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437-004-0310 Working Surfaces.

(1) Scope. This section applies to all places of agricultural employment. Measures to control toxic materials are outside the scope of this section.

(2) Housekeeping. Floors, work areas, aisles and passageways must be in good repair and must not have protruding nails, unevenness, obstructions, debris or loose boards that create a hazard.

(3) Aisles, walkways, inclines and passageways.

(a) There must be sufficient clearance for safe operation of mechanical handling equipment in aisles, at loading docks, through doorways and at turns. Aisles and passage- ways must be clear and in good repair with no obstructions that could be a hazard.

(b) Mark permanent aisles and passageways.

(c) Aisles, passageways, and walkways must be wide enough for safe work but never less than 22 inches wide. Passageways more than 4 feet above the ground or floor level must have standard guardrails.

(d) Fixed inclined walkways must be at least 22 inches wide, incline at no more than 24 degrees and be securely fastened at the top and bottom. They must have guardrails on each open side.

(e) Inclined walkways that may be slippery must have anti-slip surfaces or cleats secured at uniform intervals of not more than 18 inches, and extending the full width of the walkway.

(f) Inclines from floor to floor, without open sides, used instead of stairways must have standard handrails according to the requirements for stairways.

(g) Ramps for wheelbarrows, if made of planking, must have an odd number of planks with no cleats on the center plank.

(4) Covers and guardrails. There must be covers and/or guardrails on each open side to protect people from the hazards of open pits, tanks, vats, excavations, etc.

(5) Surface loads. For all new and remodel construction after December 1, 1997, post the load capacities on overhead storage areas. Do not allow overloading.

(6) Barriers. There must be protective barriers or suitable guards for uncovered openings or excavations that are accessible to vehicle or pedestrian traffic. Use warning lights or flares if working at night.

(7) Vertical clearances. There must be a vertical clearance of at least 6 1/2 feet over work areas. Where it is impractical to provide this clearance, use padding, contrasting paint or similar warnings on overhead obstructions.

NOTE: This does not apply to crop storage areas where people are there for short periods.

(8) Working above other workers. Areas above other workers, for handling or mixing acids, caustics, or other harmful materials must have water-tight floors that drain to a safe location, except where workers underneath wear personal protective equipment suitable for the hazard.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f/8/28/98, ef. 10/1/98.

437-004-0320 Guarding Floor and Wall Openings and Holes.

(1) Definitions. Unless otherwise stated, these terms mean:

Floor hole. An opening less than 12 inches but more than 1-inch in its least dimension, in any walking surface, through which materials but not persons may fall. This includes belt holes, pipe openings, or slot openings.

Floor opening. An opening 12 inches or more in its least dimension, in any walking surface through which persons may fall including hatchways, stairs or ladder openings, pits, or large manholes. Floor openings occupied by elevators, dumb waiters, conveyors, machinery, or containers are excluded from this subdivision.

Handrail. A single bar or pipe supported on brackets from a wall or partition, and used as a handhold for persons on stairs or ramps.

Platform. An elevated work space, such as a balcony or mezzanine for the operation of machinery and equipment.

Runway. An elevated passageway, such as a footwalk along shafting or a walkway between buildings.

Stair railing. A vertical barrier along exposed sides of a stairway to prevent people from falling.

Standard railing. A vertical barrier along exposed edges of a floor opening, wall opening, ramp, platform, or runway to prevent people from falling.

Standard strength and construction. Any construction of railings, covers, or other guards that meets the requirements of **OAR 437-004-0320(6)**.

Toeboard. A vertical barrier at floor level along exposed edges of a floor opening, wall opening, platform, runway, or ramp to prevent things from falling.

Wall hole. An opening less than 30 inches but more than 1-inch high, of unrestricted width, in any wall or partition; such as a ventilation hole.

Wall opening. An opening at least 30 inches high and 18 inches wide, in any wall or partition, through which persons may fall; such as a window, doorway or chute opening.

(2) Floor openings and floor holes.

(a) Stairway floor openings must have a standard railing that complies with **OAR 437-004-0320(6)**, on all exposed sides (except at entrance to the stairway). For infrequently used stairways where traffic across the opening prevents the use of a fixed standard railing, the guard must be a hinged floor opening cover of sufficient strength and removable standard railings on all exposed sides (except at entrance to the stairway).

(b) Ladder way floor openings or platforms must have a standard railing with standard toeboard on all exposed sides (except at entrance to opening). The passage through the railing must either have a swinging gate or be offset so that a person cannot walk directly into the opening.

(c) Hatchways and chute floor openings must have one of the following:

(A) Hinged floor opening cover with standard railings. When the opening is not in use, close the cover or guard the exposed sides at both top and intermediate positions by removable standard railings.

(B) A removable railing with toeboard on not more than two sides of the opening and fixed standard railings with toeboards on all other exposed sides. The removable railings must be in place when the opening is not in use.

(C) Where operating conditions necessitate the feeding of material into any hatchway or chute opening, protection must prevent a person from falling through the opening.

(d) Skylight floor openings and holes must have a standard skylight screen or a fixed standard railing on all exposed sides.

(e) Pit and trapdoor floor openings must have a floor opening cover of sufficient strength. While the cover is not on, an attendant must be at the pit or trap opening or there must be removable standard railings on all sides.

(f) Manhole floor openings must have a standard manhole cover that need not be hinged in place. While the cover is off, there must be an attendant at the manhole opening or it must have removable standard railings.

(g) Temporary floor openings must have standard railings, or an attendant on open sides.

(h) Floor holes into which persons can accidentally walk must have either:

(A) A standard railing with standard toeboard on all exposed sides, or

(B) A floor hole cover of sufficient strength. While the cover is off, the floor hole must have an attendant or a removable standard railing.

(i) Floor holes into which persons cannot accidentally walk must have a cover that leaves no openings more than 1-inch wide. The cover must be securely held in place to prevent tools or materials from falling through.

(j) Where doors or gates open directly on a stairway, there must be a platform, and the swing of the door must not reduce the effective length to less than 20 inches.

(3) Wall openings and holes.

(a) Wall openings with a drop of more than 4 feet must have one of the following:

(A) Rail, roller, picket fence, half door, or equivalent barrier. Where there is exposure below to falling materials, there must be a toe board or the equivalent. When the opening is not in use for handling materials, the guard must be in position regardless of a door on the opening. In addition, there must be a grab handle on each side of the opening with its center about 4 feet above floor level and of standard strength and mounting.

(B) Extension platform to receive hoisted materials for handling. It must have side rails or equivalent guards of standard specifications.

(b) Chute wall openings with a drop of more than 4 feet must have one or more of the barriers in **(3)(a)** above or as required by the conditions.

(c) Window wall openings with a drop of more than 4 feet, and where the bottom of the opening is less than 3 feet above the floor or platform, must have a guard of slats, grill work (as in **OAR 437-004-0320(6)(k)**), or standard railing.

(d) Where the window opening is below the landing, or platform, there must be a standard toeboard in addition to requirements in **(c)** above.

(e) Every temporary wall opening must have adequate guards but these need not be of standard construction.

(f) Where there is a hazard of materials falling through a wall hole, and the lower edge of the near side of the hole is less than 4 inches above the floor, and the far side of the hole more than 5 feet above the next lower level, the hole must have a standard toeboard, or a solid enclosing screen, or one as described in **OAR 437-004-0320(6)(k)**.

(4) Open-sided floors, platforms, and runways.

(a) Open-sided floors or platforms 4 feet or more above adjacent floor or ground level must have a standard railing (or the equivalent from **OAR 437-004-0320(6)(c)**) on all open sides except where there is entrance to a ramp, stairway, or fixed ladder. The railing must have a toeboard where, beneath the open sides:

(A) Persons can pass,

(B) There is moving machinery, or

(C) There is equipment with which falling materials could create a hazard.

When operating conditions make it necessary, the railing may be left off of one side if the platform is at least 18 inches wide.

Exception: When things regularly have to be passed over the edge of the floor, as in hay stor age, there is no requirement for the intermediate railing and toeboard. This exception applies also where the railing is set back from the edge 12 inches or more. There is no requirement for any railing when the employer can show that it creates a greater hazard than working without one.

(b) Runways must have a standard railing (or the equivalent from **OAR 437-004-0320 (6)(c)**) on all open sides 4 feet or more above floor or ground level. Where the use of tools, machine parts, or materials on the runway is likely, there must be a toeboard on each exposed side.

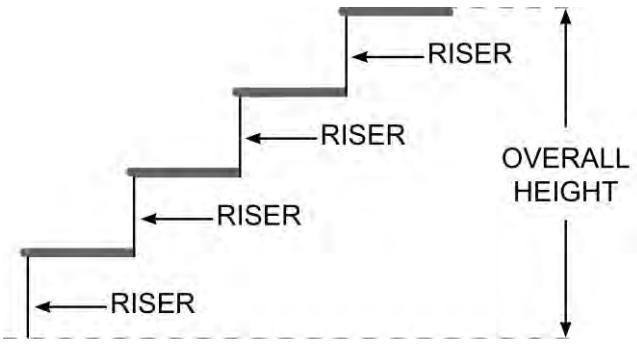
NOTE: Runways exclusively for special purposes may omit the railing on one side when operating conditions make it necessary, if the runway is at least 18 inches wide. Where persons entering runways have exposure to machinery, electrical equipment, or other dangers, additional guarding may be required for protection.

(c) Regardless of height, open-sided floors, walkways, platforms, or runways above or adjacent to dangerous equipment must have a standard railing and toeboard on open sides.

