



ROOF CONSTRUCTION SAFETY HANDBOOK

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COMPANY HSE POLICY

Damus Roofing Systems (a division of General Packaging Ltd.) is committed to executing and managing its activities to ensure the preservation of health, safety and security of all employees, contractors, clients and the community. This includes the prevention of injuries, damage to equipment and minimizing pollution to protect and preserve the environment.

To ensure our HSE requirements are met, the company shall:

- Identify hazards and provide adequate control of the health and safety risks arising from our work activities.
- Provide and enforce safe systems of work.
- Provide and maintain safe plant, tools and equipment.
- Maintain safe and healthy working conditions so far as is reasonably practicable.
- Ensure safe handling practices.
- Comply with all local legislation and international standards governing Health, Safety & Environment at the job site.
- Communicate and consult with employees on matters affecting their health and safety.
- Hold each employee accountable for their individual responsibility for Health, Safety & Environment.
- Provide appropriate training, supervision, instruction and information to ensure competency in carrying out work activities.
- Ensure that all accidents, incidents and near misses are reported and investigated and implement corrective action in a timely manner.
- Plan for and respond to emergency situations.

INTRODUCTION

This roofing safety handbook has been prepared to assist DRS subcontractors in identifying hazards while carrying out various job tasks while on our job sites and minimize risks to themselves and others by using the recommended control measures. Our goal is an accident-free job site. The physical, emotional and economic impacts of a serious injury can be devastating. Therefore, it is crucial that efforts are made to eliminate accidents.

Safety is everyone's responsibility. Each sub-contractor is responsible for correcting unsafe conditions and work practices at the job site. Unsafe acts and conditions should be reported to the Project Supervisor/HSEQ Officer so that proper corrective action can be taken.

The guidelines listed in the booklet are based on requirements listed in the Trinidad & Tobago Occupational Health & Safety Act 2004 (as amended 2006), OSHA (US) Part 1926 Construction Industry and Part 1910 General Industry Standards. The standards adopted here applies to work activities, environment and items most commonly used and encountered on our job sites.

The content of this handbook serves as part of the health and safety control measures in support of our HSE Management System.



SITE VISIT / ACTIVITY PLANNING

Metal roofers have additional fall hazards that installers of other roof materials usually do not have. Identifying hazards is the first stage in managing hazards on roof work. Once you know what the hazards are, you can choose the best way to eliminate or minimize any risk they pose.

GENERAL HAZARD ANALYSIS

- What is the pitch of the roof?
- What material is the roof made of?
- What age is the existing roof?
- Assess access to the roof
- Assess space for scaffolding
- Assess frame and structure of building
- Fire hazards

FALL HAZARD ANALYSIS

- What height will the work be done?
- How much time is required at height?
- Assess the walking and working surface
- Size and weight of roof sheets
- Personal protection equipment
- Weather conditions



MAJOR HAZARDS IN CONSTRUCTION



Behind each fatality or serious injury there are thousands of at-risk behaviors and unidentified hazards that contributed to the incident.

HAZARD IDENTIFICATION AND ASSESSMENT

- Before a job begins
- When a change to the job site, equipment, practices, procedures or environment may introduce or change a hazard
- Responding to a workplace incident, even where an injury has not occurred
- Where new information about a risk becomes available or concerns about a risk are raised by workers
- At regularly scheduled times appropriate to the job.

POTENTIAL HAZARDS IN THE ROOFING INDUSTRY

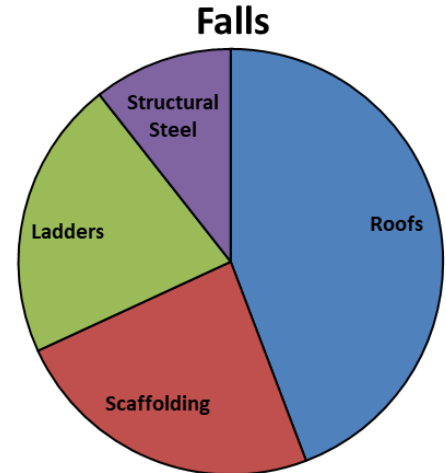
1. Falls from heights
2. Scaffold collapse
3. Electrocution
4. Caught in or between structures
5. Struck by equipment
6. Fire
7. Failure to use Personal Protective Equipment
8. Repetitive motion injuries

FALLS FROM HEIGHT

HAZARDS

Roofing fall injuries and fatalities can be caused by:

