Brieser CONSTRUCTION

Section 47
Safety Health and Environmental Manual

2025

Falling Object Prevention

Dropped Object Prevention

PURPOSE

The purpose of this Dropped Object Prevention Sample Plan is to establish corporate-wide guidelines for eliminating dropped objects when working at height. This prevention plan is intended to significantly reduce both hazards and serious injury and risks to employees that dropped objects can pose. This plan should help mitigate dropped objects by ensuring that workers are properly trained to secure tools at height and understand correct procedures.

OBJECTIVE

This Dropped Object Prevention Sample Plan applies to:

- All locations where personnel are employed to perform work at height or where they may be exposed to a dropped object by working below other personnel, tools, equipment, and platforms.
- The requirements of this plan must be observed by all personnel involved in working at height or below at height activities.
- This Dropped Object Prevention Sample Plan must be reviewed in any job safety analysis or pre-task planning for activities that require working at height with tools, and in those activities that require working below such activities.
- This plan establishes minimum expectations to mitigate the risk of damage to property or personnel done by dropped or falling objects. It is the expectation of Brieser Construction that any tools and materials that could be considered drop hazards are secured with secondary drop systems.

DEFINITIONS

Anchorage – A secure point of attachment for tethers, tools and transport buckets with closure systems which is independent of an anchorage used for fall protection for personnel.

Attachment Point – A device designed and utilized to create a connection point on a tool to which the user can connect a tether or lanyard.

Barricades – For this program, barricades are a protection tool to notify personnel of a "Drops Zone" hazard. Drops zones must be taped off with "Drop Zone" tape and/or constructed and tagged under the elevated work area in a way to ensure personnel will NOT ENTER a danger zone of potential falling objects. The barricaded area under the work zone shall have four sides and tags must be attached to all sides of entry. The tag must identify the originator, hazard, and date of erection. Unauthorized personnel shall keep away from these danger zones. Knowledge and ability necessary to fulfill the responsibilities set forth in this policy.

Drop Hazard – Any tool, material or object that has an opportunity to fall from elevation to a lower level causing potential for damage to property, injury, or death.

DEFINITIONS continued

Dropped Object Zone (DOZ) – An area with potential to be impacted by drop hazards currently present in a work-in-progress above. These Dropped Object Zones are to be secured with barricades to prevent unauthorized entry. Signage stating the hazard and who to contact for information will be posted at the DOZ as well.

Dynamic Load Maximum – Refers to the load an object can withstand without failing when dropped from a specified Drop Distance. Maximum Dynamic Load is usually much less than Maximum Static Load due to the dramatic increase in force caused by the velocity of a falling object.

Elevated Work – For the purpose of this program, any work performed at 6 ft. or more above the ground is considered elevated work or where people could work or pass underneath.

Mitigation – The elimination or reduction of the frequency, magnitude, or severity of exposure to risks by the minimization of the potential impact of a threat or warning.

Primary Drop System – Systems which serve as the tool's primary form of drop prevention and typically include the worker's hand placement or grip on the tool. Other forms of primary protection may include main support systems for the tool (such as holstering a tool on the body or the platform a tool may be resting while not in use).

Safety Net – A device installed beneath work-in-progress to catch falling objects or personnel.

Secondary Drop System – Serves as a backup in the event the primary system fails and are utilized to prevent damage from a dropped or falling object after it has fallen. Secondary systems may include passive systems such as guardrails with toe-board and mesh netting, screens, floor/hole coverings, and tool canopies that have side protection. They may also include tool restraint systems which are utilized to secure a tool or object to an employee or stationary structure to prevent it from falling (these include pouches and transport buckets with closure systems). Tool arrest systems include tool tethers, which will arrest the fall of the tool and prevent it from striking a lower level and others below.

Static Load Maximum – Refers to the maximum load an object can withstand before failing. This measurement does not take into account Drop Distance or Velocity.

