

20 LADDERS



Falls from ladders are common to all trades and pose one of the most serious safety problems in construction. Each year, on average, more than 300 lost-time injuries (LTIs) are caused by falls from a ladder in the Ontario construction industry. Many of these falls result in critical injuries (e.g., 65 in 2015) or fatalities (e.g., 2 in 2015).

The following are major causes of ladder injuries.

- Ladders are not held, tied off, or otherwise secured.
- Weather conditions cause rungs or steps to become slippery.
- Workers fail to not grip ladders properly when climbing up or down (e.g., maintain 3-point contact).
- Workers do not position themselves properly on ladders (e.g., leaning out too far).
- Ladders do not have secure footing at the base or are placed at improper angles.
- Ladders are defective.
- High winds cause ladders to topple.
- When near electrical lines, ladders are carelessly handled or improperly positioned.
- Ladder stabilizers are not used when needed.

Always consider and plan for the safest way to do work that cannot be done from ground level or from the finished floor of a building or structure. In some cases, the safest way may be to use a ladder. However, when dealing with elevated work or when working at heights, it's important to first consider whether the use of scaffolding, work platforms, or powered elevating work platforms (PEWPs) is more appropriate and a safer alternative to ladders. If it is determined that a ladder will be used, then a risk assessment of the ladder work should be done.

This chapter provides guidelines for selecting, setting up, maintaining, and using ladders. Because ladders are frequently used in the construction industry, workers face increased exposure to ladder hazards. This exposure, coupled with the large number of LTIs and the costs and suffering associated with ladder injuries, justifies having increased worker training and better supervision of ladder use in construction.

Worker training alone will not yield sufficient improvement. Any significant reduction in ladder incidents will require regular supervisory reinforcement of training as well as improved site control of operations involving ladders.

Standards

Standard manufacturing specifications exist for most types of ladders. CSA Standard Z11 sets out requirements for manufacturing portable ladders. The Ontario Ministry of Labour has established standards for job-built wooden ladders, while the International Standards Organization has issued ISO-2860 relating to "Access Ladders on Earth Moving Machinery".

Materials

The most common materials for ladders are aluminum, wood, steel, and fibreglass-reinforced plastic.

Wooden ladders deteriorate more rapidly than those made of more durable materials. They must never be painted because paint hides signs of deterioration and may accelerate rotting by trapping moisture in the wood. However, they may be treated with a clear non-toxic wood preservative or coated with a clear varnish. Inspect wooden ladders frequently for:

- Splits, shakes, or cracks in side rails and rungs
- Warping or loosening of rungs
- Loosening of attached metal hardware
- Deformation of metal parts.

Although aluminum ladders are popular and more widely used than wooden ladders in construction, they are also more susceptible to damage by rough usage. Because they conduct electricity well, aluminum ladders must not be used where electrical contact is possible. Check side rails and rungs regularly for dents, bends, and loose rungs. If dented, the ladder should be taken out of service until repaired by a competent person. If repair is not possible, the ladder should be destroyed.

Fibreglass-reinforced plastic side rails are becoming more common and are generally used with aluminum rungs. They do not conduct electricity well and are resistant to corrosion. They are lightweight and available in various colours. They are, however, costly and heat-sensitive. They must not be exposed to temperatures above 93.3°C (200°F).

Fibreglass ladders should be inspected regularly for cracks and "blooming." This is when weathering and UV damage wears away the protective surface and causes the glass fibres to become exposed. The worn area should be coated with an epoxy material compatible with the fibreglass.

Because of their weight, steel ladders are generally not used as portable ladders in the construction industry. They are, however, often fixed to permanent structures or mobile machinery.

Types

The types of ladders used on construction sites range from metal ladders that are permanently mounted on equipment to job-built wooden ladders. Sections 78 to 84 of the Construction Projects regulation (213/91) defines the following types of ladders used in construction.

Extension trestle ladder – a self-supporting portable ladder that is adjustable in length, consisting of a trestle ladder base, a vertically adjustable extension section and an adequate means of locking the ladder base and extension section together

Platform ladder – a self-supporting portable ladder that is not adjustable in length, where the highest standing level is a platform

Single ladder – a non-self-supporting portable ladder that is not adjustable in length and has only one section

Stepladder – a self-supporting portable ladder that is not adjustable in length, has flat steps and a hinged back, and whose back section is either a single ladder or other supporting device

Step stool – a self-supporting, portable, fixed, or foldable ladder that is not adjustable in length and has:

- (a) a height of 800 millimetres or less, excluding side rails, if any, above the top cap,
- (b) flat steps, but no pail shelf, and
- (c) a ladder top cap that can be stood or stepped on.

Trestle ladder – a self-supporting portable ladder, non-adjustable in length, having two sections and hinged at the top so as to be able to form equal angles with the base.

Portable Ladders

Portable ladders can be easily moved or carried. They come in different types as seen in Figure 20-1. All portable ladders must have non-slip feet or be set up so that the feet will not slip.