- ⇒ Unprotected roof edges, roof openings, leading edges
- ⇒ Fragile roof material
- ⇒ Improper scaffold construction
- ⇒ Lack of or failure to use fall protection
- ⇒ Anchorage failure
- ⇒ Work surface or layout condition
- ⇒ Material handling equipment and method
- ⇒ Human error



SOLUTIONS



1. Use fall protection equipment such as guardrails, personal fall arrest systems (anchorage, body harness, connector) when working above 6ft in construction or 4ft in general industry.
2. Cover roof openings and erect signage to notify others.
3. Hierarchy for work on fragile roofs.
 - Consider the use of a manlift.
 - Use crawling boards where appropriate.
 - Minimize fall distance by providing perimeter edge protections, guard rails and PFAS.
4. Inspection of scaffolding and ladders before use.

SCAFFOLDING SAFETY AWARENESS



When scaffolds are not erected or used properly, fall hazards can occur.

1. Scaffolding shall be erected and secured on a solid even foundation or footing.
2. Unstable objects such as concrete blocks must not be used to support scaffolds.
3. Must support its own weight plus 4 times the Maximum Intended Load.
4. Fall protection is required for working at heights of 10' and over on scaffolding.
5. Any scaffolding component damaged or weakened by any cause shall be removed or repaired. Scaffolding shall not be used while it is under repairs.
6. Scaffolds must be equipped with guardrails, mid-rails and toe boards.
7. Safety helmets are required when working under scaffolding or work on roofs.
8. Scaffold planks shall overhang end support no less than 6 inches and no more than 12 inches.
9. All planking shall be scaffold plank grade material or equivalent. Cracked or split planks shall be immediately replaced.
10. Do not overload scaffolds. Materials shall be brought up as needed.
11. Scaffolds must be at least 10 feet from electric power lines.
12. Scaffolding shall not be used during high winds and heavy rain.

MANUAL MATERIAL HANDLING

Hazards and potential injuries of manual material handling include falling objects, improperly stacked materials, strains and sprains, fractures and bruises, cuts and bruises.

CONTROLS

1. Know the Weight of any object to be handled. If it is too heavy or bulky, get help.
2. Establish firm footing, keep your back straight and lift with your legs.
3. Lift gradually. Do not jerk or twist.

HAND AND POWER TOOL SAFETY

Workers who use hand and power tools are exposed to the hazards of falling, flying, and abrasive objects, or to harmful dusts, fumes, mists, vapors, or gases.

CONTROLS

1. Keep all tools in good condition with regular maintenance.
2. Use the right tool for the job.
3. Examine each tool for damage before use and do not use damaged tools.
4. Do not use power tools if the guards have been removed.
5. Operate tools according to the manufacturers' instructions.
6. Use suitable and appropriate personal protective equipment.



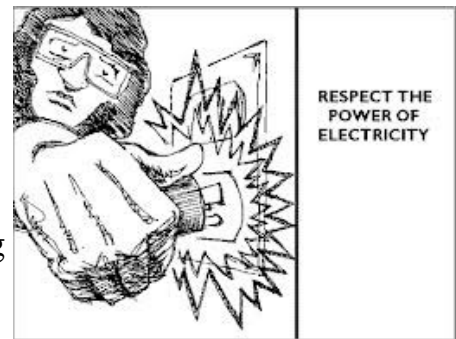
ELECTROCUTION

Electrical hazard: a serious workplace hazard that exposes workers to the following:

- ⇒ **Burns** – electrical, arc/flash, thermal contact
- ⇒ **Electrocution** – when a person is exposed to a lethal amount of electrical energy
- ⇒ **Shock** – reflex response to the passage of electric current through the body (when current enters the
- ⇒ body at one point and leaves at another)
- ⇒ **Arc Flash/Blast** – the sudden release of electrical energy through the air when a high-voltage gap exists and there is a breakdown between conductors
- ⇒ **Fire** – electrical distribution, problems with cords
- ⇒ **Explosions** – when electricity ignites an explosive mixture of material in the air

CONTROLS

- ⇒ Maintain a safe distance from overhead power lines
- ⇒ Use non-conductive ladders e.g. fibreglass.
- ⇒ Use ground fault circuit interrupters (GFCI) when using power tools.
- ⇒ Inspect power tools and extension cords to ensure no damaged insulation. Remove damaged tools from use
- ⇒ Never carry a tool by the cord
- ⇒ Never yank the cord of a tool to disconnect it
- ⇒ Keep cords away from heat, oil and sharp edges
- ⇒ Disconnect when not in use and when changing accessories such as blades or bits
- ⇒ Use gloves and appropriate footwear
- ⇒ Do not use in wet environments