Tool Belt – A device that is designed to ergonomically support and manage other dropped prevention items such as, lanyards/tethers, pouches, and holsters on the person of the worker.

Tool Bucket – A bucket designed for the purpose of carrying tools and materials. These tool buckets must be capable of being closed and secured to prevent the contents of the tool bucket from spilling. All tool buckets being utilized by employees must utilize a closure system.

Tool Canopy – A structure designed to rest over an area that is capable of withstanding the impact force of dropped objects or tools. It is recommended that tool canopies have side protection if a potential for tool deflection exists.

DEFINITIONS continued

Tool Holster – A bag or pouch designed to secure single tools or items (hammers, wrenches, levels, radios, bottles, etc.) in order to keep them easily accessible while in use with other necessary components, helps prevent them from becoming drop hazards.

Tool Lanyard/Tether – An extension made of durable materials that is designed to prevent an object from being dropped. These will typically utilize a connection point on either end of the tether for securing an object to a worker or stationary item.

Tool Pouch – A bag or pouch that is designed to secure its contents (nuts, bolts, nails, screws, small hand tools, etc.) from being spilled or dropped. Many tool pouches allow the user to remove a tool for use while preventing it from becoming a drop hazard through use of tethers, retractors, etc.

RESPONSIBILITIES

The Program Administrator: Brieser Safety Director

This person is responsible for:

- Issuing and administering this program and making sure that it satisfies all applicable federal, state, and local requirements.
- Conducting a periodic review of this program.
- Communicating the expectation that dropped objects will be eliminated within the company and ensuring that this plan and associated procedures are implemented.
- Coordinating assessments to ensure implementation and effectiveness of the procedure.
- Ensuring employees have appropriate equipment and materials to implement the procedure effectively.
- Ensuring workers have the necessary opportunity for required training.

Project Managers, Superintendents and Foremen

These people are responsible for:

- Communicating this procedure and supporting information to applicable employees.
- Knowing the hazards in their areas requires the use of this policy.
- Reviewing where this may be of minor and or significant issue on the worksite. This should be documented on the TSTI for crew to reference.
- Enforcing the use of this policy in the areas in which it is required.
- Selecting the appropriate dropped object prevention tools. Such as tool lanyards, canopies, or netting.

RESPONSIBILITIES continued

Employees

These people are responsible for:

- Notifying the supervisor of any drop hazards within their scope of work.
- Knowing this procedure and ensuring falling objects are considered and mitigation is documented on the Brieser TSTI/Fall Protection Permit.
- Conducting work only after all drop hazards have been eliminated or property mitigated.
- Stopping work if hazardous conditions prevent the job from being done safely.
- Immediately report any dropped or fallen objects.
- Contributing to the company's safe work policy.
- Seek guidance when you do not understand a particular section within this policy.

DROP PREVENTION SAFE WORK PRACTICES

Tool Attachment Points

Prior to selecting a tool lanyard, a proper attachment point must be established on the tool. If a tool has a built-in connection point placed by the manufacturer for the purpose of drop prevention, this step is not required. The load rating of the attachment point should be appropriate for the tool's weight.

Examples of CORRECT tool attachment:

Examples of INCORRECT tool attachment:

Tool Lanyards/Tethers

After establishing an adequate attachment point on a tool, a proper tool tether will then need to be selected which has an appropriate load rating for the tool to be tethered.

Examples of CORRECT tether/lanyard selections for different sized tools

Tool Holsters and Pouches

For some tools and objects, a tool holster or tool pouch may be appropriate. Tools used in these holsters should weigh less than or equal to the manufacturer stated load-rating.

Examples of holstered tools:




Tool Belts

Upon choosing a proper method for tethering, it becomes necessary to select an appropriate anchor point for the remaining end of the tethering device. For many small tools, connecting to the worker can be the best option. This is only acceptable for tools weighing less than 5 lbs. D-Rings on fall protection harnesses which have been designated by the manufacturer for use as a tool connection point are a good option. Tool Belts designed with tether points are also a good option.

