

# DUQUESNE UNIVERSITY

## LADDER MANAGEMENT PROGRAM

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### TABLE OF CONTENTS

	Page
Purpose	1
Scope	1
Definitions	1
Responsibilities	2
Ladder Selection	2
Ladder Care and Maintenance	3
Ladder Storage	3
Ladder Inspection	3
Ladder Set-Up	4
Climbing and Standing	4
Securing the Ladder	5
Training Requirements	5
Appendix A: Ladder Inspection Checklist	6

### PURPOSE

The Duquesne University Ladder Management Program has been established to meet the requirements of the Occupational Safety and Health Administration (OSHA) Standards 29 CFR 1910.25-26, 29 CFR 1910.333, and 29 CFR 1926.1053.

It is the policy of Duquesne University to maintain a safe and healthy work environment for employees, students, contractors and visitors. In recognition of the potential issues associated with the use of ladders, the University is committed to this program for all ladders used on campus for construction, alteration, repair, demolition, and general purposes.

### SCOPE

This program applies to all employees who use a ladder during the course of their work.

### DEFINITIONS

Step ladder: self-supporting portable ladder, non-adjustable in length, having flat steps and a hinged back.

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.

Type 1A (Extra Heavy Duty Industrial): 3-20 feet for heavy duty, such as utilities, contractors and industrial use. Load capacity not to exceed 300 pounds.

Type I (Industrial): 3-20 feet for heavy duty, such as utilities, contractors and industrial use. Load capacity not to exceed 250 pounds.

Type II (Commercial): 3-12 feet for medium duty, such as painters, offices, and light industrial use. Load capacity not to exceed 225 pounds.

Type III (Household): 3-6 feet for light duty, such as light household use. Load capacity not to exceed 200 pounds.

## **RESPONSIBILITIES**

### Administration:

Duquesne University has the overall responsibility for providing a place of employment free of recognized hazards and unsafe conditions, as well as complying with federal, state, and local standards and regulations.

### Environmental, Health and Safety (EHS):

The development and implementation of proper ladder management practices at Duquesne University is provided by the Environmental, Health & Safety (EHS) Department. It is the responsibility of EHS to:

1. Ensure that ladder safety measures are in place according to this program and the applicable OSHA standards.
2. Ensure that workers are trained in ladder safety.
3. Maintain training records.
4. Ensure that ladders meet OSHA regulations.
5. Evaluate program implementation.

### Deans, Directors, Department Heads, and Supervisors:

It is the primary responsibility of the principal investigator, instructor or supervisor to ensure that the information and procedures presented in this program are strictly followed by all personnel under their jurisdiction. Specifically:

1. Ensure that all ladders used at the University are free from defects and all moving parts are working properly.
2. Ensure that all personnel using ladders have been trained.
3. Remove ladders out of service if they are defective.
4. Conduct periodic inspections of work areas.

### Individual Employees:

All University faculty and staff are expected to avoid activities that might result in damage or misuse of ladders. They have a responsibility to:

1. Comply with this Ladder Inspection Program.
2. Attend required training programs.
3. Inspect ladders for defects or possible hazards prior to use.
4. Tag any defective ladder as out of service.
5. Report any ladder defects to their supervisor.

## **LADDER SELECTION**

Ladders are available in three types of composition: wood, metal, and fiberglass.

### Wood Ladders

Wood ladders are electrically non-conductive and are the best natural insulator against heat. They can conduct electricity when wet and are susceptible to drying and rotting.

### Fiberglass Ladders

Fiberglass ladders are strong, lightweight, and electrically non-conductive and do not dry out. They are slow to conduct heat, so they are able to withstand heat exposure without losing strength. Fiberglass does not bend, but it does crack and fail.

### Metal Ladders

Metal ladders are very strong and lightweight. They dent, but do not chip or crack when subjected to severe impact. They do conduct heat rapidly and will lose their tensile strength when exposed to heat. Metal ladders must not be used around energy sources and must be labeled with a DANGER warning sticker indicating electrocution hazard.

### Type III (Household)

Are not permitted for use at the University. Only commercial Type II and higher load capacity rated ladders are permitted for use.

## **LADDER CARE AND MAINTENANCE**

Ladders must be maintained in good condition at all times. In addition:

1. The joint between the steps and the side rails shall be tight.
2. All hardware and fittings shall be attached securely.
3. Movable parts shall operate freely without binding or excessive play.
4. Locks, wheels, pulleys, and other bearings shall be frequently lubricated.
5. Frayed or badly worn rope shall be replaced.
6. Safety feet and other auxiliary equipment shall be maintained in good condition.
7. Ladders shall be taken out of use and tagged: Dangerous, Do Not Use.
8. Ladder repairs must restore the ladder to its original design criteria before reuse.
9. Rungs shall be kept free of oil and grease.
10. Metal steps shall be grooved or roughed to prevent slipping.
11. Wood ladders shall not be painted with an opaque finish or coated with any material that may hide defects.

## **LADDER STORAGE**

When not in use, ladders shall be stored in a designated location out of direct sunlight and not exposed to harmful elements that may cause damage. Straight and extension ladders should be stored in storage racks.

