WorkSafe Insights

Provided by ToughComp

Dropped tools, materials, debris and equipment can create serious struck-by hazards on construction sites. An object does not have to be large or fall from a great height to cause a serious injury. Its weight, shape, speed and the location where it strikes a worker can all affect the severity of an injury. The Bureau of Labor Statistics reports that struck-by incidents from falling objects were responsible for 282 worker deaths in 2024 and approximately 14,000 nonfatal injuries.

Potential consequences of being struck by an object include head, face and eye injuries, cuts, fractures, bruises and other impact injuries, and death. A falling object can also damage equipment, vehicles, structures and finished work, while an incident involving a worker or member of the public can have much more serious consequences.

Dropped objects are one part of the broader struck-by hazard. Common causes of dropped object incidents include:

- Unsecured tool or improperly stored materials
- Objects placed too close to an edge
- Inadequate housekeeping
- Damaged or missing toeboards or barriers
- Individuals entering areas where overhead work is taking place
- Wind, vibration, equipment movement and other changing jobsite conditions that dislodge objects

Preventing these incidents requires employers to identify dropped-object hazards during job planning and establish controls before work begins. The following practices can help construction companies reduce the likelihood of dropped objects and protect workers from falling-object hazards.

Complete as Much Work as Possible on the Ground

One of the most effective ways to reduce the risk of dropped objects is to eliminate the need to work at elevation whenever practical. Employers should look for opportunities to assemble, prepare, install or otherwise complete portions of the work at ground level before moving tools, materials or equipment to an elevated location.

Completing more work on the ground can reduce the number of tools and materials workers need to handle at elevation and the time employees spend working where objects could fall. During project planning, consider whether components can be assembled on the ground, whether prefabricated sections can be used, or whether work can be repositioned to a lower level without creating other hazards.

Employers should also consider enforcing the “If you don’t need it, don’t take it” rule when managing tools and materials. Workers should take only the tools, equipment and materials necessary for the task at hand to an elevated work area. Extra tools and materials create additional opportunities for something to be misplaced, knocked over or dropped.

Practice Proper Material Storage and Good Housekeeping

Store materials so they cannot slide, roll, tip or collapse. Materials stored in tiers should be stacked, racked, blocked, interlocked, or otherwise secured against falling or collapsing. Materials should also be positioned away from unprotected edges and openings when appropriate.

Consider the characteristics of each material when determining how it should be stored. Long materials may roll or shift, sheet materials may be affected by wind, and small items can easily be knocked from elevated surfaces. Materials should not be stored in locations where normal foot traffic, equipment movement or vibration could dislodge them.

Good housekeeping is equally important. Ensure that workers remove scrap, debris, loose fasteners, packaging and other materials from elevated work areas before they pose a falling-object hazard. Establish routine cleanup responsibilities so workers know who is responsible for removing debris and when cleanup must occur.

Use Toeboards

Install toeboards where required along exposed edges of elevated work areas to help prevent tools, materials and debris from falling to lower levels. Toeboards should be properly installed, maintained and inspected throughout the project. They should not be treated as a storage area or as a substitute for securing materials that could become dislodged.

OSHA's construction standard generally requires toeboards to be at least 3.5 inches high and capable of resisting a 50-pound force. When materials are piled higher than the toeboard, additional paneling or screening must be provided to protect workers below.

The gap between the bottom of the toeboard and the working surface must not exceed 0.25 inches. Toeboards must be solid or have openings no larger than 1 inch in the greatest dimension. Consider whether small objects could pass through openings around the toeboard. Depending on the work activity, controls may be needed. Supervisors should check toeboards during routine inspections and after activities that could damage or displace them.

Install Safety Netting and Guardrails

Use guardrail systems, safety nets, screens, debris nets, catch platforms or other appropriate protective systems when workers could be exposed to falling objects. The appropriate control will depend on the work activity, site configuration, height involved and materials and tools being used on the jobsite.

Barriers should be properly installed and maintained so they do not have gaps or openings that allow tools or materials to pass through. Safety nets should be installed, inspected and maintained according to OSHA requirements and the manufacturer's instructions.

These controls should be considered during project planning rather than after elevated work begins. Employers should also evaluate whether the selected system will control the types and sizes of objects that could fall. A barrier designed to stop large materials may not prevent small tools, fasteners or debris from reaching workers below.

Use Tool and Anchor Attachments and Tethers

Tools used at elevation should be secured with appropriate tool tethers, anchors or tool attachments when a droppedobject hazard exists. This is particularly important when workers are using tools from ladders, scaffolds, lifts, elevated platforms, roofs or other locations where a dropped tool could strike someone below.

Workers should use attachments, anchors and tethers that meet ANSI-ISEA 121-2023 Standard for Dropped Objects Prevention Solutions. The standard establishes requirements for equipment and systems used to prevent dropped objects, including tethering solutions and other dropped-object prevention equipment. Workers should not use improvised or makeshift tethering or anchoring solutions, such as securing tools with duct tape and rope.

Select equipment that is appropriate for the specific tool and working conditions. Follow the manufacturer's instructions regarding attachment points, weight limits and approved uses. Inspect lanyards, attachment points and other components before use and remove damaged equipment from service.

