

Company Name: _____ Job Site Location: _____

Date: _____ Start Time: _____ Finish Time: _____ Foreman/Supervisor: _____

Topic 488: Fixed and Service Ladders

Introduction: Fixed and service ladders are permanently affixed to structures. Following are safety guidelines for fixed and service ladders:

- **All fixed ladders, appurtenances, and fastenings must** meet the minimum design live load of 200 pounds. Design consideration must include the number and position of additional concentrated live load units of 200 pounds each as determined from anticipated use. Consideration must be given to 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. Use the weight of the ladder, and attachments, together with the live load, when designing rails and fastenings.
- **All rungs must** have a minimum diameter of 3/4 inch for metal ladders, and a minimum diameter of 1-1/8 inches for wood ladders. The distance between rungs, cleats, and steps must be uniform, and not more than 12 inches. The minimum clear length of rungs, or cleats, must be 16 inches. Rungs, cleats, and steps must not have splinters, sharp edges, burrs, or projections. The rungs of an individual rung ladder **must not allow** the climber's foot to slide off the end. Fastenings must be an integral part of the fixed ladder design.
- **Side rails used as a climbing aid must be** of such cross sections as to afford adequate gripping surface without sharp edges, splinters, or burrs.
- **The preferred pitch** of fixed ladders is between 75° and 90° with the horizontal. No ladder may be more than 90° with the horizontal.
- **All splices and connections must** have smooth transition with original members, and no sharp, or extensive projections.
- **All welding must be** according to the "Code for Welding in Building Construction".
- **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.
- **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°, and 30 inches for a pitch of 90°, with minimum clearances for intermediate pitches.
- **There must be** a clear width of at least 15 inches each way from the centerline of the ladder in the climbing space, except with cages or wells.
- 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.
- **Grab bars must not** protrude on the climbing side beyond the rungs of the ladder that they serve. All ladders must be in safe condition.
- **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.
- **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.
- **Counterweighted hatch covers** must open a minimum of 60° from the horizontal. There must be no protruding potential hazards within 24 inches of the centerline of rungs or cleats. Hazards within 30 inches of the centerline must have deflector plates at an angle of 60° from the horizontal.
- **Cages, wells, or ladder climbing safety systems** must be on all ladders where the length of the 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.
- **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: (1) The ladder must be in sections, horizontally offset, with rest platforms at least every 50 feet. (2) When using a ladder climbing safety system, the ladder must have rest platforms every 150 feet (except chimneys).
- **Cages must extend** at least 42 inches above the top of the landing, unless there is other acceptable protection. 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.
- **Cages must not extend** less than 27, nor more than 28 inches, from the center line of the rungs of the ladder. The inside must be clear of projections. Vertical bars must be at a maximum spacing of 40 degrees around the circumference of the cage.
- **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.
- 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 2½ inches.
- **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.
- **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.
- **The side rails** of through, or side step ladder extensions, **must extend** 3½ feet above parapets and landings. 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 3½ foot minimum.
- **Use** the three-point climbing method. You must have a firm grip, or a solid purchase, before moving the next hand or foot to another position.

Conclusion: Inspect ladders at intervals determined by use and exposure. Follow these safety guidelines for safe use of fixed and service ladders.

Work Site Review

Work-Site Hazards and Safety Suggestions: _____

Personnel Safety Violations: _____