Examples of tethered tools utilizing tool belts:

Safety Netting

In applications where the utilization of safety nets is necessary, nets should be designed with specific sized webbing approved by the manufacturer for use based on the specific task, location and type of tools/materials being used. Forged steel safety hooks or shackles will be used to fasten the net to its supports. Nets should be installed as closely below the work in progress as is deemed practicable, but never more than 30 feet below. Safety nets shall be hung, maintained, and tested in accordance with the manufacturer's instructions as well as the requirements set forth by the Occupational Safety and Health Administration found in CFR 1926.502. Nets designed for use to prevent falling objects shall not be used as fall protection for human beings. These nets may be deployed below fall protection nets in these cases. When falling object nets are used alone, signs will be posted informing employees that "Fall Protection is still required in work areas above placed netting." Inspections of safety netting should occur weekly and defective netting will not be deployed.

Toe Boards

When being used as a secondary drop system, toe boards will be erected along the edge of overhead work in order to protect employees below. Toe boards will be capable of withstanding a force of at least 50 lbs. in any downward or outward motion. Toe boards will be at least 3 ½ inches tall with no greater than ¼ inch clearance over the working surface.

Dropped Object Zones

Dropped Object Zones are to be clearly marked with barricades or caution/danger tape to restrict access. Only employees directly engaged in the activity conducted overhead will be admitted into a Dropped Object Zone.

Guardrail Systems

If guardrail systems are to be engaged as a secondary drop system, they will need to be inspected to ensure any openings are not large enough for tools or materials to pass through. It is recommended they be enclosed with a small mesh netting or screen to prevent materials from passing through.

HUMAN PERFORMANCE

Housekeeping

Trash and waste should be kept in appropriate bins which are to be located in convenient locations across the workplace. When at height, these are to be stored in transport buckets with closure systems, pouches, etc. with an ability to be closed and prevent spillage until the material can be properly stored in a waste bin. Employees should "clean as you go" and maintain an orderly work area, resulting in a lower chance for dropped material. Tools and other materials should also be kept in an organized, orderly fashion.

Tool and Material Storage

Where tools or materials are stacked higher than the edge of the toe boards, screening or paneling will be constructed from the working surface to the top of the guardrail or mid-rail. This will be done for a sufficient distance to ensure these objects will not have an opportunity to become drop hazards. Unless guardrails with screening or paneling have been erected, materials should not be stored within four feet of the leading edge. All stacked materials should be stable and self-supporting.

Tool and Material Handling

Positive tool transfer should be utilized by employees. When transferring a tethered tool from one employee to another, “100% tie off” should be engaged. The tool should be tethered to the passing employee. Prior to handing off, the receiving employee should connect their tether to the tool as well. After positive connection has been completed, the passing employee may disconnect their tether from the tool. By utilizing this passing method, the tool never has an opportunity to become a drop hazard.

Equipment Inspection

All drop prevention systems shall be inspected prior to use. Excessively worn or damaged tools or materials must be immediately removed from service and replaced. Absolutely no modification of equipment is to be made without first notifying the Safety Department, and Equipment Director. These changes can then be discussed, approved, or denied. If denied a solution will be found to follow. Example: different tool brand.

Discipline

Failure to implement these procedures or to use necessary drop prevention systems will be considered a failure to abide by Brieser Construction safety rules and may result in discipline action up to removal from the project.

