

Section V:	Human Resources
Title:	Safety and Benefits
Chapter:	Ladder Safety
Current Effective Date:	9/21/16
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Purpose:

To provide a guideline for the safety of NC Department of Health and Human Services (DHHS) employees on the use of ladders and to reduce the risk of injury to themselves and others.

Policy:

To ensure the safety and health of DHHS employees who work with or around ladders. Each division/facility/school may develop specific operating procedures to implement this policy.

Definitions:

Cage – An enclosure guard, often referred to as a “cage” or “basket” that is fastened to the side rails of a fixed ladder or to a building structure to encircle the climbing space of the ladder for the safety of the person who must climb the ladder

Extension Ladder – A non-self-supporting portable ladder that is adjustable in length. It consists of two or more sections traveling in guides or brackets so arranged as to permit length adjustment. Its size is designated by the sum of the section lengths, measured along the side rails.

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

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

Ladder – An appliance usually consisting of two (2) side rails joined at regular intervals by crosspieces called steps, rungs or cleats, on which a person may step in ascending or descending order

Ladder Safety Device – A device, other than a cage or well, designed to eliminate or reduce the possibility of accidental falls and which may incorporate such features as life belts, friction brakes and sliding attachments.

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

Platform Ladder – A self-supporting ladder of fixed size with a platform provided at the working level. The size is determined by the distance along the front rail from the platform to the base of the ladder.

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

Railings – A railing is any one or a combination of those railings constructed in accordance with OSHA CFR 1910.23. A standard railing is a vertical barrier erected along exposed edges of floor openings, wall openings, ramps, platforms and runways to prevent falls of persons.

Rungs – The ladder cross-pieces of circular or oval cross-section on which a person may step in ascending or descending directions.

Section Ladder – A non-self-supporting portable ladder, nonadjustable in length, consisting of two or more sections of ladder so constructed so sections may be combined to function as a single ladder. Its size is designated by the overall length of the assembled sections.

Side-Step Ladder – A ladder in which an individual getting off at the top must step sideways in order to reach the landing.

Single Ladder – A non-self-supporting portable ladder, nonadjustable in length, consisting of only one section. Its size is designated by the overall length of the side rail.

Special-Purpose Ladder – A portable ladder which represents either a modification or a combination of design or construction features in one of the general-purpose types of ladders previously defined in order to adapt the ladder to special or specific uses.

Stepladder – A self-supporting portable ladder, nonadjustable in length, having flat steps and a hinged back. Its size is designated by the overall length of the ladder measured along the front edge of the side rails.

Steps – The flat cross-pieces of a ladder on which a person may step in ascending or descending directions.

Through Ladder – A ladder in which an individual getting off at the top must step through in order to reach the landing.

Well – A permanent complete enclosure around a fixed ladder which is attached to the walls of the well. Proper clearances for a well will give the person who must climb the ladder the same protection as a cage.

Implementation:

DHHS has established the following guidelines for the safe practice and use of portable and fixed ladders.

1. General Ladder Safety Rules.
 - A. The length of single ladders or the individual sections of ladders shall not exceed 30 feet. Two-section ladders shall not exceed 48 feet in length and over two-section ladders shall not exceed 60 feet in length.
 - B. Maintain ladders free of oil, grease and other slipping hazards.

- C. Do not use ladders during strong winds except in an emergency and only when tied securely.
- D. Only use fiberglass ladders near energized equipment or electrical wiring. Metal ladders must NEVER be used near electrical equipment
- E. Do not leave ladders that are placed for work unattended.
- F. Do not load ladders beyond their maximum intended load nor beyond their manufacturer's rated capacity.
- G. Use ladders only for their designed purpose and only on stable and level surfaces, unless secured to prevent accidental movement.
- H. Do not use ladders on slippery surfaces unless secured or provided with slip-resistant feet to prevent accidental movement. Do not use slip-resistant feet as a substitute for exercising care when placing, lashing, or holding a ladder upon slippery surfaces.
- I. Secure ladders placed in areas such as passageways, doorways, driveways or where they can be displaced by workplace activities or traffic to prevent accidental movement. If necessary, use a barricade to keep traffic or activity away from the ladder.
- J. Keep areas clear around the top and bottom of ladders.
- K. Do not move, shift, or extend ladders while in use.
- L. Use ladders equipped with nonconductive side rails if the worker or the ladder could contact exposed energized electrical equipment.
- M. Face the ladder when climbing up or down and use at least one hand to grasp the ladder when climbing.
- N. Do not carry heavy objects or loads that could cause loss of balance and falling.
- O. Type I – Industrial ladders shall be the type used by DHHS employees, except Type II ladders may be used in office environments for painting or light duty operations.
- P. Type III (household ladders) will not be used by DHHS employees.

2. Portable Ladders.

- A. A simple rule for setting up a ladder at the proper angle is to place the base at a distance from the vertical wall that is equal to one-fourth the working length of the ladder. For every 4 feet of vertical height, the base of the ladder should be 1 foot out from the top support.

- B. Use ladders only in an upright position.
- C. Extend ladder at least 3 feet or three rungs above the top support point.

