

ALLIANCE MECHANICAL

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LOSS PREVENTION & SAFETY MANUAL & FIRST AID



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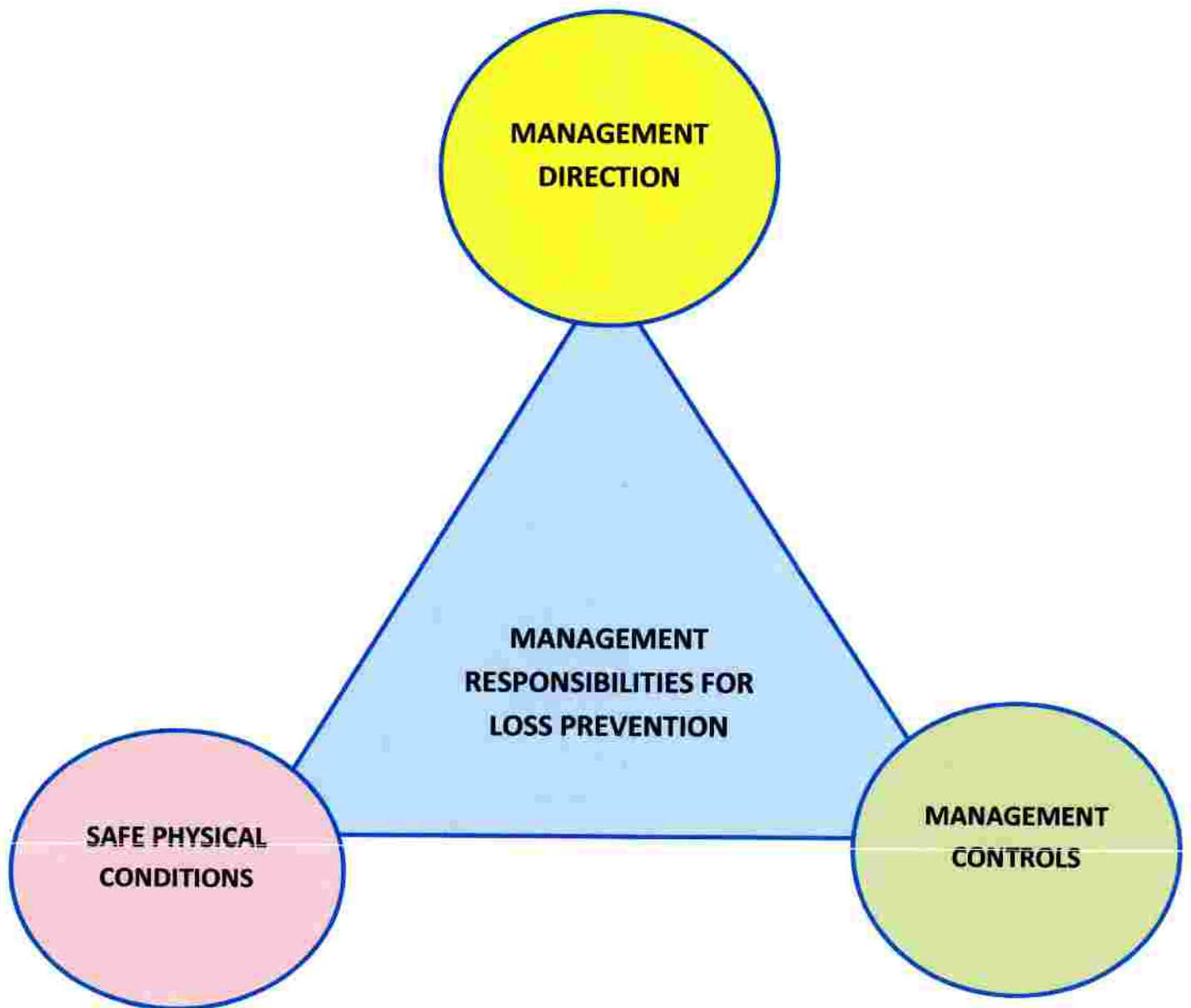
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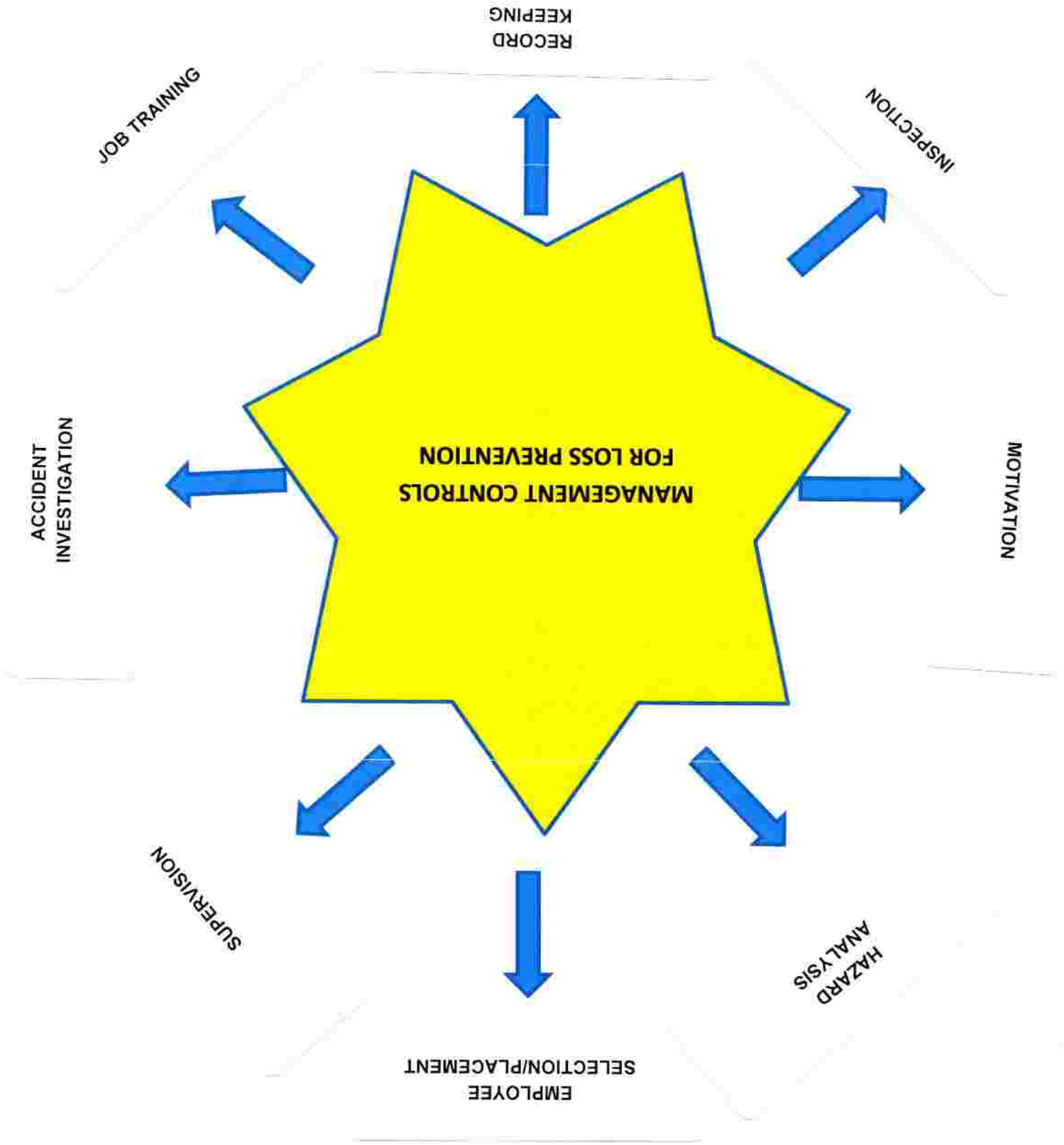
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SECTION I

RESPONSIBILITIES







MANAGEMENT RESPONSIBILITIES FOR LOSS PREVENTION

The basic responsibility for loss prevention in any organization must be assumed by the Safety Director if it is to be fulfilled in an effective manner.

Basically, Management's responsibilities can be broken down into three general areas:

- 1 To provide and maintain **SAFE PHYSICAL CONDITIONS**, (Safe place to work, safe vehicles, safe equipment, etc.). Fulfilling this responsibility must be a prerequisite to all other Loss Prevention efforts.
- 2 To provide **MANAGEMENT DIRECTION** to Loss Prevention efforts. The object is to assign responsibility throughout the chain of command.
- 3 To provide adequate **MANAGEMENT CONTROLS** for Loss Prevention. Loss Prevention and Efficiency go hand-in-hand. The same lack of management controls that results in accidents will also result in other operational problems.

The first responsibility is one imposed by Federal & State legislation as well as being a basic moral responsibility. The other two responsibilities are simply good management principles.

EMPLOYEE RESPONSIBILITY

Each employee should be made aware of his/her Loss Prevention responsibility. This is not only for the benefit of the employer, but also for the employee as well. Every employee should:

- 1 Report all unsafe acts and unsafe conditions to supervision
- 2 Report all accidents of injuries immediately
- 3 Perform all work in a safe like manner
- 4 Be familiar with and abide by all safety rules and regulations

RULES, REGULATIONS AND PROCEDURES

Safety rules and regulations should be established and published. These should be basic and made known to all employees.