Although portable ladders are available in various grades, only ladders that meet the design, performance, test, and marking requirements of a Grade 1, Grade 1A, or Grade 1AA ladder in the CSA Standard Z11-12: *Portable Ladders* should be purchased and used.

The type purchased should be compatible with the degree of rough usage expected. For all construction projects, heavy-duty (or higher) portable ladders must be used for construction purposes.

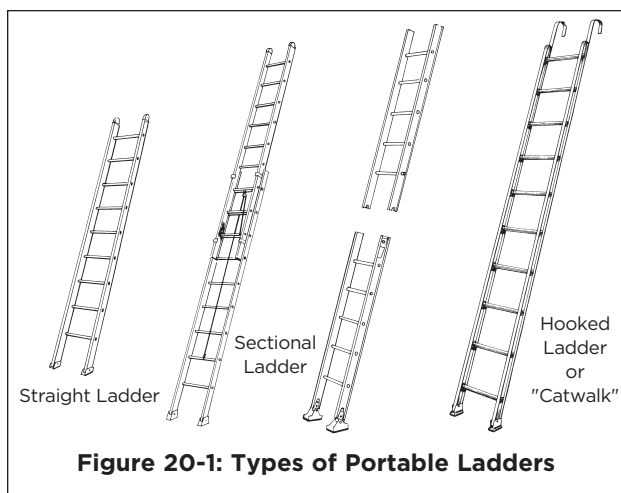


Figure 20-1: Types of Portable Ladders

Self-Supporting Ladders

A stepladder is defined as a self-supporting portable ladder that is not adjustable in length, has flat steps and a hinged back, and whose back section is either a single ladder or other supporting device (O. Reg. 213/91, s. 78). Since it doesn't require a wall for support, it can be used in the center of a room or work area.

Other types of self-supporting ladders are platform ladders, trestle ladders, and extension trestle ladders (Figure 20-2). In addition to the standards of sound construction and reliable service that should apply to all ladders used on site, the primary consideration with these ladders is that they have strong spreader arms that lock securely in the open position.

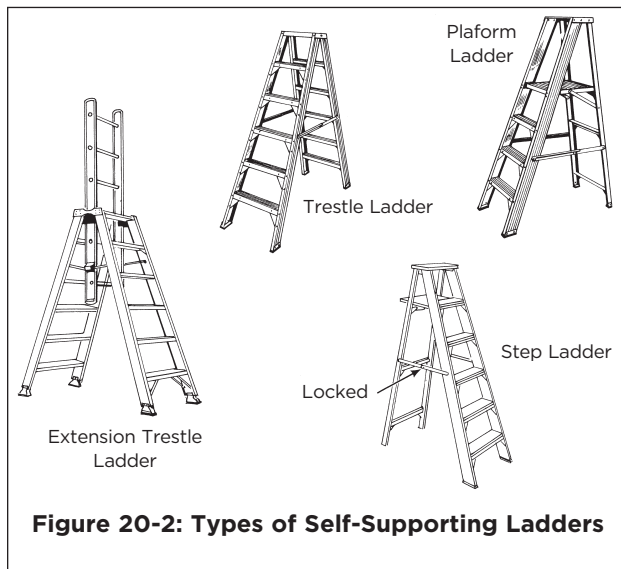


Figure 20-2: Types of Self-Supporting Ladders

Each type can be used for a specific purpose. Workers are not permitted to stand on the top step of a stepladder or trestle ladder (i.e., the first step below the top cap or top of the rails). However, the highest standing level of a platform ladder is the platform at the top. Always follow the manufacturer's instructions before using a ladder.

Trestle ladders have a "double front" that allows two workers to climb at the same time (one per side). An extension trestle ladder has a middle section that can be adjusted vertically. Two extension trestle ladders, placed side-by-side, can support a scaffold plank, creating a stable work platform.

Fixed Ladders

Steel ladders permanently fixed to structures such as stacks and silos are designed for servicing those structures after construction is complete (Figure 20-3). However, they are often used by work crews during construction.

If the ladders are vertical and there is a risk of falling more than 3 (10 ft), a body harness and lifeline (or body harness and channel lock device) should be used by workers climbing up and down or working from the ladders.

These ladders must have:

- Safety cages starting no more than 2.2 m (7 ft) from the bottom of the ladder and extending at least 0.9 m (3 ft) above the top landing
- Rest platforms with ladder offsets at intervals no more than 9 m (30 ft) apart where a fall arrest system is not used
- Side rails that extend 90 cm (35 in) above the landing
- Rungs that are at least 15 cm (6 in) from the wall and spaced at regular intervals
- An adequate landing surface that is clear of obstructions at the top and bottom. (O. Reg. 213/91, s. 84(1))

Vertical ladders permanently fixed to structures should comply with *Fixed Access Ladders: Engineering Data Sheet 2-04* available from the Ontario Ministry of Labour (MOL).

