ANSI Standard A14.3-2000
Ladders – Fixed – Safety Requirements

Scope and Application:

This standard prescribes minimum requirements for the design, construction, and use of fixed ladders, and sets forth requirements for cages, wells, and ladder safety systems used with fixed ladders in order to minimize personal injuries. All parts and accessories necessary for a safe and efficient ladder shall be considered integral parts of the design.

The methods employed to ensure compliance with this standard shall be determined by the proper regulatory or administrative authority.

• Pitch:
  - This standard covers fixed ladders within the pitch range of 60 to 90 degrees from the horizontal.
  - Preferred Pitch: The preferred pitch of fixed ladders shall be considered to be within the range of 75 to 90 degrees from the horizontal.
  - Substandard Pitch: Fixed ladders shall be considered substandard if they are installed within the substandard pitch range of 60 to 75 degrees from the horizontal.
  - Pitch Greater Than 90 Degrees: Ladders having a pitch in excess of 90 degrees from the horizontal shall not be permitted.

• Exceptions: This standard is intended for application to the types of structures depicted and described in the standard (i.e. buildings, wells, and shafts). It sets forth the criteria (what is needed) necessary to build a fixed ladder in a certain way and manner (how to build). The standard does not contemplate special or unique (as to where and when) applications of the requirements or a combination of requirements may apply universally.

This standard establishes requirements for fixed ladders in order to promote a greater degree of standardization. In cases where difficulty is encountered in complying with the standard, or where there are special service conditions, it is expected that the administrative authority will grant exceptions from the literal requirements of the standard, or will permit the use of alternative designs or features, if equivalent safety is thereby secured. The word “equivalent” in this standard shall be interpreted to mean alternative design, feature, construction, connection, or material providing equal performance.

Purpose:

The purpose of this standard is to provide safety for life, limb, and property by establishing minimum standards for the design an installation of fixed ladders.

Definitions:

• Cage - A barrier, which may be referred to as a cage guard or basket guard that is an enclosure mounted on the side rails of the fixed ladder or fastened to the structure to enclose the climbing space of the ladder in order to safeguard the employee climbing the ladder.
• Carrier - The track of a ladder system consisting of flexible cable or rigid rail, which is secured to the ladder or structure by mountings.
• Connector - A component used to connect and disconnect between the harness and the ladder safety sleeve (examples include snaphooks and carabiners).
• Fastening - Means attaching a ladder to a structure, building or equipment using a positive means such as bolt, weld or other type of fasteners.
• Fixed Ladder - A ladder permanently attached to a structure.
• Harness, Full Body - A component with a design of straps which is fastened about the person in a manner so as to contain the torso and distribute the fall arrest forces over at least the upper thighs, pelvis, chest and shoulders.

(Over)
Ladder Safety System - An assembly of components whose function is to arrest the fall of a user, including the carrier and its associated attachment elements (brackets, fasteners, etc.) safety sleeve, full body harness and connectors, wherein the carrier is permanently attached to the climbing face of the ladder or immediately adjacent to the structure.

Mounting - A means for attaching a cage or a ladder safety system to a ladder.

Pitch - The included (acute) angle between the horizontal and the ladder, which is measured on the opposite side of the ladder from the climbing side. The pitch is usually expressed as H/L, which is the horizontal distance, H, from the base of the ladder to the supporting surface divided by the working length, L, of the ladder.

Platform - A landing surface that is used as a working or standing location.

Safety Sleeve - The part of a ladder safety system consisting of the moving component with locking mechanism that travels on the carrier and makes a connection between the carrier and the full body harness.

Well (Shaft) - A walled enclosure around a fixed ladder that provides the person climbing the ladder with the same protection as a cage.

This standard also describes:

- General Design Criteria
- Design Details for Fixed Ladders
- Design Details for Cages, Wells and Platforms
- Ladder Safety System
- Protective Finishes
- Maintenance and Use of Ladders

Note: See next page for fixed ladder illustration

This bulletin contains a summary of excerpts taken from the Standard, for general information purposes only. This bulletin is not reflective of the complete requirements that the Standard prescribes.
Refer to ANSI A14.3 Safety Requirements for Fixed Ladders.

“A” Required distance 3.5 feet (1.07 m) excluding arch.

“B” Minimum 7 inches (18 cm)

“C” Maximum 12 inches (30 cm) between centres, all rungs.

“D” From centre of rung 27 inches - 30 inches (68.5 cm - 76.25 cm) and shall not be less than 27 inches (68.5 cm) in width

“E” Minimum 16 inches (40 cm) clear width between side rails

“F” Maximum 12 inches (30 cm)

“G” Hooping shall begin at a height of 8 feet (2.44 m) from grade

“H” Lockable blank doors to extend high enough to prevent unauthorized access

“I” Maximum spacing between hoops 4 feet (1.22 m)

“J” Bands shall be spaced a maximum 40 degrees on centre around the circumference of the cage. This will result in a maximum spacing of 9.5 inches (24 cm)

The surface of the parapet between the handrails of the ladder shall be covered by expanded metal decking having a minimum width of 2ft (0.6m), or other non-skid surface acceptable to the inspecting authorities. For multi-level buildings, a fixed ladder is required to provide access to every level that is more than 13 feet above the preceding level.

Note: Manitoba Regulation M.R. 217/2006 Section 1.4 inconsistency:
If there is an inconsistency between this regulation and a requirement contained in a publication, code or standard referenced in this regulation, the provisions in this regulation prevail.