- 1 All accidents must be reported immediately
- 2 Any unsafe act or condition should be brought to the attention of the supervisor
- 3 Personal protective equipment must be used or worn in all designated areas.
- 4 All machine guards must be kept in place while machines are in use
- 5 Machines should not be operated by unauthorized personnel
- 6 No running, horseplay, or fighting is permitted
- 7 Any use of liquor or drugs is prohibited, those reporting for work under the influence of drugs/liquor will be subject to immediate discharge.

VEHICLE SAFETY

AREAS FOR MANAGEMENT CONTROLS

DRIVER SELECTION—Be sure your drivers are qualified and physically fit for the job assignment

DRIVER TRAINING—Provide individual driver training and testing. Instruct new drivers and retrain unsafe drivers. Hold short drivers' meetings.

MOTIVATION—Recognize a good driving record. Provide safe equipment. Display posters, driver messages, etc.

VEHICLE INSPECTION—Arrange for scheduled vehicle inspection for wear, defects and appearance.

ACCIDENT INVESTIGATION—Investigate and make written reports of each accident to provide records for future accident control.

PREVENTIVE MAINTENANCE—Provide a preventive maintenance program on a scheduled basis to uncover problems before failure occurs.

RECORDKEEPING—Keep records to supply the information necessary to transform costly ineffective safety work into a planned Loss Prevention effort, and to meet DOT, OSHA and state regulators

For a larger commercial vehicle fleet operations, our Loss Prevention Department has available a separate guide outlining management controls for Loss Prevention in this area.

CONTRACTOR SAFETY PROGRAM

SAFETY AND HEALTH POLICY

Alliance Air Conditioning and Heating Inc, believes that **NO JOB OR TASK IS MORE IMPORTANT THAN WORKER HEALTH AND SAFETY.**

If a job represents a potential safety or health threat, every effort will be made to plan a safe way to do the job.

Every procedure must be a safe procedure. Shortcuts in safe procedures by either foremen or workers will not be tolerated.

If a worker observes any unprotected job, which may pose a potential threat to their health or safety, he or she must inform management and management must take adequate precautions

IF A JOB CANNOT BE DONE, SAFELY, IT WILL NOT BE DONE

Our futures are only built through our people, we aim to protect each one of them.

SAFETY AND HEALTH OBJECTIVES

Alliance Air Conditioning and Heating, Inc, goal to achieve worker safety and health by using the following objectives:

- A Using qualified personnel
- B Making regular job site safety inspections
- C Enforcing the use of safety equipment
- D Following safety procedures and rules
- E Providing ongoing safety training
- F Enforcing safety rules and using appropriate discipline

JOB SAFETY TRAINING

- 1 After inspecting the job site, the safety person or other designated person will identify and evaluate all potential hazards.
 - A Injury severity potential
 - B Probability of an accident
- 2 The safety person or other designated person will also appraise the skill and knowledge level of exposed workers.
- 3 Appropriate training will be given for
 - A Hazards will be pointed out
 - B Necessary precautions will be explained
 - C The higher the hazard the more detailed will be the training
- 4 Records will be maintained for all training sessions with descriptions of topics covered and names of workers trained.

SECTION II

PREVENTATIVE ACTION
POWER TOOL SAFETY
HANDLING & STORING GASES
LIQUID FUELS & COMPRESSED
GAS CYLINDERS
ELECTRICAL HAZARDS
WELDING & BURNING
CLEAN JOB SITE
SAFETY RULES
LADDER SAFETY
HOISTING/RIGGING



PLANNING FOR SAFE OPERATIONS

Pre-job planning is essential to safe, efficient and profitable projects. Hazards to workers, material, equipment, adjacent properties and the general public must be considered and the project organized with these items in mind.

Loss Prevention should be included in all job bids and should be included in the pre-job activities. Pre-job meetings should be help with participation by the owner or contracting agency, project manager, Loss Prevention coordinator, foreman, insurance representatives and prime subcontractors.

Items to be determined in pre-job planning include:

- 1 Management Responsibilities - for implementing and meeting provisions of federal, state and local codes.
- 2 Public Relations - procedures for control of exposures affecting local property owners.
- 3 Subcontractors - requirements and procedures, including requirement for compliance with Loss Prevention Program
- 4 Worker and vehicle traffic
- 5 Storage of materials
- 6 Public protection
- 7 Accident reporting and investigation
- 8 Safety equipment, warning signs, emergency procedures

Each contractor and each job is different and individual consideration is required.

ACCIDENT PREVENTION POLICY

The designated superintendent will have the responsibility to provide all employees with operation procedures, hazards and safeguards of tools and equipment for the job.

Weekly job meetings will be provided for expanded orientation to such tools.

The superintendent will make daily visual inspections to insure that all unsafe or hazardous conditions are eliminated. The superintendent will provide instructions to each employee regarding recognition and avoidance of hazards.

The superintendent will give instructions to each employee required to handle known poisons, toxic materials, caustics and other harmful substances, regarding the potential hazards, safe handling, use, personal hygiene, protective measures required and applicable first aid procedures to be used in the event of injury.

The superintendent will give instructions to each employee where known harmful plants, reptiles, animals or insects are present, regarding the potential hazards, injury avoidance and applicable first aid procedures to be used in the event of injury.

The superintendent will give instructions to each employee required to enter a confined space, regarding the hazards involved, injury precautions, the use of required personal protective equipment, emergency equipment and applicable first aid procedures to be used in the event of injury.

The superintendent will give instructions regarding procedures to be followed in case of an injury accident or other emergency situations.

PERSONAL PROTECTIVE EQUIPMENT

FOOT PROTECTION

- 1 Protective footwear shall be worn to protect from falling objects, chemical or stepping on sharp objects. Athletic or canvas-type shoes shall not be worn
- 2 Use steel toe shoes or boots whenever you are exposed to falling objects
- 3 Use shoes or boots with reinforced flexible metal soles or inner soles when you are working near puncture hazards
- 4 Use boots or shoes with no metal parts and non-conductive soles when you are working near electrical, fire, or explosion hazards
- 5 Use rubber shoes or boots with rubber or synthetic soles when working on wet surfaces
- 6 Use wooden soles when working on hot surfaces
- 7 Use easy to remove gaiters without laces or eyelets when work near welding sparks or hot metal splashes
- 8 Use rubber or neoprene boots to protect your feet from chemical or corrosive items.

HEAD PROTECTION

- 1 Head protection will be worn on job sites when there are potentials of falling objects, hair entanglement, burning or electrical hazards
- 2 Choose the right kind of hat. Class A protect you from impact and penetration. Class B hat have the same features as Class A, except they have not metal parts to conduct electricity. Class C is made of lightweight aluminum; they protect you from impact but not from electrical hazards. Class D is designed for the fire fighters and are fire resistant
- 3 Wear your hard hat throughout the day. For maximum protection, wear your hard hat when you walk onto the job site and keep it on until you leave.
- 4 Maintain your hat. Inspect it everyday to make sure the shell is not damaged. If your hat sustains a heavy blow, get a new one. Remove and wash any sweatbands from your hat, and don't store the hat in a high-heat environment
- 5 A metallic helmet shall not be used
- 6 A helmet that has been physically altered, painted, or damaged shall not be worn

BODY PROTECTION

- 1 An employee who handles rough, sharp-edged, abrasive materials, or whose work subjects the hand to lacerations, punctures, burns, or bruises, shall wear hand protection of a type suitable for the work being performed.
- 2 Cloth gloves shall not be worn when operating rotating equipment such as a drill or

- a powered threading machine.
- 3 Precautions shall be taken with regard to synthetic clothing that is worn near a source of flame, spark, a hot surface, or material that could ignite the clothing
 - 4 An employee shall not wear loose clothing, neckwear encircling the neck or exposed jewelry, such as rings and necklaces, near a machine having reciprocating or rotating shafts or spindles or when handling material that could catch on clothing or jewelry and cause injury. A ring shall not be worn on the finger unless covered by a glove or tap.
 - 5 Avoid rolled up sleeves. Keep them buttoned at the wrist or wear short sleeves
 - 6 Avoid shirttails hanging out
 - 7 Avoid open jackets. Zipper or button them up at least chest high
 - 8 A person shall wear a hat, cap or net where there is a danger of hair entanglement in moving machinery or equipment or where there is exposure to means of ignition.
 - 9 Pant legs must be short enough to prevent tripping and should have uncuffed bottom cuffs can catch on equipment or other materials, causing you to fall. Also avoid wearing rolled up pants.

EYE & FACE PROTECTION

- 1 Eye protection will be worn when there are potentials of hazards from flying objects or particles, chemicals, arcing, glare or dust.
- 2 Use eye protection with side shields to protect you from flying objects
- 3 Use face shields plus goggles or spectacles for serious hazards
- 4 use eye and face protectors that fit snugly
- 5 Remember that ordinary prescription lenses do not provide impact protection

LINEMAN'S BELT & SAFETY STRAP

- 1 An employee working on a pole, tower, or other such structure, except where use of the belt and strap created a greater hazard, other equivalent safeguards that do not create a greater hazard shall be used shall wear a lineman's belt and safety strap.
- 2 A lineman's belt and safety strap shall be inspected before use each day and shall be replaced or repaired if found to be defective

UNPROTECTED SIDES & EDGES

Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet or more above a lower level shall be protected from falling by the use of a guardrail systems, safety net system, or personal fall arrest systems.

