Ladder Use in Construction Guideline

Forward

This guideline has been prepared to assist workplace parties in understanding their obligations under the Occupational Health and Safety Act (OHSA) and its regulations. It is not intended to replace the OHSA or its regulations and reference should always be made to the official version of the legislation.

This guideline does not constitute legal advice. If you require assistance with respect to the interpretation of a legislative provision and its application in specific circumstances, please contact your legal counsel.

While this guideline will also be available to Ministry of Labour (MOL) inspectors, they will apply and enforce the Act and its regulations based on the facts as they may find them in the workplace. This guideline does not restrict their enforcement discretion in any way.

Background

There continues to be a high number of incidents where workers have fallen from ladders and were critically injured or killed on construction projects. The following table shows the number of events investigated by the MOL's Construction Program from 2011 to 2017 (May). Thirteen per cent of critical injuries and four per cent of fatalities investigated by the construction program over this period were directly related to ladder use on projects.

Table 1: Events Investigated by the Ministry of Labour Construction Health and Safety Program, 2011-2017 (May)

Year	Critical injuries		Fatalities	
	Ladders	All Hazards	Ladders	All Hazards
2011	22	181	1	22
2012	23	187	0	13
2013	26	197	0	21
2014	27	191	1	22
2015	21	151	3	18
2016	18	159	0	14
2017 (May 1)	13 (May 1)	92 (May 1)	0 (May 1)	7 (May 1)
Total Incidents	**150**	**1,158**	**5**	**117**
Percent of Total Incidents	**13%**		**4%**	

MOL Position

Constructors and employers must always plan for and consider the safest way of undertaking work and must take every precaution reasonable in the circumstances for the protection of a worker.

Section 125(1) of the Regulation states "Where work cannot be done on or from the ground or from a building or other permanent structure without hazard to workers, a worker shall be provided with a scaffold, a suspended work platform, a boatswain's chair, or a multi-point suspended work platform that meets the requirements of this Regulation."

The use of a scaffold, a suspended work platform, a boatswain's chair, or a multi-point suspended work platform is required where work cannot be done on or from the ground or from a building or other permanent structure without hazard to the worker(s). Where it is determined that there is no hazard to the worker (i.e. through a written ladder risk assessment, sample items of which are provided in Appendix A) or that any likely hazard has been mitigated through measures, procedures, PPE, other controls, a ladder may be used by workers for performing work. The employer's risk assessment will determine if there is any hazard(s) posed by use of ladders and whether any identified hazards have been mitigated. If there is no hazard or any identified hazard has been mitigated to protect the health and safety of the worker, a ladder may be used.

Subsection 125(1) establishes the need for a safe scaffold or other work platform. Sections 134-142 further outline requirements for scaffold platforms and other work platforms. All of these sections must also be read in conjunction with the other provisions of the regulation, including sections 26 to 26.9 which outline the adequate use of fall protection in specified circumstances.

For example, when a worker is using a ladder to work at a work location where he/she could fall more than three metres, the worker must be adequately protected from the falling hazard by using an adequate fall-arrest system.

Where work is being performed above grade from a ladder rather than a scaffold or other work platform, an employer must ensure that any hazards associated with the ladder work have been assessed and appropriate controls, measures, procedures, and PPE are in place to mitigate identified hazards. This will be determined by performing a ladder risk assessment.

Where a ladder is used, the employer shall ensure that the ladder and its use comply with the regulatory requirements and that all reasonable precautions for the protection of the worker are taken.

If a ladder is to be used by a worker to work above or below grade, prior to its use, hazards to workers related to the use of the ladder must be identified, assessed, and mitigated to protect the

health and safety of the worker.

The employer's decision to choose a ladder to work above or below grade must not be solely made on the basis of speed or ease of production. The primary consideration must be how to provide the safest means of access and a surface to work from or on that enables a worker to perform the task safely. Where the conditions on the job allow the use of a scaffold, elevated work platform, or other type of work platform, these should be given first consideration as they provide safer footing and better ergonomics for the worker. There are, however, instances where ladders could be used: e.g. restricted space, very short work duration, or a combination of circumstances that would make it impracticable to use a scaffold or other type of platform whose set up may pose more exposure risks to a worker.

