

**Company:** \_\_\_\_\_

Prepared by 3M Fall Protection | 800-328-6146 | 3MFallProtection@mmm.com

# Dropped Object Prevention Sample Plan



3M™ Fall Protection has developed a Dropped Object Prevention Sample Plan that companies can customize to meet the needs of their specific work environment.

Disclaimer: this is a sample plan. Consult with your competent person and local authority for specific information and details on what your plan shall include.



Fall Protection  
for Tools

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## 1. 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.

## 2. APPLICATION

This Dropped Object Prevention Sample Plan applies to:

- 2.1 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.
- 2.2 The requirements of this plan must be observed by all personnel involved in working at height or below at height activities.
- 2.3 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.
- 2.4 This plan establishes minimum expectations in order to mitigate the risk of damage to property or personnel done by dropped or falling objects. It is the expectation of \_\_\_\_\_, that any tools and materials that could be considered drop hazards are secured with secondary drop systems.

## 3. DEFINITIONS

### 3.1 Primary Drop System

Primary Drop Systems are 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).

### 3.2 Secondary Drop System

Secondary Drop Systems serve 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.

### 3.3 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.

### 3.4 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.

### 3.5 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.

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### **3.6 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. Examples may include D-Rings with 3M(TM) DBI-SALA(TM) Quick Wrap Tape and/or 3M(TM) DBI-SALA(TM) Heat Shrink, 3M(TM) DBI-SALA(TM) Quick Spins, etc.

### **3.7 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.

### **3.8 Tool Bucket**

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

### **3.9 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.

### **3.10 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.

### **3.11 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.

### **3.12 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.

### **3.13 Safety Net**

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

### **3.14 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.

### **3.15 Static Load**

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

### **3.16 Dynamic Load**

Maximum Dynamic Load 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.

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## 4. RESPONSIBILITIES

### Management/Supervision is responsible for:

- A. Communicating the expectation that dropped objects will be eliminated within \_\_\_\_\_ and ensuring that this plan and associated procedures are implemented.
- B. Coordinating assessments to ensure implementation and effectiveness of the procedure.
- C. Ensuring employees have appropriate equipment and materials to implement the procedure effectively.
- D. Ensuring workers have necessary opportunity for required training.

### Health and Safety is responsible for:

- A. Communicating this procedure and supporting information to applicable employees.
- B. Conducting assessments to evaluate the procedure's effectiveness.
- C. Conducting necessary training with applicable employees.

### All Employees are responsible for:

- A. Notifying his or her supervisor of any drop hazards within their scope of work.
- B. Conducting work only after all drop hazards have been eliminated or property mitigated.
- C. Stopping work if hazardous conditions prevent the job from being done safely.
- D. Immediately reporting any dropped or fallen objects.
- E. Including potential drop hazards in Job Hazard Analyses and Pre-job Planning

## 5. TRAINING

**5.1** 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 during their work with \_\_\_\_\_. This training shall include:

- A. The nature of drop hazards and dropped objects in the workplace
- B. Correct procedures and equipment use for drop prevention
- C. Purpose and application of applicable Primary and Secondary Drop Systems
- D. Proper storage and handling of equipment and materials at height
- E. Reporting requirements for incidents and near misses

**5.2** When there is reason to believe that an employee who has undergone training does not have adequate understanding or comprehension of \_\_\_\_\_ 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 should be documented.



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## 6. DROP PREVENTION SYSTEMS CRITERIA

### 6.1 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. Load rating of the attachment point should be appropriate for the tool's weight.

Examples of **CORRECT** tool attachment:



Examples of **INCORRECT** tool attachment:



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## 6.2 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



## 6.3 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:



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## 6.4 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:



## 6.5 Wristbands

Another acceptable option for tethering to the human body is with the use of a wristband. Wristbands must never be utilized with tools over 5 lbs.

Examples of tethered tools utilizing wristbands:





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## 6.6 Tool Buckets

For the safe transportation of tools and materials, buckets may be utilized only if they are manufactured with a closure system which allows the user to secure the contents of the bucket from potential spills.