FALL PROTECTION

Follow these safety precautions to maximize your protection against falls:

FOR EMPLOYERS

- 1 Identify potential fall hazards prior to each project and during daily walk arounds. Pay
attention to hazards associated with routine and non-routine tasks.
- 2 Eliminate the need for fall protection where possible by rescheduling the task, isolating the
task, or changing the task
- 3 Ensure that fall protection equipment is appropriate for the task, in good condition, and used
properly.
- 4 Conduct general fall prevention training on a regular basis.
- 5 Train on the specific fall hazards identified and on the required personal protective equipment
- 6 Conduct regular inspections of fall protection equipment in accordance with manufacturer's
recommendations and OSHA requirements
- 7 Emphasize fall hazards unique to the site, such as open floor holes or shafts, riser
penetrations, and skylights

FOR EMPLOYEES

- 1 Attend and participate in fall prevention training
- 2 Use fall protection equipment if required for the job. Be sure that equipment is right for the
task, fits properly, and is in good condition
- 3 Inspect fall protection equipment and devices before each use.
- 4 Make sure that floor holes, open shafts, and riser penetrations are protected by sturdy
guardrails or covers
- 5 Never use a defective ladder
- 6 Walk, don't run on stairways
- 7 Use handrails whenever they are provided
- 8 Wear sturdy footwear with slip-resistant soles
- 9 Adjust your footing and walking habits if it is raining, snowing or sleeting.
- 10 Clean up spills immediately
- 11 Keep aisles, walkways, stairs and work areas unobstruction and clean
- 12 Pay attention to what you are doing and where your feet are



INSTRUCTION # IM-0002A
ISSUE DATE 05/27/08
EXPIRATION DATE 05/27/18



User Instruction Manual
Self-Retracting Lifelines
Installation, Operation,
and Maintenance

SAFEWAZE® FALL PROTECTION COMPANY
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800-560-1094



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Approved Applications

Typical Applications of the SafeWaze® SRL are as follows:

• **Above Ground:** As a self-retracting lanyard for workers on rigs, derricks, roof slopes, towers, vessels, tank cars, bins, silos, quarries, shaft pits, cranes, tanker trucks and ladders.

• **Below Ground:** As a self-retracting lanyard for workers in confined spaces such as man-holes, tanks, and vessels (when connected to a rigid anchor point).

• **Ladder Safety:** As a self-retracting lanyard for workers climbing fixed ladders and temporary ladders in the construction and plant industries.

• **Two-dimensional protection:**
For use in conjunction with an I-beam trolley to provide protection laterally and vertically. Refer to the appropriate instructions provided with the SafeWaze® 4655 Beam Trolley.



Safety Information

WARNINGS!



Product Description:

The SafeWaze self-retracting lifelines are designed to be used as part of an engineered fall protection system which includes a full-body safety harness, compliant anchorage component or engineered horizontal lifeline system. The self-retracting lifeline is designed to absorb the energies generated by a fall reducing the forces to the user to 900 pounds or less maximum arresting force. It is necessary for the user to follow the instructions in this manual concerning free fall distances, proper installation and use of this equipment. If you have any questions regarding SafeWaze self-retracting lifelines, please contact SafeWaze customer service at 1-800-560-1094 for assistance.



Under Penalty of Law

These instructions are not to be removed except by the user of this equipment. Current instructions must always be available to any potential user. Note: Because of continuous developments in the application and use of SafeWaze® equipment and our desire to serve your best interests, these instructions are invalid 10 years after the effective date on these instructions. If these instructions are out of date, call SafeWaze® customer service and request current instructions. Dial toll free 1-800-560-1094 (U.S. and Canada). If you have difficulty or experience any problem with SafeWaze® equipment or product instructions, call the above toll-free number immediately and ask the customer service department for assistance. The equipment purchased is designed to be used as a part of a complete fall protection system. Product must be inspected and maintained regularly. It is the responsibility of the user and user's management to review these instructions periodically and to ensure compliance with every requirement to maintain the integrity of the system. You assume complete liability if you fail to follow these instructions and are injured.

Use this equipment only as instructed.

Warning:

All SafeWaze® equipment should be a part of a complete fall protection or emergency rescue system. If the buyer or user chooses to disregard this warning, he is solely responsible for the safety of the entire system and all users. Before replacing or adding components to a fall protection or emergency escape system, consult the original manufacturer. Federal OSHA further states that any unauthorized substitution or change to a system by the buyer should be fully evaluated or tested by a qualified person before the new system is put into use (see OSHA 1926.500). Management must read and understand all instructions fully; failure to do so could result in serious or fatal injury. No fall arrest system can guarantee that you will not sustain injuries if a fall occurs. The most you can expect is that injuries will be substantially reduced. Improper use of this equipment builds false security thus increasing the chance of serious injury or death. To achieve the maximum level of safety that this equipment is capable of providing, all instructions must be followed diligently. This means careful planning of your application and work method.



Self Retracting Lifelines

Installation, Operation and Maintenance Instructions

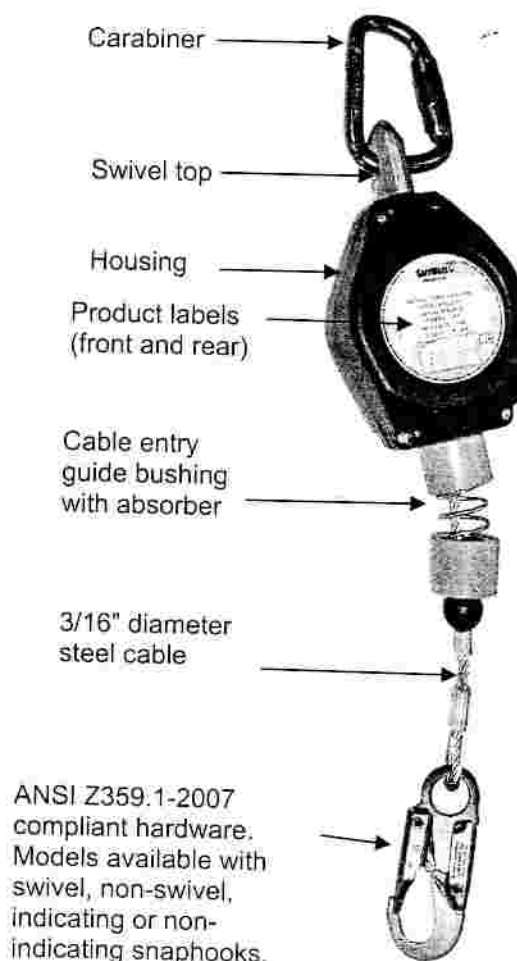
General

SafeWaze® SRL's are self-retracting lanyards designed for vertical fall arrest where fall hazards exist.

The retractable lanyards are designed to extend as a worker moves vertically down from the SRL and retracts automatically when the worker moves back up towards the SRL. The retracting feature helps minimize tripping hazards and longer falls often associated with shock absorbing lanyards.

Numerous models and cable lengths are available to meet the various needs of the construction and industrial work environments. SafeWaze incorporates snap hook hardware meeting the requirements of ANSI Z359.1-2007 into every retractable lifeline model.

SRL Parts Description



To the Equipment User:
You must read and fully understand or have the following instructions explained to you before using this equipment. Failure to do so could result in serious or fatal injury.





Safety Information

Fall Protection System Components-General

System Components

A complete fall protection system consists of the following components, Anchorage, Body Support, and Connecting Devices.

• Anchorage

An anchorage, as defined by OSHA, "shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached, or shall be designed, installed and used as follows: as part of a complete personal fall arrest system which maintains a safety factor of at least two; and under the supervision of a qualified person."

For all lifelines it is important to remember that the anchorages must be designed and installed according to the instructions provided using a safety factor of at least two. Anchorages for lifelines require anchorage strengths of 5,000 lbs. minimum or if an engineered system require at least a 2 times safety factor for the anchorage strength per OSHA. Refer to the information provided by SafeWaze® with each lifeline for anchorage strength requirements.

• Body Support

A body support is the component of a personal fall protection system that is worn on or around the body. Full body harnesses must be used for all fall arrest systems.

• Connecting Method

A connecting method is the link between the body support and anchorage. It can be a shock-absorbing lanyard, rope grab, self-retracting lanyard or retrieval system. Connecting methods will vary depending on the application. The user must also have a rescue plan and the means at hand to implement it in the event of a fall.

Fall Indicator Swivel Snap Hooks

Fig. A depicts standard hook without signs of impact

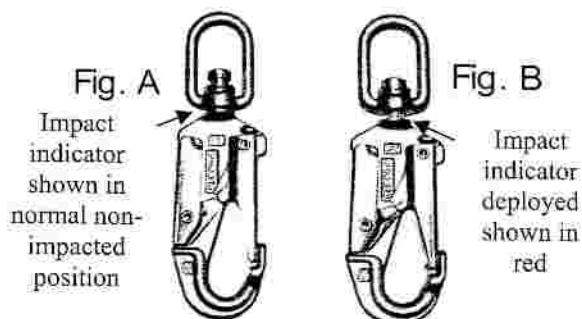


Fig. B depicts standard hook after impact. Deployment force is 675 lbs ± 50 lbs.

Units with deployed indicator hooks (Fig. B) should be removed from service. Contact SafeWaze® customer service at 1-800-560-1094 for assistance.

WARNING!