Many different types of portable ladders are available for use in the construction industry such as single ladders, extension ladders, trestle ladders, step ladders, etc. It is a requirement of the O. Reg. 213/91 (subsection 80(1) that "a portable ladder at a project shall be manufactured and shall 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"

A single ladder, measured along its side rail, must not exceed nine metres (30 feet) in length for grade 1 or 1A ladders; it must not exceed 5 metres (16 feet) for grade 1AA ladders.

Extension ladders with two sections must not exceed 18 metres (60 feet) for grades 1 and 1A ladders, and they must not exceed 9.5 metres (32 feet) for grade 1AA ladders - measured along their side rails. Extension ladders with three sections must not exceed 22 metres (72 feet) for grade 1 and 1A; they must not exceed 11 metres (36 feet) for grade 1AA ladders – measured along their side rails.

Ladders must not be used in an elevator shaft or similar hoisting area when the shaft or hoisting area is being used for hoisting. [O. Reg. 213/91 s.81]

Ladders used for access between levels of a structure, the ground or grade level to a building or structure, or different work surface levels must: extend a minimum of 900 millimetres (three feet) above the top surface; have a clear space of at least 150 millimetres behind each rung; be located so that an adequate landing surface that is clear of obstructions is available at the top and bottom of the ladder; and be secured at the top and bottom of the ladder to prevent movement.
[O. Reg. 213/91 s.82]

Ladders must be positioned safely and used in accordance with all regulatory requirements. For example, a ladder must not be positioned in front of a door that opens towards the ladder unless the door is locked, blocked, or guarded against opening.

No barrel, box, cart, or other loose object shall be used as a support for a ladder. [O. Reg. 213/91 s.115]

Ladders must be designed, constructed and maintained so as not to endanger a worker [O. Reg. 213/91

s.79] and inspected before use. Ladders with weakened, broken, bent or missing steps, broken or bent side-rails, broken, damaged, or missing non-slip bases, or showing other damage must not be used. [O. Reg. 213/91 ss.93 (2)] Defective ladders should be tagged and removed from the site to be repaired or destroyed.

Ladders must be used in accordance with any operating manuals issued by the manufacturers [O. Reg. 213/91 ss. 93(3).

Performing work from any type of ladder is not advisable in most cases as ladders are primarily intended for access and egress, and represent increased risks due to poor ergonomics to workers if standing on rungs and performing work.

Job-built ladders made of wood must comply with sections 79, 80, 81, and 82 of the Regulation for Construction Projects (O. Reg. 213/91), whether they are portable or secured as a temporary access ladder. Ladders can be used safely, but they need to be chosen judiciously (construction grade when used on a construction project), set up correctly, secured in place, repaired or replaced when damaged and used adequately (3-limb contact with the user's body always inside the side railings.)

Ladder Guidance

1. On a construction project, where an employer intends to have work performed at heights, the employer shall use a scaffold or other equipment as outlined by sections 125 to 149 of the Regulation. Where the hazard assessment for the use of a ladder to perform the work in question determines that there are no hazards posed by the use of a ladder or that any identified hazards have been mitigated, an employer may consider the use of a ladder to perform that work. Where a ladder is used, the employer shall ensure that the ladder and its use comply with regulatory requirements and that all reasonable precautions for the protection of the worker when using the ladder are taken.

2. Portable, manufactured ladders must be designed, constructed, and maintained so as to not endanger a worker and must be capable of withstanding all loads to which they may be subjected.

3. Ladders must be used in accordance with manufacturers' instructions. It is a requirement of the regulation that "a portable ladder at a project shall be manufactured and shall 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"(O. Reg. 213/91, ss. 80(1))

4. Workers must be adequately trained on the selection, setup, use, and maintenance of a ladder.

5. An employer's site-specific health and safety program must address the hazards and risks associated with the use of ladders to ensure that a worker's health and safety are protected.

6. The work to be performed from a ladder must also not adversely affect the stability of the ladder (e.g., overreaching to where the worker's "belt buckle" or mid chest is beyond the side rails of the ladder, and reaching to extreme overhead would not be allowed).