LADDER SAFETY

- When climbing off a ladder at an upper level, make sure the ladder extends 3 feet above the landing.
- Never stand on the top of a ladder.
- When climbing the ladder, use three points of contact — keep 1 hand and both feet or both hands and 1 foot in contact with the ladder at all times.
- Carefully inspect the ladder for defects, checking for cracks, corrosion and that bolts and rivets are secure. Tag and remove unsafe ladders from service. Place ladders 1' back for every 4 foot in height.
- Never carry any load that could cause you to lose balance
- Make sure the ladder's feet work properly and have slip-resistant pads. Secure ladder at the bottom.
- Avoid setting the ladder near exit doors, near the path of pedestrian or vehicular traffic.

ALWAYS CHOOSE THE RIGHT LADDER FOR THE JOB



HOT WORK

Welding, grinding and cutting generates sufficient heat, sparks or flame to cause a fire.



CONTROLS

- Establish safe areas for welding and cutting.
- All potential flammable and combustible materials must be isolated, removed and/or protected from the fire source.
- Floors should be swept clean of combustible materials or protected with fire-resistant shields such as a fire blanket.
- Suitable fire extinguishing equipment shall be on site in case of a fire.
- A fire watch should be used when hot work is in progress and for a minimum of 30 minutes past completion of a hot work project.
- All employees engaged in welding and burning operation shall use a face shield and goggles, welding apron, and welding gloves.



PERSONAL PROTECTIVE EQUIPMENT

EYE AND FACE PROTECTION

Protects against:

- ◇ Flying particles
- ◇ Liquid chemicals, acids
- ◇ Chemical gases or vapors
- ◇ Light radiation
- ◇ Hot sparks
- ◇ Molten metal
- ◇ Glare

HEAD PROTECTION

Protects against:

- ◇ Objects falling from above
- ◇ Penetration injuries
- ◇ Electrical injuries from falling, flying, fixed objects or electrical conductors

FOOT PROTECTION

Potential hazards that require foot and leg protection are:

- ◇ Heavy objects that may fall or roll on employees' feet
- ◇ Sharp objects piercing the sole of ordinary shoes
- ◇ Electrical hazards
- ◇ Hot or wet surfaces
- ◇ Slippery surfaces

PERSONAL PROTECTIVE EQUIPMENT (continued)

HAND PROTECTION

Protects from:

- ◇ Skin absorption or harmful substances
- ◇ Severe cuts, abrasions, punctures or lacerations
- ◇ Burns

HEARING PROTECTION

When there are sounds exceeding:

- ◇ 8-hour total weighted average of 85 decibels or 50% dose.
- ◇ 115 dBA for short term exposures.
- ◇ 140 dBC for instantaneous exposures.

FALL PROTECTION

- ◇ Includes full body harness, lifelines and lanyards
- ◇ Must be worn at heights of 6 feet and above in the construction industry
- ◇ Must be worn at heights of 4 feet and above in general industry



HOUSEKEEPING

You must do your part to keep the worksite free of unnecessary clutter and debris that could cause an injury or accident.

1. Limit the amount of materials onsite.
2. Remove combustible materials such as wood and paper from the site promptly.
3. Remove garbage daily.
4. Keep lumber with protruding nails cleared away from work areas, passageways, and stairs.
5. Remove or bend over protruding nails prior to disposal and storage.
6. Store tools and materials neatly and out of the way
7. Keep flammable or hazardous wastes in covered, segregated waste containers.
8. Ensure that materials stored on roofs or at heights are secured. Never throw waste, materials, or tools from a building or structure.
9. Guard the area where the material could fall and post signs around the workplace to wear hard hats and watch for falling debris.

HAZARD COMMUNICATION

1. Be aware of Hazardous Material used on site.
2. The Material Safety Data Sheets (MSDS) for all hazardous substances used are maintained on site.
3. Employees shall not work with a material until they have been informed of the hazards they may be exposed to and steps they may protect themselves (Job Safety Analysis/Risk Assessment)
4. All personnel shall maintain the integrity of labels for containers on the worksite.

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*Safety Starts
With YOU!*