DO NOT ATTEMPT TO USE ANY FALL PROTECTION SYSTEM WITHOUT FULL KNOWLEDGE AND UNDERSTANDING OF HOW TO USE ALL COMPONENTS, AND WITHOUT ADEQUATE TRAINING IN THE SPECIFIC APPLICATION TO WHICH IT IS BEING APPLIED.



Application and Operation

DANGER !

Never use any self-retracting lifeline for fall protection when working on surfaces that can collapse such as grain, cement, and powders in tanks and silos. The SRL may not sense that you are falling and you could sink into the material causing suffocation. A stable working surface must be provided for these applications.

DANGER !

Do not use with a body belt or chest harness.

- **Kevlar:** In applications for models with Kevlar fiber, these self-retracting lanyards must be used with special considerations.
- **Welding:** The opportunity for burning holes or cutting webbing by melting is highly probable. Any application reasonably involving contact with heat in excess of 140°F is restricted.
- **Glazing:** A cutting action across a sharp edge could be disastrous. Use around glass windows or other glass-like panels that could provide a cutting edge should be conducted with extreme caution.
- **Sharp Edges:** Use caution when contact of the line with sharp edges or corners is likely during a fall. Repositioning the SRL may be required.
- **Paint and Chemicals:** The webbing is subject to stiffening and loss of strength. Stiffening will inhibit retraction tension into the SRL creating dangerous free-fall producing slack which the SRL has not been designed to accommodate.

Loss of strength in the webbing or cable may prevent a fall from being arrested. For this reason, any use around paint over-spray, or strong solvents, alkalis and certain strong acids is not recommended. Contact SafeWaze® customer service 1-800-560-1094 for additional assistance.

• **Prolonged UV and Radiation Exposure:** This may weaken webbing if, for example, the line is left extracted for periods of time outdoors. Prolonged exposure to strong sunlight is not advised because of progressive degradation of the line.

• **Other Applications:** There may be other applications that are inappropriate for this unit. If you have questions regarding usage applications, call SafeWaze® customer service at 1-800-560-1094.

Operating Characteristics:

- **Braking:** The SafeWaze® SRL series operates on a centrifugal activation (locking) mechanism and a brake mechanism. The activation mechanism consists of two locking pawls and a ratchet wheel. When the cable moves at a speed greater than 4.5 ft/sec. out of the SRL, the locking pawls engage into the ratchet ring activating the deceleration mechanism. A disc brake attached to the locking mechanism absorbs the energy generated during the fall, thereby reducing forces on the body. The SRL remains locked until tension is relieved.
- **Reserve Cable:** Never use the SRL where the cable or webbing is pulled all the way out.
- **Standards Compliance:** The SafeWaze® line of self-retracting lifelines comply with all applicable ANSI, OSHA, and CSA standards in effect at time of manufacture.



Models, Performance, & Installation

Available Models

- **Thor™** M Series cable retractables with aluminum housing
- **Thunderbolt™** RLD Series cable retractables with ABS plastic housing
- **MS** Series lightweight web retractables with aluminum housing. MS-11 with ABS plastic housing.
- **3307** 7ft. web retractable with aluminum housing

Performance Data and Material Specification

- All SRL's are rated at 400 lbs. maximum working load or one person, whichever is less. Not rated for material handling.
- All cable SRL's use 3/16" galvanized 7x19 aircraft cable. Stainless steel models are available upon request.
- All Web SRL's use Vectran™ tear resistant webbing.
- SRL's meet all applicable ANSI, CSA and OSHA requirements for fall arrest in effect at date of manufacture. Maximum arresting distance for all SafeWaze SRL's is 42".
- All Thunderbolt series use a high impact anti-shock polymer housing.
- All Thor series use a aluminum alloy patented housing construction
- MS series MS-16 and up use a ABS Plastic housing.

Installation and Attachment

- Installation or attachment must be done according to the instructions below and any enclosed diagrams.

• **Anchorage Strength:** All anchorages must be capable of supporting a minimum of 3,600 lb. when certification exists, or 5,000 lb. in the absence of certification. (See ANSI Z359) for definition of certification.) When more than one personal fall arrest system is attached to an anchorage, the anchorage strengths listed above shall be multiplied by the number of personal fall arrest systems attached to the anchorage. This requirement is consistent with OSHA requirements which read, "Anchorages used for attachment of personal fall arrest systems shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 lb. per user attached, or be designed, installed and used as part of a complete personal fall arrest system which maintains a safety factor of at least two and is supervised by a qualified person."

• **Connection:** A locking SafeWaze® carabiner such as the 0210-07 can be used to attach the SRL to a suitable, overhead anchorage. (See page 10) Make sure the carabiner is secure and closed completely.

• **Location:** The SRL cable must always be taut to prevent free fall. Select an anchorage that is at least 7 feet above the walking-working surface so that there is no slack in the lifeline cable when connected to the user's full body harness.

• **Clearance:** For rigid anchorages, allow a minimum of 4-1/2 feet of clearance below the walking or working surface to the nearest obstruction. If work is not done directly under the anchorage, additional clearance must be available for additional free fall due to a swing fall.



Training and Inspection

Training

All training must be conducted under careful and qualified supervision. Live hands-on training for all users is essential to help understand and demonstrate the capabilities and limitations of their personal protective equipment. Training also helps promote confidence and should be conducted as an initial introduction as well as periodically for review and additional practice. Also, this instruction booklet should be stored where users can easily review it whenever necessary.

The following is a recommended list of training objectives. Training should be site specific and may need to cover more topics than are listed here.

- Recognize fall hazards, and eliminate the hazard where possible
- Know the three parts of a fall arrest system: Anchorage, Body Support, and Connection
- Select the proper equipment for each application
- Consider environmental and other work place factors
- Avoid incompatible connections and snaphook roll-out (burst-out)
- Determine and reduce free fall distances
- Lower the maximum arresting force
- Properly fitting the full body harness
- Selection of an appropriate anchor point
- Implement a pre-determined rescue plan
- Inspect and maintain equipment
- Understand the limitations and requirements of the equipment.
- Understand the consequences of not following or understanding these instructions

Inspection

Inspection Frequency: All equipment must be inspected visually by the user before each use and at least monthly by a competent person other than the user per (ANSI Z359). Detailed inspection records must be kept. An inspection chart is provided at the end of this instruction manual for your convenience.

Equipment used in harsh environments may require more frequent formal inspections. (For example, caustic or corrosive environments.)

Corrective Action: If damage is found as described below, remove the item from service immediately and replace it. If any damage or questionable conditions are apparent that are not described below, remove the item from service, mark "DO NOT USE", replace it and call SafeWaze® Customer Service 1-800-560-1094.

Failure to remove equipment that has been damaged or subjected to a fall arrest could lead to serious or fatal injury. A detailed record of inspection dates must be maintained.

Locking Mechanism: Test the locking mechanism of the SRL by pulling sharply on the cable. The SRL should lock quickly and remain locked until the cable is released. The cable should retract smoothly back into the SRL.

Anchorage and Attachment: Make sure the attachment to the anchorage is secure. The structure to which the SRL is attached must be checked. Make sure it is secure and free from distortion, cracks or other visible signs of damage. Painting approved anchorages with a bright color can help workers to easily identify where to connect the SRL.



Inspection, cont.

Table 1: Type of Exposure - Visual Signs of Harmful Exposures

Type of Webbing	Heat	Chemicals	Flame or Molten Metals	Paint and Solvents	Dirt and Grit
Polyester	Fibers will become brittle, shrivel, turn brown in color, and break when flexed. Should not be used above 140°.	Fibers change color and texture similar to a brownish smudge, or smear. Will become less elastic with traverse cracks resulting from bending.	Fiber strands fuse together, become hard, brittle and shiny in appearance.	Paint can penetrate into the weave and dry, causing the webbing to become hard, brittle, and eventually break the fibers. Solvents and drying agents with paint cause damage similar to chemical exposure.	Particles work their way into the weave and can cut and fray fibers.

Housing and Handle: The housing on each side of the SRL should be examined for cracks, dents, distortion, corrosion, abrasion or other visible signs of damage. Fasteners should be secure.

Cable: The entire length of cable should be inspected for kinks, broken strands, corrosion, abrasion, or other signs of wear and damage. Swaged terminations should be secure with the thimble tight and not visibly damaged or distorted.

Kevlar Fiber Lanyards: The entire length of line should be inspected for cuts, broken threads, and other signs of wear or damage. Any fiber cable with noticeable cuts or abrasions must be removed from service.

Polyester Webbing: The entire length of webbing should be inspected for tears, cuts, fraying or other signs of wear and damage. Sewn terminations should be secure, complete and not visibly damaged. Begin at one end and bend a portion (6–8 inches) into a U-shape between your hands. Check both sides and all straps along the entire length of the webbing. Any unit with noticeable cuts or abrasions must be removed from service. Contact SafeWaze Customer Service 1-800-560-1094 for assistance.

Detailed examples of visual signs of harmful exposure are summarized in Table 1.

Snaphook and Carabiners: All snaphooks and carabiners must operate smoothly and open and close completely. Check snaphook or carabiner body for sharp edges, burrs, distortion, cracks, and corroded or pitted surfaces.

Snaphook Rivets: Should be checked for cracks, broken, loose, or bent conditions.

Labels: Labels must be secure and legible. Each size and shape of SRL has an appropriate label.