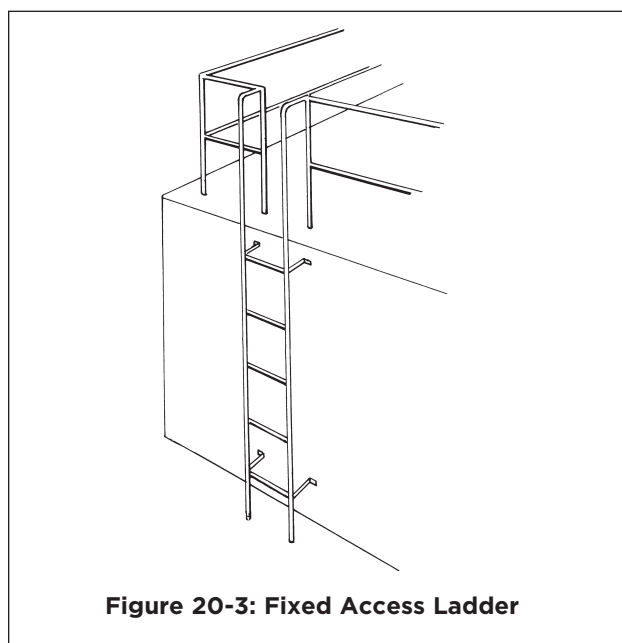


Figure 20-3: Fixed Access Ladder

Special-Purpose Ladders

A special-purpose ladder is a portable ladder that has been modified or redesigned for a specific use (Figure 20-4). These ladders should be used in accordance with manufacturers' directions and only for the intended application.

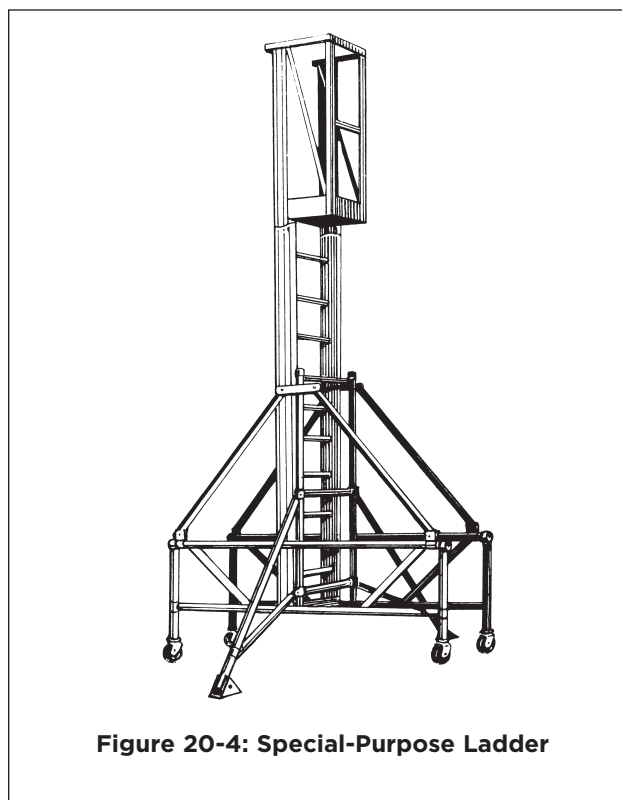


Figure 20-4: Special-Purpose Ladder

Job-Built Wooden Ladders

Job-built ladders are usually made on the jobsite as a means of access and egress until permanent stairs are installed. Although they are normally not reused, they should be constructed according to good structural carpentry practice. Specifications for single-width and double-width job-built ladders are shown in Figure 20-5.

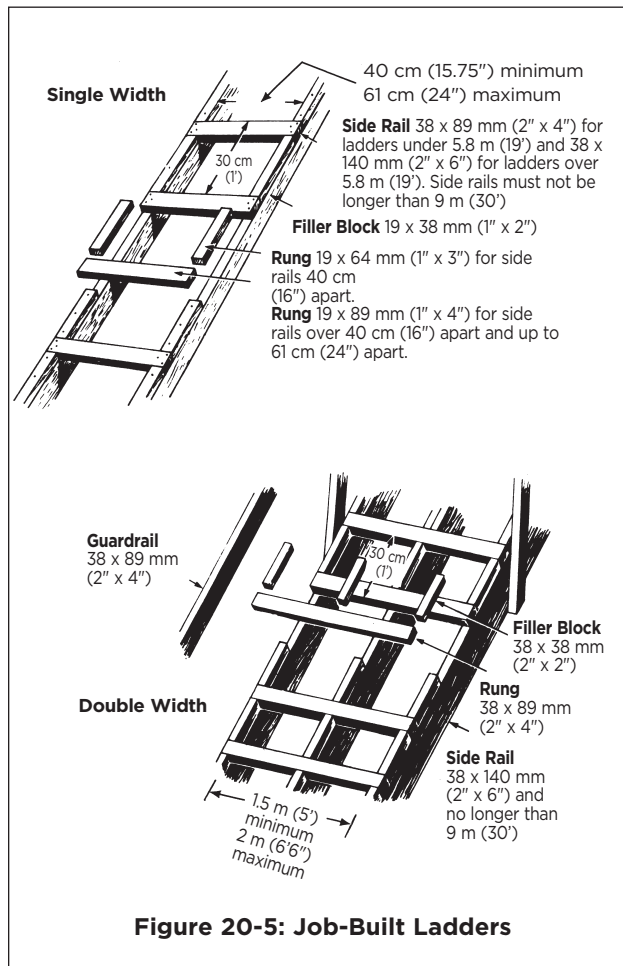


Figure 20-5: Job-Built Ladders

- The wood should be straight-grained and free of loose knots, sharp edges, splinters, and shakes.
- Rungs should be clear, straight-grained, and free of knots.
- The ladder must be placed on a firm footing and be securely fastened in position.
- A wooden ladder should never be painted or coated with an opaque material so that any damage can be seen easily.
- A straight wooden ladder should not be longer than 9 m (30 ft).