## **LADDER INSPECTION**

The user shall inspect the ladder prior to use. Ladders shall be inspected by EHS for visible defects on an annual basis and after any incident that could affect its safe use. The checklist in Appendix A to this plan shall be utilized as a reference by the individual conducting the annual inspection, with a record of the inspection being maintained.

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

1. Dents or bends of the side rails or excessively dented rungs.
2. All rung-to-rail connections.
3. Hardware connections.
4. Rivets for shear.

## LADDER SET-UP

A ladder shall be set-up according to the following prior to climbing:

1. Position the ladder so that the side rails extend at least 3 feet above the landing.
2. Secure the side rails at the top to a rigid support and use a grab device when 3-foot extension is not possible.
3. Extension ladders shall be extended from the ground only.
4. Ensure the weight on the ladder will not cause it to slip off its support.
5. Portable ladders shall be used so that the base is a distance from the vertical wall equal to one-fourth the working length of the ladders.
6. Ladder base shall be placed with secure footing.
7. Ladder shall be placed or held in place to prevent slipping.
8. Ladders shall not be used in a horizontal position as a platform, runway, or scaffold.
9. Ladders shall not be placed in front of doors opening toward the ladder unless the door is blocked open, locked or guarded.
10. Ladders shall not be placed on boxes, barrels, or other unstable bases to obtain additional height.
11. No ladder shall be used to gain access to a roof unless the top of the ladder extends at least 3 feet above the point of support, at eave, gutter, or roofline.
12. The area surrounding the ladder must remain clear of debris, equipment, etc.
13. The user shall equip all portable ladders with non-slip bases or secure the ladder when there is a slipping hazard.
14. The minimum overlap for the two sections on extension ladders shall be:

<b>Size of Ladder (Feet)</b>	<b>Overlap (Feet)</b>
Up to and including 36	3
Over 36, up to and including 48	4
Over 48, up to and including 60	5

15. Never place a ladder near electrical wiring or against piping where damage may occur.
16. When two or more ladders are used to access a work area, they must offset with a landing or platform between the ladders.
17. Always check for stability prior to climbing.
18. A 4-1 height to base ratio should be maintained.

## CLIMBING AND STANDING

When climbing or standing on a ladder, the following safety precautions shall be adhered to:

1. Ensure shoes are free of mud, soil or anything slippery.
2. The user must face the ladder when ascending or descending.
3. Use at least one hand to grasp the ladder when climbing. Maintain at least three points of contact with the ladder (two feet and one hand or two hands and one foot).
4. The top rest for a portable ladder shall be rigid and have strength to support the load.
5. The top two steps of a ladder shall not be used for standing.
6. Do not stand on the pail shelf of a ladder.
7. Do not straddle the front and back of a ladder.
8. The bracing on the back legs of ladders is designed solely for increasing stability and not climbing.
9. Never stand on the top two rungs of a straight or extension ladder.
10. When working to the side of a ladder, the centerline of the body must be maintained between the side rails.
11. No more than one person shall be on a ladder at a time unless the ladder is manufactured to support an additional person.
12. Do not move, shift, or extend ladders while in use.
13. Never climb onto a ladder from one side.
14. Never slide down a ladder.
15. Never sit on the ladder rails.

## **SECURING THE LADDER**

The following are required to secure ladders:

1. Single and extension ladders shall be secured at the top and bottom to prevent movement. To secure the ladder at the bottom, flip the ladders hoes so that the spurs poke the ground. If setting up a ladder on hard surfaces, tie ropes to both 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. If possible, nail a cleat behind the ladder's feet to prevent the ladder from slipping. To secure the ladder at the top, use roof hooks, tie it to a solid anchor, use rubber or soft plastic mitts, or use a ladder stabilizer. If the ladder cannot be secured at both the top and bottom, it shall be secured at the base. If this is still not possible, an employee must stand at the base and secure the ladder manually.
2. Step ladders shall be opened completely and ensure that the spreader is locked prior to use. Never use a step ladder in the folded position.
3. Never use ladders on slippery surfaces or on snow or ice unless secured or the ladder is equipped with non-slip or spiked feet.
4. Ladders shall not be placed in front of doors that open toward the ladder unless the door is blocked open, locked or guarded.

## **TRAINING REQUIREMENTS**

All employees shall be trained prior to portable ladder use to recognize hazards and procedures to minimize hazards. Employees shall be trained in the following:

1. Hazard recognition.
2. Proper use and placement of ladders.
3. The maximum intended load capacities of ladders used.

## Appendix A: LADDER INSPECTION CHECKLIST

Use this list to remind yourself of what you should look out for in order to prevent accidents.

<b>General</b>	<b>Needs repair</b>	<b>O.K.</b>	<b>Date repaired</b>
Loose steps or rungs (considered loose if they can be moved at all with the hand)?			
Loose nails, screws, bolts, or other metal parts?			
Cracked, spilt, or broken uprights, braces, or rungs?			
Slivers on uprights, rungs, or steps?			
Damaged or worn non-slip bases?			
<b>Step ladders</b>			
Wobbly (from side strain)?			
Loose or bent hinge spreaders?			
Stop on hinge spreaders broken?			
Loose hinges?			
Broken, split, or worn steps?			
<b>Extension ladders</b>			
Loose, broken, or missing extension locks?			
Defective locks that do not seat properly while extended?			
Worn or rotted rope?			