

# Ladder Use in Construction

## 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 2006 to 2010 (May). Thirty two per cent of critical injuries and 12 per cent of fatalities investigated by the construction program over this five year period were directly related to ladder use on projects.

Table 1. Events Investigated by the Ministry of Labour Construction Health and Safety Program, 2006-2010 (May)

Year	Critical Injuries		Fatalities	
	Ladders	All Hazards	Ladders	All Hazards
2006	37	54	4	27
2007	20	111	2	16
2008	29	106	3	20
2009	33	92	0	16
2010 (May 1)	8 (May 1)	33 (May1)	1(May 1)	4 (May 1)
<b>Total incidents</b>	<b>127</b>	<b>396</b>	<b>10</b>	<b>83</b>
Percent of total Incidents	<b>32%</b>		<b>12%</b>	

### **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 “A scaffold which meets the requirements of sections 126, 128, 129, 130, 134, 135, 137, 138, 139, 140, 141 and 142 shall be provided for workers where work cannot be done on or from the ground or from a building or other permanent structure without hazard to the workers.”

The use of a scaffold 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 ladder risk assessment) 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. Sections 134-142 further outline requirements for scaffold platforms and other work platforms. All these sections must also be read in conjunction with the other provisions of the regulation, including section 26 which prescribes 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 a prescribed fall arrest system.

Where work is being performed above grade from a ladder rather than a scaffold, 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 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 appropriate and mitigated to protect the health and safety of the worker.

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The employer's decision to choose a ladder to work above or below grade must not be 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.

It is recognized that many different types of portable ladders are available for use in the construction industry such as single, extension ladders, trestle ladders, step-ladders, etc. It is recommended that heavy-duty CSA-certified ladders be used at construction projects -- Construction Grade 1 in accordance with CSA Standard CAN3-Z11 Portable Ladders.

A single ladder, measured along its side rail, must not exceed nine metres (30 feet) in length. Extension ladders with two sections must not exceed 15 metres measures along their side rails and extension ladders with more than two sections must not exceed 20 metres. No ladder shall be lashed to another ladder to increase its length. [O. Reg. 213/91 s.78]

Ladders must not be present in an elevator shaft or similar hoisting area when the shaft or hoisting area is being used for hoisting. [O. Reg. 213/91 s.79]

Ladders used for access between levels of a structure 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.80]

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.

Ladders must not be erected on boxes, carts, tables, scaffold platforms, elevating work platforms, or vehicles or other loose objects. [O. Reg. 213/91 s.115]

Ladders must be maintained so as not to endanger a worker [O. Reg. 213/91 ss.78 (1)] 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.

Performing work from job built ladders is not advisable in most cases as these types of ladders are intended for access and egress only, and represent increased ergonomic risks to workers if standing on rungs for an extended period.

Job built ladders made of wood must comply with sections 81 and 82 of the Regulation, whether they are portable or secured as a temporary access ladder  
Ladders can be used safely, but employers should consider that they need to be set up correctly, secured in place, and repaired or replaced when damaged.

**Ladder Guidance:**

1. On a construction project, where an employer intends to have work performed at heights, the employer shall use a scaffold as required by section 125(1) of the Regulation. Where the hazard assessment for the use of a ladder to perform the work in question determines that there are either 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 manufacturer's instructions. It is recommended that heavy-duty CSA-certified ladders be used at construction projects (Construction Grade 1 in accordance with CSA Standard CAN3-Z11 Portable Ladders).
4. Workers must be adequately trained on the selection, setup, use, and maintenance of a ladder and ;
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, i.e., the use of equipment such as hammer drills, pulling cable through conduit, over reaching where the worker's "belt buckle" is beyond the side rails of the ladder, etc would not be allowed.
7. A worker must not carry any materials, tools or equipment in his/her hands while climbing the ladder. Nor should the worker support heavy or bulky objects while standing on a ladder, i.e. large air handling ducts, heavy wall plumbing pipe, etc.
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 during 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 is 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 CAN3-Z11 Portable Ladders are a preferable choice over standard extension ladders.
15. 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 he or she determines that the use of the ladder contravenes the OHSA and the regulation..

### 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

A risk assessment\* of the ladder work will consider the probability of the hazard causing harm and the severity of the outcome. (\* Practical Loss Control Leadership, Frank Bird pg. 416, 1996)

		Hazard Probability			
		A	B	C	D
Hazard Severity	I	Critical	Critical	Critical	Moderate
	II	Critical	Serious	Moderate	Minor
	III	Serious	Moderate	Minor	Negligible
	IV	Moderate	Minor	Negligible	Negligible

Probability of the hazard causing harm may range from:

- A-likely to occur immediately
- B-probable in time
- C-possible in time
- D-remotely possible

Severity may range from:

- I-fatality or permanent total disability
- II-lost time injury
- III-reportable injury, no lost time
- IV-minor medical treatment

The following components of the ladder risk assessment may include, but are not limited to:

**The ladder:**

- is the suitable for the task (step, extension, platform ladder) ☐
- is a suitable grade ☐
- can accommodate the weight being moved up, down and held on it ☐
- length will position the worker so he/she does not have to over-reach ☐
- length will extend three rungs above the top of the supporting surface  
e.g. extension ladder ☐
- has been maintained ☐
- is set up at a safe angle (1:4) ☐
- can be used as per the manufacturer's guidelines ☐

**Workers working on ladders:**

- are trained in ladder safety ☐
- can perform tasks that do not affect the ladder stability ☐  
(e.g. no forceful exertions or sudden forces, not using equipment  
such as hammer drills, not over-reaching while pulling something  
such as cable through conduit)
- can climb the ladder using both hands ☐
- can climb the ladder while facing it ☐
- can stand on the ladder and receive or place materials/tools without  
reaching sideways beyond the side rails of the ladder, or below  
knee level, or lean backwards ☐
- can achieve three point contact when standing and working on the ladder ☐  
(e.g. not holding large, awkward items that require both hands to hold)
- can always keep both feet on the ladder when standing on it ☐
- can stand below a height of three metres ☐  
(otherwise fall protection is needed)

## **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 while climbing:

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

## **2. Receiving/Placing/Removing Materials**

The types of factors which an inspector may consider when observing workers handling materials while on ladders are:

- 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 point 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 workers 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:

- Is the worker able to achieve three point contact, if necessary.
- Worker's belt buckle is not extending beyond side rails of 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 task safely.

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