Job-built ladders are heavy and not recommended where portability is important. Because they are made of wood and often used by a whole crew of workers, job-built ladders deteriorate rapidly. They should be inspected every day or so. If defective, they must be repaired immediately or taken out of service and **destroyed**.

Supervision and Use

Improved site management and more control over the use of ladders on site can significantly reduce the number of ladder injuries.

This requires that supervisors:

- Train workers to maintain and use ladders properly
- Perform a risk assessment of the ladder work to be conducted
- Evaluate the access requirements of a specific work assignment
- Choose the best means of access for the job.

Portable ladders should be used only where safer means of access such as stairs, scaffolds, manlifts, or ramps are not suitable or practical. Supervisors must consider the number of workers requiring access to elevated work locations as well as the extent and duration of the work before deciding on the safest and most economical means of access.

Ladders should not be used by large crews of workers. It's more efficient to use other means of access such as stairs or personnel hoists where large numbers of workers will be using the access equipment frequently.

Always assess if another means of performing the work can be used. Other types of access such as stationary or rolling scaffolds or powered elevating platforms will usually be more efficient and significantly reduce the potential for incidents.

In deciding on the best type of access for various tasks and work locations, management should also consider things such as

- The amount of material involved
- The amount of time workers spend on the access equipment
- The weather conditions
- The equipment available on site
- The condition of the surface from which access must be made
- The amount of room available
- The potential for shared use with other trades.

It is critical that consideration be given to worker access for specific tasks and for entire work areas. Ladders must not be used where other means of access are safer and more practical.

If there is no practical alternative to using a ladder, supervisors should ensure that ladders are suitable for the job being done, that they are in good condition, and that personnel are trained to use them properly. Ladder stabilizers on straight and extension ladders are strongly recommended where ladders are the only means of access.

In addition to proper training, planning, and organizing, supervisors must check that the plans and directions are being carried out by workers.

Although very important, maintaining day-by-day control over this hazard is often overlooked by the busy supervisor. With ladders, as with other supervisory responsibilities, safety issues not dealt with today can become problems tomorrow.

Proper Use of Ladders

More than 80% of ladder incidents are related to improper use or application of the equipment. Although supervisors must ensure that the access equipment used is appropriate for the specific job or situation, those using the equipment must also be trained to use it properly. Training should include taking the following precautions when working with ladders.

- Check the ladder for defects at the start of a shift, after it has been used in another location by other workers, or after it has been left in one location for a lengthy period of time. (See the end of this chapter for inspection procedures.)
- Ensure the areas surrounding the base and top of the ladder are clear of trash, materials, and other obstructions. Most incidents occur when getting on and off the ladder.
- Secure the base of the ladder should be secured against accidental movement. Use a ladder equipped with non-slip feet appropriate for the situation, nail a cleat to the floor, or otherwise anchor the feet or bottom of the side rails (Figure 20-6).

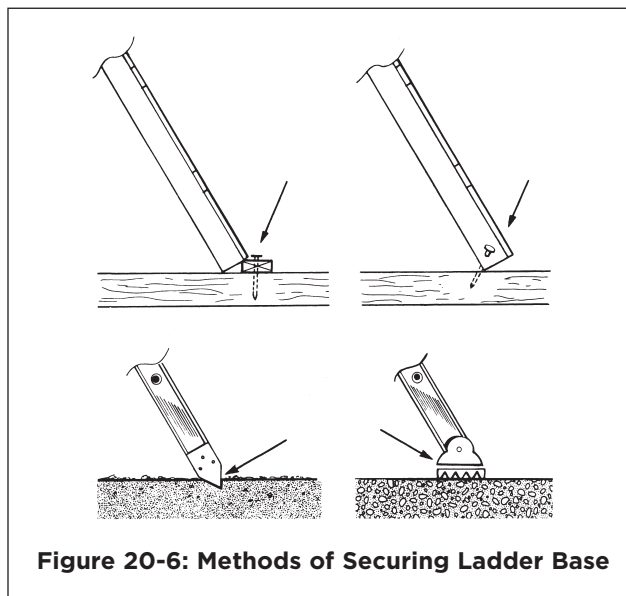


Figure 20-6: Methods of Securing Ladder Base

- Set up the ladder on a firm, level surface. If its base is to rest on soft, uncompacted, or rough soil, use a mud sill (Figure 20-7).
- Tie off the top of the ladder or otherwise secure it to prevent any movement (Figure 20-8).