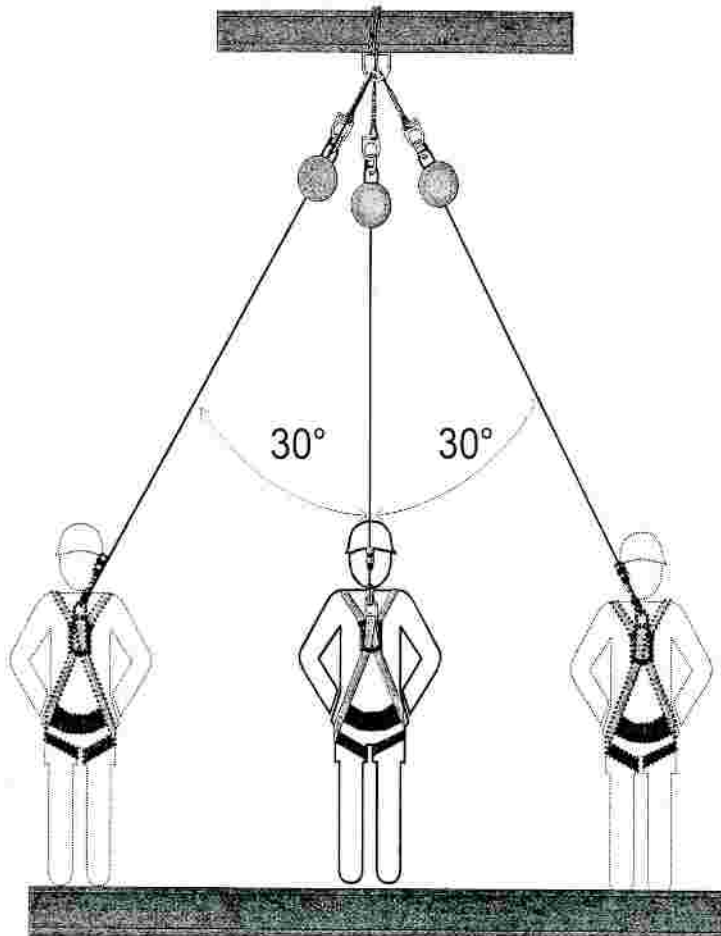
Full Body Harness: Follow SafeWaze® instructions for proper inspection of full body harnesses.

Fall Impact Indicators: If your unit is equipped with a stress or impact indicator, this indicator must be in the non-impacted position (See page 5). If impact indicator has been deployed or any portion of the warning message is showing, the SRL must be removed from service and returned to SafeWaze® for repair and recertification. Call Customer Service at 1-800-560-1094 for information on repair and recertification process.



SRL Swing Fall and Use Illustrations

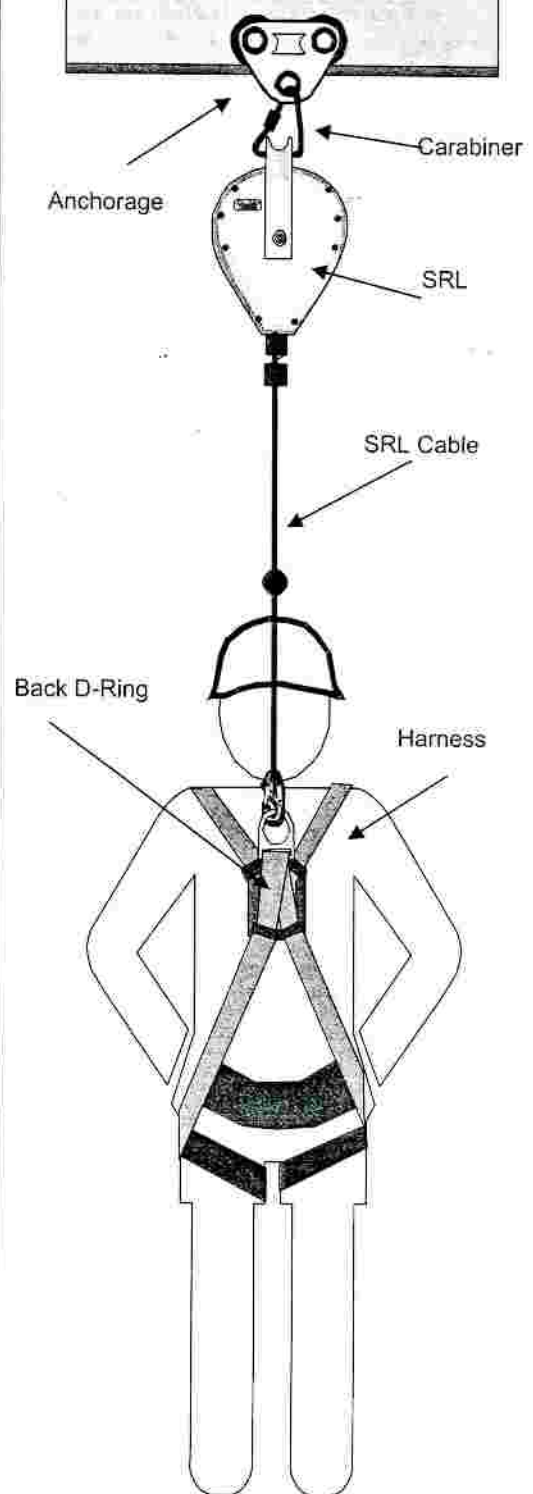
SRL Swing Fall Hazard



**Limit Excursion angle
 to less than 30° using SRL**

For usage applications requiring travel beyond the recommend 30° angle, please contact SafeWaze customer service department at 1-800-560-1094. These applications may require the use of an additional in-line energy absorber such as the SafeWaze model #3012.

Typical SRL Use





Operating Instructions

Operating Instructions

You must follow these instructions carefully to allow the system to provide you with proper fall protection during the job. If you have any concerns regarding the condition of the system or experience any problems, you must notify your supervisor or the safety supervisor immediately. Never take any chances.

DANGER !



Do not use if SRL does not retract!

Do not use if the lanyard does not lock!

Do not use if stress indicator is activated!

You must understand and follow all of the warnings outlined in this instruction booklet.

- Before each use, test the locking mechanism of the SRL by pulling sharply on the cable. The SRL should lock quickly and remain locked until the cable is released.
- Do not use the SRL if it does not lock when cable is pulled sharply.
- Visually inspect the SRL, cable, hooks, stress indicator, and the anchorage (refer to the inspection section of this instruction for details). Check the inspection log before each use. If the log does not show that a formal inspection has been performed within the last month, remove the SRL from use and mark it "DO NOT USE" until a formal inspection is done by a competent person.
- Adjust your harness to fit very snugly. Follow Harness Guidelines. A proper, snug and secure fit can help reduce the chances of falling out of your harness.
- Attach the SRL to your harness' back D-ring using the locking snaphook at the end of the cable. The snaphook must be attached to the back or dorsal D-ring that is located between the shoulder blades. Do not use any other D-ring for fall arrest.

- Attach while at ground or grade level before you are exposed to a fall hazard. Make sure the snaphook closes and locks completely. Any harness used must be in good condition and meet federal OSHA requirements. Check with your supervisor or the safety department if have questions or concerns. D-rings must have a minimum internal diameter of two inches (2"). No other linkage or method of attachment is allowed.

- Never connect the SRL to more than one person. The SRL is a one-person device.

- After you are connected, work normally with smooth movements. Do not jump across floor openings or fall hazards. If you move too quickly, the SRL will achieve lock up as the unit is sensing a fall.

If this happens, move toward the SRL to release the lock and then continue to work. The SRL should be anchored or attached so that it is overhead when you are working. You must not work in a position where a swing fall could lead to an injury (see illustration page 10 and explanation in the warning section of this booklet).

- **Important:** If you fall, immediately report what happened to your supervisor or the safety department. Remove the item from service, replace it and call SafeWaze® Customer Service 1-800-560-1094 for recertification or repair. The entire system must be inspected by a qualified person to ensure system will provide the proper protection for the next person using the system.

- Never interfere with the automatic retraction of the SRL; do not use the SRL if the cable has been knotted, badly kinked, or if wire rope clips have been used. Slack cable could result in a long, dangerous free fall.

- Cable must always be taut to prevent free fall.

- You must read, fully understand and follow all warnings and instructions outlined in this instruction manual.



Maintenance & Warnings

Maintenance

Frequency: Personal protective equipment must be maintained regularly to ensure that the equipment will operate properly when needed. Failure to maintain and store equipment carefully can result in poor operation that could lead to a serious or fatal injury.

Cleaning: The SRL can be wiped down with a clean cloth to remove any dust or dirt. The cable can also be wiped to remove grease, grit or dirt.

Lubrication: DO NOT LUBRICATE THE SRL! The snaphook may be lubricated with a suitable lubricant that will not attract dirt and grit.

Reconditioning and Repair: There are no user serviceable parts in the SRL.

All repairs must be made by SafeWaze® or an authorized SafeWaze repair center.

Warnings

- Failure to observe the warnings below, follow all instructions in this booklet, or seek qualified assistance, can lead to serious or fatal injury.
- Always inspect equipment before each use.
- Never attempt to make any repairs, alterations, or adjustments to SafeWaze® equipment. All product questions or concerns must be reported to SafeWaze® Customer Service.

