

The Height of Safety

Mobile elevated work platform training in the live entertainment industry

BY JEFF BALDWIN

On the morning of Wednesday, October 27, 2010, Declan Sullivan started his day like any other. He showed up to work, attended a briefing, and then headed to the practice field to record that day's football practice for the athletic department. Declan was in his junior year at Notre Dame. What made Declan's job interesting was that it required him to be on a scissor lift at a height of 40 feet. He was part of a small media team that filmed football practices.



Declan Sullivan University of Notre Dame undergraduate student. | Courtesy Barry J. Sullivan

OPPOSITE: Group A, Type 3 (Scissor Lift). | Courtesy Jeff Baldwin

Declan's life would be cut short that day. A wind gust exceeding 50 mph toppled over his scissor lift, tragically ending his life. The Marklift MT40G scissor lift was later determined to be more susceptible to tipping due to its characteristics.

The aftermath of his untimely death resulted in an internal investigation by Notre Dame, culminating in a 145-page report. Additionally, a four-month-long investigation by the Indiana Occupational Safety and Health Administration (IOSHA) resulted in six "serious violation" citations. These included 1) Failure to properly train students, 2) Failure to keep a copy of the operator's manual on the Marklift, 3) Warning Labels faded/lost/weathered, 4) Failure to ensure annual inspection, 5) Failure to ensure proper service according to the OEM, and 6) Instructing untrained employees to elevate the lift while knowing there was a wind advisory in effect. These

violations resulted in a fine of more than \$75,000. While the monetary fines can be paid, the loss of life will forever impact Declan's family and friends (Notre Dame 2011).

According to the International Powered Access Federation (IPAF) Global Safety Report 2024, which focuses on fatal and major incidents only, 1,022 reported MEWP (Mobile Elevated Work Platform) safety incidents occurred worldwide in 2023, a 26.5% increase from 2022. These incidents involved 831 people and resulted in 128 fatalities, an increase of 12% from 2022. While this data is global, the United States is one of the major contributors to these statistics, making up 44.4% of reports, followed by the United Kingdom at 12% and Canada at 4%. Of these reports, construction, arboriculture, and facilities management service comprise the top three reports by industry sector, with construction



accounting for 45% of that reporting. In 2023, the top three lost-time incidents involving MEWPs were falls from the platform, overturns, and electrocutions (IPAF 2024).

According to both Federal OSHA and IPAF, the most effective way to prevent MEWP incidents is through comprehensive operator training and pre-work inspections.

MEWPs, such as boom lifts and scissor lifts, are an equipment staple in the live entertainment industry, regularly used for tasks such as rigging, lighting, set construction, and equipment installation and maintenance. What makes this industry unusual is that events and performances can take place in a wide variety of venues and contexts, including traditional commercial and academic theatres, arenas, and coliseums, but also theme parks, cruise ships, summer-stock venues, and temporary festival locations.

While there are no OSHA regulations specific to the live entertainment industry and our use of MEWPs, practitioners still bear significant responsibility

for observing regulatory compliance as well as other safety standards, enforcing safe equipment operation practices, and training involved personnel.

Modernizing Standards

In June of 2020, the American National Standards Institute (ANSI) along with the Scaffold and Access Industry Association (SAIA) updated the A92 suite of standards for MEWPs. The A92 standards detail the design, safe use, operator training, and maintenance of MEWPs, which were formerly known as Aerial Work Platforms (AWPs). This was the first major update to these standards since 2006.

The new update of the A92 suite of standards put a bigger emphasis on

- Consistency with global standards
- Safety through technology (incorporation of load sensing and tilt alarms)
- Clear responsibilities for all parties involved in MEWP operations
- Comprehensive training

Some of these changes are illustrated below.

New Classifications (ANSI A92.20) and Training Requirements (ANSI A92.24)

Scissor lift, Cherry picker, Boom lift, and Basket lift are now terms of the past. With the adoption of the new A92 standards came new classifications. MEWPs are now classified by Type and Group, so the next time you head to a local dealer for either a purchase or rental, you might be looking for a Type 1, Group A or Type 3, Group B, lift.

The Type refers to how the MEWP moves. For example, a Type 1 can only be moved when in the stowed (lowered) position, whereas a Type 3 can be moved while elevated and the operator can control movement from the platform.