- If a ladder is used for access from one work level to another, ensure the side rails extend a minimum of 900 mm (3 ft) above the landing. Install grab rails at the upper landing so that a worker getting on and off the ladder has secure handholds.
- Set up all straight or extension ladders at the proper angle, which is 1 foot back for every 3 or 4 feet up (1:3 or 1:4). (See Figure 20-9.)

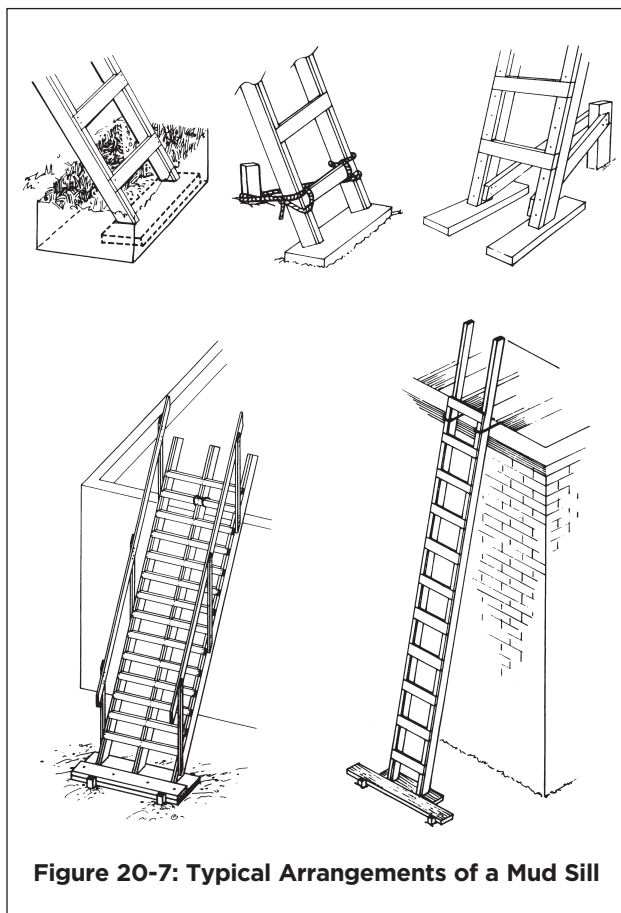


Figure 20-7: Typical Arrangements of a Mud Sill

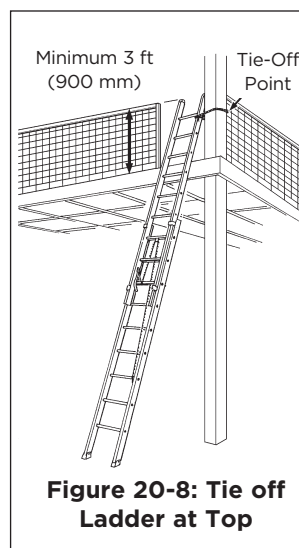


Figure 20-8: Tie off Ladder at Top

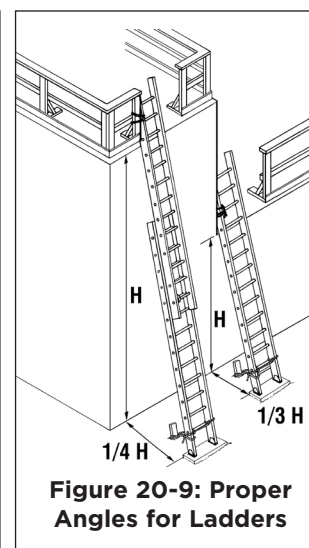


Figure 20-9: Proper Angles for Ladders

- Before setting up straight or extension ladders, check the area for overhead powerlines. Ladders made of aluminum or other conductive material should never be used near powerlines. Only competent electricians and powerline technicians using ladders made of non-conductive material are allowed to work in close proximity to energized electrical lines.
- Never use portable ladders horizontally as a substitute for scaffold planks, runways, or any other service for which they were not designed.
- When a task can only be done while standing on a portable ladder, ensure that the length of the ladder allows the worker to stand on a rung no higher than the fourth from the top. The ladder should also be tied off or equipped with a suitable stabilizer.
- Never splice together short to make a longer ladder. Side rails will not be strong enough to support the extra loads.
- Do not use straight ladders as bracing, skids, storage racks, or guys. They were not designed for these purposes and the ladder can be damaged, leading to structural failure.
- Unless suitable barricades have been erected, do not set up ladders in passageways, doorways, driveways, or other locations where they can be struck or displaced by persons or vehicles using the access route.
- Allow only one person at a time to use a single-width ladder. In the case of a double-width ladder, allow no more than two people on it at one time (each on a separate side).
- Do not place ladders against flexible or movable surfaces.
- Always face the ladder when climbing up or down and when working from it.
- Maintain 3-point contact when climbing up or down a ladder. That means two hands and one foot or two feet and one hand on the ladder at all times. This is especially important when you get on or off a ladder at heights (Figure 20-10).