Normal length of ladder (feet)	Overlap (feet)
Up to and including 36	3
Over 36, up to and including 48	4
Over 48, up to 60	5

- D. Use ladders only for their intended purpose; not as a substitute for scaffolding or a runway between two elevated surfaces.
- E. Do not place a ladder in front of a doorway that opens toward the ladder unless the door is locked, blocked or guarded or upon windowpanes or sashes.
- F. Place a ladder so that both side rails have secure footing. Provide solid footing on soft ground to prevent the ladder from sinking.
- G. Place the ladder feet on a substantial and level base, not on a movable object.
- H. Lean ladder against secured backing.
- I. Secure the bottom and top of ladder to prevent displacement when using the ladder for access to a scaffold.
- J. Keep the ladder away from electrical wiring.
- K. Only one person at a time will be on a ladder.
- L. Short ladders shall not be spliced together to make longer ladders.

3. Stepladders.

- A. Never climb or stand on the top step or top cap of a stepladder.
- B. A stepladder should be no more than 20 feet high.
- C. Make sure the stepladder is fully opened and the metal spreader is locked before climbing ladder.

4. Fixed Ladders.

Fixed ladders cannot be moved; they are permanently attached to structures. They provide access to a specific elevated location. If the total length of the climb on a fixed ladder equals or exceeds 24 feet (7.3 m), the ladder must be equipped with ladder safety devices, or self-retracting lifelines and rest platforms at intervals not to exceed 150 feet (45.7 m). The fixed ladder can also be equipped with a cage or well, and multiple ladder sections with each ladder section not to exceed 50 feet (15.2 m) in length. These ladder sections must be offset from adjacent sections and landing platforms must be provided at maximum intervals of 50 feet (15.2 m). Specific features of fixed ladders are as follows:

- A. Fixed ladders must be used at a pitch no greater than 90° (degrees), measured vertically from the back side of the ladder. Ladders having a pitch in excess of 90° from the horizontal are prohibited.
- B. Fixed Ladders must be able to support at least two loads of 250 pounds on any two consecutive points of attachment.
- C. All rungs and cleats shall have a minimum diameter of 3/4 inch rung/cleat (for metal ladders); 1 1/8 inches rung/cleat (for wood ladders).
- D. The minimum clear length of rungs/cleats shall be 16 inches.
- E. The distance between rungs, cleats, and steps shall not exceed 12 inches.
- F. The side rails of through or side-step ladder extensions shall extend 3 ½ feet above parapets and landings.
- G. The minimum clearance of 2 ½ feet on the climbing side of ladders with 90° pitch and three (3) feet for ladders with a 75° pitch.
- H. A clear width of at least 15 inches shall be provided each way from the centerline of the ladder in the climbing space, except when cages or wells are necessary.
- I. The minimum clearance between fixed ladder rungs, cleats, step, and any obstruction behind the ladder shall be seven (7) inches.
- J. Metal ladders and appurtenances must be painted or otherwise treated to resist corrosion.
- K. Wood ladders, when used under conditions where decay may occur, shall be treated with a nonirritating preservative.
- L. Projects requiring the installation of fixed ladders must be accomplished under the direction of a registered professional engineer.

- M. When fixed ladders are used on towers, tanks or chimneys, use appropriate ladder safety devices. Properly selected personal fall arrest systems shall be used for the safety of the employee.

5. Ascending and Descending Ladders.

- A. Both hands should be used on ladders. Raise and lower needed material(s) by mechanical means, if necessary.
- B. Keep the center of gravity centered as much as possible between the hands and foot that are in contact with the ladder.
- C. Always face the ladder going up or down.
- D. Never slide down a ladder.
- E. Make sure shoe bottoms are not greasy, muddy, or slippery before you climb.
- F. Do not climb higher than the third rung from the top of extension or straight ladders, or the second tread from the top of a stepladder.

6. Inspections.

- A. An inspection program shall be established by which all ladders are inspected as required or on frequency of use.
- B. Ladders shall be inspected by a competent person for visible defects on a periodic basis and after any occurrence that could affect their safe use.
- C. Ladders that are weak, improperly repaired, damaged, have missing rungs or appear unsafe shall be removed from the job or site for repair. Before discarding a wood ladder, destroy it and any other ladder that cannot be repaired, so no one can use it again.
- D. For portable wood ladders, all wood parts shall be free from sharp edges and splinters; sound and free from accepted visual inspection from shake, wane, compression failures, decay or other irregularities.
- E. For portable metal ladders, the design shall be without structural defects or accident hazards such as sharp edges, burrs, etc. The selected metal shall be of sufficient strength to meet the test requirements and shall be protected against corrosion.
- F. For fixed ladders, all wood parts shall meet the criteria of wood ladders. All metal parts shall meet the criteria of metal ladders
- G. Remove defective ladders from service when noted during inspection. Tag it "DANGEROUS-DO NOT USE". Do not use the ladder until repaired.

Training:

Employees using the ladders shall be trained in:

1. The proper use of the ladders
2. Proper ladder selection
3. How to set up ladders
4. Ladder inspection
5. Proper maintenance

References:

1. NC Employees Workplace Program Requirements for Safety and Health: Ladders
2. Occupational Safety and Health Standards
 - A. 29 CFR [1910.25, Portable wood ladders](#)
 - B. 29 CFR [1910.26, Portable metal ladders](#)
 - C. 29 CFR [1910.27, Fixed ladders](#)
 - D. 29 CFR [1926.1053, Ladders](#)

For questions or clarification on any of the information contained in this policy, please contact [Human Resources](#). For general questions about department-wide policies and procedures, contact the [DHHS Policy Coordinator](#).

