

# A comprehensive program to help prevent falls from ladders.

Ladder-related hazards can be eliminated or reduced by following good safety practices.



Photo courtesy of [elcosh.org](http://elcosh.org)

At Nationwide®, we encourage you to avoid the use of ladders in the workplace whenever possible. An alternative is to use one of the variety of widely available products that provide a work platform with the required fall protection (e.g., guardrails, personal fall arrest systems) for the chosen platform. For those occasions when a ladder is the only practical way to reach an elevated work area, we urge you to follow the portable ladder safety program detailed on these pages.

As the Occupational Safety and Health Administration (OSHA) points out, “Workers who use ladders in construction risk permanent injury or death from falls and electrocutions, but these hazards can be eliminated or substantially reduced by following good safety practices.”<sup>1</sup>

<sup>1</sup> OSHA® Fact Sheet — *Reducing Falls in Construction: Safe Use of Stepladders* (5/13)

## Portable Ladder Safety

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## I. Introduction

Whenever possible, a mobile scaffold, scissor lift or other suitable elevated work platform with guardrails and appropriate fall protection for the device should be used instead of a ladder.

When you need to access an elevated work area, you should first think about the best equipment to use. While a ladder may immediately come to mind, ask the following questions before making your decision:

- Will awkward or heavy items be manually handled while on the ladder?
- Is the work area too high for a ladder to be used safely?
- Will the length of time to complete the task make ladder use unsafe?
- Does the job require frequent moving and/or awkward body positioning?
- Does the job require pulling, pushing or holding tools or equipment?
- Is reaching required that places the trunk of the body outside the ladder rails?



Scissor lift (left) and mobile scaffold.

Mobile scaffold photo courtesy of Werner Co.

If your answer is "Yes" to any of the above questions, avoid the use of a ladder and use a properly set up and positioned alternative, such as a scissor lift or mobile scaffold.

If you have to use a ladder, use one that has a working platform with handrails on the sides, such as a platform stepladder.

## II. Policy

When a ladder is the only practical way to reach an elevated area for construction, alteration, repair, demolition, maintenance or general purposes, the worker or crew should follow the portable ladder safety program detailed in this brochure. The program is consistent with OSHA Standard 29 CFR Parts 1910 and 1926. However, it is not a substitute for the actual standards and all other applicable codes, regulations and standards.



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## Portable Ladder Safety

### III. Scope

This program is for anyone who may have the opportunity to use a ladder during the course of work. The program applies to the use of stepladders, extension ladders and other portable ladders. Workers and others using ladders must be able to recognize and avoid ladder hazards and be aware of safe practices for setting up, storing, inspecting and working with ladders.

### IV. Authority and Responsibility

A **competent person** (as defined by OSHA) should always be on site during working hours. His or her ladder safety responsibilities include:

- 1. Identifying existing and predictable conditions in the work area which are hazardous or dangerous
- 2. Authorizing prompt corrective action with regard to the utilization of portable ladders
- 3. Authorizing the shutdown of the job activity, if necessary

The **safety manager** is responsible for:

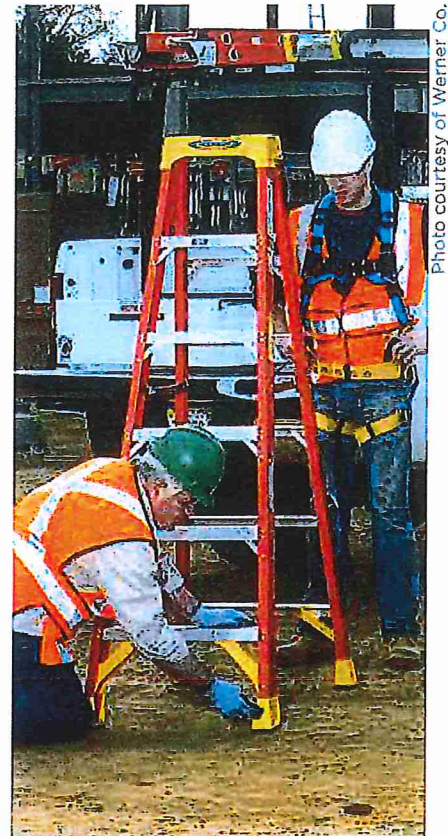
- 1. Making sure that ladder safety measures are in place according to this program and the applicable OSHA standards for ensuring that workers are trained in ladder safety
- 2. Maintaining training records
- 3. Ensuring that ladders and ladder use meet OSHA regulations
- 4. Periodically evaluating program implementation