(5) Stairway railings and guards.

(a) Stairs with four or more risers must have standard stair railings or standard handrails from **(A)** through **(E)** below. Measure the width of the stairs clear of all obstructions except handrails:

Oregon Note: Count each vertical distance of the overall vertical height to determine the total number of risers.



(A) On stairways less than 44 inches wide with both sides enclosed, at least one handrail, preferably on the right side descending.

(B) On stairways less than 44 inches wide with one side open, at least one stair railing on the open side.

(C) On stairways less than 44 inches wide with both sides open, one stair railing on each side.

(D) On stairways more than 44 inches wide but less than 88 inches wide, one handrail on each enclosed side and one stair railing on each open side.

(E) On stairways 88 or more inches wide, one handrail on each enclosed side, one stair railing on each open side, and one intermediate stair railing approximately midway of the width.

(b) Winding stairs must have a handrail offset to prevent walking on any treads less than 6 inches wide.

(6) Railing, toeboards, and cover specifications.

(a) A standard railing must have a top rail, intermediate rail, and posts, and must be between 36 and 44 inches high from the upper surface of the top rail to the walking surface. The top rail must be smooth. The intermediate rail must be about halfway between the top rail and the floor, platform, runway, or ramp. The ends of the rails must not overhang the terminal posts except where such overhang is not a projection hazard.

(b) A stair railing must be similar to a standard railing but the height must be between 30 and 36 inches from upper surface of top rail to surface of tread in line with face of the riser at the forward edge of the tread.

(c)

(A) For wood railings, the posts must be at least 2-inch by 4-inch stock spaced not to exceed 6 feet; the top and intermediate rails must be at least 2-inch by 4-inch stock. If the top rail is made of two right-angle pieces of 1-inch by 4-inch stock, posts may be spaced on 8-foot centers, with 2-inch by 4-inch intermediate rail.

(B) For pipe railings, posts and top and intermediate railings must be at least 1 1/2 inches nominal diameter with posts spaced not more than 8 feet on center.

(C) For structural steel railings, posts and top and intermediate rails must be of 2-inch by 2-inch by 3/8-inch angles or other metal shapes of equivalent bending strength with posts spaced not more than 8 feet on center.

(D) The anchoring of posts and framing of members for railings of all types must be strong enough that the completed structure can withstand a load of at least 200 pounds applied in any direction at any point on the top rail.

(E) Other types, sizes, and arrangements of railing construction are acceptable if they have:

(i) A smooth-surfaced top rail at a height above floor, platform, runway, or ramp level of 42 inches nominal, and;

(ii) A strength to withstand at least the minimum requirement of 200 pounds top rail pressure, and;

(iii) Protection between top rail and floor, platform, runway, ramp, or stair treads, equivalent at least to that afforded by a standard intermediate rail.

(d) A standard toeboard must be 4 inches nominal in height from its top edge to the level of the floor, platform, runway, or ramp. It must be securely fastened in place and with not more than 1/4-inch clearance above floor level. It may be made of any strong material either solid or with openings not more than 1-inch in greatest dimension.

Where material can fall through the space between the standard toeboard and midrail, there must be paneling or screen from floor to the midrail. If material can fall through the space between the midrail and top rail, there also must be paneling or screen there.

(e)

(A) A handrail must have a lengthwise member mounted directly on a wall or partition. Mounting brackets must attach to the lower side of the handrail so that the top and sides are smooth. The handrail must furnish an adequate handhold for anyone grasping it to avoid falling.

(B) Handrails must be 30 to 34 inches in height from the upper surface of the handrail to the surface of the tread in line with the face of the riser or to the surface of the ramp.

(C) Hardwood handrails must be at least 2 inches in diameter. Metal pipe handrails must be at least 1 1/2 inches in diameter. Brackets must be long enough to give at least 1 1/2 inches clearance between handrail and wall. Bracket spacing must be not more than 8 feet.

(D) Handrails must be able to withstand a load of at least 200 pounds applied in any direction at any point on the rail.

(f) All handrails and railings must have a clearance of at least 1 1/2 inches between the handrail or railing and any other object.

(g) Floor opening covers may be of any material that meets the following strength requirements:

(A) Trench or conduit covers and their supports must be able to stand a load of at least 20,000 pounds if they are where vehicles can pass over them.

(B) Floor opening covers may be made of any material strong enough to handle the load. Covers may project not more than 1-inch above the floor level if all edges are beveled to an angle with the horizontal of not more than 30 degrees. All hinges, handles, bolts, or other parts must be flush with the floor or cover surface.

(h) Skylight screens must be capable of withstanding a load of at least 200 pounds applied perpendicularly on the screen. They must be strong enough that under ordinary loads or impacts, they will not deflect downward sufficiently to break the glass below them. Those with grillwork must have openings not more than 4 inches square. Those of slatwork must have openings not more than 2 inches wide with length unrestricted.

(i) Wall opening barriers (rails, rollers, picket fences, and half doors) must be capable of withstanding a load of at least 200 pounds applied in any direction (except upward) on the top rail or corresponding member.

(j) Wall opening grab handles must be not less than 12 inches long and mounted to give approximately 3 inches clearance from the side framing of the wall opening. The size, material, and anchoring of the grab handle must be such that it can withstand a load of at least 200 pounds applied in any direction.

(k) Wall opening screens must be able to withstand a load of at least 200 pounds applied horizontally on the near side of the screen. They may be solid, grillwork with openings not more than 8 inches long, or slatwork with openings not more than 4 inches wide with length unrestricted.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f/8/28/98, ef. 10/1/98.

437-004-0330 Fixed Industrial Stairs.

(1) Definitions. Unless otherwise stated, fixed industrial stair terms mean:

Handrail. A single bar or pipe supported on brackets from a wall or partition, and used as a handhold for persons on stairs or ramps.

Nose, nosing. That part of a tread projecting beyond the face of the riser.

Open riser. The space between the treads of stairways without upright parts (risers).

Platform. An extended step or landing breaking a continuous run of stairs.

Railing. A vertical barrier along exposed sides of stairs and platforms to prevent people from falling. The top rail usually serves as a handrail.

Rise. The vertical distance from the top of a tread to the top of the next higher tread.

Riser. The upright part of a step at the back of a lower tread and near the leading edge of the next higher tread.

Stairs, stairway. A set of steps with three or more risers, from one level or floor to another, or leading to platforms, pits or around machinery, tanks, and other equipment.

Tread. The horizontal part of a step.

Tread run. The horizontal distance from the leading edge of a tread to the leading edge of an adjacent tread.

Tread width. The horizontal distance from front to back of tread including nosing.

(2) Application. This section has specifications for the safe design and construction of fixed stairs. This includes interior and exterior stairs around machinery, tanks, and other equipment, and stairs leading to or from floors, platforms, or pits. This section does not apply to stairs used for fire exits, private residences or articulated stairs, the angle of which changes with the rise and fall of the base support.

(3) Where fixed stairs are required. There must be fixed stairs where work requires regular travel between floors or levels, and access to operating platforms at any equipment that requires frequent attention. There also must be fixed stairs for daily access to elevations or for access at each shift for such purposes as inspection, regular maintenance, etc. There must be fixed stairs where work may expose employees to acids, caustics, gases, or other harmful substances, or where employees normally must carry tools or equipment by hand. (It is not the intent of this section to preclude using fixed ladders for access to elevated tanks, towers, and similar structures, etc., where their use is common practice.) Spiral stairs are not legal except for special limited use and secondary access situations where it is not practical to provide a conventional stairway. Winding stairs are acceptable on tanks and similar round structures where the diameter of the structure is at least 5 feet.

(4) Stair strength. Fixed stairs must be able to carry a load of five times the normal live load anticipated but never less than a moving concentrated load of 1,000 pounds.

(5) Stair width. Fixed stairs must be at least 22 inches wide.

(6) Angle of stairway rise. Fixed stairs must be at angles to the horizontal of between 30 degrees and 50 degrees. Use any uniform combination of rise/tread dimensions that will result in stairs at an angle to the horizontal between 30 degrees and 50 degrees. Table 1 gives rise/tread dimensions that will produce stairs within this range. However, other allowable rise/tread combinations are possible.

Table 1

Angle to horizontal	Rise (in inches)	Tread run (in inches)
30°35'	6 1/2	11
32°08'	6 3/4	10 3/4
33°41'	7	10 1/2
35°16'	7 1/4	10 1/4
36°52'	7 1/2	10
38°29'	7 3/4	9 3/4
40°08'	8	9 1/2
41°44'	8 1/4	9 1/4
43°22'	8 1/2	9
45°00'	8 3/4	8 3/4
46°38'	9	8 1/2
48°16'	9 1/4	8 1/4
49°54'	9 1/2	8

(7) Stair treads. All treads must be slip-resistant and the nosings must be a nonslip finish. Welded bar grating treads without nosings are acceptable if the leading edge can be readily identified by people descending the stairs and if the tread is serrated or is of nonslip design. Rise height and tread width must be uniform throughout any flight of stairs including any foundation structure used as one or more treads of the stairs.

(a) Treads must not be loose. Replace or repair defective treads quickly.

(8) Stairway platforms. Stairway platforms must be no less than the width of the stairway and a minimum of 30 inches long measured in the direction of travel.

(9) Railings and handrails. There must be standard railings on the open sides of exposed stairs and stair platforms. There must be handrails on at least one side of closed stairs preferably on the right side going down. Stair railings and handrails must comply with OAR 437-004-0320.