7. A worker must not carry any materials, tools or equipment in his/her hands while climbing/descending the ladder or supporting heavy objects that will overload the weight capacity of the ladder.

8. When a ladder is used as a means of access, the ladder must be erected in accordance with the manufacturer's instructions, and a worker must maintain three-limbed contact so that both hands are used when climbing up or down.

9. When ladders are used as a means of work positioning, the Ministry of Labour expects that a worker will be protected from falling, while in the work position and exposed to fall hazards described under section 26 of Ontario regulation 213/91. The worker's fall protection must be secured to an adequate anchor point independent of the ladder.

10. Any equipment including ladders which are damaged must be immediately taken out of service and repaired in accordance with manufacturers' instructions or be replaced.

11. Ladders that are used as access between levels of a structure must be secured at the top and bottom to prevent movement.

12. Where possible, it is recommended that ladder stabilizers be used with portable, manufactured ladders.

13. A ladder is not designed or intended to be used as a "work platform". Work platforms must meet the requirements of sections 134 and 135 of the Regulation respecting loading, dimensions, configuration, etc. It should be noted by employers considering ladder use that the narrower width of ladders does provide additional ergonomic stresses to workers using ladders, and results in less stability necessitating strict work practices to avoid overreaching while on a ladder.

14. The use of ladders with built-in work platforms that are designed and manufactured in accordance with CSA Standard Z11-12 Portable Ladders are a preferable choice over standard step ladders.

15. MOL inspectors will review situations where a ladder is being used for work based on a ladder risk assessment for the tasks being performed and may issue orders or requirements, as appropriate, where they determine that the use of the ladder contravenes or may contravene the OHSA and the regulation.

Using Ladders

The primary use of ladders in construction should normally be for access and egress to work areas above or below ground level. Work activities carried out with ladders can be divided into three types.

1. Climbing/descending a ladder
2. Receiving/placing/removing tools/materials while on a ladder
3. Working from a ladder

Each of these activities and their associated tasks have similar inherent hazards that could affect the health and safety of the worker depending on the type of ladder being used but there are some hazards that are unique by type of ladder. The risk assessment done by the employer must consider the type of ladder that is to be used and the work activities and associated tasks.

1. Climbing

Ladders are designed to provide access to work areas at different heights and allow workers to travel more easily from the ground to other levels of a structure or building, either above or below ground. Inspectors may consider the following when observing workers using ladders for climbing:

- Is the worker using both hands while climbing/descending?
- Is the worker maintaining three-limb contact?
- Is the worker facing the ladder?
- Has the worker received information, instruction, and supervision on safe climbing and material handling with respect to ladders?

2. Receiving/Placing/Removing Materials

A factor that an inspector may consider when observing workers handling materials while on ladders is whether the worker receives items to one hand only as long as precautions and safeguards are in place.

Precautions and safeguards may include:

- Worker has received information, instruction, and supervision on safe material handling
- One hand must hold the rail (three-limb contact must be maintained)
- Worker keeps both feet on the ladder at all times
- Worker's centre line of body (belt buckle) stays within the side rails of the ladder
- Worker does not reach down below knee level
- Handling or placing of the object does not interfere with the worker's balance (e.g., tool/ materials don't come in contact with the ladder, worker doesn't have

to lean backwards or sideways beyond the side rails of the ladder for tool/materials to clear the ladder).

3. Performing Work

The types of factors which Inspectors may consider when observing workers performing work while on ladders are:

- Is the worker able to achieve three-limb contact, if necessary? (e.g. not holding large, awkward items that require both hands to hold)
- Is the worker's belt buckle within the side rails of ladder?
- Is the worker facing the ladder at all times?
- Is the worker able to maintain their balance without holding onto something other than the ladder?

Precautions and safeguards may include:

- Demands of the task and characteristics of objects enable a worker to grasp side rail for balance
- Worker's centre line of their body (belt buckle) stays within the side rails of the ladder
- Force is generated consistently and with ease
- Worker keeps both feet on the ladder
- Worker has received information, instruction, and supervision in order to carry out the task safely

Guidance on Ladder Risk Assessment

Where work is to be performed above grade from a ladder rather than a scaffold, an 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.

