



Fall Protection and Training

Fall Protection for Elevated Work Platforms

Brought To You by 3M Personal Safety Division | Dec 01, 2023

Mobile elevating work platforms (MEWPs), also known as aerial work platforms, scissor lifts, boom lifts, etc., are useful industrial devices to position workers, tools and materials. Their widespread use and popularity are evident across many industries.

At a minimum, MEWPs consist of a work platform with controls, an extending structure and a chassis.¹ With advancements in technology and an increasing variety of equipment options, this type of equipment has become more common for those working at heights. Generally, MEWPs can offer a quicker, less costly and yes, at times, safer way to work when compared with traditional means (e.g., scaffolds and other temporary work platforms). And it is safer to work from a wide, flat, level surface, surrounded by guardrails, than using a ladder or climbing structures/equipment to gain access for work.

However, the proliferation of MEWPs has also contributed, in part, to the staggering numbers of fatalities and lost-time claims due to falls in Canada. According to the Association of Workers' Compensation Boards of Canada (AWCBC), from 2015 to 2017 there were nearly 50,000 lost-time claims due to falls, plus 63 fatalities due to falls in Canadian workplaces.² To be clear, only a modest portion of these numbers can likely be attributed to fall events that occurred while using a mobile elevating work platform. The availability of such industry data is limited.

Nevertheless, the use, or more accurately, misuse of fall protection equipment is a common cause of many of these fall-related tragedies, and falls involving mobile elevating work platforms are no different. The hazards related to fall protection and MEWPs are often underestimated and misunderstood.

Fall hazards

Most MEWPs also have built-in guardrail systems, so fall protection is taken care of, right? Wrong.

In some Canadian jurisdictions, fall protection by guardrail only is an acceptable practice in a specific set of circumstances, for example, if its use complies with all three of the following conditions: the device being used is a scissor lift, operating on a firm, substantially level surface and fall protection by guardrail only is permitted by the MEWP manufacturer.

However, baseline legal compliance is merely a starting point. MEWPs are different from scaffolds and

other work platforms; the major difference is that they are mobile. To truly help protect people from harm, personal fall protection is strongly recommended when using this equipment.

Falling over guardrails is the cause of many injuries with mobile elevating work platforms. Typically, falling over MEWP guardrails is caused by workers reaching out beyond the guardrail system because the MEWP cannot adequately reach the required work location, or the guardrail itself inhibits the work in some way. The fundamental cause is poor planning, and this leads some workers to inappropriately extend their vertical reach by standing on mid rails, or even stand and balance themselves on top rails. They may also try to extend their reach horizontally over top rails or in between top rails and mid rails.

Falling while entering or exiting a mobile elevating work platform is also a concern. In some instances, workers use MEWPs solely for access. Work may need to be performed on a roof, mezzanine or other platform with limited access, therefore requiring workers to transition from a MEWP onto another platform. Fatal falls can occur if the worker does not use a personal fall arrest system (PFAS) and maintain 100% tie-off, or if the MEWP:

- does not have a well-designed gate for ease of access/egress, or
- is not situated in close proximity to the landing surface.

Tip-over and ejection is another serious hazard. Generally speaking, a mobile elevating work platform can become unstable if not operated on a firm, flat, level surface capable of withstanding all load forces imposed by the MEWP in all operating conditions.³ Any of the following circumstances can also lead to potential instability:

- exceeding the platform capacity;
- disregarding warning alarms and signals;
- using excessive manual force;
- hoisting materials with the MEWP;
- using the MEWP as a jack;
- altering, disabling or overriding safety features/devices (e.g., tilt alarm, limit switches);
- failing to deploy stability enhancing devices, if the MEWP is so equipped (e.g., outriggers, stabilizers);
- collisions with other vehicles, objects or structures;
- inadequate maintenance; or
- high wind speeds.

Tip-overs are extremely dangerous not only to occupants of the mobile elevating work platform, but also to other people in the vicinity. Ejection of an occupant, whether connected to an approved anchorage point with a PFAS or not, can be fatal or cause severe injuries. Although it is a matter of some contention, regulators and manufacturers generally deem it is safer to remain within the MEWP guardrail system than be launched into the air. In other words, the occupants should remain as occupants at all times during operation.

