paragraph (b) or (c) of this section.

(3) Portable ladders shall be lashed, blocked or otherwise secured to prevent their being displaced. The side rails of ladders used for access to any level shall extend not less than 36 inches above that level. When this is not practical, grab rails which will provide a secure grip for an employee moving to or from the point of access shall be installed.

(4) Portable metal ladders shall be of strength equivalent to that of wood ladders. Manufactured portable metal ladders provided by the employer shall be in accordance with the provisions of ANSI Standard A14.2-1972: Safety Requirements for Portable Metal Ladders (incorporated by reference, see §1915.5).

(5) Portable metal ladders shall not be used near electrical conductors nor for electric arc welding operations.

(6) Manufactured portable wood ladders provided by the employer shall be in accordance with the provisions of ANSI Standard A14.1-1975: Safety Requirements for Portable Wood Ladders (incorporated by reference, see §1915.5).

(b) *Construction of portable wood cleated ladders up to 30 feet in length.* (1) Wood side rails shall be made from West Coast hemlock, Eastern spruce, Sitka spruce, or wood of equivalent strength. Material shall be seasoned, straight-grained wood, and free from shakes, checks, decay or other defects

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which will impair its strength. The use of low density woods is prohibited.

(2) Side rails shall be dressed on all sides and kept free of splinters.

(3) All knots shall be sound and hard. The use of material containing loose knots is prohibited. Knots shall not appear on the narrow face of the rail and, when in the side face, shall be not more than ½ inch in diameter or within ½ inch of the edge of the rail or nearer than 3 inches to a tread or rung.

(4) Pitch pockets not exceeding ¼ inch in width, 2 inches in length and ½ inch in depth are permissible in wood side rails, provided that not more than one such pocket appears in each 4 feet of length.

(5) The width between side rails at the base shall be not less than 11½ inches for ladders 10 feet or less in length. For longer ladders this width shall be increased at least ¼ inch for each additional 2 feet in length.

(6) Side rails shall be at least 1½ × 3⅝ inches in cross section.

(7) Cleats (meaning rungs rectangular in cross section with the wide dimension parallel to the rails) shall be of the material used for side rails, straight-grained and free from knots. Cleats shall be mortised into the edges of the side rails ½ inch, or filler blocks shall be used on the rails between the cleats. The cleats shall be secured to each rail with three 10d common wire nails or fastened with through bolts or other fasteners of equivalent strength. Cleats shall be uniformly spaced not more than 12 inches apart.

(8) Cleats 20 inches or less in length shall be at least 25/32 × 3 inches in cross section. Cleats over 20 inches but not more than 30 inches in length shall be at least 25/32 × 3¾ inches in cross section.

(c) *Construction of portable wood cleated ladders from 30 to 60 feet in length.* (1) Ladders from 30 to 60 feet in length shall be in accordance with the specifications of paragraph (b) of this section with the following exceptions:

(i) Rails shall be of not less than 2 × 6 inch lumber.

(ii) Cleats shall be of not less than 1 × 4 inch lumber.

(iii) Cleats shall be nailed to each rail with five 10d common wire nails or

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fastened with through bolts or other fasteners of equivalent strength.

[47 FR 16986, Apr. 20, 1982, as amended at 67 FR 44542, July 3, 2002]

§ 1915.73 Guarding of deck openings and edges.

(a) The provisions of this section shall apply to ship repairing and ship-building operations and shall not apply to shipbreaking.

(b) When employees are working in the vicinity of flush manholes and other small openings of comparable size in the deck and other working surfaces, such openings shall be suitably covered or guarded to a height of not less than 30 inches, except where the use of such guards is made impracticable by the work actually in progress.

(c) When employees are working around open hatches not protected by coamings to a height of 24 inches or around other large openings, the edge of the opening shall be guarded in the working area to height of 36 to 42 inches, except where the use of such guards is made impracticable by the work actually in progress.

(d) When employees are exposed to unguarded edges of decks, platforms, flats, and similar flat surfaces, more than 5 feet above a solid surface, the edges shall be guarded by adequate guardrails meeting the requirements of § 1915.71(j) (1) and (2), unless the nature of the work in progress or the physical conditions prohibit the use or installation of such guardrails.

(e) When employees are working near the unguarded edges of decks of vessels afloat, they shall be protected by personal flotation devices, meeting the requirements of § 1915.158(a).

(f) Sections of bilges from which floor plates or gratings have been removed shall be guarded by guardrails except where they would interfere with work in progress. If these open sections are in a walkway at least two 10-inch planks placed side by side, or equivalent, shall be laid across the opening to provide a safe walking surface.

(g) Gratings, walkways, and catwalks, from which sections or ladders have been removed, shall be barricaded with adequate guardrails.

[47 FR 16986, Apr. 20, 1982, as amended at 67 FR 44542, July 3, 2002]

§ 1915.74 Access to vessels.

