



Leading-edge safety in high-rise formwork

In the high-rise formwork industry, nearly 23 per cent of all lost-time injuries are caused by falls. Most of these injuries result in sprains and tears, fractures, and concussions.

Formworkers create many of the walls and floors that everyone else on the project will work between. A leading edge is the unprotected side and edge of a floor, a roof, or formwork. It changes location as workers place new formwork in front or to the side of the piece they previously installed. By definition, high-rise formworkers will almost always be in situations where fall protection is required. However, when the edge is constantly moving, it's more difficult to apply standard fall protection controls.

Here are a few ways to prevent falls when working toward the leading edge during formwork operations.

- Install guardrails along the edge of all completed decks, allowing enough room for installing bulkheads. Remember to install guardrails as the leading edge progresses.
- For work on the leading edge, use an active fall protection system consisting of a full-body harness with a lanyard combined with an energy absorber connected to a rope grab and a lifeline secured to an anchorage.
- If possible, arrange your fall protection system so that it is in travel restraint. If you can't reach the edge, you can't fall.
- Use appropriate anchor points. You can wrap connectors or slings around concrete columns or several dowels of rebar or use embedded connection points that are specifically intended for anchorage. Check with an engineer if you're unsure about proper anchor points (e.g., how many dowels of rebar are required). Affix the anchor securely so that the connector cannot slip or fall off.

Wire or metal anchorage slings are more durable than webbing that can wear and tear over time.

- Mark the transition from completed or "safe" areas to unprotected leading-edge areas with clear signs and barriers. Always keep barriers a minimum of 2 m from the leading edge operations. A sign must indicate that personal fall protection equipment is required in the work area.

A fall protection system is required for any work done between a barrier and the leading edge.

- Instead of a lifeline and rope grab, you can use self-retracting lifelines (SRLs). SRLs work by allowing the lifeline to unspool under slight tension. Just be aware that when you use SRLs, you will probably be in fall arrest, not travel restraint.

Before using an SRL, check the manufacturer's instructions to ensure it can be used horizontally.

- To minimize fall hazards, don't extend the deck out to the end of the bay. Work across the leading edge, advancing each bay one step at a time.
- To minimize the possibility of formwork and falsework collapse, always nail the formwork in as you progress.
- If you're supplying materials to workers using fall protection, make sure you're in a safe area or protected by using travel restraint or fall arrest.
- As the leading edge is advanced, install guardrails to contain workers and eliminate the fall hazard.

Due to the severity of the hazards involved in high-rise formwork, training is an essential first step. Train workers in the use of fall protection and make them aware of any site-specific fall hazards. Demonstrate proper leading-edge installation procedures including the setup of a fall protection system, the installation of guardrails, and the erection of signage and barriers.



Employers must have a fall emergency rescue plan in place whenever workers are at risk of falling.

(O. Reg. 213/91, s.26.1 (4))