(10) Vertical clearance. Vertical clearance above any stair tread to an overhead obstruction must be at least 6 1/2 feet measured from the leading edge of the tread.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f/8/28/98, ef. 10/1/98.

437-004-0340 Portable Ladders.

(1) Definitions. Portable ladder terms mean:

Check. A lengthwise separation of the wood, most of which occurs across the rings of annual growth.

Compression failure. A deformation (buckling) of the fibers due to excessive compression along the grain.

Decay. Disintegration of wood substance due to action of wood-destroying fungi. It is also known as dote and rot.

Extension ladder. A nonself-supporting portable ladder of adjustable length. It has two or more sections that adjust to varied lengths.

Extension trestle ladder. An adjustable, self-supporting portable ladder made of a trestle ladder base and a vertical extension section.

Ladder. A device with steps, rungs or cleats between rails, for people to climb up or down.

Low density wood. Exceptionally light in weight and usually deficient in strength for the species.

Platform ladder. A fixed length, self-supporting portable ladder with a platform at the highest permissible standing level.

Platform. A landing surface for working or standing.

Reinforced plastic. A plastic made stronger than its base by the addition of high strength fillers, usually fibers, fabrics or mats.

Section.

Bottom or base section. The lowest section of a nonself-supporting portable ladder.

Middle or intermediate section. The section(s) between the top (fly) and bottom (base) sections of a nonself-supporting portable ladder.

Top or fly section. The uppermost section of a nonself-supporting portable ladder.

Sectional ladder. A nonself-supporting, fixed length, portable ladder, with two or more sections of ladder that may combine to work as a single ladder. Its size is the length of the assembled sections.

Shake. A separation along the grain, most of which occurs between the rings of annual growth.

Single section ladder. A fixed length, nonself-supporting portable ladder made of one section.

Stepladder. A fixed length, self-supporting portable ladder with a hinged back.

Top cap. The very top part of a stepladder.

Top step. The first step below the top cap of a stepladder. If the ladder has no top cap, the top step is the first one below the top of the rails.

Trestle ladder. A fixed length, self-supporting portable ladder made of two sections and hinged at the top. It can be climbed by two people at once, one per side.

Wane. Bark, or the lack of wood from any cause, on the corner of a piece.

Wood irregularities. Natural characteristics in or on wood that may lower its durability, strength, or utility.

Working Load Rating. The maximum load authorized by the manufacturer for the ladder.

(2) Application. This standard covers the selection, use and care of portable ladders used in agriculture. It does not cover orchard ladders, special ladders, combination step and extension ladders, aisle way stepladders, and shelf ladders.

(3) Ladder selection. Portable reinforced plastic (fiberglass) ladders must comply with American National Standard A14.5-1992. Wood ladders must comply with American National Standard A14.1-1994. Metal ladders must comply with American National Standard A14.2-1990.

Unaltered and properly maintained ladders that meet the ANSI standard in effect at the time of their manufacture comply with this standard as do ladders that comply with newer versions of the particular ANSI standard.

(4) Condition of wood ladders. There must be no sharp edges or splinters on wood parts. Visual inspection must show no check, shake, wane, compression failures, decay, or other wood irregularities. Ladders may not be made of low density wood.

(5) General requirements – all ladders.

(a) Step spacing must be uniform and not more than 12 inches. Steps must be parallel and level when the ladder is in the normal use position.

(b) All joints, attachments and working parts of ladders must be tight and not worn to a point that causes a hazard. Do not use ladders with damaged or bent parts.

(c) Replace frayed or badly worn rope.

(d) Safety feet and other auxiliary equipment must in good condition.

(e) Inspect ladders and remove from use any with defects. Ladders awaiting repair must be tagged, “Dangerous, Do Not Use.”

(f) There can be no dents, breaks or bends in the side rails or rungs;

(g) Do not make ladders by fastening cleats across a single rail.

(h) Portable ladders must have nonslip bases.

(6) General requirements – portable stepladders.

(a) The minimum width between side rails at the top, inside to inside, must be not less than 11 1/2 inches. From top to bottom, the side rails must spread at least 1-inch for each foot of length of the stepladder.

(b) The bottoms of the four rails must have insulating nonslip material.

(c) There must be a metal spreader or locking device strong enough to hold the ladder open. The spreader must have no sharp points or edges. For Type III ladders, the pail shelf and spreader can be one unit (a shelf-lock ladder).

(7) Use – all ladders. Use ladders only for purposes approved or recommended by the manufacturer.

(a) Do not load ladders beyond their working load rating. Do not allow more than one person at a time on ladders not intended by the manufacturer to hold more than one person.

(b) Do not use ladders in front of doors that open toward the ladder without blocking, locking or guarding the door.

(c) Do not use ladders placed on boxes, barrels, or other unstable bases to obtain additional height.

(d) Do not use ladders with broken or missing steps, rungs, or cleats, broken side rails, or other faulty parts.

(e) Do not splice sections of short ladders together to make a long one.

(f) When used, metal reinforcers must be on the underside of rails of portable rung ladders.

(g) A ladder for access to a roof must extend at least 3 feet above the top support point, at the eave, gutter, or roof line.

(h) Secure ladders as necessary when used on surfaces that may allow slipping or movement. Use one of the following methods:

(A) non-slip bases on the ladder feet; or,

(B) steel points or safety shoes on the ladder feet, designed for the type of surface the ladder is on; or

(C) nail the ladder to the floor, or set it against secured blocks or chocks.

NOTE: Non-slip bases are not a substitute for care in safely placing, lashing, or holding a ladder on oily, metal, concrete, or slippery surfaces.

(i) Use portable ladders only on a surface that gives stable, level footing.

(j) The climber must face the ladder and have free use of both hands when climbing up or down.

(k) Do not step or jump between erected ladders.

(l) There must be only one person at a time on a ladder unless its labeling specifically allows use by more than one person.

(m) Do not use ladders as planks or bridges between walking surfaces or in other horizontal applications.

(n) Do not use ladders to gain additional height from elevated surfaces like scaffolds, truck beds, vehicle bodies, tractor scoops or boom truck buckets.

(o) Do not use metal ladders or wood ladders with vertical metal parts for electrical work or where they may contact electric conductors. This type ladder must have markings reading “WARNING – do not use around energized electrical equipment” or words of equal meaning.

(8) Use of specific types of ladders.

(a) Portable stepladders. Do not use stepladders more than 20 feet long.

(A) Do not climb on the back section of the ladder unless it has steps meant for climbing. Do not stand on the top step or top cap of stepladders.

(B) There must be only one person at a time on the ladder.

(C) Do not use stepladders in freestanding positions when not fully opened. Do not use them as supports for working platforms or scaffolding planks.

(b) Portable rung ladders.

(A) Single ladder.

(i) Do not use single ladders more than 30 feet long.

(ii) Place these ladders at an angle shown in Figure 1.

(iii) The tops must be tied down or secured if there is a possibility of sliding or movement.

(iv) Single ladders are acceptable as fixed ladders only when they comply with 437-004-0360.

(B) Two-section ladder.

(i) Do not use two-section extension ladders more than 60 feet long. All ladders of this type must have two sections, one to fit within the side rails of the other, and arranged so that the upper section will raise and lower.

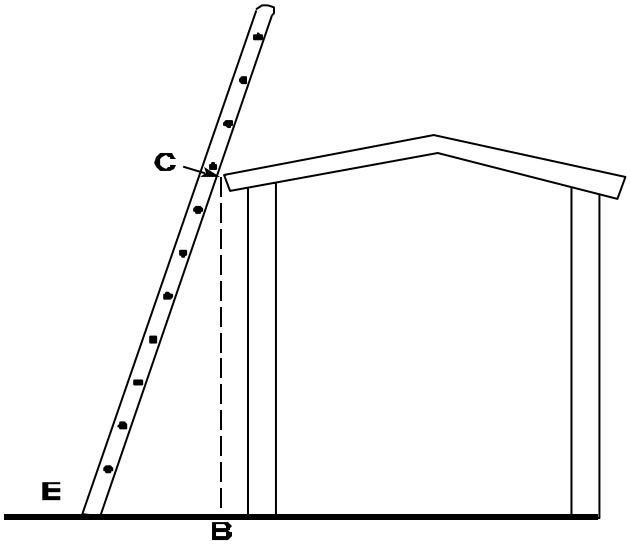
(ii) Set up and use extension ladders so that the top section or fly is resting on the bottom section or base. Rung locks must be in the proper position.

(iii) Place these ladders at an angle shown in Figure 1.

(iv) The tops must be tied down or secured if there is a possibility of sliding or movement.

(v) On two-section extension ladders the minimum overlap for the two sections in use must be as follows:

Size of Ladder (feet)	Overlap (feet)
Up to and including 36	3
Over 36 up to and including 48	4
Over 48 up to and including 80	5



C is the top support
E is the foot of the ladder
EB = 1/4 EC

Figure 1. Diagram of proper ladder pitch

(C) Sectional ladder.

(i) Do not use assembled combinations of sectional ladders longer than lengths allowed in this subdivision.

(ii) Place these ladders at an angle shown in Figure 1.

(iii) The tops must be tied down or secured if there is a possibility of sliding or movement.

(iv) Do not use three section extension ladders longer than 72 feet.

(D) Trestle and extension trestle ladder. Do not use trestle ladders, or extension sections or base sections of extension trestle ladders more than 20 feet long.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f/8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 9-2006, f. 9/22/06, ef. 9/22/06.

437-004-0350 Orchard Ladders.

Definition.

Orchard Ladder. A self-supporting portable tripod ladder of fixed length. It has two front side rails and a single back support leg.