**Supervisors** are responsible for:

- 1. Ensuring that all ladders used are free from defects and all moving parts are working properly
- 2. Ensuring that all affected employees using ladders have been trained
- 3. Ensuring that all affected employees comply with this program
- 4. Taking ladders out of service if they are defective
- 5. Conducting periodic inspections of work areas

**Employees** are responsible for:

- 1. Complying with the requirements of this program
- 2. Attending required training programs
- 3. Inspecting ladders for defects or possible hazards prior to use
- 4. Tagging any defective ladder as out of service
- 5. Reporting any ladder defects to their supervisor



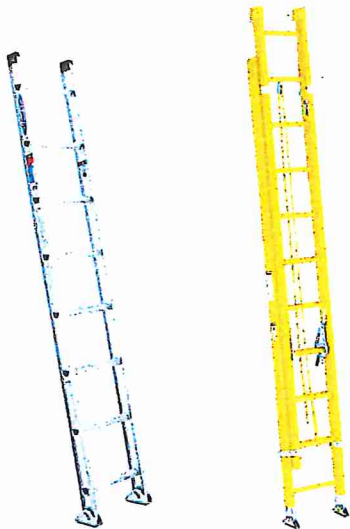
Supervisors are responsible for ensuring that all ladders used are free from defects and all moving parts are working properly.

## Portable Ladder Safety

Photo courtesy of Werner Co.



Podium stepladder.



Single ladder (left) and extension ladder.

## V. Training Requirements

All employees should be trained and familiar with all applicable OSHA requirements including the OSHA ladder safety requirements in 29 CFR 1926.1053 and OSHA construction standards listed at the end of this brochure. These provide information on:

- Recognition of the possible hazards associated with ladder use, as well as maintenance and proper safety precautions
- The proper use and placement of ladders
- The maximum intended load capacities of ladders used

All training should be documented, and documentation should include: materials presented, persons present (with signatures recorded), and the date and time of the training.

Employees should be retrained as necessary to maintain their understanding and knowledge on the safe use of ladders.

## VI. Types of Portable Ladders

- **Stepladder:** A self-supporting portable ladder, non-adjustable in length, having flat steps and a hinged back. A **podium stepladder** has its top rungs removed for an extra measure of safety.
- **Single Ladder:** A non self-supporting portable ladder, nonadjustable in length, consisting of one section.
- **Extension Ladder:** A non self-supporting portable ladder adjustable in length, consisting of multiple sections.

The American National Standards Institute (ANSI) requires that a duty rating sticker be placed on the side of the ladder. When selecting a ladder, be sure to use the proper duty rating to carry the combined weight of the user and material. The ladder duty ratings are as follows:

- Type IA (Extra Heavy Duty Industrial): 3-20 feet for heavy duty, such as utility work, construction and industrial use. Load capacity is not to exceed 300 pounds.
- Type I (Industrial): 3-20 feet for heavy duty, such as utility work, construction and industrial use. Load capacity is not to exceed 250 pounds.
- Type II (Commercial): 3-12 feet for medium duty, such as painting, office use and light industrial use. Load capacity is not to exceed 225 pounds.
- Type III (Household): 3-6 feet for light duty, such as light household use. Load capacity is not to exceed 200 pounds.

*Note: Only Type I and IA ladders should be used on construction sites.*

## VII. Selection of Ladders

Ladders are generally available in three material compositions: wood, fiberglass and metal.

- **Wood ladders** are electrically non-conductive and are the best natural insulator against heat. They can be electrically conductive if wet. Wood ladders are heavier than metal. They are susceptible to drying and rotting and need a clear finish to protect them.
- **Fiberglass ladders** are strong, lightweight and electrically non-conductive. They do not dry out and split like wood. They are slow to conduct heat, so they are able to withstand heat exposure without losing strength. They are heavier than wood or metal and are not available in longer extension ladders. Fiberglass may chip or crack under severe impact. When overloaded, fiberglass does not bend; it cracks and fails.
- **Metal ladders** are very strong and lightweight. They dent, but do not chip or crack when subjected to severe impact. They do not require protective varnish. They do conduct heat rapidly. If they are exposed to heat, they will lose their tensile strength. They must not be used when working on or near electrical wires or when working around energy sources. Metal ladders must be labeled with a "DANGER" warning sticker indicating electrocution hazard.