- Do not interfere with the retraction capability of this SRL in any way. Do not knot, clamp, or tape the cable to prevent it from retracting back into the SRL. The cable must be allowed to retract automatically; otherwise dangerous free falls, swing falls or dangerous

- Never allow the cable to retract uncontrolled back into the SRL. This may cause someone to be hit by the cable or snaphook, or cause damage to other property. This may also internally damage, or lock up the SRL, requiring factory service. (SafeWaze® recommends the use of an 1/8" braided tag line to prevent uncontrolled rewind.)

- Use the SRL for fall arrest only. Never use the SafeWaze® SRL as a restraint or positioning device. For example, do not lock the SRL by hand and lean out holding onto the cable to reach an object.

- Use caution when working near electrical hazards.

- Never use the SafeWaze® SRL for fall protection when working on surfaces that can collapse. Examples of this are grain, cement, and powders in tanks and silos. The SRL may not sense that you are "falling" and you could sink into material causing suffocation. A working surface that is stable must be provided for such applications.

- In salt and other corrosive environments, stainless steel cable models are recommended. Contact SafeWaze® customer service at 1-800-560-1094 for more information regarding cable conversions.



Warnings - Questions?

Warnings, cont.

- Do not use the SafeWaze® SRL for load or material arresting applications.
- Never put the SRL cable or webbing between your legs or under your arms.
- Never put the cable through an opening such as a railing, that may fall with you.
- Never connect the SRL to more than one person. The SRL is a one-person device.
- Never use or attach a snaphook to incompatible hardware. This may increase your chances of accidental disengagement (rollout).
- No additions or substitutions of any part of a SafeWaze® system is permitted without the written approval of SafeWaze®.
- Do not use this SRL in violation of any applicable company, state, or federal, standard or requirement.
- Anyone who has a history of back or neck problems that could be aggravated or complicated by using SafeWaze® equipment must not do so. Pregnant women and minors must not use this equipment. If there is any reason why you may not be physically able to safely absorb the forces subjected in the event of a fall arrest, consult your doctor.
- All users must be in good health and not under the influence of drugs or alcohol.
- Use caution when working around moving machinery.
- Do not use near sharp edges or abrasive surfaces that may cut cable or webbing.

• **Swing Fall Hazard:** Always check for obstructions below your working area to make sure your potential fall path is clear. Work as directly under the anchorage as possible. Swing falls can be controlled in at least three ways. First, an engineered fall protection system can be used to help maintain the attachment point overhead. Secondly, the height of the anchorage can be raised, thereby reducing the angle of the arc and force of the swing.

Finally, do not exceed 30° excursion from the vertical plane of the anchorage. See Swing Fall illustration on page 10. For applications exceeding the 30° angle, contact SafeWaze customer service department at 1-800-560-1094 for assistance. The use of an additional in-line shock absorber may be required.

Important: Carefully review the mobility needed to complete the required work task, including travel to and from the workstation.

For continuous and complete fall protection, more than one SafeWaze® fall protection system may be required.

Questions?

If you have any questions about these instructions or the proper usage of any SafeWaze® fall protection equipment, please call SafeWaze® customer service department toll free at 1-800-560-1094.



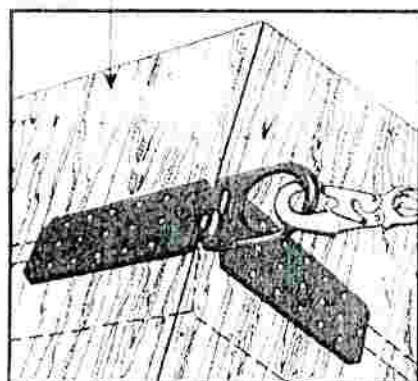
Inspection Log

Use this form to maintain records for inspections on all products requiring inspections in a given period. Equipment must be inspected prior to each use by the user, and removed from service, recertified if applicable, destroyed or discarded if it does not pass inspection. Once a year, all equipment must be inspected and passed by a Competent Person (other than the user). Fill out Fall Protection Equipment Inspection Checklist forms daily to monitor product condition. Please contact SafeWaze customer service at 1-800-560-1094 for assistance.

Model Number	Serial #	Date in Service	Inspection Date	Employee Name	
Inspection Checklist	Comments			<input checked="" type="checkbox"/> Pass	<input checked="" type="checkbox"/> Fail
Housing / Fasteners					
Labels / Warnings					
Cable					
Webbing / Stitching					
Hook (swivel)					
Hook (gate keeper)					
Hook (gate)					
Hook (body)					
Carabiner					
Cable Swage Fittings					
Cable Thimble					
Top Housing Swivel					
Housing Handle					
Cable Guide Bushing					
Cable Lock Up Test					
Current Instruction Manual					
Comments / Other					

Reusable Roof Anchor

Typical Arrangements
Wood or Metal Roofs



Wood Screw style



Installation Instructions

The Reusable Roof Anchor fits any roof pitch, allowing Anchoring From either side. When installed in accordance with these instructions, it will provide an anchor point at the peak of the roof that is suitable for use with the SafeWaze® Fall Arrest System. The Roof Peak Anchor should be used in conjunction with wall plates supported by roofing brackets when installing conventional roofing systems on truss, rafter, and plywood sheathing constructions. See inset for screw style.

Begin by placing the first anchor along the peak of the roof at a point of 5 feet from the beginning of the roof line. Additional anchors should be placed no more than every 10 feet, with the last anchor set 5 feet from the end of the roof line. Remove ridge vents when attaching peak anchors. Each anchor should be fastened to the roof using 10 items minimum of #8 X 2" wood screws. The outer row of holes must be secured to the roof rafter. The outer row of the holes must be secured to the plywood sheathing. Use all holes provided when securing the peak anchor to the building structure. Inspect rafter from inside the attic area to ensure that the wood is structurally sound and free from rot and/or other signs of deterioration. Fasten as described above. When installed as an anchor point on a flat surface, the rope connecting the fall arrest harness to the anchor cannot extend over the peak of the roof. If it becomes necessary to work on the other side of the peak, an anchor must be installed on the flat surface being worked on.



Specifications for 4000 Reusable Roof Anchor
Material: Steel-painted

Size: 11" long per side and 3" wide; 2 1/2" ID ring

Capacity: The SafeWaze Roof Anchors are designed to be used as anchor points for no more than one person at a time. Each worker on a roof requires the use of an individual roof anchor.

May be used on steel roofs of 24 gauge or thicker if mounted with minimum of 10 items of #8 size, 3/4" long sheet metal screws per side on raised ribs of roof panel with pull in the long axis of the bracket. See inset photo. Can be across ribs or in line with ribs.

Sheet metal screw style



Rated at 5000 lbs tensile strength

Compliance: Meets or exceeds all ANSI standards and OSHA 1926.502 regulations.

WARNING!

Failure to read and follow these instructions on the use of this product could result in serious personal injury or death. Training and instruction review should be repeated at regular intervals. This product must be used in strict compliance with all state and federal OSHA regulations.

1. Use only with ANSI & OSHA compliant fall arrest systems.
2. This anchorage is not intended to be permanently installed.
3. This product must be installed in accordance with all instructions.
4. All anchors must be inspected before and after each use.
5. All anchors which have been subjected to a fall or other damaging incident must be removed from service and destroyed.



Reusable Roof Anchor - OSHA Testing Information

Fall Arrest Roof Anchor Testing per OSHA 1910.66 Two-Plate Roof Peak Anchor

A two-plate roof peak anchor was tested per the requirements of OSHA 1910.66, which states that the "equipment to which personal fall arrest equipment is attached shall be capable of supporting at least 5,000 pounds (22.2 kN) applied in any direction."

The anchorage was attached to a simulated roof peak, constructed of 2" X 4" rafters secured by 16 screws in each plate. The wood assemblage was attached to the cross-head member of a Titus-Disen tensile tester using an angle iron fixture. It was then oriented such that the load applied to the anchor was in the direction of the simulated roof surface.

A test load was gradually applied to the D-ring. The test was taken at a rate well beyond the OSHA requirement. After the test, no deformation to the anchorage was detected. The D-ring was able to move freely. No screws were sheared off, deformed or pulled out. **The two-plate roof peak anchorage performed beyond the safety requirements specified by OSHA 1910.66, 1926.502.**

Sheet Metal Roof Testing

Test description

The anchor was screwed into a 24 gauge section of steel roof sheeting, the thinnest used in the industry.

Test #1

The anchor was screwed on top of the ribs in the metal perpendicular to the ribs as would be installed for use. 10 pairs of #8, 3/4" long, sheet metal screws on each leg of the anchor.

The test cable was connected to the "D" on the anchor and the pull made along the main axis of the bracket.

Test #2

Same set up as above.

6 screws on each leg of the anchor.

All Test Results met or exceeded OSHA 1926.502 anchoring requirements of 5000 lbs strength.

Conclusions

The AO Safety/SafeWaze reusable roof anchor Model 4000 is useable on metal roofing material of 24 gauge or thicker with a minimum of 10 screws on each side with the pull in the direction of the long axis of the bracket.