(1) Application. This covers the maintenance, use and care of orchard ladders.

(2) Maintenance.

(a) Each step of wooden orchard ladders must have these reinforcements:

(A) A steel rod not less than 0.160-inch in diameter, that passes through metal washers big enough to prevent pressing into the side rails, and through a truss block between the rod and the center of each step, or;

(B) A metal angle brace on each end firmly secured to the steps and side rails, or;

(C) Construction of equivalent strength and safety.

(b) If the ladder has rod reinforcement, the bottom step must also have a metal angle brace on each end securely attached to the bottom step and side rails.

(c) All steps 27 inches or longer must have a metal angle brace at each end securely attached to the step and rail.

(d) The minimum width between side rails at the highest step for standing, inside to inside, is 9 1/2 inches. From top to bottom the side rails must spread at least an average of 2 1/2 inches for each foot of ladder length.

(e) All orchard ladders must have a top with tightly secured wood or metal brackets or fittings, side rails and back leg. The back leg must swing freely without excessive play or wear at the joints.

(f) There must be no dents, breaks or bends in the side rails or rungs.

(3) Training.

(a) Prior to assigning an employee to work with orchard ladders, the employer must assure that they have the necessary skills and knowledge to use the ladder safely, or;

(b) The employer must train new employees about the requirements of this standard and the special procedures and cautions associated with using an orchard ladder.

(4) Use and care.

(a) Do not use orchard ladders longer than 16 feet.

(b) Do not use the top as a step.

(c) Do not allow more than one person at a time on ladders.

(d) Do not step or jump between two or more erected ladders.

(e) Do not use ladders to gain additional height from already elevated surfaces like scaffolds, truck beds, vehicle bodies, tractor scoops or boom truck buckets.

(f) Inspect ladders before each use. Do not use any with defects, loose, warped, bent or broken parts. Tag these ladders, "Dangerous, Do Not Use" until they are fixed.

(g) Do not use metal ladders or wood ladders with vertical metal parts for electrical work or where they may contact electric conductors. This type ladder must have markings reading "WARNING – do not use around energized electrical equipment" or words of equal meaning.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f/8/28/98, ef. 10/1/98.

437-004-0360 Fixed Ladders.

(1) Definitions. Fixed ladder terms mean:

Cage. A guard sometimes referred to as a basket guard that is an enclosure fastened to the side rails of a fixed ladder or to a structure to encircle the climbing space of the ladder.

Cleats. Ladder cross-pieces of rectangular cross-section placed on edge on which a person may step when climbing up or down.

Fastenings. A device to attach a ladder to a structure, building, or equipment.

Fixed ladder. A ladder permanently attached to a structure, building, or equipment.

Grab bars. Individual handholds adjacent to or as an extension above ladders to provide access beyond the limits of the ladder.

Individual-rung ladder. A fixed ladder with each rung individually attached to a structure, building, or equipment.

Ladder. A device with steps, rungs or cleats between rails, for people to climb up or down.

Ladder safety device. Any device, other than a cage or well, designed to eliminate or reduce the possibility of accidental falls, that may use life belts, friction brakes, and sliding attachments.

Pitch. The included angle between the horizontal and the ladder, measured on the opposite side of the ladder from the climbing side.

Rail ladder. A fixed ladder with side rails joined at regular intervals by rungs or cleats and fastened in full length or in sections to a building, structure, or equipment.

Rungs. Ladder cross-pieces of circular or oval cross-section on which a person may step when climbing up or down.

Side-step ladder. One from which a person getting off at the top must step sideways to reach the landing.

Steps. The flat cross-pieces of a ladder on which a person may step when climbing up or down.

Through ladder. A ladder from which a person getting off at the top must step through side rails to reach the landing.

Well. A permanent complete enclosure around a fixed ladder, that is attached to the walls of the well. Proper clearances for a well will give the climber the same protection as a cage.

(2) Design requirements.

(a) Design considerations. All ladders, appurtenances, and fastenings must meet these load requirements:

(A) The minimum design live load must be a single concentrated load of 200 pounds.

(B) Design consideration must include the number and position of additional concentrated live load units of 200 pounds each as determined from anticipated use.

(C) Consider the live loads caused by persons on the ladder to be concentrated at such points as will cause the maximum stress in the structural member being under evaluation.

(D) Use the weight of the ladder and attachments together with the live load when designing rails and fastenings.

(E) All wood parts of fixed ladders must meet the requirements of OAR 437-004-0340(3).

(F) For fixed ladders with wood side rails and wood rungs or cleats, used at an angle between 75 degrees and 90 degrees, and intended for use by no more than one person per section, single ladders in OAR 437-004-0340(8)(b)(A) are acceptable.

(3) Specific features.

(a) Rungs and cleats.

(A) All rungs must have a minimum diameter of 3/4-inch for metal ladders, except as in paragraph **OAR 437-004-0360(3)(g)** and a minimum diameter of 1 1/8 inches for wood ladders.

(B) The distance between rungs, cleats, and steps must be uniform and not more than 12 inches.

(C) The minimum clear length of rungs or cleats must be 16 inches.

(D) Rungs, cleats, and steps must not have splinters, sharp edges, burrs, or projections.

(E) The rungs of an individual rung ladder must not allow the climber's foot to slide off the end. Figure 2 shows a suggested design.

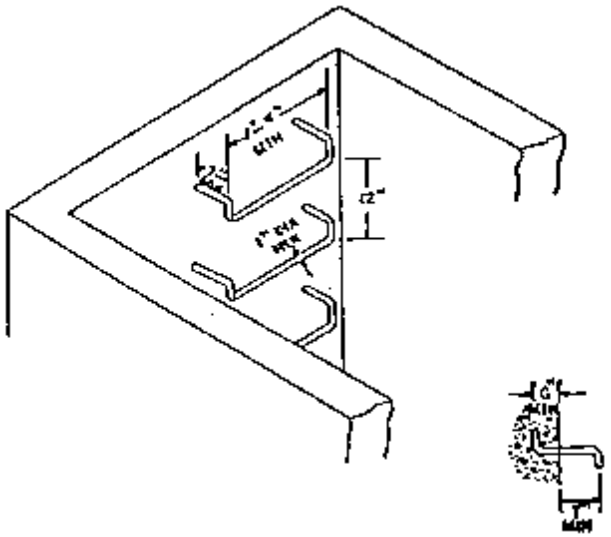


Figure 2. - Suggested design for rungs on individual-rung ladders.

(b) Side rails. Side rails that might be used as a climbing aid must be of such cross sections as to afford adequate gripping surface without sharp edges, splinters, or burrs.

(c) Fastenings. Fastenings must be an integral part of fixed ladder design.

(d) Splices. All splices must meet design requirements noted in **(2)(a)** above. All splices and connections must have smooth transition with original members and no sharp or extensive projections.

(e) Electrolytic action. Protect dissimilar metals from electrolytic action when they are joined.

(f) Welding. All welding must be according to the "Code for Welding in Building Construction" (AWSD1.0-1966).

(g) Protection from deterioration. Paint or treat metal ladders and attachments to resist corrosion and rusting when necessary. Ladders with individual metal rungs imbedded in concrete, that serve as access to pits and to other areas under floors, must have rungs with a minimum diameter of 1-inch or paint or treatment to resist corrosion and rusting.

(4) Clearance.

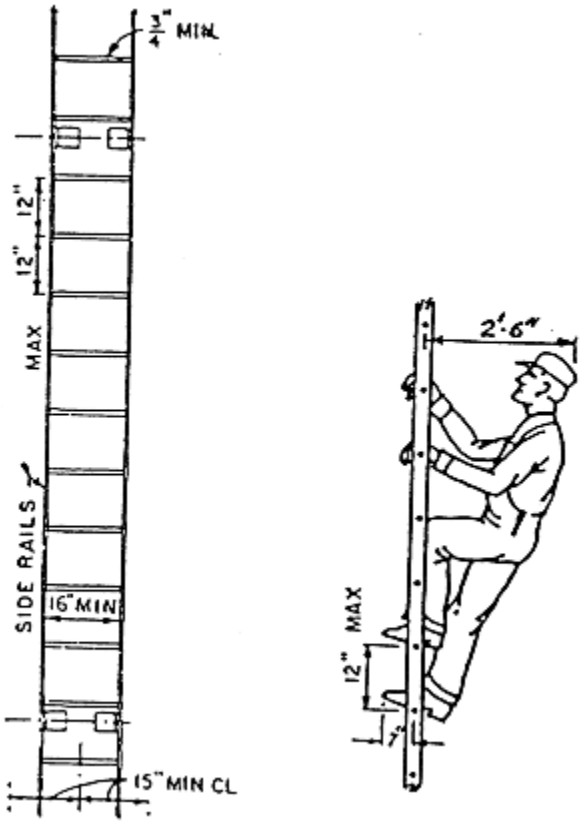


Figure 3. - Rail Ladder With Bar Steel Rails and Round Steel Rungs

(a) Climbing side. On fixed ladders, the perpendicular distance from the centerline of the rungs to the nearest permanent object on the climbing side of the ladder must be 36 inches for a pitch of 76 degrees, and 30 inches for a pitch of 90 degrees (Figure 3), with minimum clearances for intermediate pitches varying between these two limits in proportion to the slope, except as in **(4)(c)** and **(e)** below.

(b) Ladders without cages or wells. There must be a clear width of at least 15 inches each way from the centerline of the ladder in the climbing space, except when cages or wells are necessary.