## VIII. Proper Use of Portable Ladders

The following are requirements when using portable ladders:

- Inspect ladders prior to each use, and do not use a ladder with broken or missing steps, rungs or cleats, broken side rails or other faulty equipment
- Allow ladders to be used by only one person at a time
- Provide an additional ladder when use by more than one person is needed
- Do not load ladders beyond the maximum intended load for which they were built, or beyond their manufacturer's rated capacity
- Use only ladders that comply with OSHA standards
- Do not make improvised repairs to ladders
- Do not splice short ladders together to create a longer ladder
- Do not use ladders made by fastening cleats across a single rail
- Use ladders only for their intended purposes—not as guys, braces or skids
- Use portable rung ladders with reinforced rails only when metal reinforcement on the underside is present
- Do not leave a placed ladder unattended



Photo courtesy of Werner Co.

The worker on this podium stepladder helps to maintain his balance by grasping the protective rail.

Photo courtesy of Werner Co.



The workers have positioned the ladder to extend at least 3 feet above the point of support at the roofline. Until the ladder is tied-off at top and bottom (see "Securing the Ladder" on p. 8), the worker below must continue to secure it manually.

- ❖ With stepladders, make sure metal spreader or locking devices are present to hold the front and back sections open during use
- ❖ Do not use stepladders of more than 20 feet in length
- ❖ Do not use single ladders of more than 30 feet in length
- ❖ Do not use two-section ladders of more than 48 feet in length for metal ladders and 60 feet in length for wood ladders
- ❖ Do not use extension ladders with individual sections that exceed 30 feet in length
- ❖ Do not use ladders with more than two sections when total length exceeds 60 feet
- ❖ Do not use ladders outdoors during strong winds

## IX. Ladder Safety Basics

Prior to climbing a ladder, it should be set up according to the following:

- ❖ Position the ladder so that the side rails extend at least 3 feet above the landing
- ❖ Secure the side rails at the top to a rigid support and use a grab device when 3-foot extension is not possible
- ❖ Use extension ladders from the ground only
- ❖ Make sure the weight on the ladder will not cause it to slip off its support
- ❖ Use portable ladders so that the base is a distance from the vertical wall equal to one-fourth the working length of the ladder
- ❖ Ensure that the ladder base is placed with secure footing
- ❖ Hold the ladder in place to prevent slipping
- ❖ Do not use a ladder in a horizontal position as a platform, runway or scaffold
- ❖ Do not place a ladder in front of a door opening toward the ladder unless the door is blocked open, locked or guarded
- ❖ Do not place ladders on boxes, barrels or other unstable bases to obtain additional height
- ❖ Do not use a ladder to gain access to a roof or another floor level unless the top of the ladder extends at least 3 feet above the point of support, at eave, gutter or roof line
- ❖ Make sure all portable rung ladders are equipped with non-slip bases, or secure such ladders when there is a hazard of slipping
- ❖ Keep the area around the ladder clear from equipment, debris, etc.

## Portable Ladder Safety

- Use this guide to determine the minimum overlap for the two sections of an extension ladder:

| 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 60 | 5              |

- Never place a ladder near electrical wiring or against operational piping (chemical, gas, sprinkler systems) where damage may occur
- When two or more ladders are used to access a work area, offset them with a landing or platform between the ladders
- Always check for ladder stability prior to climbing

## X. Climbing and Standing

Workers climbing or standing on ladders should follow these safety precautions:

- Make sure shoes are free of mud, soil or anything slippery
- Face the ladder when ascending or descending
- Use at least one hand to grasp the ladder when ascending or descending; maintain at least three points of contact with the ladder (two feet and one hand or two hands and one foot)
- With portable rung and cleat ladders, make sure the top rest is rigid and has strength to support the load
- With stepladders, make sure the highest working height is clearly marked, and do not use the top two steps for standing
- Do not stand on the pail shelf of a stepladder
- Do not straddle the front and back of a stepladder
- Do not climb on the bracing on the back legs of a stepladder, as that bracing is designed solely for increasing stability
- Never stand on the top two rungs of a straight or extension ladder
- Do not hand carry supplies or equipment on a ladder; instead, use a rope, block or pulley system to move the equipment
- To prevent loss of balance, carry items such as hammers, nails and pliers in a tool belt
- When working to the side of a ladder, keep the centerline of the body between the side rails; do not overreach or lean too far to one side
- Allow no more than one person on a ladder at a time unless the ladder is manufactured to support an additional person



Photo courtesy of Werner Co.

Before climbing, workers should make sure their shoes are free of mud, soil or anything slippery.

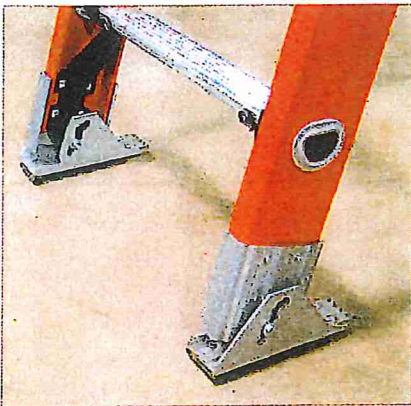


Three points of contact should be maintained when climbing or descending a ladder.

*Continued >>*

## Portable Ladder Safety

Photos courtesy of Werner Co.



In the top photo, the ladder is tied to solid anchors fastened to the roof. In the bottom photo, the ladder shown can be secured by tying ropes to both legs beneath the lowest rung, and then tying the other ends of those ropes to a solid, anchored object near the base of the wall.

- ⚠ Do not move, shift, or extend ladders while in use
- ⚠ Never climb onto a ladder from one side
- ⚠ Never slide down a ladder
- ⚠ Never sit on ladder rails
- ⚠ If you feel sick or dizzy while climbing or standing on a ladder, do not try to climb down in a hurry; drape your arms around the rungs and rest your head against the ladder until you feel better, then climb down slowly

## XI. Straight or Extension Ladder Setup

Always follow the same process when setting up a straight or extension ladder:

- ⚠ Lay the ladder on the ground with the base resting against the bottom of the wall and the top pointing away from the wall
- ⚠ Starting at the top, lift the ladder over your head and walk under the ladder to the wall; move hands from rung to rung as you go
- ⚠ When the ladder is vertical and the top touches the wall, pull the base out so that the distance from the wall is  $\frac{1}{4}$  the height to the point of support
- ⚠ Reverse the process to remove the ladder

## XII. Securing the Ladder

Remember the following when securing a portable ladder:

- ⚠ Secure single and extension ladders at top and bottom to prevent movement as an additional safety measure; when securing ladders, always follow the manufacturer's recommendations; potential options for securing a single ladder or extension ladder include:
  - Tie ropes to both ladder legs beneath the lowest rung and tie the other end of the ropes to a solid anchored object at or near the base of the wall
  - Nail a cleat behind the ladder's feet to prevent the ladder from slipping
  - At the point of contact with the roof, use roof hooks, tie the ladder to a solid anchor (see top photo on this page), use rubber or soft plastic "mitts" or use a ladder stabilizer
  - Have an employee stand at the base of the ladder and secure it manually
- ⚠ Open stepladders completely and lock the spreader prior to use; never use a stepladder in an unfolded position
- ⚠ Never use ladders on slippery surfaces or on snow or ice unless secured or the ladder is equipped with non-slip or spike feet
- ⚠ Do not place a ladder in front of a door opening toward the ladder unless the door is blocked open, locked or guarded

**Portable Ladder Safety****XIII. Ladder Inspection**

In addition to the user's inspection every time a ladder is used, ladders should be inspected frequently by a competent person and after any incident that could affect their safe use. The person performing the inspection should complete a portable ladder inspection checklist, and the respective division should maintain a record of the inspection.