POWER TOOL SAFETY

- 1 Select the right tool for the job; only use the tool for the tasks it was intended for
- 2 Avoid using metal ladders with an electrical tool
- 3 Always store electric tools in a dry place
- 4 Never carry a power tool by its cord
- 5 Keep the work area free from anything that could catch fire from a tool spark
- 6 Don't wear loose shirts, jewelry, or other items that could get caught in a power tool. Tie back and cover long hair
- 7 Stand on a rubber mat when using power tools in damp conditions.
- 8 Keep tools lubricated and free of dust and dirt
- 9 Never remove or bypass a machine guard
- 10 Report defective tools right away. A tool or part of a tool with a defect that could cause injury shall be replaced or repaired before use
- 11 Do not use a tool other than its designed or approved use
- 12 When a guard is provided on a tool, it shall not be made inoperative. It may be removed only for repair, service, or setup, and it shall be replaced before the tool is returned to use
- 13 All means of power transmission and reciprocating and rotating parts of a tool, such as belts, gears, sprockets, shafts, pulleys, and chains, shall be guarded if exposed to contact.
- 14 Hand tools or portable power tools shall not be left on a scaffold, ladder, or work platform after the completion of the work operation or day. Before the scaffold, ladder, or work platform is moved, all tools shall be removed or properly secured against displacement
- 15 Racks, bins, or tool chest shall be provided for the storage of tools, and any sharp or pointed edges shall be arranged so as not to create a hazard
- 16 The user shall visually inspect a tool for safe operation before each daily use and, when found defective, shall be removed from service and tagged.
- 17 A tool is used in a potentially explosive atmosphere shall be designed and approved for such atmosphere
- 18 A safety device or operating control shall not be made inoperative, except for the removal of lock-on control devices.

PORTABLE POWER TOOLS, CONTROLS

- 1 A hand held powered circular saw which has a blade diameter of more than 2 inches; an electric, hydraulic, or pneumatic chain saw; and a percussion tool without positive accessory holding means shall be equipped with a constant pressure switch or control that shuts off the power when the pressure is released. A gasoline powered; hand operated tool shall be equipped with a constant pressure throttle control. A throttle position lock may be provided for starting only.
- 2 All of the following tools shall be equipped with a constant pressure switch or

- 2 All of the following tools shall be equipped with a constant pressure switch or control and may have a lock on control if the tool can be turned off by a single motion of the same finger or fingers that turn it on without release of the grip on the tool:
- a A hand held powered drill
 - b Tapper
 - c Fastener driver
 - d Grinder with a wheel more than 2 inches in diameter
 - e Disc sander with a disc more than 2 inches in diameter
 - f Belt sander
 - g Reciprocating saw
 - h Saber saw
 - i Scroll saw
 - j Jigsaws with a blade shank more than a nominal 1/4 inch
 - k Similarly operating power tool

The lock-on control of a drill of more than 3/8 inch capacity shall not be used when the drill is held in the hand to drill, clean, or enlarge a hole

- 3 All of the following hand held power tools may be equipped with either a positive on-off control or other control as described in (2) above:
- a A platen sander
 - b Grinder with a wheel 2 inches or less in diameter
 - c Disc sander with discs 2 inches or less in diameter
 - d Router
 - e Planer
 - f Laminate trimmer
 - g Nibbler
 - h Shear
 - i Saber saw
 - j Scroll saw
 - k Jigsaw with a blade shank of nominal 1/4 inch or less
- 4 The operating control on a hand held power tool shall be located as to prevent accidental operation

HAND TOOL SAFETY

- 1 Use the right tool for a job. Never use a makeshift, or improperly fitting tool
- 2 Use wrenches of the right size for the job. If one wrench is too small to do the job, use a bigger wrench - not pliers
- 3 Use only tools in good condition - do not use tools with cracked or broken handles, without handles, or with mushroomed or broken heads
- 4 Keep keen-edged blades sharp and store them safely when not in use
- 5 To prevent chips from flying, avoid using a hammer with a hardened face on a highly tempered tool such as a drill, a file, a die or a jig. Also, make sure your hammer and smallest heads are tight on the handles so they can't fly off
- 6 Never apply a wrench to moving machinery. Stop the machine and remove all tools before starting it again. Also, always unplug an electrical tool before changing a sanding disc, a dull bit or a blade
- 7 Never handle any tools in such a manner that you can be injured if they slip. Think about your movements and positions your body accordingly. When you're using a hacksaw, nibblers, a saber saw or drills, hold the work down firmly with clamps, vise grips or a vise. Don't ever try to hold your work with just your hand. Use the proper blade and saw speed for the material you're cutting and don't try to force-feed the saw. When you're drilling or using any other rotating tool, use the right speed and put just the right amount of pressure on the work. When you're carrying your tools, always keep the pointed ends down in a tool belt or pouch. Don't carry them in your pocket.
- 8 Don't let a tool dangle by its cord or disconnect it by yanking on the cord
- 9 Remember that with electrical tools, even a 110 volt house current can kill you. Use ground fault devices for your protection. Make sure that all tool cords extension cords and plugs have proper ground on them. Under no circumstances should the ground be removed.
- 10 If the floor is wet, or even damp, stand on something that won't conduct electricity. And, keep clear of water pipes, conduits, or any other metal that may make you part of the easiest path to the ground.
- 11 If you use a wire brush, keep your face, arms and chest protected to prevent little bits of wire that break loose from flying off and penetrating your skin
- 12 When you're using a portable power shear, don't try to force the blade through the metal and be sure to keep the cord out of the way so you don't accidentally cut through it.
- 13 The construction industry calls for the use of many types of hand tools. Handle them with care, and use them only for the purpose for which they were made

HANDLING & STORING GASES, LIQUIDS FUELS AND COMPRESSED GAS CYLINDERS

- 1 Remember that acetylene and fuel gases catch fire easily. Keep them from sparks and fire. Observe the "NO SMOKING" rule in their vicinity
- 2 Oxygen can ignite even when no flames or sparks are around to set it off. Because it is a real fire hazard when it comes in contact with oil or grease, you should never handle oxygen cylinders with oily hand or gloves. Keep grease away from the cylinders, and do not use oil or grease on cylinder attachments or valves.
- 3 Acetylene cylinders contain a porous material impregnated with acetone. Acetone is a chemical that dissolves acetylene and then releases it as the pressure is released. Acetone absorbs acetylene easily under normal temperatures, but releases it when heated. Acetylene cylinders have fusible safety plugs that melt at around 212 F the boiling point of water. So if a valve becomes frozen, thaw it by pouring warm water on the valve, not the cylinder. Never use flame or intense heat on acetylene cylinder valves. Keep heat away from the cylinder.
- 4 Remember that gases are under pressure. Oxygen is supplied in cylinders at about 2,000 pounds per square inch, acetylene cylinders are at 250 pounds per square inch, and LP gases usually are at nearly 300 pounds per square inch. So be careful when opening valves or releasing these gases
- 5 Proper storage of gas cylinders is essential. Acetylene, oxygen and other gas cylinder should be stored separately, placed in an upright position and secured so they cannot be turned over accidentally.

HANDLING & STORING FLAMMABLE AND COMBUSTIBLE LIQUIDS

- 1 Substitute fire-safe products for dangerous ones when possible. This will help reduce fire changes
- 2 Beware of using gasoline, benzene, or other flammables as cleaners. Less dangerous products that will work just as well are available
- 3 Keep only a minimum supply of flammables and combustibles on hand. Get rid of what you don't need
- 4 Store your supply away from the main building where possible. A small detached shed would be suitable. For on-premises storage, an approved fire resistive room of vented metal storage cabinet is needed. Do not use the boiler room, electrical panel room, or air conditioning equipment room
- 5 Protect against static electricity buildup when dispensing these liquids from drums into metal containers. Ground all drums, and clip a wire between the drum and the container being filled.
- 6 Use only "U.L." approved safety cans for working amount of flammables. Plunger can and bench cans are designed for fire safety in production areas.
- 7 Oil, grease and solvent-soaked rags should be kept in a self closing metal container

- designed for this purpose. Change or dispose of cleaning rags frequently
- 8 Never smoke or use open flame where flammables or combustibles are being used or stored

HANDLING & STORING COMPRESSED GAS CYLINDERS

- 1 Never drop cylinders or permit them to strike each other
- 2 Avoid dragging or sliding cylinders - even for short distances
- 3 Do not use cylinders as "rollers" for moving material or other equipment
- 4 Keep cylinders in designated storage areas when not in use
- 5 No part of a cylinder should be subjected to a temperature more than 125 F
- 6 Cylinders should not be permitted to come in contact with sparks, flames, electric apparatus or circuits
- 7 Never tamper with safety devices in valves or cylinders
- 8 Use a regulator when connecting cylinders to systems of lower pressure ratings
- 9 The connection of regulators to gas cylinders should be made with properly fitting wrenches, and connections specified to be hand tight should be made hand tight only
- 10 When returning empty cylinders, close the valve to leave some positive pressure in the cylinder, replace the protective cap and mark and label the cylinder "empty"
- 11 Do not set full and empty cylinders in the same area

