

(3) The width of every runway floor shall not be less than 19 inches, and where the floor is more than 5 feet above the supporting level the width shall be increased to not less than 28½ inches.

(4) Where used for vehicles, the width of platform and the distance between railings for any runway shall be such that there will be a clearance between railings and vehicle, and between vehicles, of not less than 6 inches for all vehicles used thereon.

(5) A guard railing as defined in section Ind 35.03 shall be provided on runways as follows:

(a) On the open sides of every runway, the floor of which is more than 24 inches above the supporting level.

(b) On the outer side of all runways at turns.

(c) At all openings as in the case of scaffolds.

(6) Toeboards, as defined in section Ind 35.04, shall be provided on the open sides of every elevated runway at all places where the runway floor is 8 feet or more above a work space or similar exposed area.

(7) No runway shall have an incline of more than one foot of vertical rise in 3 feet of horizontal run.

(8) Every runway shall be maintained in safe structural condition while in use, and the floor thereof shall be kept unobstructed and free of objects or material that may cause persons to stumble or slip.

Ind 35.25 Ladders. (1) **LADDERS REQUIRED.** Where permanent or temporary stairways are not in place or runways are not provided, ladders shall be provided for safe and easy access to elevated working levels and shall be left in place until permanent or temporary stairways are ready for use. Every ladder used under this code shall conform to the definitions set forth in section Ind 35.02.

(2) **DESIGN AND CONSTRUCTION OF ALL LADDERS.** (a) *Wood ladder.* Every wood ladder shall be designed and constructed to support the maximum load, including weight of materials and persons, within the limits of unit stresses specified in section Ind 53.28 of the Wisconsin state building code.

Note. For a complete specification of wood ladder, see American Standard Safety Code for Wood Ladders sponsored by the American Society of Safety Engineers and approved by the American Standards Association, April 2, 1948.

(b) *Metal ladders.* 1. Ladders constructed of metal shall be the equivalent of wood ladders in strength. Before being used, every metal ladder shall be tested as a simple beam by placing the ladder in a flat, horizontal position, supported at the extreme ends of the side rails. When tested in the above manner, all metal ladders shall sustain for 10 minutes a static load of 200 pounds applied at the center of the rung, located midway between the supports without taking a permanent set or developing any indication of failure.

2. Metal ladders shall not be used in locations where there is danger of the ladder or the person using the ladder coming in contact with conductors carrying electrical current.

(3) **WOOD SIDE RAILS.** Wood side rails shall be made of coast type Douglas fir, Southern yellow pine, Sitka spruce, or wood of equivalent strength and resistance. Wood of other species may be used for the construction of side rails if suitable adjustments are made in the size of the side rails on the basis of the mechanical properties of the

species used. They shall be made of thoroughly seasoned material, free from shakes, decay and other weakening defects. Cross grain in the side rails shall not exceed a slope of one in 12. Checks will be permitted in side rails provided they are not more than 6 inches in length or $\frac{1}{2}$ inch in depth. There shall be no knots in the narrow faces of the side rails. Sound knots not more than $\frac{1}{2}$ inch in diameter will be permitted in the wide faces of the side rails provided they are located not less than $\frac{1}{2}$ inch from either edge of the side rail and are not more frequent than one knot to each 3 feet of ladder length.

(4) RUNGS, STEPS OR CLEATS. (a) Rungs and cleats shall be made of white ash, oak, hickory, or other wood of equal strength. Wood of other species may be used for cleats if suitable adjustments are made in the size of the cleats on the basis of the mechanical properties of the species used. They shall be made of thoroughly seasoned material, free from shakes, decay or other defects. Cross grain shall not exceed a slope of 1 in 15 for rungs or cleats, or 1 in 12 for flat steps. Knots over $\frac{3}{8}$ inch in diameter shall not appear in rungs. Knots in the wide faces of flat steps or cleats shall not exceed $\frac{1}{4}$ inch in diameter. There shall be no knots in the narrow faces of flat steps or cleats.

(b) The rungs, cleats and steps of every ladder shall be of uniform size and spacing, but in no case shall the spacing exceed 14 inches, center to center.

Note. For all new ladders, it is recommended that the spacing of rungs, treads or cleats should not exceed 12 inches, center to center.

(c) Wooden rungs shall be inserted in holes bored along the center line of the wide face of the side rails. The holes shall extend through the side rails or be bored so as to give $\frac{1}{8}$ inch length of bearing to the rung tenon. In through bored construction, the rungs shall extend through and flush with the outside face of the side rails. The size of the hole shall be such as to insure a driving fit for the rung, with the shoulder forced firmly against the rail and the tenon secured in place by nails.

(d) Wooden cleats shall be housed into the side rails not less than $\frac{1}{2}$ inch, and nailed to each rail with three 10d wire nails, or fastened with through bolts.

(e) Wooden treads shall be inset into the side rails not less than $\frac{1}{8}$ inch and fastened thereto by nails or screws and further secured by braces, bolts, tie rods, or the equivalent.

(5) CLEAT LADDERS. (a) Portable cleat ladders built on the job shall be not more than 24 feet in length and shall conform to the following requirements.

| Length in Feet | Inside Width in Inches, Not Less Than | | Minimum Nominal Cross Section, in Inches | |
|-------------------------------------|---|--------|--|--------|
| | At Bottom | At Top | Side Rails | Cleats |
| Not more than 16..... | 20 | 16 | 2 x 4 | 1 x 4 |
| More than 16, not more than 24..... | 24 | 20 | 2 x 6 | 1 x 4 |