The Group refers to where the platform is in relation to the base. To be considered a Group A MEWP, the platform always stays inside the tipping lines. An example of this would be a scissor lift. In Group B, the platform can extend outside the tipping lines, which includes articulating or telescoping booms. As you can imagine, this can get a little complicated with the variety of classifications—such

Structure and Organization

Aspect	2006 Standards	2020 Standards
Format	Multiple equipment-specific standards (A92.5, A92.6, A92.3)	Unified structure: A92.20 (Design), A92.22 (Safe Use), A92.24 (Training)
Global alignment	Primarily U.S.-focused	Harmonized with ISO 16368 (global MEWP Standard)

Design & Manufacturing (ANSI 92.20)

Aspect	2006 Standards	2020 Standards
Guardrails	Standardized but less stringent	Increased height for guardrails on some MEWPs
Load sensing	Not required	Mandatory load and tilt sensing systems
Wind rating	Less emphasized	Machines must be clearly rated for indoor/outdoor use
Platform controls	Basic requirements	Enhanced controls with more intuitive layouts and emergency stop features

Safe Use Practices (ANSI A92.22)

Aspect	2006 Standards	2020 Standards
Risk assessment	General guidance	Formal risk assessment and rescue planning required
Maintenance & Inspection	Basic requirements	More rigorous pre-use inspection and maintenance protocols
Stability testing	Manufacturer-defined	Standardized testing procedures for stability and durability

Training Requirements (ANSI A92.24)

Aspect	2006 Standards	2020 Standards
Operator training	Required but less detailed	Detailed training for operators, occupants, and supervisors
Occupant training	Not required	Now mandatory for anyone on the platform
Supervisor training	Not addressed	Now required for those overseeing MEWP operations

OSHA Penalty Structure (effective January 2025)

Violation Type	Maximum Penalty
Serious	\$16,550 per violation
Other-than-Serious	\$16,550 per violation
Failure to Abate	\$16,550 per day beyond abatement date
Willful or Repeated	\$165,514 per violation

as a Type 1, Group B, which refers to a boom lift that can be towed and has a platform that extends beyond the base. However, the machine cannot be driven when the boom is raised.

You may be thinking, “I have been using a scissor lift all my life. How do I fit into all of this?” The simple answer, if you are working in the live entertainment Industry and can check any of these boxes:

- I have and continue to operate a MEWP
- have been an occupant on a MEWP
- I supervise workers who use a MEWP

...is that training is required. It's that simple. Gone are the days of grabbing the keys and doing a quick walkthrough, if a walkthrough was even done. OSHA's General Duty Clause, section 5(a)(1), states that employers must provide a workplace free from recognized hazards and is often interpreted to include providing proper training on equipment used in that workplace. OSHA's training requirements for aerial lifts are primarily found in 29 CFR 1910.67 for General Industry and 29 CFR 1926.453 for Construction, both of which apply to mounted elevating and rotating platforms and incorporate ANSI A92.2 by reference.

Under these OSHA regulations, only trained and authorized personnel are permitted to operate aerial lifts. Operators must also follow the manufacturer's instructions and ensure equipment is used in accordance with established safety procedures. It is important to note that the newer ANSI A92 standards (A92.20, A92.22, A92.24) have not yet been formally adopted by OSHA. However, OSHA may still reference these newer standards under the General Duty Clause as they represent recognized industry best practices.

To put this into perspective, penalties for non-compliance with MEWP training requirements can be significant:

OSHA's goal is to help avoid

accidents and injuries by encouraging compliance with safety standards. However, in cases of serious injury, repeat offenses, or willful neglect, penalties can escalate quickly.

“I didn't know about the new standards” is not a valid defense if OSHA inspects your worksite and finds infractions that result in a citation or fine. Employers are required by law to know and comply with OSHA standards relevant to their operations. Ignorance of the law is not an excuse. An example is if an OSHA representative visits your theatre, venue, or commercial studio and finds MEWP operators untrained or using equipment improperly, you can still be held accountable and possibly fined, even if you didn't know about the updated ANSI A92 standards or you misunderstood OSHA's expectations.

