GUARDRAILS

IDENTIFY

Falls account for a large percentage of all time-loss injuries and fatalities in North American workplaces. They are the leading cause of death in construction, but can occur in all types of workplaces.

Where possible, guardrails must be installed:

- Along the open edges of roofs and floors.
- On formwork, scaffolds, and other work surfaces.
- Around openings in floors, roofs, and around skylights.
- Wherever workers are exposed to the risk of falling.

Guardrails are a common and convenient fixed barrier. They can be used to protect the worker from falling into or onto a hazardous surface or equipment. Manitoba's legislated requirements are discussed in the Workplace Safety and Health Regulation Part 14.3 to 14.5.

The selection of a protection system to control a fall hazard depends on the circumstances and the job task. Ideally, the choice will be one that removes the risk of falling entirely.

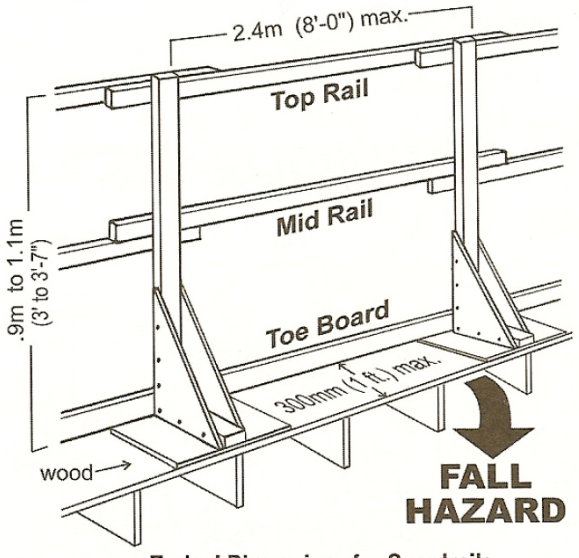
COMMUNICATE AND CONTROL

Providing a fixed barrier to prevent workers from falling is preferable to personal protective equipment (PPE), such as a safety harness and lifeline. A fixed barrier must be capable of stopping someone from proceeding past the edge of a work level or into a floor opening.

Like other barriers, such as ladder cages and fencing, guardrails can be permanent or temporary, depending on the circumstances at the workplace.

Guardrails can be made of many different types of materials — wood, steel, wire rope, and composites. Manufactured systems of metal frames and wire mesh are widely used, as are wooden systems built entirely on-site.

Typical wooden guardrails will be built to resemble:



Typical Dimensions for Guardrails

These components should be secured to the inside of the posts or jacks. Toe boards should be installed on all open sides of a scaffold or work platform to prevent objects from falling to the floor below and possibly striking a person.

Guardrails should be installed as close to the edge as possible — no further away than one foot (30 cm) — and must be capable of resisting any load likely to be applied. This may require extra reinforcement in special situations, such as where forklifts or buggies are used.

For maximum resistance to sideways force, the top rail of wooden guardrails should be laid flat, with the larger dimension horizontal. To further strengthen guardrails, double the top rail and reduce the spacing of posts to between three feet, four inches and six feet, eight inches (one to two metres).

The top rail should be smooth-surfaced throughout the length of the railing and be capable of withstanding 200 pounds (91 kilograms) of force applied in any direction at any point.

The mid (intermediate) rail should be installed approximately halfway between the top rail and the walking surface.

COMMUNICATE AND CONTROL

Although guardrails are the best method of protecting workers around openings in floors and roofs, they are not always practical. In narrow areas, for example, securely fastened covers made of planks, plywood, or steel plate might be the only alternative.

Covers must be strong enough to support any weight to be reasonably expected. They must also be clearly marked to prevent accidental removal.

The open edges of stairs also require guardrail protection. Typical specifications call for a double two-by-four top rail 42 inches (one metre) above stair level, a mid-rail, and support posts no further than five feet (1.5 metres) apart.

All guardrails, especially those made of wood, should be inspected regularly. If you discover a weakened or a missing rail or section, correct the situation if you can. Otherwise, report it so the hazard can be eliminated.

If you bump a rail with material or equipment, check to make sure it hasn't been weakened. Again, if you discover a broken rail, upright post or toe board, repair or report it immediately.

THE QUIZ

1. List two work areas where guardrails must be installed, if possible:
   a) _____
   b) _____

2. Guardrails are used along the open edges of floors and roofs, but where else can they be used? List two work areas:
   a) _____
   b) _____

3. Falls are the leading cause of death in the construction industry:
   TRUE_____ FALSE_____

4. Are guardrails used only along the open edges of floors and roofs?
   YES_____ NO_____

5. Which of these materials are commonly used to make guardrails?
   a) Wood
   b) Steel
   c) Plastic
   d) Wire rope
   e) All of the above

6. The top rail must be between three feet and three feet, seven inches from the walking surface:
   TRUE_____ FALSE_____

7. Which of these guardrail components help prevent objects from falling to a lower level and possibly injuring someone?
   a) Top rail
   b) Screen
   c) Toe board
   d) Lanyard
   e) All of the above

8. Guardrails should be installed no further away than 3.3 feet (one metre) from an open edge:
   TRUE_____ FALSE_____

9. Which of these steps should be taken if you discover a damaged guardrail?
   a) Stop working
   b) Repair the guardrail or report it immediately
   c) Put on fall arrest equipment and resume work
   d) None of the above

10. Does your workplace require regular inspection of all guardrail systems?
   YES_____ NO_____

ANSWERS:

1. Floor openings, roof edges; **2.** Elevator shaft, scaffold; **3.** TRUE; **4.** NO; **5.** e; **6.** TRUE; **7.** c; **8.** FALSE; **9.** b; **10.** Site-specific answer