(c) Ladders with cages or baskets. Subparagraphs **(4)(a)** and **(b)** above do not cover ladders with a cage or basket. They must conform to **(5)(a)(E)**. Subparagraph **(4)(a)** above does not cover fixed ladders in smooth-walled wells. They must conform to **(5)(a)(F)**.

(d) Clearance in back of ladder. The distance from the centerline of rungs, cleats, or steps to the nearest permanent object in back of the ladder must be not less than 7 inches, except that when there are unavoidable obstructions, there must be minimum clearances shown in Figure 4.

Minimum Ladder Clearances

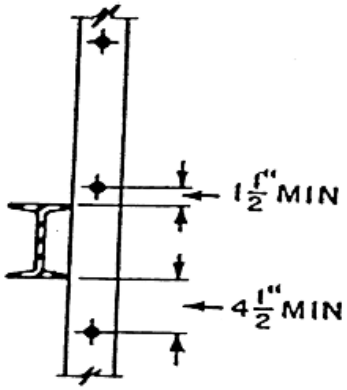


Figure 4. - Clearance for Unavoidable Obstruction at Rear of Fixed Ladder

(e) Clearance in back of grab bar. The distance from the centerline of the grab bar to the nearest permanent object in back of the grab bars must be not less than 4 inches. Grab bars must not protrude on the climbing side beyond the rungs of the ladder that they serve.

(f) Step-across distance. The step-across distance from the nearest edge of the ladder to the nearest edge of equipment or structure must be not more than 12 inches, or less than 2 1/2 inches (Figure 5).

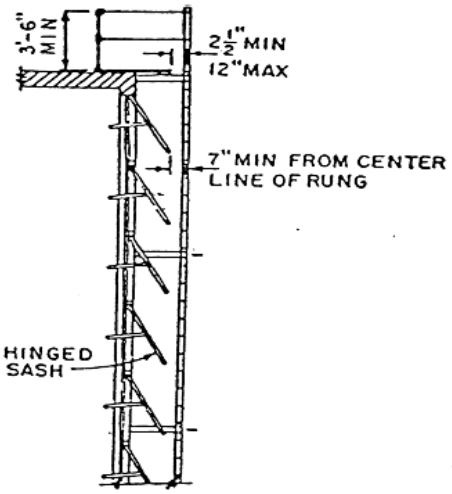


Figure 5. - Ladder Far from Wall

(g) Hatch cover. Counterweighted hatch covers must open a minimum of 60 degrees from the horizontal. The distance from the centerline of rungs or cleats to the edge of the hatch opening on the climbing side must be not less than 24 inches for offset wells or 30 inches for straight wells. There must be no protruding potential hazards within 24 inches of the centerline of rungs or cleats; any such hazards within 30 inches of the centerline of the rungs or cleats must have deflector plates at an angle of 60 degrees from the horizontal as shown in Figure 6. The relationship of a fixed ladder to an acceptable counterweighted hatch cover is shown in Figure 7.

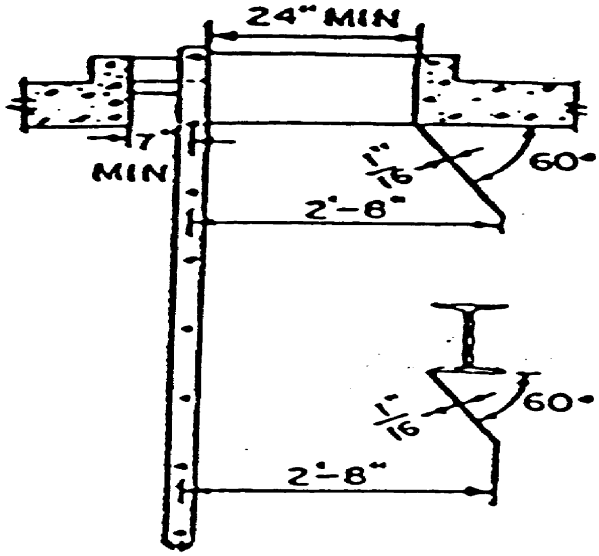


Figure 6. - Deflector Plates for Head Hazards

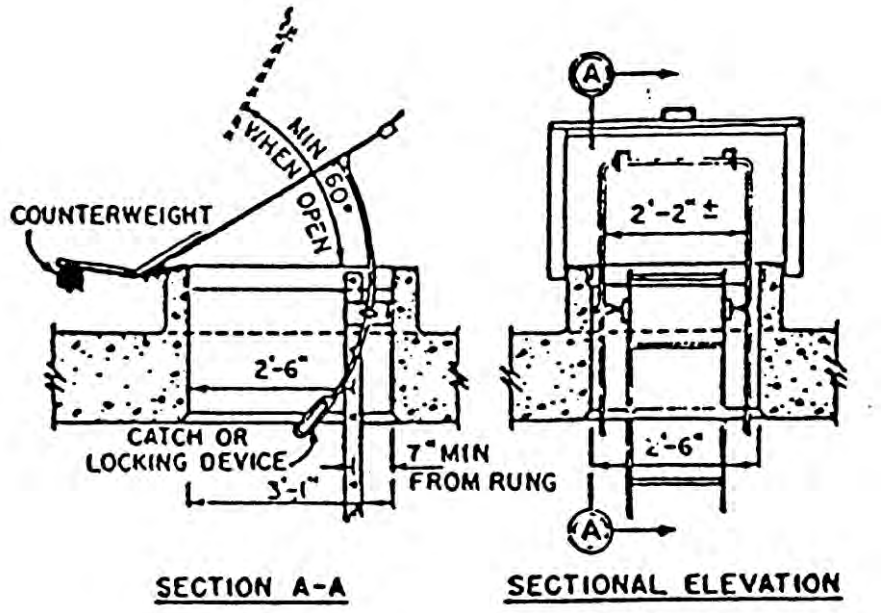


Figure 7. – Relationship of Fixed Ladder to a Safe Access Hatch

(5) Special requirements.

(a) Cages, Wells and Ladder Climbing Safety Systems.

(A) Cages, wells or ladder climbing safety systems must be on all ladders where the length of climb is more than 24 feet but not more than 50 feet or the top of the ladder is more than 24 feet above the ground or nearest lower landing surface.

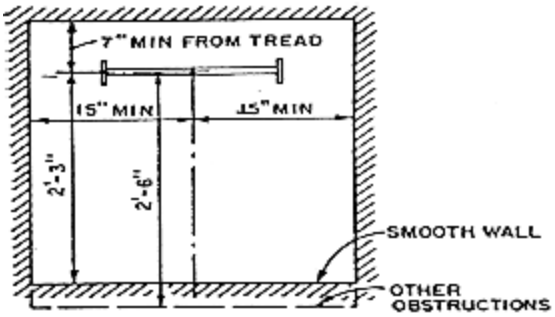
NOTE: Design specifications for cages and wells are in Figures 8, 9 and 10.

(B) Ladders with a length of climb more than 50 feet must have a cage, well or climbing safety system and must meet one of the following two requirements:

(i) When using a cage or well the ladder must be in sections, horizontally offset, with rest platforms at least every 50 feet.

(ii) When using a ladder climbing safety system the ladder must have rest platforms at least every 150 feet (except chimneys).

Figure 8. - Clearance Diagram for Fixed Ladder in Well



(C) Cages must extend at least 42 inches above the top of the landing, unless there is other acceptable protection.

(D) Cages must extend down the ladder to a point not less than 7 feet nor more than 8 feet above the base of the ladder. The bottom must flare not less than 4 inches or the portion of the cage opposite the ladder must extend to the base.

(E) Cages must not extend less than 27 nor more than 28 inches from the center line of the rungs of the ladder. Cages must not be less than 27 inches in width. The inside must be clear of projections. Vertical bars must be at a maximum spacing of 40 degrees around the circumference of the cage; this will give a maximum spacing of approximately 9 1/2 inches, center to center.

(F) Ladder wells must have a clear width of at least 15 inches measured each way from the center line of the ladder. Smooth-walled wells must be a minimum of 27 inches from the center line of rungs to the well wall on the climbing side of the ladder. Where other obstructions on the climbing side of the ladder exist, there must be a minimum of 30 inches from the centerline of the rungs.