Safe Use Practices (ANSI A92.22)

With the new A92.22 standard, emphasis was put on improving the safety of MEWP operations. It applies to all entities involved with MEWPs, including owners, users, supervisors, operators, and occupants, with all entities of these roles having specific responsibilities. Let's take a closer look at these requirements:

- OWNER is defined as the entity who owns the MEWP, which may or may not be the user.

o Responsibilities:

- Maintain the MEWP in safe working condition
- Provide manuals and maintenance records
- Ensure the MEWP is inspected and serviced regularly

- USER is defined as the company or organization that has control over the MEWP and its operation.

o Responsibilities:

- Select appropriate MEWPs for the task

- Ensure operators and supervisors are trained
- Conduct risk assessments and develop a rescue plan
- Maintain records of training and inspections

• SUPERVISOR is defined as the person who oversees MEWP operations and ensures safe use on site.

o Responsibilities:

- Be trained in the MEWP safety and hazard recognition
- Ensure operators are authorized and trained
- Monitor compliance with safe use practices

• OPERATOR is defined as the individual physically operating the MEWP

o Responsibilities:

- Complete pre-use inspections
- Operate the MEWP safely and within manufacturer guidelines
- Use fall protection as required
- Report all malfunctions or hazards

• OCCUPANT is defined as any person on the platform who is not the operator.

o Responsibilities:

- Receive basic training on fall protection and emergency descent
- Follow the operator's instructions
- Be aware of hazards and safety procedures

The new standards also include a requirement for rescue planning, which is often overlooked unless prompted by a safety audit, incident, or inspection. Ideally, everyone in the live entertainment industry would have a rescue plan in place in the event of an incident, but the reality often falls short of full compliance. Some employers, such as utilities, construction firms, and government employers, usually create thorough site-specific rescue plans. Many others have generic plans in a binder or posted on a wall that are not reviewed regularly and employees do not receive regular training, reducing their effectiveness in an emergency. Unfortunately, in too many cases, no real plan exists. When challenged, there are usually excuses like “We've never had an incident before,” “We don't work that high up,” “Our



Group B, Type 3 (telescopic boom lift). | Courtesy Jeff Baldwin



Group A, Type 1 (vertical mast lift). | Courtesy Jeff Baldwin

workers are experienced,” or “We’re just a small company.” Or even worse “That’s what 911 is for.” All these excuses ignore the core legal and ethical obligation to protect workers at height.

Just a reminder: if OSHA investigates a fall incident and there is no documented training or rescue plan in place, citations under the General Duty Clause, or failing to follow consensus standards like ANSI A92 or Z359, are likely.

Why do rescue plans matter? Because a swift response is critical, and this is not possible without an established plan and training. In the event a MEWP occupant becomes suspended at height and unable to descend, due to platform entanglement or worse, injury or unconsciousness, minutes count. Relying solely on 911 (emergency services) can result in critical delays of 10-30-plus minutes. This can lead to serious injury or death, especially in fall arrest situations. When this is the case, orthostatic intolerance or “suspension trauma” is a real risk. Suspension trauma is the pooling of blood in the legs and can begin within 3 to 6 minutes of being motionless in a

full-body harness. This can lead to fainting, organ damage, or death. The consensus supported by ANSI/ASSE Z359 and ANSI/SAIA A92.22 is that a fallen worker should be rescued in less than 6 minutes, especially if the worker is suspended in a harness.

There are several self-rescue devices available on the market. These devices must be used with great care and proper training.

Technical rescues should be considered a last resort. While firefighters and emergency personnel are trained in rescue scenarios, their response time may be delayed, and their equipment may not be suitable for MEWP-specific rescues. They also may not meet OSHA's requirement for a prompt rescue following a fall arrest. That's not to say calling 911 shouldn't be part of your rescue plan—it absolutely should—but it should never be the only plan in place.

Best Practices Every Day

What can you do? Stay informed. Regularly review OSHA regulations and

relevant ANSI standards. Ensure staff are trained and retrained by a qualified MEWP trainer. It's important to keep documentation of the MEWP training on hand and readily available. Adopt ANSI best practices, even if not explicitly required by OSHA; doing so helps protect both workers and your organization. Also, explore resources from the Entertainment Services and Technology Association (ESTA), particularly its Technical Standards Program, which includes many ANSI standards tailored to our industry.



Jeff Baldwin is assistant professor and head of theatre technology, Indiana University (IU) Department of Theatre, Drama & Contemporary Dance. A U.S. Marine Corps veteran, he earned the Armed Forces Expeditionary Medal for service in Yemen. He holds an MFA in Theatre Technology from IU and brings more than 15 years of experience in project management

and technical direction to his role. Baldwin also advises on military portrayals in theatre. He currently serves on the USITT Board of Directors and is Chair of the Research and Activities Committee. His research centers on integrating automation and safety systems into stage technologies. He is a certified MEWP train-the-trainer. Reach him at jeffbaldw@iu.edu.