Examples of tool buckets with closure systems:



## 7. SECONDARY DROP SYSTEMS CRITERIA

### 7.1 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.

### 7.2 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.

### 7.3 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.

### 7.4 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.



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## **8. HUMAN PERFORMANCE**

### **8.1 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.

### **8.2 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 has been erected, materials should not be stored within four feet of the leading edge. All stacked materials should be stable and self-supporting.

### **8.3 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.

### **8.4 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.

### **8.5 Discipline**

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

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9. SUPPORTING ILLUSTRATIONS

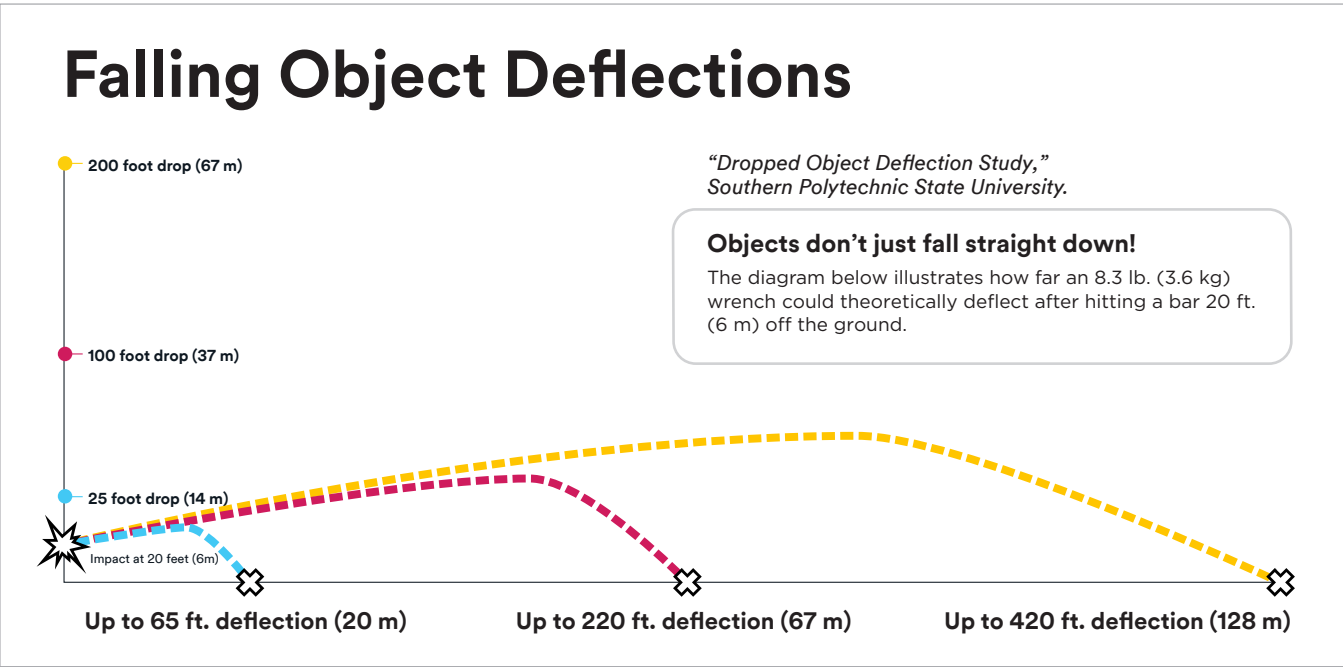
9.1 Impact Force Chart

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.

9.2 Tool Deflection Diagram



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### **10.0 Contact Information**

For questions about the content of this plan, please contact your immediate supervisor/manager.

Supervisor Name: \_\_\_\_\_

Supervisor Title & Department: \_\_\_\_\_

Supervisor Phone Number: \_\_\_\_\_

If there are product questions, please Contact 3M Tech Service.