If a ladder tips over, immediate inspection of the following is required:

- 1. Inspect for side rail dents or bends or excessively dented rungs
- 2. Check all rung-to-side rail connections
- 3. Check hardware connections
- 4. Check rivets for shear

**XIV. Ladder Care and Maintenance**

Ladders should be maintained in good condition at all times by ensuring that your workers do the following:

- 1. Keep the joint between the steps and side rails tight
- 2. Keep all hardware and fittings securely attached
- 3. Make sure movable parts operate freely without binding or excessive play
- 4. Lubricate all locks, wheels, pulleys and other bearings frequently
- 5. Replace frayed or badly worn rope
- 6. Keep safety feet and other auxiliary equipment in good condition
- 7. Inspect ladders frequently
- 8. Take defective ladders out of service and tag them as "Dangerous, Do Not Use"
- 9. Make sure ladder repairs restore a defective ladder to its original design criteria before the ladder is returned to use
- 10. Keep rungs free of grease and oil
- 11. Make sure metal steps and rungs are grooved or roughened to prevent slipping
- 12. Do not paint ladders with an opaque finish or coat them with any material that may hide defects; use only clear varnish



Photo courtesy of Werner Co.

An extension ladder's metal steps and rungs should be grooved or roughened to prevent slipping.

*Continued >>*

Photo courtesy of Werner Co.



Because of the risk of electric shock, a fiberglass ladder should be used whenever working with or near electrical wires.

## XV. Ladder Storage

When not in use, ladders should be stored in a designated location out of direct sunlight and not exposed to harmful elements that may cause decay/damage. Never store materials on a ladder. Straight and extension ladders should be stored in storage racks. Be sure that ladders are secured when in transit, as vibration and bumping against other objects may cause damage.

## XVI. Use On or Near Electrical Equipment

Safety-related work practices should prevent electric shock or other injuries from electrical contact when work is performed on or near equipment or circuits that are or may be energized. These work practices should be consistent with the nature and extent of the associated electrical hazards.

Metallic or metal-type ladders should not be used around electrical energy, components and sources. Portable ladders should have nonconductive side rails if used where the employee or ladder could contact exposed energized parts. These requirements are found in OSHA 29 CFR 1910 and 1926. Additional training, such as lockout/tagout and electrical safety training is required for this application. Contact your operations manager for further training.

## XVII. Safe Wire/Cable Pulling in Elevated Places

Employees who perform electrical work may be required to run or pull wire throughout a work site. This path is often at height, which forces employees to reach up or elevate themselves. When these tasks are performed manually, they often require employees to exert significant force, assume awkward postures, perform repetitive motions, and be exposed to vibration and contact stress while working at height. Due to these factors, the use of ladders is usually not the best work method for pulling wire.

Appropriate work platforms may offer a better solution. For example, equipment such as a mobile scaffold or suitable elevated work platform should be used instead of a ladder when pulling wire or when other significant work is being performed.

## Portable Ladder Safety

Using a pulley in the ceiling overhead allows workers to pull or guide wire without overhead arm positions and helps to prevent falls. By temporarily suspending a pulley from the ceiling, the cables to be pulled run over the top of the wheel, allowing the worker to pull while standing on the floor and working in a neutral posture. Another pulley positioned at the end of the process allows the other worker to feed the cables, also while standing on the floor. Yet another safer alternative to ladders for overhead wire pulling is a portable pulley used in combination with mechanical pullers (see photo at right).

In preparation for pulling wire with the use of mechanical pullers, you should first remove impediments such as work tables, bins or power equipment. In addition, you should:

- ❶ Sequence work to prevent "rush jobs" as much as possible
- ❷ Minimize potential remote-location difficulties by scheduling work in plant/switch rooms whenever a project allows
- ❸ In consultation with all other service trades, coordinate the work to allow the electrician to complete tasks as free from obstructions as possible; this is particularly important when multiple service trades are working in crowded and/or congested areas
- ❹ Allow for the progressive clean-up of the work area to prevent any debris/rubbish from becoming a trip hazard

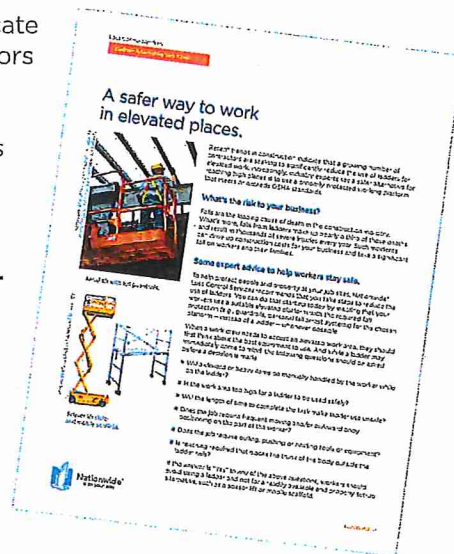


Photo courtesy of Greenlee, a Textron Company.