SUPPORTING ILLUSTRATIONS

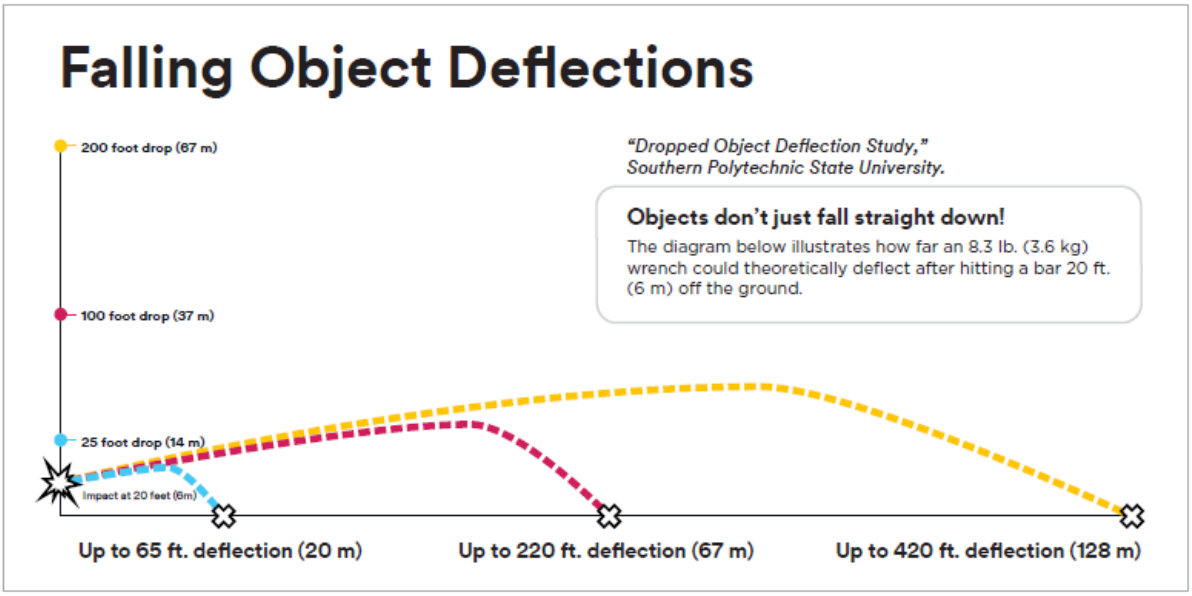
Impact Force Chart

Impact of an 8.3 lb. (3.6 kg) dropped wrench*

Drop Height		Speed		Impact Force	
Feet	Meters	MPH	KPH	Lbs.	Newtons
5	1.5	12	19	166	738
10	3	17	27	332	1477
25	7.6	27	43	830	3692
50	15.2	39	63	1660	7384
100	30.5	55	88	3320	14768
200	61	77	124	5540	29536
300	91	95	152	9960	44304
400	122	109	175	13280	59072
500	152	122	196	16600	73840

*Assumes a 3 in. (7.6 cm) deceleration distance for purposes of this calculation of impact force.

Tool Deflection Program



PHYSICAL BARRIERS

Where work activities cannot be coordinated to eliminate work above another work activity and a potential for falling objects exist, a physical barrier such as roof/bulkheads, debris netting, or other control measures may be used to protect the work crews below.

Examples of physical barriers are, but not limited to:

- Fencing
- Netting
- Toe boards
- Bulk heads
- Fire Blanket
- Plastic Sheeting

Plastic, fire blanket, or similar sheeting material of good repair shall be used to prevent items from falling through grating or scaffold decks when the potential exists. This shall be placed in a way that would cover a large enough area to be effective and will be maintained ***to*** prevent tripping hazards.

Ensure toe boards are installed on all scaffolding. This includes openings in scaffolds around pipes or other equipment where gaps can occur. Debris netting will also be required on scaffolds.

BARRICADES

Use of barricade DANGER tape is required for all overhead work. Tags will be attached to the barricade bearing the nature of work and labeled, "*OVERHEAD WORK*," name of the person who barricaded the area, date, and company. The area barricaded should include the potential fall area but should not be so large to hamper work traffic in the area. Mass barricading is not allowed.

The use of barricades "only," i.e., if tool falls no one will be in the area must be approved by the Safety Department and only in extreme situations.

Barricades "only" are not allowed if there is a potential to damage customer process equipment or instrumentation.