This will be determined by performing a ladder risk assessment. Elements of ladder risk assessment are available in Appendix A. It is to be noted that the risk assessment, while it may have some generic components, it must also address the specific job where work is being carried out, as each job location has its own peculiarities/particular characteristics.

Before a ladder is used on a construction site, a risk assessment that considers the ladder itself, the environment and the task or work to be done must occur. If the risk assessment determines that there are identified hazards to the worker, alternative work methods, equipment or changes to the environment may be necessary to protect the health and safety of the worker.

Appendix A

Factors to consider when performing your ladder risk assessment:

Risk Assessment Question	Answer (Yes/No)	Hazard Control
Condition of ladder		
Does the ladder have visible damage (bent side rails, missing non-slip feet, missing components)		If Yes, remove from service.
Size/capacity/grade of ladder chosen		
For an extension ladder is the top of the ladder extending less than three feet above the supporting surface?		If yes, ladder is not long enough for the task
For an extension ladder is the set up less than the safe 1:4 ratio?		If yes, ladder is not long enough or space constraints make it unsuitable for ladder use.
For a step ladder, platform step ladder or trestle ladder will the user when standing on a step deemed suitable as per manufacturer's instructions be reaching overhead with the arms outstretched to perform work?		If yes, the ladder is likely too small for the vertical location of the task. Worker should be able to reach the task comfortably (i.e. working only slightly above head level, able to keep arms bent , not in full reach
The ladder being used is not a Grade 1, 1A, 1AA?		If not; alternate ladder required to meet O. Regulation 213/91
Surface ladder is on and proximity to OH power lines		If yes, list measures taken (de-energize, other…)
Is the surface the ladder is on soft, uneven, sloping?		If yes: list measures taken to create a base of stability.
Is the area untidy with materials, supplies, cords etc. that may impact ladder stability and positioning for the work?		If yes; list measures taken to mitigate risk.
Ascending / Descending		
Is the worker's ability to maintain 3-limb contact and use both hands when going up or coming down the ladder affected by materials or tools they have in their hands?		If yes; list measures planned to mitigate risk.
Does the worker need to turn outward when ascending or descending?		If yes; this method is not appropriate and is a fall hazard. Alternate method must be chosen.
Receiving or Passing Items When on the Ladder/Proximity to overhead power lines		If yes, outline procedure/measures taken to avoid contact with live power lines
The worker must remove both hands from the ladder to receive or pass an item?		If yes; list control measures to mitigate risk.
When receiving or passing an item (tool/material) the worker's mid chest/belt buckle go outside the side rail of the ladder?		If yes; due to the worker position on the ladder even a small light load can impact balance. Alternate means of getting the load to the worker's position should be examined.
When receiving or passing an item (tool/material) the worker's hands are reaching below knee level when on the		

ladder?		
The worker needs to turn around or twist backward to receive or pass the item (tool/material)?		
The item (material/tool) being received or passed down is very heavy or awkward?		If yes; the load will impact the person's center of balance on the ladder and can lead to a fall. Alternate methods should be determined.
Working From the Ladder		
The worker's location on the step ladder (i.e. step they are working from) requires them to bend downward to grasp the top cap?		If yes: Consider a larger ladder. When working above the top cap of the ladder a worker who needs to regain stability should be able to grasp and attain 3-point contact with the ladder without bending and reaching downward.
Push, pull forces are required when on the ladder?		If Yes; examine orientation of the ladder and consider that a platform may be more suitable given the task demands.
The task requires the worker's mid chest/belt buckle to extend outside the side rails of the ladder.		If yes; platform may be more suitable for tasks that have longitudinal demands.
The location of the elevated work may require the worker to take one foot off the ladder?		If yes; a ladder is not suitable for the work being performed. Alternate access is needed.

Decision:

Did you answer "Yes" to any of the risk assessment questions?

Are there suitable controls that will protect the health and safety of the worker from the identified hazards?