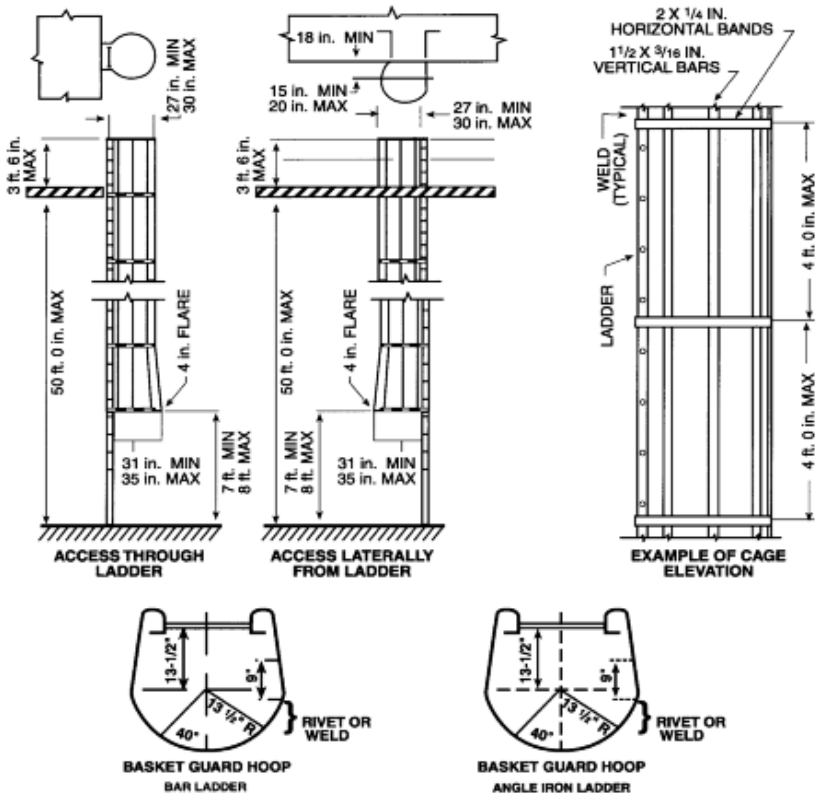


Figure 9. – Cages for Ladders More Than 24 Feet High

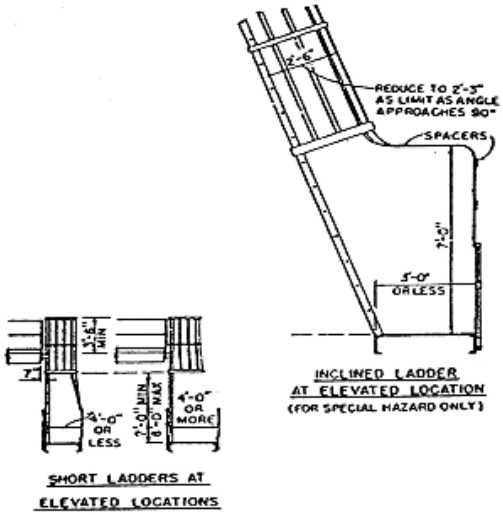


Figure 10. – Cages – Special Applications

(b) Landing platforms.

(A) Where a person has to step a distance more than 12 inches from the center line of the rung of a ladder to the nearest edge of a structure or equipment, there must be a landing platform. The minimum step-across distance is 2 1/2 inches.

(B) All landings must have standard railings and toeboards, that give safe access to the ladder. Platforms must be not less than 24 inches wide and 30 inches long.

(C) One rung of any section of ladder must be at the level of the landing laterally served by the ladder. Where access to the landing is through the ladder, the spacing from the landing platform to the first rung below the landing must be the same as the rung spacing on the ladder.

(c) Ladder extensions. The side rails of through or side stepladder extensions must extend 3 1/2 feet above parapets and landings. For through ladder extensions, omit the rungs from the extension. There must be not less than 18 nor more than 24 inches clearance between rails. For side step or offset fixed ladder sections, at landings, the side rails and rungs must extend to the next regular rung beyond or above the 3 1/2-foot minimum (Figure 11).

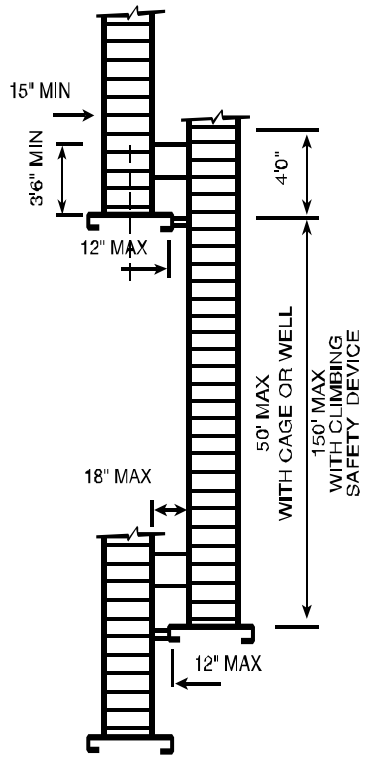


Figure 11. – Offset Fixed Ladder Sections

(d) Grab bars. Space grab bars by a continuation of the rung spacing when they are horizontal. Vertical grab bars must have the same spacing as the ladder side rails. Grab bar diameters must be the equivalent of the round rung diameters.

(6) Pitch.

(a) Preferred pitch. The preferred pitch of fixed ladders is between 75 degrees and 90 degrees with the horizontal (Figure 12).

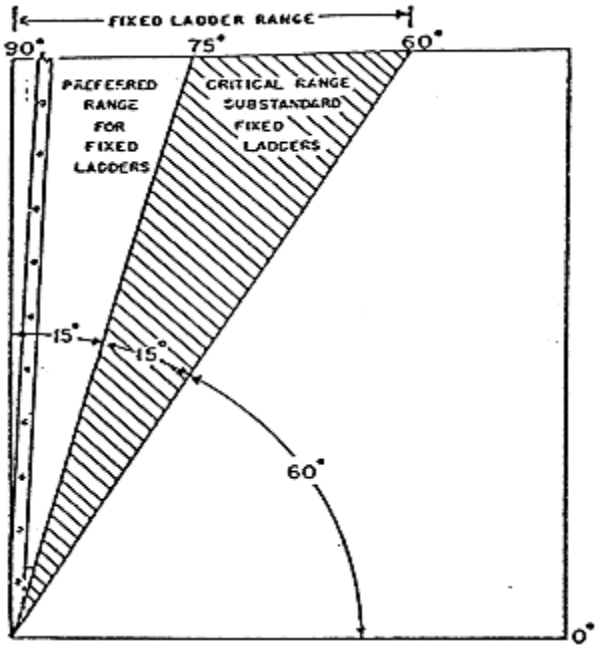


Figure 12. - Pitch of Fixed Ladders

(b) Substandard pitch. Fixed ladders are substandard if they are between 60 degrees and 75 degrees with the horizontal. Substandard fixed ladders are allowed only where necessary to meet conditions of installation.

(c) Scope of coverage in this section. This section covers only fixed ladders between 60 degrees and 90 degrees with the horizontal.

(d) Pitch more than 90 degrees. No ladder may be more than 90 degrees with the horizontal.

(7) Maintenance. All ladders must be in safe condition. Inspect ladders at intervals determined by use and exposure.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f/8/28/98, ef. 10/1/98.

437-004-0370 Scaffolding.

(1) Scope. This section has safety requirements for scaffolds.

(2) Definitions. Scaffolding terms mean:

Bearer. A horizontal part of a scaffold on which the platform rests and which may use ledgers as support.

Boatswain's chair. A seat supported by slings attached to a suspended rope, designed to accommodate one worker in a sitting position.

Brace. A tie that holds one scaffold part in a fixed position with respect to another.

Crawling board or chicken ladder. A plank with cleats spaced and secured at equal intervals, for use on roofs, not designed to carry any material.

Double pole or independent pole 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.

Guardrail. A rail secured to uprights that run along the exposed sides and ends of platforms.

Heavy duty scaffold. A scaffold built to carry a working load of not more than 75 pounds per square foot.

Horse scaffold. A scaffold for light or medium duty, made of horses supporting a work platform.

Ladder jack scaffold. A light duty scaffold supported by brackets attached to ladders.

Ledger (stringer). A horizontal scaffold member that extends from post to post and supports the putlogs or bearer forming a tie between the posts.

Light duty scaffold. A scaffold built to carry a working load not more than 25 pounds per square foot.

Manually propelled mobile scaffold. A portable rolling scaffold mounted on casters.

Maximum intended load. The total of all loads including the working load, the weight of the scaffold, and such other loads as may be reasonably anticipated.

Medium duty scaffold. A scaffold built to carry a working load not more than 50 pounds per square foot.

Midrail. A rail approximately midway between the guardrail and platform and secured to the uprights along the exposed sides and ends of platforms.

Putlog. A scaffold part on which the platform rests.

Roofing bracket. A bracket used in sloped roof construction. It has a way for fastening to the roof or is supported by ropes fastened over the ridge and secured to some suitable object.

Runner. The lengthwise horizontal bracing or bearing parts or both.

Scaffold. Any temporary elevated platform and its supporting structure used for supporting workers or materials or both.

Single pole scaffold. Platforms resting on putlogs or crossbeams, the outside ends of which are on ledgers secured to a single row of posts or uprights and the inner ends of which are on or in a wall.

Toeboard. A barrier secured along the sides and ends of a platform, to keep material from falling.

Tubular welded frame scaffold. A sectional, panel, or frame metal scaffold made of prefabricated welded sections, that has posts and bearers with intermediate connecting members, braced with diagonal or cross braces.

Working load. Load imposed by workers, material and equipment.

(3) General requirements for all scaffolds.

(a) The footing or anchorage for scaffolds must be sound, rigid, and able to carry the maximum intended load without settling or displacement. Do not use unstable objects such as barrels, boxes, loose brick, or concrete blocks to support scaffolds or planks.

(b) Scaffolds and their components must be able to support at least four times the maximum intended load.

(c) Scaffolds and other devices mentioned here must be in safe condition. Do not alter or move an occupied stationary scaffold.

(d) Remove from use any damaged or weakened scaffold until repairs are done.

(e) Do not overload scaffolds. Follow manufacturers' instructions.

(f) Loaded planks or platforms must not deflect more than 1/60th of the span (2 inches in 10 feet).

(g) Nails or bolts used to make scaffolds must be strong enough and in sufficient numbers at each connection to assure the designed strength of the scaffold. Do not subject nails to a straight pull. Drive all nails completely.

(h) Overlap all planking or platforms (minimum 12 inches) or secure them from movement.

(i) There must be a ladder or equivalent safe access.

(j) Scaffold planks must extend over their end supports not less than 6 inches nor more than 18 inches.

(k) The poles, legs, or uprights of scaffolds must be plumb, and securely and rigidly braced to prevent swaying and displacement.

