



Working at Heights: Fall Prevention

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Working at heights with aerial stunts or rigging equipment and scenery are routine activities in the entertainment industry. Accident statistics show that falls related to these activities are a significant cause of often serious or fatal injuries to entertainment production crews.

Risk Assessment

Work from height requires proper planning and organization, which starts with a good risk assessment. A good assessment will identify who is exposed to potential accidents and what precautions should be taken to mitigate these risks.

Some of the risks and hazards of working at heights include:

- A person falling.
- Falling objects striking someone below.
- Collapsing structures injuring people on the structure or on the ground below the structure.

Once a risk assessment is performed and risk management plans are put in place, it is critical that crews are competent and well trained on plan details. In some cases, specialty expertise will be required. For example, scaffolding and other structures will require engineering expertise in both the design and construction of the structures.

Accident Prevention

There are numerous ways to prevent people and items from falling from heights in a production. When considering these options, it is wise to note that collective safeguards relying on physical barriers, such as guardrails and netting, are preferable to warning systems or individual protections such as body harnesses.

Some other approaches to consider include:

- The most effective control is to altogether limit loose objects in a production that could fall from a height.
- Toe boards, mesh guards and other barriers can be used to prevent items from being knocked off the edge of a structure.
- Objects, such as scaffolding boards, can be secured to a structure to prevent them from falling.

- Damage from falling objects can be avoided by excluding or limiting access where work is being done overhead. Personal protective equipment such as hard hats can also be provided if workers must work above occupied work areas.

Collapsing Structures

Temporary structures, such as scaffolding, and more permanent structures, such as stages used in long running productions, can be subject to collapse. Outdoor structures are particularly susceptible because of varying weather conditions. Preventing this sort of structural collapse requires proper design, installation and inspection maintenance.

In all cases, adequacy of the design, installation and on-going structural integrity rely upon the skills, knowledge and experience of the staff. Qualifications of staff should be based upon the location, equipment type and configuration of the structure. A qualified individual/team will have the knowledge and experience necessary to identify, analyze and respond to the location-specific risks related to the structure.

Because of the high risk associated with collapsing structures, it is important to independently verify proper design, installation and on-going structural integrity. Designs should meet the requirements of recognized standards such as the American National Standards Institute's (ANSI) standard on Temporary Structures Used for Technical Production of Outdoor Entertainment Events (E1.21-2013).

Expertise alone, however, is insufficient. Production pressure can contribute to failures. Safety validation should be made by qualified individuals that operate independently and are insulated from production schedule pressures.



Lighting Grids

Crews working in grid should be protected from fall by collective safeguards. If individual safeguards are necessary, they should be properly fitted and used.

All suspended equipment should have an independent safety bond in addition to its primary means of suspension. Crew members working in grid should not be allowed to carry any loose items. Tools and equipment should have tie lines.

Finally, barriers should be used below work areas to create an exclusion zone.

Aerial Lifts

Aerial lifts are vehicle-mounted, boom-supported aerial platforms, such as cherry pickers, bucket trucks or scissor lifts, used to access aboveground sites.

The major causes of fatalities are falls, electrocutions, collapses and tip-overs. Production management must take measures to ensure the safe use of aerial lifts by production crews.

Safety Practices

- Train and monitor crews who operate aerial lifts on the safe use of the equipment.
- Maintain and operate lifts according to the manufacturer's instructions.
- Never override safety devices.
- Never move the equipment with workers in an elevated platform unless this is permitted by the manufacturer.

- Workers must not position themselves between overhead hazards, such as joists and beams, and the rails of the basket. Movement of lift could crush worker(s).
- Maintain a minimum clearance of at least 10 feet, or 3 meters, away from the nearest energized overhead lines.
- Always treat power lines, wires and other conductors as energized, even if they are down or appear to be insulated.
- Use a body harness or restraining belt with a lanyard attached to the boom or basket to prevent the worker(s) from being ejected or pulled from the basket.
- Set the brakes and use wheel chocks when on an incline.
- Use outriggers, if provided.
- Do not exceed the load limits of the equipment. Allow for the combined weight of the worker, tools and materials.

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