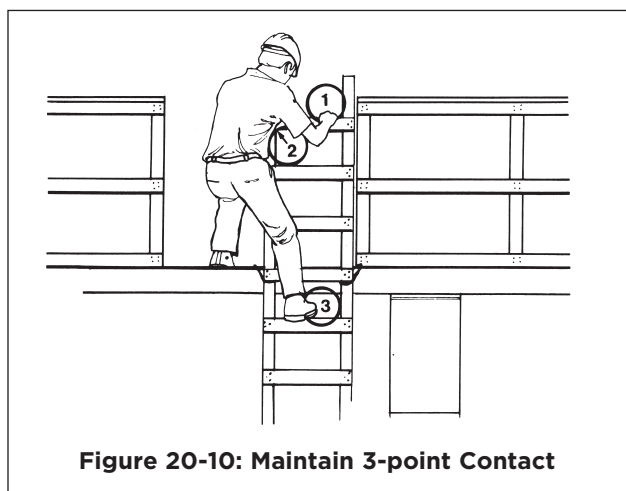


Figure 20-10: Maintain 3-point Contact

- When working from a ladder, keep your centre of gravity between the side rails. A person's centre of gravity is approximately in the centre of the body at belt height. The location of your centre of gravity can shift when you reach out to either side of a ladder, especially with materials, tools, or equipment in your hands. If the centre of gravity of your body and hand-held objects moves beyond the side rails, the ladder can become unstable.
- Avoid climbing up or down a ladder while carrying anything in your hands. Tools, equipment and materials should be placed in a container and raised or lowered by rope, if necessary.
- Ensure workers are instructed and frequently reminded to keep their boots free of mud, snow, grease, or other slippery materials if they are using ladders.
- Always hold onto the ladder with at least one hand. If this is not possible because of the task to be done, and in particular if the work is 3 metres (10 feet) or more above the floor, the worker must wear a safety harness and tie the lanyard off to the structure or to a lifeline before beginning work.
- Keep both feet on the ladder when standing on it. Never straddle the space between a ladder and another object (Figure 20-11).

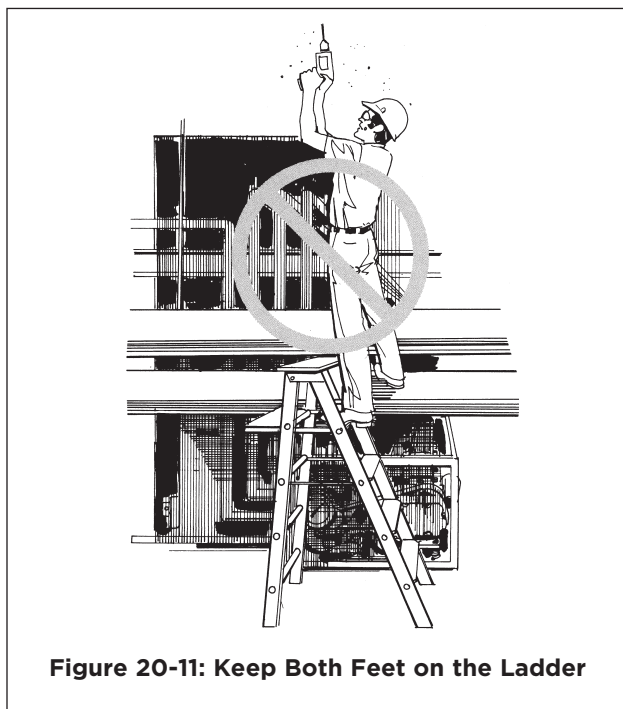


Figure 20-11: Keep Both Feet on the Ladder

- When working from ladders, wear protective footwear with soles and heels made of slip-resistant materials such as soft urethane.
- Never erect ladders on boxes, carts, tables, or other unstable surfaces.
- Use fall arrest equipment such as ladder climbing devices or lifelines when working from long fixed ladders or when climbing vertical fixed ladders.

- Never rest a ladder on any of its rungs. Ladders must rest on their side rails.
- When erecting long, awkward, or heavy ladders, two or more persons should share the task to avoid injury from overexertion.
- Instruct all personnel to watch for overhead powerlines before attempting to erect any ladder. When overhead powerlines are in proximity of the work, aluminum ladders must not be used.

Inspection and Maintenance

Regular inspection and maintenance will increase the useful life of ladders and reduce the number of incidents. A suggested checklist for inspection has been provided at the end of this chapter. Repairs should only be carried out by the manufacturer of the ladders.

Ladders found to be defective should be taken out of service and either tagged for repair or scrapped. Once tagged, the ladder must not be used until repaired. Ideally, the tag should only be removed by the person who took the ladder out of service initially. The tag should be printed in big bold letters with the words "DANGER - DO NOT USE".

General Procedures

Ladders should be inspected for structural rigidity. All joints between fixed parts should be tight and secure. Hardware and fittings should be securely attached and free of damage, excessive wear, and corrosion. Movable parts should operate freely without binding or excessive play. This is especially important for gravity-action ladder locks on extension ladders.

Non-skid feet should be checked for wear, imbedded material, and proper pivot action on swivel feet.