(a) *Access to vessels afloat.* The employer shall not permit employees to board or leave any vessel, except a barge or river towboat, until the following requirements have been met:

(1) Whenever practicable, a gangway of not less than 20 inches walking surface of adequate strength, maintained in safe repair and safely secured shall be used. If a gangway is not practicable, a substantial straight ladder, extending at least 36 inches above the upper landing surface and adequately secured against shifting or slipping shall be provided. When conditions are such that neither a gangway nor a straight ladder can be used, a Jacob's ladder meeting the requirements of paragraphs (d) (1) and (2) of this section may be used.

(2) Each side of such gangway, and the turn table if used, shall have a railing with a minimum height of approximately 33 inches measured perpendicularly from rail to walking surface at the stanchion, with a midrail. Rails shall be of wood, pipe, chain, wire or rope and shall be kept taut at all times.

(3) Gangways on vessels inspected and certificated by the U.S. Coast Guard are deemed to meet the foregoing requirements, except in cases where the vessel's regular gangway is not being used.

(4) The gangway shall be kept properly trimmed at all times.

(5) When a fixed tread accommodations ladder is used, and the angle is low enough to require employees to walk on the edge of the treads, cleated duckboards shall be laid over and secured to the ladder.

(6) When the lower end of a gangway overhangs the water between the ship and the dock in such a manner that there is danger of employees falling between the ship and the dock, a net or other suitable protection shall be rigged at the foot of the gangway in such a manner as to prevent employees from falling from the end of the gangway.

(7) If the foot of the gangway is more than one foot away from the edge of the apron, the space between them shall be bridged by a firm walkway equipped with railings, with a min-

imum height of approximately 33 inches with midrails on both sides.

(8) Supporting bridles shall be kept clear so as to permit unobstructed passage for employees using the gangway.

(9) When the upper end of the means of access rests on or flush with the top of the bulwark, substantial steps properly secured and equipped with at least one substantial handrail approximately 33 inches in height shall be provided between the top of the bulwark and the deck.

(10) Obstructions shall not be laid on or across the gangway.

(11) The means of access shall be adequately illuminated for its full length.

(12) Unless the construction of the vessel makes it impossible, the means of access shall be so located that drafts of cargo do not pass over it. In any event, loads shall not be passed over the means of access while employees are on it.

(b) *Access to vessels in drydock or between vessels.* Gangways meeting the requirements of paragraphs (a) (1), (2), (9), (10), (11) of this section shall be provided for access from wingwall to vessel or, when two or more vessels, other than barges or river towboats, are lying abreast, from one vessel to another.

(c) *Access to barges and river towboats.*
(1) Ramps for access of vehicles to or between barges shall be of adequate strength, provided with side boards, well maintained and properly secured.

(2) Unless employees can step safely to or from the wharf, float, barge, or river towboat, either a ramp meeting the requirements of paragraph (c)(1) of this section or a safe walkway meeting the requirements of paragraph (a)(7) of this section shall be provided. When a walkway is impracticable, a substantial straight ladder, extending at least 36 inches above the upper landing surface and adequately secured against shifting or slipping, shall be provided. When conditions are such that neither a walkway nor a straight ladder can be used, a Jacob's ladder in accordance with the requirements of paragraph (d) of this section may be used.

(3) The means of access shall be in accordance with the requirements of paragraphs (a) (9), (10), and (11) of this section.

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(d) *Jacob's ladders.* (1) Jacob's ladders shall be of the double rung or flat tread type. They shall be well maintained and properly secured.

(2) A Jacob's ladder shall either hang without slack from its lashings or be pulled up entirely.

[47 FR 16986, Apr. 20, 1982, as amended at 67 FR 44542, July 3, 2002]

§ 1915.75 Access to and guarding of dry docks and marine railways.

The provisions of this section shall apply to ship repairing, shipbuilding and shipbreaking.

(a) A gangway, ramp or permanent stairway of not less than 20 inches walking surface, of adequate strength, maintained in safe repair and securely fastened, shall be provided between a floating dry dock and the pier or bulkhead.

(b) Each side of such gangway, ramp or permanent stairway, including those which are used for access to wing walls from dry dock floors, shall have a railing with a midrail. Such railings on gangways or ramps shall be approximately 42 inches in height; and railings on permanent stairways shall be not less than approximately 30 or more than approximately 34 inches in height. Rails shall be of wood, pipe, chain, wire, or rope, and shall be kept taut at all times.

(c) Railings meeting the requirements of paragraph (b) of this section shall be provided on the means of access to and from the floors of graving docks.

(d) Railings approximately 42 inches in height, with a midrail, shall be provided on the edges of wing walls of floating dry docks and on edges of graving docks. Sections of the railings may be temporarily removed where necessary to permit line handling while a vessel is entering or leaving the dock.

(e) When employees are working on the floor of a floating dry dock where they are exposed to the hazard of falling into the water, the end of the dry dock shall be equipped with portable stanchions and 42 inch railings with a midrail. When such a railing would be impracticable or ineffective, other effective means shall be provided to prevent employees from falling into the water.