Tool tethering should be part of a broader dropped-object prevention program. It should supplement, rather than replace, other controls. Employers should also establish clear expectations about which tools and equipment must be tethered and when tethering is required.

Employ Tool and Material Bags or Buckets

Provide workers with suitable tool bags, hoists and top-closing buckets, and pouches or containers for transporting and storing tools, fasteners and small materials at elevation. Containers should be designed for the intended use, inspected regularly and used within their rated capacity.

Keeping tools and small materials inside a suitable container helps prevent them from being left loose on elevated surfaces where they could be kicked, knocked over or blown away. Workers should avoid carrying loose items in their hands when climbing ladders or moving between work positions, as doing so creates a risk of dropping the items.

When selecting tool bags, buckets and other containers used at height, employers should consider products specifically designed for dropped-object prevention and look for equipment that meets applicable requirements of ANSI/ISEA 121-2023. Containers should also be secured when necessary to prevent them from tipping or falling.

Employers should establish procedures for moving larger materials and equipment so that workers do not improvise by placing heavy or awkward items in containers not designed to hold them.

Utilize Debris Chutes

Use enclosed debris chutes when removing construction waste from elevated locations. Chutes should be properly constructed, secured and maintained throughout their use. Employers should inspect them for damage and ensure that sections remain properly connected. The discharge area should also be controlled so workers are not exposed to falling debris or material as it exits the chute.

Where debris is dropped through floor openings without a chute, OSHA requires the lower area to be appropriately barricaded and warning signs to be posted. Employers should also establish procedures for removing accumulated debris from collection areas before the buildup creates another hazard.

Establish Exclusion Zones

When overhead work creates a falling-object hazard, establish an exclusion zone below and around the work area. Use barricades, signs, warning lines or other appropriate means to prevent unauthorized personnel from entering the hazard area.

The exclusion zone should account for the potential path of a falling or deflected object, rather than simply covering the area directly beneath the work. Employers should consider the height of the work, the type and size of materials being handled, nearby structures, and the possibility that an object could bounce or travel sideways after impact.

Coordinate exclusion zones with other contractors and crews working on the site. A barricade is ineffective if another crew is allowed to remove it or workers routinely pass through the area without understanding the hazard. Supervisors should monitor the zone throughout the work activity and adjust it as conditions change.

Conduct Regular Worksite Inspections

Supervisors and safety professionals should routinely inspect elevated work areas, scaffolds, platforms, roofs and other locations where objects could fall. Look for loose tools, unsecured materials, damaged toeboards, missing screens, inadequate barricades and accumulated debris.

Inspections should also consider activities taking place above and below each other. A work area that was safe in the morning may become hazardous later in the day as materials are moved, equipment is repositioned, weather conditions change, or another crew begins working underneath.

As construction progresses, new elevations, crews, equipment and work activities can create new dropped-object hazards. Inspections should therefore be repeated throughout the project rather than treated as a one-time exercise. Correct deficiencies promptly and document recurring problems so underlying causes can be addressed.

Train Employees

Train employees to recognize dropped-object hazards and understand the controls used on their jobsites. Training should be specific to the work employees perform and should address both elevated work and activities occurring below elevated work areas.

Training should cover:

- How to identify objects that could fall or become dislodged
- Elimination of performing work at heights, like prefabrication, that can be conducted at the ground level
- Prohibition of throwing tools or materials from a height
- The “If you don’t need it, don’t take it” approach to managing tools and materials at elevation
- Proper use of tool lanyards, anchors, tethering systems, bags and buckets
- Proper material storage and housekeeping
- Requirements for exclusion zones and barricades
- Procedures for working above and below other crews
- Proper use of hard hats and other required personal protective equipment (PPE)
- How to report damaged protective equipment and unsafe conditions
- Procedures for stopping work when an uncontrolled dropped-object hazard is identified

Training should not be limited to new employees. Refresher training and toolbox talks can be used when new hazards are introduced, work conditions change or inspections identify recurring problems. Supervisors should also reinforce expectations through daily job briefings and observations.

Ensure Proper PPE Is Used

PPE is an important final layer of protection when workers may be exposed to falling or flying objects. Ensure workers wear appropriate head protection, eye and face protection, protective footwear and other PPE based on the hazards identified for the job.

Hard hats should be worn anytime a worker may be exposed to falling objects. Eye and face protection can provide additional protection from smaller debris and materials that may fall, bounce or become airborne.

PPE should be properly selected, maintained and replaced when damaged. Employees should understand the limitations of PPE and recognize that wearing a hard hat does not make it acceptable to work beneath an uncontrolled overhead hazard. PPE should complement, not replace, engineering and administrative controls designed to prevent objects from falling in the first place.

Make Dropped-object Prevention Part of Job Planning

Preventing struck-by injuries from dropped tools and materials requires more than reminding workers to wear hard hats. Employers should identify potential dropped-object hazards during planning and job hazard analyses, determine where workers could be exposed and establish controls before work begins.

A combination of completing work at ground level when practical, limiting the tools and materials taken to elevated work areas, secure material storage, toeboards and other barriers, tool tethering, debris-control systems, exclusion zones, good housekeeping, employee training, regular inspections and appropriate PPE can help prevent objects from falling and protect workers when a falling-object hazard remains.



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