Deteriorated, frayed or worn ropes on extension ladders should be replaced with a size and type equal to the manufacturer's original rope.

Aluminum ladders should be checked for dents and bends in side rails, steps, and rungs. Repairs should be made only by the manufacturer or someone skilled in good aluminum or metal work practices. Replacing a rung with a piece of conduit or pipe is not good practice and should not be permitted.

Wooden ladders are susceptible to cracking, splitting, and rot and should be either unpainted or covered with a transparent finish so that checks, cracks, splits, rot, or compression failures can be readily detected. Repairs should be consistent with good woodworking practice. Only wood equal to or better than the wood used by the manufacturer should be used in the repair.

The bases, rungs, and steps of all ladders should be examined for grease, oil, caulking, imbedded stone and metal, or other materials that could make them slippery or otherwise unsafe.

Methods of storage and transportation are important. Storage areas should permit easy access and be cool and dry, particularly if wooden ladders are kept there. Areas where the moving of other materials can damage ladders should be avoided.

Ladders should be supported during storage and transportation to prevent sagging or chafing. When being transported, ladders should be "top freight"—nothing should be piled on them. If damage does occur, the damaged ladder should be taken out of service and repaired or replaced. Identify the causes of any damaged ladders and take steps to prevent such damage in the future.

Special Considerations

All trades have frequent ladder incidents. To prevent them, supervisors should devote more time to training and to reinforcing that training on the job.

Approximately 50% of all ladder incidents occur while work tasks are being performed from the ladder. **Remember: A ladder is not a work platform.** Many of these incidents could be prevented by using other types of access equipment such as scaffolds or powered elevating platforms.

Between 30% and 40% of all ladder incidents involve unexplained loss of footing. This can be the result of not paying attention while on the ladder. Therefore, training and instruction should include maintaining awareness of the hazards involved in working from a ladder.

Many ladder incidents are related to unfavourable weather conditions that create slippery and unstable situations (e.g., wind, mud, ice, snow, and rain). This is an especially important consideration for the outside trades such as labourers, bricklayers, sheet metal applicators, roofers, and carpenters.

A surprising number of incidents occur when workers take the first step onto the bottom rung of a ladder. While falls from this distance are usually not as serious as those from greater heights, they can cause lost-time injuries as well as serious or critical injuries such as sprains, strains, fractures, and contusions.

Workers should be careful when stepping onto any ladder. It is often at this point that the unstable, insecure ladder will slide or tip and that muddy or snow-covered boots will slip on the first or second rung. Make sure that boots are clean, that ladders are secure and stable, and that workers are aware of the hazards. Again, this involves supervisor training and continuous reinforcement.

Finally, a large number of incidents occur because workers use straight ladders that are not secured. Site supervisors must rigidly ensure that ladders are either firmly secured or held in place by a second worker (refer to Figures 20-6 to 20-8).

Ladder Use Guideline

IHSA has produced a document called "Ladder Use in Construction Guideline" to help workplace parties understand their obligations under the *Occupational Health and Safety Act (OHSA)* and its regulations. It is available to download from the **News & Events** section of the IHSA website. Employers and supervisors should refer to this guideline when determining policies for ladder use.

The guideline refers to conducting a hazard risk assessment for ladders. IHSA has produced a **Hazard Risk Assessment for Ladder Use** to aid employers and supervisors meet the intent of the guideline. This assessment can be found at the end of this chapter.

Ladder Use Checklist

- Ensure that workers know the ladder safety policy.
- Use the type of ladder that is properly suited to the task.
- Construct job-built ladders properly.
- Inspect ladders before use.
- Erect ladders with the proper slope (between 4:1 and 3:1).
- Avoid placing ladders in high-traffic areas, on walkways, or around entrances and exits.
- Tie ladders off at the top.
- Block or otherwise secure the ladder base or have the ladder held by a second worker when in use.
- When outdoors, place the ladder base on firm footings such as compacted soil or mudsills.
- Extend the ladder 900 mm (3 ft) above the top landing.
- Clear material, debris, and other obstructions from the top and bottom of ladders.
- When climbing, use a single-width ladder and have only one person on it at a time.
- Maintain three-point contact when climbing a ladder (two feet and one hand or two hands and one foot on the ladder at all times).
- Do not carry tools or materials in your hands when climbing ladders. Wear a tool belt and use a rope to lift material.
- Face the ladder when climbing.
- Use a fall-arrest system when climbing long ladders.
- Do not use a ladder when a safer means of access is available and practical.
- Never use metal ladders near live electrical equipment or conductors.
- Do not use ladders horizontally or for some other purpose for which they haven't been designed.
- Make sure ladders do not get damaged during transport and storage.
- Do not support ladders by their rungs.
- Get help when erecting long or heavy ladders.