No unauthorized personnel can be within a barricaded "drops zone" while overhead work is going on.

BARRICADES continued

In situations where work crews and or different contractors are utilizing the same barricade, each work group shall tag barricade to ensure the barricade is **NOT REMOVED** before all the work is completed.

- Each work group **MUST COMMUNICATE** to the other groups that they are using the barricade and when their work is done, they will remove their tag. As each group completes their task, they **MUST NOTIFY** the remaining work groups that they are done, and they are removing their tag.
- When the last group has completed their work and **NO OTHER TAGS** are on the barricade, the last work crew can remove the barricade.
- If a tag remains on the barricade, and the other work crew cannot be contacted; **DO NOT REMOVE** the barricade. Brieser site supervision must be notified of this situation.

When cranes are used to hoist objects, the lift area shall be barricaded off. If the area barricaded is too large, one or more spotters will be used to warn people and direct them away from the lift area. These spotters will use horns to communicate with the people working in the area where a lift is about to begin. Items that are lifted must be rigged.

TRAINING

In many circumstances additional training related specifically to dropped and falling objects will be necessary for employees. Training will be provided to each employee who may create or be exposed to drop hazards on their worksite. This training shall include:

- The nature of drop hazards and dropped objects in the workplace.
- Correct procedures and equipment use for drop prevention.
- Purpose and application of applicable Primary and Secondary Drop Systems
- Proper storage and handling of equipment and materials at height
- Reporting requirements for incidents and near misses
- A copy of this policy is located on Brieser's Website
- Brieser will ensure that each affected employee with respect to training can demonstrate knowledge and understanding of.
  - Falling Object hazards associated with elevated work.
  - Proper use, storage, and maintenance of tethered tools
  - The contents of this policy

When there is reason to believe that an employee who has undergone training does not have adequate understanding or comprehension of these standards regarding drop prevention, it will be required that said employee is re-trained. Other circumstances which could necessitate re-training are changes in procedure, changes in drop prevention equipment, etc. Training will be documented.

Dropped Object Prevention Learning Exercise

Score: **%**

Employees Name:		**Date:**	
Company:		**Instructor:**	
Trade:		**Job Title:**	

Answer each of the following questions "True" or "False" by circling the appropriate letter.

1.	**T**	**F**	All locations where personnel are employed to perform work at height must adhere to this program. Except for those people that work at federally owned facilities.
2.	**T**	**F**	This plans main expectation is that any tools and materials that could be considered drop hazards are secured with secondary drop systems
3.	**T**	**F**	Tool lanyards / tethers should only be used on all tools over 5 pounds.
4.	**T**	**F**	Tools not in use and in a toolbelt should be tethered to the tool belt?
5.	**T**	**F**	Tools being used under 5 pounds should be tethered to the user's wrist?
6.	**T**	**F**	Only specific tool buckets with closure systems should be used to haul tools to height. 5-gallon plastic buckets are never allowed.
7.	**T**	**F**	When being used as a secondary drop system, toe boards will be capable of withstanding a force of at least 50 lbs. in any downward or outward motion. Toe boards will be at least 3 ½ inches tall with no greater than ¼ inch clearance over the working surface.
8.	**T**	**F**	When at height, trash bins are to be stored in open cast iron buckets without an ability to be closed and prevent spillage.
9.	**T**	**F**	Where tools or materials are stacked higher than the edge of the toe boards, screening or paneling will be constructed from the working surface to the top of the guardrail or mid-rail.
10.	**T**	**F**	All drop prevention systems shall be inspected yearly. Excessively worn or damaged tools can be removed from service at the end of the workday.

Dropped Object Prevention Learning Exercise

Answer Sheet

1. **FALSE**
2. **TRUE**
3. **FALSE**
4. **TRUE**
5. **TRUE**
6. **TRUE**
7. **TRUE**
8. **FALSE**
9. **TRUE**
10. **FALSE**