(l) Use a tag line when hoisting materials onto a scaffold.

(m) There must be overhead protection for employees exposed to overhead hazards.

(n) If persons work or pass under the scaffolds there must be a screen between the toeboard and the guardrail, along the entire opening. The screen must be No. 18 gauge U.S. Standard Wire 1/2-inch mesh or the equivalent.

(o) Employees must not work on scaffolds during storms or high winds.

(p) Employees must not work on scaffolds covered with ice or snow or that have slippery surfaces.

(q) Accumulations of tools, materials, and debris must not cause a hazard.

(r) Wire or fiber rope for scaffold suspension must be able to support at least six times the intended load.

(s) Do not use shore scaffolds or lean-to scaffolds.

(t) Lumber sizes, used here, refer to nominal sizes except where otherwise stated.

(u) Use anchor bolts, reveal bolts, or other equivalent means to secure scaffolds to permanent structures. Do not use window cleaners' anchor bolts.

(v) Take special precautions to protect scaffold members, including any wire or fiber ropes, when using a heat-producing process.

(4) General requirements for wood pole scaffolds.

(a) Scaffold poles must be plumb and on a foundation that prevents settling.

(b) Where wood poles are spliced, the ends must be square and the upper section must rest squarely on the lower section. There must be wood splice plates, at least 4 feet long, on at least two adjacent sides and overlapping the abutted ends equally. These plates must be the same width as the pole. Splice plates of other materials of equivalent strength are acceptable.

(c) Set independent pole scaffolds as near to the wall of the building as practicable.

(d) Guy or tie pole scaffolds to the building or structure. If they are more than 25 feet high or long, secure them at intervals not more than 25 feet vertically and horizontally.

(e) Set putlogs or bearers with their greater dimensions vertical, long enough to project over the ledgers of the inner and outer rows of poles at least 3 inches for proper support.

(f) Reinforce every wooden putlog on single pole scaffolds with a 3/16 x 2-inch steel strip or equivalent secured to its lower edge throughout its length.

(g) Ledgers must be long enough to extend over two pole spaces. Do not splice ledgers between the poles. Reinforce ledgers with bearing blocks securely nailed to the side of the pole to form a support for the ledger.

(h) Use diagonal bracing to prevent the poles from moving in a direction parallel with the wall of the building, or from buckling.

(i) Use cross bracing between the inner and outer sets of poles in independent pole scaffolds. Cross brace the free ends of pole scaffolds.

(j) There must be full diagonal face bracing across the entire face of pole scaffolds in both directions. Splice the braces at the poles.

(k) Lay platform planks with their edges close together so the platform will be tight with no spaces through which tools or material can fall.

(l) When lapped, each plank must lap its end supports at least 12 inches. Where the ends of planks abut each other to form a flush floor, the butt joint must be at the centerline of a pole. Rest abutted ends on separate bearers. Use intermediate beams where necessary to prevent dislodgment of planks due to deflection. Nail or cleat the ends to prevent their dislodgment.

(m) When a scaffold turns a corner, lay the platform planks to prevent tipping. The planks that meet the corner putlog at an angle must be laid first, extending over the diagonally placed putlog far enough to have a safe bearing, but not far enough to involve any danger from tipping. The planking running in the opposite direction at right angles must be laid to extend over and rest on the first layer of planking.

(n) When moving platforms to the next level, leave the old platform undisturbed until the new putlogs or bearers are in place.

(o) Install guardrails, 2 x 4 inches or the equivalent, between 36 inches and 42 inches high at all open sides on all scaffolds more than 10 feet above the ground or floor. The midrail, when required, must be 1 x 4-inch lumber or equivalent, and there must be toeboards at least 4 inches high. Use wire mesh according to paragraph **OAR 437-004-0370(3)(n)**.

(p) All wood pole scaffolds 60 feet or less in height must be built according to tables 1 through 6. If they are more than 60 feet high, a registered professional engineer must design them. A copy of the typical drawings and specifications must be available to the employer and for inspection purposes.

Table 1 – Minimum Nominal Size and Maximum Spacing of Members of Single Pole Scaffolds – Light Duty

	Maximum height of scaffold	
	20 feet	**60 feet**
Uniformly distributed load	Not to exceed 25 pounds per square foot.	
Poles or uprights	2 by 4 in	4 by 4 in.
Poles spacing (longitudinal)	6 ft. 0 in	10 ft. 0 in.
Maximum width of scaffold	5 ft. 0 in	5 ft. 0 in.
Bearers or putlogs to 3 ft. 0 in width	2 by 4 in	2 by 4 in.
Bearers or putlogs to 5 ft. 0 in width	2 by 6 in. or 3 by 4 in	2 by 6 in. or 3 by 4 in. (rough)
Ledgers	1 by 4 in	1 1/4 by 9 in.
Planking	1 1/4 by 9 in (rough)	2 by 9 in.
Vertical spacing of horizontal members	7 ft. 0 in.	7 ft. 0 in.
Bracing, horizontal and diagonal	1 by 4 in	1 by 4 in.
Tie-ins	1 by 4 in	1 by 4 in.
Toeboards	4 in high (minimum)	4 in. high (minimum)
Guardrail	2 by 4 in	2 by 4 in.

Use all members on their edge, except planking.

Table 2 – Minimum Nominal Size and Maximum Spacing of Members of Single Pole Scaffolds – Medium Duty

Uniformly distributed load	Not more than 50 pounds per square foot.
Maximum height of scaffold	60 ft.
Poles or uprights	4 by 4 in.
Pole spacing (longitudinal)	8 ft. 0 in.
Maximum width of scaffold	5 ft. 0 in.
Bearers or putlogs	2 by 9 in. or 3 by 4 in.
Spacing of bearings or putlogs	6 ft. 0 in.
Ledgers	2 by 9 in.
Vertical spacing of horizontal members	9 ft. 0 in.
Bracing, horizontal	1 by 6 in. or 1 by 4 in.
Bracing, diagonal	1 by 4 in.
Tie-ins	1 by 4 in.
Planking	2 by 9 in.
Toeboards	4 in high (minimum)
Guardrails	2 by 4 in.

Use all members on their edge, except planking.

Table 3 – Minimum Nominal Size and Maximum Spacing of Members of Single Pole Scaffolds – Heavy Duty

Uniformly distributed load	Not more than 75 pounds per square foot.
Maximum height of scaffold	60 ft.
Poles or uprights	4 by 4 in.
Pole spacing (longitudinal)	6 ft. 0 in.
Maximum width of scaffold	5 ft. 0 in.
Bearers or putlogs	2 by 9 in. or 3 by 4 in. (rough)
Spacing of bearings or putlogs	6 ft. 0 in.
Ledgers	2 by 9 in.
Vertical spacing of horizontal members	6 ft. 6 in.
Bracing, horizontal	2 by 4 in.
Tie-ins	1 by 4 in.
Planking	2 by 9 in.
Toeboards	4 in high (minimum)
Guardrails	2 by 4 in.

Use all members on their edge, except planking.

Table 4 – Minimum Nominal Size and Maximum Spacing of Members of Independent Pole Scaffolds – Light Duty

	Maximum height of scaffold	
	20 feet	**60 feet**
Uniformly distributed load	Not to exceed 25 pounds per square foot.	
Poles or uprights	2 by 4 in	4 by 4 in.
Poles spacing (longitudinal)	6 ft. 0 in	10 ft. 0 in.
Poles spacing (transverse)	6 ft. 0 in.	10 ft. 0 in
Ledgers	1 1/4 by 4 in	1 1/4 by 9 in.
Bearers or putlogs to 3 ft. 0 in width	2 by 4 in	2 by 4 in.
Bearers or putlogs to 10 ft. 0 in width	2 by 6 in. or 3 by 4 in	2 by 9 in. (rough) or 3 by 8 in.
Planking	1 1/4 by 9 in	2 by 9 in.
Vertical spacing of horizontal members	7 ft. 0 in.	7 ft. 0 in.
Bracing, horizontal and diagonal	1 by 4 in	1 by 4 in.
Tie-ins	1 by 4 in	1 by 4 in.
Toeboard	4 in high	4 in. high (minimum)
Guardrail	2 by 4 in	2 by 4 in.

Use all members on their edge, except planking.

Table 5 – Minimum Nominal Size and Maximum Spacing of Members of Independent Pole Scaffolds – Medium Duty

Uniformly distributed load	Not to exceed 50 pounds per square foot.
Maximum height of scaffold	60 ft.
Poles or uprights	4 by 4 in.
Pole spacing (longitudinal)	8 ft. 0 in.
Pole spacing (transverse)	8 ft. 0 in.
Ledgers	2 by 9 in.
Vertical spacing of horizontal members	6 ft. 0 in.
Spacing of bearings	8 ft. 0 in.
Bearers	2 by 9 in. (rough) or 2 by 10 in.
Bracing, horizontal	1 by 6 in. or 1 1/4 by 4 in.
Bracing, diagonal	1 by 4 in.
Tie-ins	1 by 4 in.
Planking	2 by 9 in.
Toeboards	4 in high (minimum)
Guardrails	2 by 4 in.

Use all members on their edge, except planking.

Table 6 – Minimum Nominal Size and Maximum Spacing of Members of Independent Pole Scaffolds – Heavy Duty

Uniformly distributed load	Not to exceed 75 pounds per square foot.
Maximum height of scaffold	60 ft.
Poles or uprights	4 by 4 in.
Pole spacing (longitudinal)	6 ft. 0 in.
Pole spacing (transverse)	6 ft. 0 in.
Ledgers	2 by 9 in.
Vertical spacing of horizontal members	4 ft. 6 in.
Bearers	2 by 9 in. (rough)
Bracing, horizontal and diagonal	2 by 4 in.
Tie-ins	1 by 4 in.
Planking	2 by 9 in.
Toeboards	4 in high (minimum)
Guardrails	2 by 4 in.