Manually pulling or feeding wire through long runs of conduit often requires highly repetitive and strenuous use of hand, arm and back muscles. The use of a mechanical wire puller like the one pictured here helps reduce the risk of strains and sprains, as well as falls from height.

## XVIII. Building a Ladder-Alternative Job Site

Recent trends in construction indicate that a growing number of contractors are seeking to significantly reduce the use of ladders for overhead work. Increasingly, industry experts say a safer alternative for reaching high places is to use a properly protected work platform that meets or exceeds OSHA standards. Refer to the Nationwide flyer, Ladder-Alternative Job Sites (CMO-0344AO), and make sure all training requirements are met before employees use the alternative equipment.



Questions? Contact  
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## Portable Ladder Safety

## Brochures Available on the OSHA Website

1. Visit [osha.gov](http://osha.gov).
2. Click on the "Publications" tab in the top navigation bar.
3. In the "Search" window, type in the number or name of the item you wish to view (e.g., OSHA 3625-2013)
  - OSHA 3625-2013: Ladder Safety: Falling Off Ladders Can Kill: Use Them Safely
  - OSHA FS-3662-2013: Ladder Safety: Reducing Falls in Construction: Safe Use of Stepladders Fact Sheet
  - OSHA 3124-2003: Stairways and Ladders
  - OSHA 2202-2011: Construction Industry Digest
  - Aerial Lifts Fact Sheet

## OSHA WEB PAGES WITH LADDER SAFETY INFORMATION

**Preventing Fatal Falls**—Visit [osha.gov/stopfalls](http://osha.gov/stopfalls).

**Mobile Scaffolding**—Visit [osha.gov](http://osha.gov) and type "Mobile Scaffolding" in the "Search" window.

**Solutions for Electrical Contractors**—Visit [osha.gov](http://osha.gov) and type "Solutions for Electrical Contractors" in the "Search" window.

## OSHA Construction Standards

Visit [osha.gov](http://osha.gov) and type any item below into the "Search" window:

- 29 CFR 1910.25 - Portable Wood Ladders
- 29 CFR 1910.26 - Portable Metal Ladders
- 29 CFR 1926.1053 - Stairways and Ladders
- 29 CFR 1926 Subpart C - General Safety and Health Provisions
- 29 CFR 1926 Subpart L - Scaffolds
- 29 CFR 1926 Subpart M - Fall Protection
- 29 CFR 1926 Subpart X - Ladders

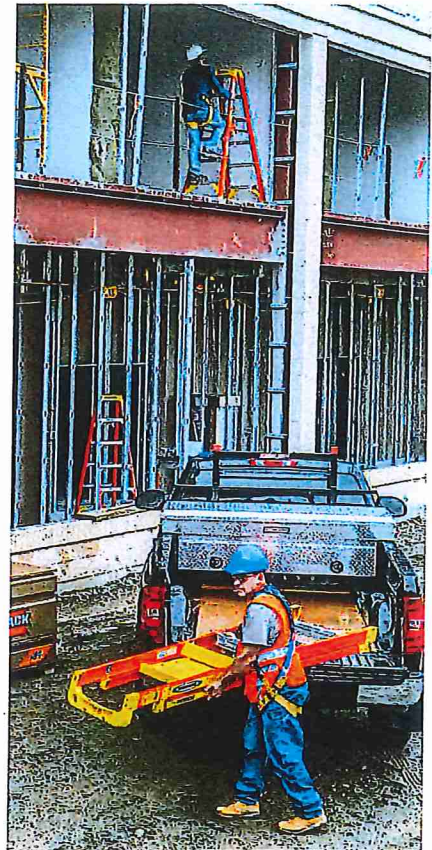


Photo courtesy of Werner Co.

Providing solutions  
to help our members  
manage risk.<sup>SM</sup>



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