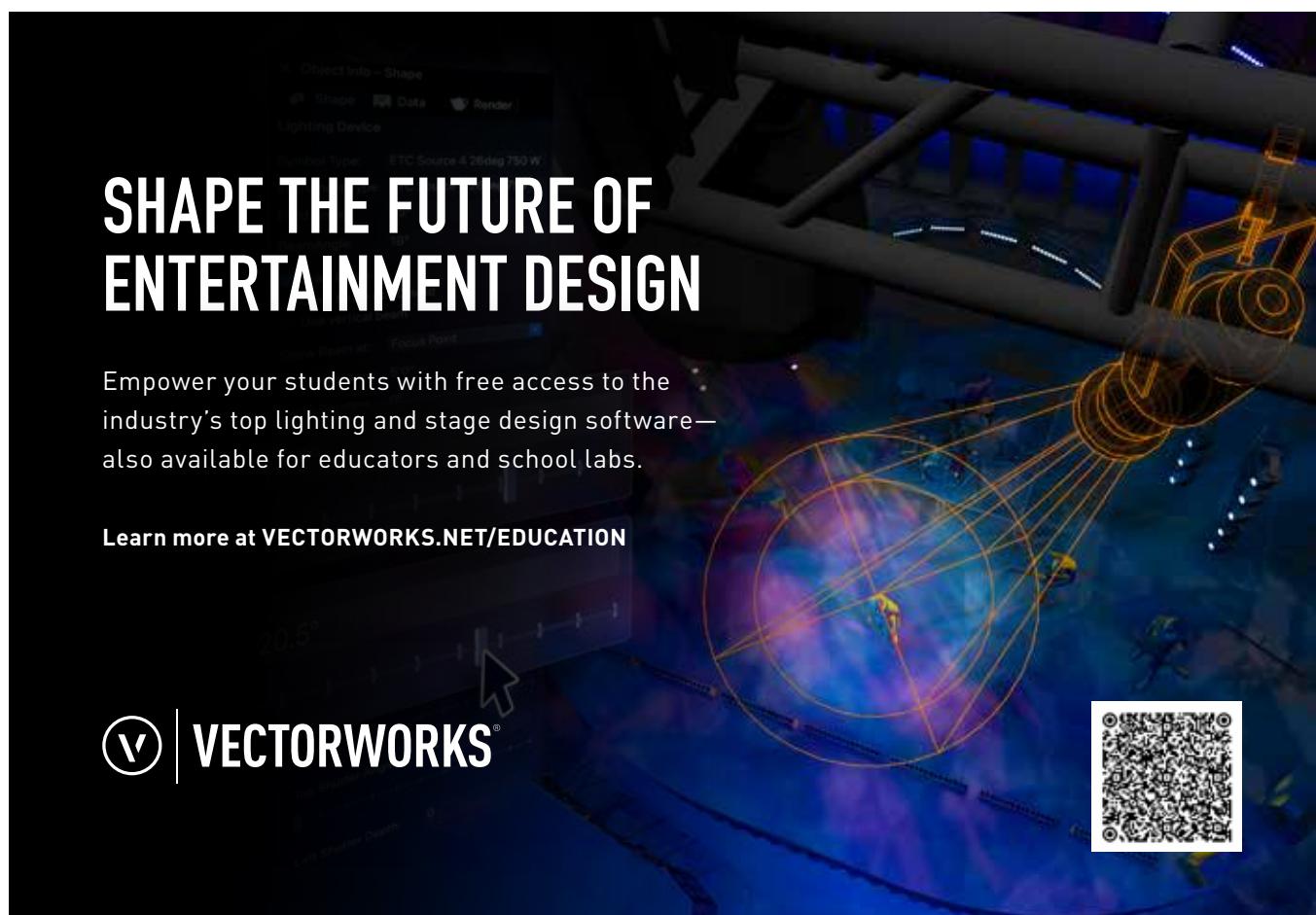
Resources

29 CFR 1910.67: <https://www.osha.gov/laws-regulations/standardnumber/1910/1910.67>

29 CFR 1926.453: <https://www.osha.gov/laws-regulations/standardnumber/1926/1926.453>

ANSI A92 – Standards <https://webstore.ansi.org/search/find?st=MEWP&v=5&cp=1&f1=Standard&f1=Package&f2=2&f3=26>

Technical Standards Program – ESTA: <https://tsp.estate.org/tsp/index.html>



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