Use all members on their edge, except planking.

(5) Tubular welded frame scaffolds.

(a) Metal tubular frame scaffolds, including accessories such as braces, brackets, trusses, screw legs, ladders, etc., must be able to safely support four times the maximum intended load.

(b) Spacing of panels or frames must be consistent with the loads imposed.

(c) Scaffolds must have cross bracing or diagonal braces, or both, to secure vertical members together laterally. The cross braces must be long enough to automatically square and aline vertical members so that the erected scaffold is always plumb, square, and rigid. All brace connections must be secure.

(d) Scaffold legs must be on adjustable bases or plain bases on mud sills or other foundations adequate to support the maximum intended load.

(e) The frames must be one on top of the other with coupling or stacking pins to provide proper vertical alignment of the legs.

(f) Where uplift may occur, lock panels together vertically with pins or other equivalent means.

(g) Install guardrails, 2 x 4 inches or the equivalent, between 36 inches and 42 inches high at all open sides on all scaffolds more than 10 feet above the ground or floor. The midrail, when required, must be 1 x 4-inch lumber or equivalent, and there must be toeboards at least 4 inches high. Use wire mesh according to paragraph **OAR 437-004-0370(3)(n)**.

(h) All tubular metal scaffolds must be able to support four times the maximum intended loads.

(i) To prevent movement, secure the scaffold to the building or structure at intervals not more than 30 feet horizontally and 26 feet vertically.

(j) Maximum permissible spans of planking must conform with paragraph **OAR 437-004-0370(3)(g)**.

(k) A registered professional engineer must design drawings and specifications for frame scaffolds more than 125 feet high above the base plates. Copies must be available to the employer and for inspection purposes.

(l) Only competent and experienced personnel may set up tubular welded frame scaffolds.

(m) Frames and accessories for scaffolds must be in good repair. Remove them from use until they have no defects, unsafe conditions and are in compliance with this section. Do not use any broken, bent, excessively rusted, altered, or otherwise structurally damaged frames or accessories.

(n) Make periodic inspections of all welded frames and accessories. Complete any maintenance, including painting, or minor corrections recommended by the manufacturer, before further use.

(6) Boatswain's chairs.

(a) The chair seat must be not less than 12 by 24 inches, and 1-inch thick. Use a seat with reinforcement on the underside to prevent the board from splitting.

(b) The two seat slings must be 5/8-inch diameter fiber rope or equivalent, reeved through the four seat holes to cross each other on the underside of the seat.

(c) Seat slings must be at least 3/8-inch wire rope when a worker is using a heat producing process such as gas or arc welding.

(d) Protect the worker with a safety life belt and lifeline attached to substantial members of the structure (not the scaffold), or to securely rigged lines, that will safely suspend the worker in case of a fall.

(e) The tackle must have the correct size ball bearing or bushed blocks and properly spliced 5/8-inch diameter first-grade manila or equivalent.

(f) The roof irons, hooks, or the object to which the tackle is anchored must be secure. Tiebacks, when used, must be at right angles to the face of the building and securely fastened to a substantial anchor point.

(7) Horse scaffolds.

(a) Horse scaffolds must not be more than two tiers or 10 feet high.

(b) The members of the horses must be not less than those in Table 7.

Table 7
Minimum Dimensions for Horse Scaffold Members

Members	Dimensions (inches)
Horizontal members or bearers	3 by 4
Legs	1 1/4 by 4 1/2
Longitudinal brace between legs	1 by 6
Gusset brace at top of legs	1 by 8
Half diagonal braces	1 1/4 by 4 1/2

(c) Space horses not more than 5 feet for medium duty and not more than 8 feet for light duty.

(d) When arranged in tiers, each horse must be directly over the horse in the tier below.

(e) On all scaffolds arranged in tiers, nail the legs to the planks to prevent displacement or thrust and cross brace each tier.

(f) Do not use horses or parts that are weak or defective.

(g) Install guardrails, 2 x 4 inches or the equivalent, between 36 inches and 42 inches high at all open sides on all scaffolds more than 10 feet above the ground or floor. The midrail, when required, must be 1 x 4-inch lumber or equivalent, and there must be toeboards at least 4 inches high. Use wire mesh according to paragraph **OAR 437-004-0370(3)(n)**.

(8) Ladder-jack scaffolds.

(a) All ladder-jack scaffolds are only for light duty and may not be more than 20 feet above the floor or ground.

(b) All ladders used with ladder-jack scaffolds must be heavy-duty and designed and constructed according to 437-004-0340. Do not use stepladders.

(c) The ladder jack must bear on the side rails in addition to the ladder rungs, or if bearing on rungs only, the bearing area must be at least 10 inches on each rung.

(d) To prevent slipping, use special devices, secure placement or anchor ladders used with ladder jacks.

(e) The wood platform planks must be not less than 2 inches (nominal) thick. Both metal and wood platform planks must overlap the bearing surface not less than 12 inches. The span between supports for wood must be not more than 8 feet. The platform must be at least 18 inches wide.

(f) Not more than two persons may be on any given 8 feet of a ladder-jack scaffold at one time.

(9) Roofing brackets.

(a) Roofing brackets must fit the pitch of the roof.

(b) Nail brackets in place in addition to using the pointed metal projections. Drive the nails all the way into the roof. When using rope supports, they must be first-grade manila of at least 3/4-inch diameter, or equivalent.

(c) A substantial catch platform must be below the working area of roofs more than 20 feet from the ground to eaves with a slope more than 3 inches in 12 inches and no parapet. In width the platform must extend 2 feet beyond the projection of the eaves and have a safety rail, midrail, and toeboard that complies with **OAR 437-004-1020**. This does not apply where employees are using a personal fall protection system.

(10) Crawling boards or chicken ladders.

(a) Crawling boards must be not less than 10 inches wide and 1-inch thick, with 1 x 1 1/2 inch cleats. The cleats must be equal in length to the width of the board and spaced at equal intervals not more than 24 inches. Drive nails through and clinch them on the underside. The crawling board must extend from the ridge pole to the eaves when used with roof construction, repair, or maintenance.

(b) A firmly fastened lifeline of at least 3/4-inch rope must be strung beside each crawling board for a handhold.

(c) Use adequate ridge hooks or equivalent effective means to secure crawling boards to the roof.

(11) Manually propelled mobile scaffolds.

(a) The height of free-standing mobile scaffold towers must not be more than four times the smallest base dimension.

(b) Casters must be able to support four times the maximum intended load. All casters must have a positive locking device.

(c) Scaffolds must have cross bracing and horizontal bracing.

(d) Platforms must have tight planking for the full width of the scaffold except for necessary entrance opening. Platforms must not be free to move.

(e) There must be a fixed or built-in ladder or stairway for access and exit.

(f) Move the mobile scaffold by force applied near or as close to the base as practicable. Keep the scaffold stable during movement. Move scaffolds only on level floors with no obstructions or openings.

(g) Workers may not ride on manually propelled scaffolds unless the following conditions exist:

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

(B) The smallest dimension of the scaffold base is at least one-half of the height. If it has outriggers, they must be on both sides of the staging;

(C) The wheels have rubber or similar resilient tires.

(h) Scaffolds must rest upon a suitable footing and be plumb. Lock the casters or wheels to prevent unintended movement.

(i) Guardrails made of lumber, not less than 2 X 4 inches (or other material providing equivalent protection), between 39 and 42 inches high, with a midrail and toeboards, must be on all open sides and ends of scaffolds more than 10 feet above the ground or floor. Toeboards must be at least 4 inches high. If people may pass under the scaffold, use wire mesh between the toeboard and top of the guardrail.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f/8/28/98, ef. 10/1/98.

437-004-0380 Manually Propelled Mobile Ladder Stands and Scaffolds (Towers).

Standards for the use of mobile work platforms and scaffolds are found in Division 2, Subdivision D, 1910.29 which applies to agricultural places of employment.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f/8/28/98, ef. 10/1/98.

437-004-0390 Other Working Surfaces.

(1) Dockboards (bridge plates).

(a) Use bridge plates over any gap of more than 4 inches between two surfaces.

(b) Portable and powered dockboards must be strong enough to carry the load imposed on them.

(c) Anchor portable dockboards or use devices that prevent them from slipping.

(d) Powered dockboards must comply with Commercial Standard CS202-56 (1961) "Industrial Lifts and Hinged Loading Ramps" published by the U.S. Department of Commerce.

(e) Portable dockboards must have handholds or other ways to allow safe handling.

(f) There must be positive protection to prevent railroad cars from moving while dockboards or bridge plates are in position.

(g) Bridgeplates must be able to carry four times the heaviest expected load.

(h) Bridgeplates must sit evenly on the surface at each end. Repair or replace plates that teeter or rock.

(2) Floors.

(a) Floors, floor supports, and required appurtenances must be in good repair.

(b) Floors must not be slippery.

(3) Ramps and runways.

(a) Ramps and runways must be in safe condition.

(b) Ramps and runways for vehicles must be wide enough and have an even surface. They must have timber guards of not less than nominal 6-inch by 6-inch material set on nominal 3-inch blocks, or the equivalent, secured to the sides of the ramp or runway.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f/8/28/98, ef. 10/1/98.

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