Ladder Inspection Checklist

	YES	NO
1. Are any wooden parts splintered?	<input type="checkbox"/>	<input type="checkbox"/>
2. Are there any defects in side rails, rungs, or other similar parts?	<input type="checkbox"/>	<input type="checkbox"/>
3. Are there any missing or broken rungs?	<input type="checkbox"/>	<input type="checkbox"/>
4. Are there any broken, split, or cracked rails repaired with wire, sheet metal, or other makeshift materials?	<input type="checkbox"/>	<input type="checkbox"/>
5. Are there any worn, damaged, or missing feet?	<input type="checkbox"/>	<input type="checkbox"/>
6. Are there any worn, damaged, or unworkable extension ladder locks, pulleys, or other similar fittings?	<input type="checkbox"/>	<input type="checkbox"/>
7. Is the rope on extension ladders worn, broken, or frayed?	<input type="checkbox"/>	<input type="checkbox"/>
8. Has the rope on extension ladders been replaced by material inferior to the ladder manufacturer's original rope?	<input type="checkbox"/>	<input type="checkbox"/>
9. Are the spreader arms on step ladders bent, worn, broken, or otherwise rendered partly or totally ineffective?	<input type="checkbox"/>	<input type="checkbox"/>

If the answer is "YES" to any of the questions on the Inspection Checklist, the ladder should be tagged so that workers will know it is defective and should not be used. It should be taken out of service immediately and placed in a location where it will not be used until repairs are completed. If the ladder is not to be repaired it should be destroyed.

Hazard Risk Assessment for Ladder Use

Where work is to be performed above grade from a ladder rather than a scaffold, the employer must ensure the hazards associated with the ladder work have been assessed and appropriate controls are in place to protect the health and safety of the worker.

Assessing the safety of using a ladder for a specific job task can be done using the ladder risk assessment guideline below. This hazard risk assessment (HRA) is intended for the temporary use of portable ladders. Permanently anchored ladders, job-built ladders, and portable ladders secured for permanent access and egress are not considered part of this assessment. The Construction Projects regulation (213/91) provides guidance on the safe installation of ladders meant for access and egress on a more permanent basis.

Conducting an HRA

Employers can learn how to conduct a detailed HRA or job safety analysis (JSA) through programs at IHSA. For employers familiar with the process, use the resources on the ihsa.ca website (click **Tools and Resources**, then **Policy and Program Templates**, then **Hazard Assessment, Analysis, and Control**).

In general, before a ladder is selected over other options, an assessment of the work must be completed and alternatives considered. A hazard assessment must be done, hazards identified must be mitigated, and there should be evidence that these considerations have been taken into account. Following the steps below can help guide you through the process.

1. Identify the Task.

The first step in developing this assessment is to identify the task at hand. This task will often be a situation that is repeated on many jobsites (e.g., accessing a rooftop, working on the ceiling in a restricted space, or tying rebar).

2. Assess the alternatives.

When a task has been identified, there is often more than one way to accomplish it. Obvious alternatives to the use of a ladder include scaffolds and elevating work platforms. The employer has the responsibility to rate the severity and the probability of the hazards associated with each alternative in order to make a reasonable determination about which one to use.

3. Break down the task into steps.

Once you have identified the task, the next step is to break it down into steps. Each step is a part of the operation that is necessary to advance the work. Keep the steps in sequential order as much as possible. For example, the steps for using a ladder will usually involve:

- (1) Removing the ladder from storage
- (2) Setting up the ladder
- (3) Using the ladder
- (4) Dismantling the ladder
- (5) Returning the ladder to storage.

4. Identify the hazards associated with each job step.

This is the most challenging part of the hazard risk assessment. Take each step and list the hazards associated with it. Think about what could go wrong from a health and safety perspective. Think about how people, equipment, materials, processes, and the surrounding environment could contribute to a hazard.

5. Determine controls for each hazard.

Each hazard identified in the previous step needs a control. The control explains how you will eliminate the hazard or how you will significantly reduce the risk of injury or illness associated with the hazard. The probability of the hazard causing harm and the severity of the outcome should be considered.

Methods of hazard control may include the following:

Eliminate/mitigate the hazard

- Install equipment in easily accessed locations.
- Improve the work environment (e.g., bring the work to floor level).
- Build permanent or portable stairs.
- Use another type of equipment to access the work (e.g., elevating equipment or scaffolding).

Contain the hazard

- Install accessible anchors for fall protection and travel restraint.
- Use ladders with work platforms.
- Use ladder stabilizers.

Revise the work procedure

- Schedule and plan work when better access can be provided.
- Get help from a co-worker.

Reduce the exposure

- Refresh worker knowledge with training.
- Use appropriate personal protective equipment such as work boots with good tread.
- Rotate jobs to reduce the length of time each worker is exposed to the hazard.

If a hazard to the worker exists, rate the severity and the probability of the hazard. Note that it is the employer and supervisor's responsibility to take reasonable precautions for the protection of the worker. They have to make a reasoned decision as to whether or not the ladder can safely be used to complete the job task once the hazards associated with the ladder work have been assessed and appropriate controls have been put in place.

Employees using the ladder must be able to show evidence that an assessment was done. Written evidence of the assessment should be kept with the ladder. The complexity of the hazard risk assessment is based upon the complexity of the work that involves the ladder.

A sample JSA for setting up an extension ladder can be found in Appendix A. As well, there is a JSA Form.