

load may be used to determine the weight of the cargo.

(i) *Tractors.* Tractors used in Ro-Ro operations shall have:

(1) Sufficient power to ascend ramp inclines safely; and

(2) Sufficient braking capacity to descend ramp inclines safely.

(j) *Safe speeds.* Power driven vehicles used in Ro-Ro operations shall be operated at speeds that are safe for prevailing conditions.

(k) *Ventilation.* Internal combustion engine-driven vehicles shall be operated only where adequate ventilation exists or is provided. (Air contaminant requirements are found in §1918.94 and part 1910, subpart Z, of this chapter.)

(l) *Securing cargo.* Cargo loaded or discharged during Ro-Ro operations shall be secured to prevent sliding loads.

(m) *Authorized personnel.* Only authorized persons shall be permitted on any deck while loading or discharging operations are being conducted. Such authorized persons shall be equipped with high visibility vests (or equivalent protection<sup>10</sup>).

NOTE TO PARAGRAPH (m): High visibility vests or equivalent protection means high visibility/retro-reflective materials which are intended to make the user clearly visible by day through the use of high visibility (fluorescent) material and in the dark by vehicle headlights through the use of retro-reflective material. For example, an acceptable area of material for a vest or equivalent protection is .5 m<sup>2</sup> (760 in.<sup>2</sup>) for fluorescent (background) material and .13m<sup>2</sup> (197 in.<sup>2</sup>) for retro-reflective material. Vests or equivalent protection, such as high visibility/retro-reflective coveralls, that are available for industrial use, may also be acceptable.

(n) *Vehicle stowage positioning.* Drivers shall not drive vehicles, either forward or backward, while any personnel are in positions where they could be struck.

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#### § 1918.87 Ship's cargo elevators.

(a) *Safe working load.* The safe working loads of ship's cargo elevators shall be determined and followed.

<sup>10</sup>Decals on hard hats will not be considered equivalent protection for the purposes of this paragraph.

(b) *Load distribution.* Loads shall be evenly distributed and maintained on the elevator's platform.

(c) *Elevator personnel restrictions.* Personnel shall not be permitted to ride on the elevator's platform if a fall hazard exists. (See §1918.2.)

(d) *Open deck barricades.* During elevator operation, each open deck that presents a fall hazard to employees shall be effectively barricaded.

#### § 1918.88 Log operations.

(a) *Working in holds.* When loading logs into the holds of vessels and using dumper devices to roll logs into the wings, the employer shall ensure that employees remain clear of areas where logs being dumped could strike, roll upon, or pin them.

(b) *Personal flotation devices.* Each employee working on a log boom shall be protected by a personal flotation device meeting the requirements of §1918.105(b)(2).

(c) *Footwear.* The employer shall provide each employee that is working logs with appropriate footwear, such as spiked shoes or caulked sandals, and shall ensure that each employee wears appropriate footwear to climb or walk on logs.

(d) *Lifelines.* When employees are working on log booms or cribs, lifelines shall be furnished and hung overside to the water's edge.

(e) *Jacob's ladder.* When a log boom is being worked, a Jacob's ladder meeting the requirements of §1918.23 shall be provided for each gang working alongside unless other safe means of access (such as the vessel's gangway) is provided. However, no more than two Jacob's ladders are required for any single log boom being worked.

(f) *Life-ring.* When working a log boom alongside a ship, a U.S. Coast Guard approved 30-inch (76.2 cm) life-ring, with no less than 90 feet (27.4 m) of line, shall be provided either on the floating unit itself or aboard the ship close to each floating unit being worked.

(g) *Rescue boat.* When employees are working on rafts or booms, a rescue boat capable of effecting an immediate rescue shall be available. Powered rescue boats are required when the current exceeds one knot.

## § 1918.89

(h) *Log rafts*. When an employee is working logs out of the water, walking sticks<sup>11</sup> (safety sticks) shall be provided as follows:

(1) They shall be planked and be no less than 24 inches (.61 m) wide;

(2) They shall extend along the entire length of all rafts on the side(s) of the vessel being worked, and to the means of access to the log raft(s); and

(3) They shall be buoyant enough to keep the walking surface above the waterline when employees are walking on them.

## § 1918.89 Handling hazardous cargo (See also § 1918.2 and § 1918.99).

Hazardous cargo shall be slung and secured so that neither the draft nor individual packages can fall because of tipping of the draft or slacking of the supporting gear.

### Subpart I—General Working Conditions.

## § 1918.90 Hazard communication.

See § 1918.1(b)(4).

## § 1918.91 Housekeeping.

(a) *General*. Active work areas shall be kept free of equipment, such as lashing gear, and materials not in use, and clear of debris, projecting nails, strapping and other objects not necessary to the work in progress.

(b) *Slippery surfaces*. The employer shall eliminate conditions causing slippery walking and working surfaces in immediate areas used by employees.

(c) *Free movement of drafts*. Dunnage shall not be placed at any location where it interferes with the free movement of drafts.

(d) *Dunnage height*. Dunnage racked against sweat battens or bulkheads shall not be used when the levels of such racks are above the safe reach of employees.

(e) *Coaming clearance*. Dunnage, hatch beams, tarpaulins or gear not in use shall be stowed no closer than three

<sup>11</sup> A “walking stick” is two logs bolted or otherwise secured together with two or three planks firmly attached on top that serves as a floating walking and working surface and that is used in the loading of logs onto vessels from the water.

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feet (.91 m) to the port and starboard sides of the weather deck hatch coaming.

(f) *Nails*. (1) Nails that are protruding from shoring or fencing in the work area shall be rendered harmless.

(2) Dunnage, lumber, or shoring material in which there are visibly protruding nails shall be removed from the work area, or, if left in the area, the nails shall be rendered harmless.

(g) *Ice aloft*. Employees shall be protected from ice that may fall from aloft.

## § 1918.92 Illumination.

(a) *Walking, working, and climbing areas*. Walking, working, and climbing areas shall be illuminated. Unless conditions described in the regulations of the U.S. Coast Guard (33 CFR 154.570) exist for specific operations, illumination for cargo transfer operations shall be of a minimum light intensity of five foot-candles (54 lux). Where work tasks require more light to be performed safely, supplemental lighting shall be used.

(b) *Intensity measurement*. The lighting intensity shall be measured at the task/working surface, in the plane in which the task/working surface is present.

(c) *Arrangement of lights*. Lights shall be arranged so that they do not shine into the eyes of winch-drivers, crane operators or hatch tenders. On Ro-Ro ships, stationary lights shall not shine directly into the eyes of drivers.

(d) *Portable lights*. Portable lights shall meet the following requirements:

(1) Portable lights shall be equipped with substantial reflectors and guards to prevent materials from coming into contact with the bulb.

(2) Flexible electric cords used with temporary lights shall be designed by the manufacturer for hard or extra-hard usage. Temporary and portable lights shall not be suspended by their electric cords unless the cords and lights are designed for this means of suspension. Connections and insulation shall be maintained in safe condition.

(3) Electric conductors and fixtures for portable lights shall be so arranged as to be free from contact with drafts, running gear, and other moving equipment.