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(f) Access to wing walls from floors of dry docks shall be by ramps, permanent stairways or ladders meeting the applicable requirements of § 1915.72.

(g) Catwalks on stiles of marine railways shall be no less than 20 inches wide and shall have on at least one side a guardrail and midrail meeting the requirements of § 1915.71(j) (1) and (2).

[47 FR 16986, Apr. 20, 1982, as amended at 67 FR 44542, July 3, 2002]

§ 1915.76 Access to cargo spaces and confined spaces.

The provisions of this section apply to ship repairing, shipbuilding and shipbreaking except that paragraph (a)(4) of this section applies to ship repairing only.

(a) *Cargo spaces.* (1) There shall be at least one safe and accessible ladder in any cargo space which employees must enter.

(2) When any fixed ladder is visibly unsafe, the employer shall prohibit its use by employees.

(3) Straight ladders of adequate strength and suitably secured against shifting or slipping shall be provided as necessary when fixed ladders in cargo spaces do not meet the requirements of paragraph (a)(1) of this section. When conditions are such that a straight ladder cannot be used, a Jacob's ladder meeting the requirements of § 1915.74(d) may be used.

(4) When cargo is stowed within 4 inches of the back of ladder rungs, the ladder shall be deemed "unsafe" for the purpose of this section.

(5) Fixed ladders or straight ladders provided for access to cargo spaces shall not be used at the same time that cargo drafts, equipment, materials, scrap or other loads are entering or leaving the hold. Before using these ladders to enter or leave the hold, the employee shall be required to inform the winchman or crane signalman of his intention.

(b) *Confined spaces.* (1) More than one means of access shall be provided to a confined space in which employees are working and in which the work may generate a hazardous atmosphere in the space except where the structure or arrangement of the vessel makes this provision impractical.

(2) When the ventilation ducts required by these regulations must pass through these means of access, the ducts shall be of such a type and so arranged as to permit free passage of an employee through at least two of these means of access.

§ 1915.77 Working surfaces.

(a) Paragraphs (b) through (d) of this section shall apply to ship repairing and shipbuilding operations, and shall not apply to shipbreaking. Paragraph (e) of this section shall apply to shipbuilding, ship repairing and shipbreaking operations.

(b) When firebox floors present tripping hazards of exposed tubing or of missing or removed refractory, sufficient planking to afford safe footing shall be laid while work is being carried on within the boiler.

(c) When employees are working aloft, or elsewhere at elevations more than 5 feet above a solid surface, either scaffolds or a sloping ladder, meeting the requirements of this subpart, shall be used to afford safe footing, or the employees shall be protected by safety belts and lifelines meeting the requirements of §§ 1915.159 and 1915.160. Employees visually restricted by blasting hoods, welding helmets, and burning goggles shall work from scaffolds, not from ladders, except for the initial and final welding or burning operation to start or complete a job, such as the erection and dismantling of hung scaffolding, or other similar, nonrepetitive jobs of brief duration.

(d) For work performed in restricted quarters, such as behind boilers and in between congested machinery units and piping, work platforms at least 20 inches wide meeting the requirements of § 1915.71(i)(1) shall be used. Backrails may be omitted if bulkheading, boilers, machinery units, or piping afford proper protection against falling.

(e) When employees are boarding, leaving, or working from small boats or floats, they shall be protected by personal flotation devices meeting the requirements of § 1915.158(a).

[47 FR 16986, Apr. 20, 1982, as amended at 67 FR 44543, July 3, 2002]

Subpart F—General Working Conditions

SOURCE: 76 FR 24698, May 2, 2011., unless otherwise noted.

§ 1915.80 Scope, application, definitions, and effective dates.

(a) The provisions of this subpart apply to general working conditions in shipyard employment, including work on vessels, on vessel sections, and at landside operations, regardless of geographic location.

(b) *Definitions applicable to this subpart.* (1) *Additional safety measure.* A component of the tags-plus system that provides an impediment (in addition to the energy-isolating device) to the release of energy or the energization or startup of the machinery, equipment, or system being serviced. Examples of additional safety measures include, but are not limited to, removing an isolating circuit element; blocking a controlling switch; blocking, blanking, or bleeding lines; removing a valve handle or wiring it in place; opening an extra disconnecting device.

(2) *Affected employee.* An employee who normally operates or uses the machinery, equipment, or system that is going to be serviced under lockout/tags-plus or who is working in the area where servicing is being performed under lockout/tags-plus. An affected employee becomes an authorized employee when the employer assigns the employee to service any machine, equipment, or system under a lockout/tags-plus application.

(3) *Authorized employee.* (i) An employee who performs one or more of the following lockout/tags-plus responsibilities:

(A) Executes the lockout/tags-plus procedures;

(B) Installs a lock or tags-plus system on machinery, equipment, or systems; or

(C) Services any machine, equipment, or system under lockout/tags-plus application.

(ii) An affected employee becomes an authorized employee when the employer assigns the employee to service any machine, equipment, or system under a lockout/tags-plus application.