Read more: Selecting the Right Fall Protection Connector for Leading Edges

Regulatory requirements

Legislative requirements regarding fall protection for mobile elevating work platforms vary from province to territory. Firstly, of those provinces and territories that actually refer to established standards for this equipment, typically CAN/CSA B354.2 (Self-Propelled Elevating Work Platforms) and CAN/CSA B354.4 (Self-Propelled Boom-Supported Elevating Work Platforms) from the Canadian Standards Association (CSA) are called out. Similar standards from the American National Standards Institute (ANSI) are referred to, although minimally, in some Canadian legislation as well. Relatively recently, both CSA and ANSI updated relevant standards, i.e., CAN/CSA-B354.7:17, to help align with global markets but specific adoption into Canadian workplace legislation has not yet occurred.

As it pertains specifically to fall protection, the CSA standards mentioned above mandate the use of a personal fall arrest system when using boom-supported equipment, and leave it optional when using non-boom-supported equipment, e.g., scissor lifts (with some provisions). Where the law is concerned, the various Canadian jurisdictions generally follow suit, whether CSA is referenced in their regulations or not. More stringent requirements exist, for example in Ontario, specifically within the Construction Regulation 213/91, where all occupants are required to be attached to an adequate anchorage point by a method of personal fall protection. This regulation also includes a stipulation to protect against ejection. In stark contrast, currently in Quebec there is a general exemption from using personal fall protection if the worker is protected by some other device that provides equivalent safety. However, the relevant legislation in Quebec is changing.

Best practices

As already noted, legal compliance is only a starting point. Both manufacturers and users of mobile elevating work platforms have a responsibility to ensure that this equipment is operated as safely as possible.

Major manufacturers of MEWPs follow standards put forth by authorities like CSA and ANSI in designing their equipment, for instance, ensuring appropriate safety devices are in place. In terms of direction for users, they typically make blanket statements that users are responsible to conform to applicable national, territorial/provincial and local health and safety regulations. However, manufacturers do consistently cite specific safety precautions to be observed by MEWP operators, including those related to fall protection. Where additional fall protection is required, one prominent manufacturer recommends using a fall restraint system to keep workers within the confines of the platform, and not exposing them to any hazards requiring a fall arrest.⁴

Organizations that employ this machinery can create site rules, such as making the use of a PFAS mandatory during operation. Many safety-conscious and high-performing organizations in fact do this, placing an astute and appropriate emphasis on risk reduction to keep their people from harm. Furthermore, some have rules to help protect workers against ejection as well.

Wherever you work, good planning well ahead of the task goes a long way. Assuming of course the task at hand cannot be practically executed from ground level or by other safer means, operational managers, line supervisors and safety professionals alike must basically consider if

- 1) the MEWP selected for the task can adequately reach the working area, eliminating any need for workers to extend their reach beyond what the guardrail system allows by design;
- 2) the worker is adequately protected by the guardrails as well as personal fall protection in the form of fall restraint, wherever possible, but at least fall arrest or PFAS;
- 3) the worker can safely exit and re-enter the MEWP at height should the task require it and if permitted by the manufacturer, and always maintain 100% connection with a PFAS;
- 4) any worker required to operate a MEWP is adequately trained for the specific model they will operate to prevent causes of tip-over/ejection; and
- 5) any worker required to occupy a MEWP, including an operator, is adequately trained in fall protection, to recognize all potential fall hazards.

Depending on the specific jurisdiction (country, province/territory, industry, employer location) where the work is taking place, there are several options for personal fall protection. Learn more about fall protection solutions or register for training with 3M's Fall Protection Group.

1. Source: *Standards Council of Canada, CAN/CSA-B354.7:17*

2. Source: *Association of Workers' Compensation Boards of Canada, Statistics*

3. Source: *Snorkel 400S Operator's Manual*

4. Source: *Skyjack SJ6826 RT Operating Manual*

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