ELECTRICAL HAZARDS

- 1 The importance of properly equipping all electric tools with approved extension cords and means for grounding cannot be overemphasized. Inspection, testing and maintenance of all such equipment in safe operating condition are continuing responsibilities for everyone. Unsafe tools must be removed from service wherever and whenever found on the job and not returned to service until safe to use. Any cords or receptacles that are taped must be carefully inspected to assure that the condition covered by the tape is safe. Three-wire circuits should be available at all receptacles, and a circuit tester can be used to make certain that the grounding circuit is properly installed and operating.
- 2 Preventing electrocutions is a matter of grounding the case of the tool so that whenever a short condition exists, the current is drained off by the ground wire and not your body. A case ground, correctly installed and tested, is absolutely essential, as a third-wire grounding of any electrical circuit. Such circuits consist of two wires, the energized or hot lines and the neutral or common. The neutral or common must not be used as the third-wire independent ground. This third-wire ground acts as an independent grounding circuit for the frames of tools, equipment and boxes of the system itself. It should be the same size wire and current-carrying capacity as the two-circuit wires.
- 3 Electrically powered hand tools perform many jobs. The power source for these tools is often supplied through temporary electrical hookups. Such installations have two basic characteristics: First, they are temporary and not constructed for permanent use; secondly, these power supply lines and equipment are subjected to treatment and conditions much more severe than found in most other kinds of work. Because sheet metal workers frequently are exposed to extremes of moisture, heat and physical contact with their surroundings, temporary wiring systems must be in a safe and efficient condition at all times. Frequent inspections must assure that wiring, once set up, stays safe.
- 4 The most common electrical accident occurs when a person becomes a pathway for electricity flowing to a ground of low energy level. This kind of electricity flow is called ground fault. Because ground faults can kill people and destroy equipment ground fault circuit interrupting devices are used to interrupt the electrical circuit to the load when a fault current-to-ground exceeds some predetermined value that is less than that required to operate the over current protective device of the supply circuit. It is used in addition to normal fusing or circuit breaker protection, not as a replacement. Two types of portable ground fault circuit interrupters exist. The plug-in type plugs directly into the receptacle and provides an alternate receptacle to plug into; the cord-connected type has a molded box with several protected receptacles and a short cord and plug. Workers using a receptacle must have ground fault circuit interrupter protection.
- 5 Adopting an assured equipment grounding conductor program is another way to provide adequate protection from electrical hazards. This is an inspection and

maintenance program covering all cord sets, receptacles that are not part of permanent wiring of a building or structure, and equipment connected by cord and plug that are available for use by employees. This program provides for periodic inspection of receptacles, flexible cord sets (extension cords), and equipment connected by cord and plug. Where evidence of damage exists, the damaged items are taken out of service and tagged until the items have been tested and required repairs have been made. All equipment-grounding conductors are tested for continuity. All receptacles and attachment caps or plugs are tested for correct attachment of the equipment-grounding conductor. Inspection and tests are performed:

- A Before first use
- B Before equipment is returned to service following any repairs
- C Before equipment is used after any incident which can be reasonably suspected to have caused damage.
- D At intervals not to exceed three months, except that cord sets and receptacles which are fixed and not exposed to damaged shall be tested at intervals not exceeding six months.

WELDING AND BURNING

Welding and burning require high degree of skill. Care must be taken at all points to avoid harm to yourself and to those around you.

- 1 A qualified person must perform wiring electric welding equipment. A diesel or gasoline engine-driven generator must be located to avoid danger from exhaust gases and fumes. Portable units must be firmly secured. Before operating, be sure that all safety guards are in place and that you are using the right size welding cable. Prevent the leads from getting wet or damaged and avoid trip hazards.
- 2 Make connections to the transformer or generator with the proper plugs or lugs. If you have to extend leads, use proper cable couplings. If you are working in a confined space, check to see that you have adequate ventilation. Be sure that safety precautions are taken around welding jobs to protect other workers. When working above ground level, be sure that the staging or scaffold is stable. Most welding jobs require the use of both hands, so be certain that you are adequately tied off to prevent falls.
- 3 Wear goggles or welding shields for welding and cutting. They must have the correct filters and be in good condition. When welding on the job site, attach your welding shield to a hard hat. Don't forget that those helping you must wear eye protection and head protection as well. There is always the possibility of electric shock when welding. Although the voltage is low, a shock can cause you to fall or drop something. Be sure that tools are properly restrained so they will not fall on workers below.
- 4 Wear the proper clothing - pants and shirt should be neither too loose nor too tight. While burning or welding, wear close-fitting overalls without cuffs or turn-ups to prevent sparks from falling into them. Make sure your clothing is free from oil, grease, and other combustible substances. Because burning and welding operations create a lot of sparks, wear protective gauntlets and leather apron or leather jacket and be sure the top button of your shirt is buttoned. Leather gauntlet gloves and strong shoes should always be worn when performing welding and burning operations. And don't forget, those working with you or helping you should wear the same kinds of clothing.
- 5 Fire is obviously one of the main dangers from welding and cutting operations. Always make sure that the working area is clean and free from combustible materials of any kind, including wood and paper. Be especially leery of oil drums and containers likely to give off combustible vapor. The slightest spark can be explosive. If something combustible, such as wood floor, cannot be moved, cover it with a non-combustible blanket. Do not allow welding cables and hoses to become strewn around the work area, as they present perpetual hazards for others to trip over. All welding cable and hoses should be properly coiled when not in use. Only cylinders in use should be kept at the work area. If you must weld or cut near combustible materials, keep a fire extinguisher at hand.

- 6 Many welding and cutting operations produce fumes harmful in heavy concentrations, and good ventilation is needed to protect against this hazard. Sometimes special ventilating equipment is necessary. If you have any doubts about the ventilation on the job, ask your supervisor for his opinion.
- 7 When you have completed burning or welding, mark your work "hot" with white chalk as a warning to others. While you are cutting, make sure the piece you are cutting cannot fall and injure someone. When you are not using welding equipment, always switch the equipment off to prevent others from getting shocked. No matter where you are welding or burning, always be certain that adequate fire-fighting equipment is available and ready for use.

CLEAN JOBSITE

HOUSEKEEPING TIPS

- 1 Get rid of trash, oil rags, and debris promptly and properly
- 2 Keep work area and walkways clean and clear
- 3 Throw away cardboard boxes, paper wrappings, and packing materials when you unpack equipment
- 4 Don't smoke around trash containers
- 5 Wipe up spills right away
- 6 Get rid of food waste promptly and properly to control insect and rodent problems
- 7 Keep wood, paper, gas, and oil away from heat
- 8 Keep scrap lumber with protruding nails clear from work area
- 9 Clean up throughout the day; don't leave cleanup for the end of the day or shift
- 10 Keep flammable liquids in properly covered storage containers; place flammable rags in tightly closed metal container that is emptied daily
- 11 Secure material, equipment, and lumber where possible to avoid it blowing from roofs or high places during heavy winds
- 12 Stack material, equipment, and lumber piles properly to prevent them from falling or collapsing
- 13 Use proper housekeeping tools, such as brooms, mops, rags or vacuums
- 14 Avoid placing strings or lines across walkways, aisles, and stairways.

SAFETY RULES

ALL SAFETY RULES MUST BE OBEYED. FAILURE TO DO SO WILL RESULT IN STRICT DISCIPLINARY ACTION

- 1 Keep your mind on your work at all times. No fooling around on the job. Injury or termination or both can be the result
- 2 Personal safety equipment must be worn as prescribed for each job, such as: safety glasses for eye protection, hard hats at all times within the confines of the construction area where there is a potential for falling materials or tools, gloves when handling materials, and safety shoes are necessary for protection against foot injuries
- 3 Precautions are necessary to prevent sunburn and protect against burns from hot materials
- 4 If any part of your body should come in contact with an acid or caustic substance, rush to the nearest water available and flush the affected part. Secure medical aid immediately
- 5 Watch where you are walking at all times
- 6 The use of illegal drugs or alcohol or being under the influence of the same on the project shall be cause for termination. Inform your supervisor if taking any prescription drugs that warn against driving or using machinery
- 7 Do not distract the attention of other workers. Do not engage in any act that would endanger another employee
- 8 Sanitation facilities have been or will be provided for your use. Defacing or damaging these facilities is prohibited
- 9 A good job is a clean job, and a clean job is the start of a safe job. So keep your working area free from debris
- 10 Do not use a compressor to blow dust or dirt from your clothes, hair or hands
- 11 Never work aloft if you are afraid to do so, if you are subject to dizzy spells, or if you are apt to be nervous or sick
- 12 Never move an injured person unless it is absolutely necessary. Further injury may result. Keep the injured as comfortable as possible and utilize job site first aid equipment until emergency services arrive
- 13 Know where firefighting equipment is located and be trained on how to use it
- 14 Lift correctly - with legs, not the back. If the load is too heavy, GET HELP. Stay fit.
- 15 Nobody but operator shall be allowed to ride on equipment unless proper seating is provided
- 16 Do not use power tools and equipment until you have been properly instructed in the safe work methods and become authorized to use them
- 17 Be sure that all guards are in place. Do not remove, displace or destroy any safety device or safeguard furnished or provided for use on the job, nor interfere with the

use thereof.

- 18 Do not enter an area, which has been barricaded
- 19 If you must work around power shovels, trucks and dozers, make sure operators can always see you. Barricades are required for cranes
- 20 Never oil, lubricated or fuel equipment while it is running or in motion
- 21 Before servicing, repairing or adjusting any powered tool or piece of equipment disconnect it, lock out the source of power and tag it out
- 22 Barricade danger area. Guardrails or perimeter cables may be required
- 23 Trenches over five feet deep must be shored or sloped. Excavated or other material shall not be stored nearer than two feet from the edge of the excavation
- 24 Use the "four and one" rule when using a ladder. One foot of base for every four feet of height
- 25 Portable ladders in use shall be equipped with safety feet unless ladder is tied blocked or otherwise secured. Stepladders shall not be used as a straight ladder
- 26 Ladders must extend three feet above landing or roof for proper use
- 27 Defective ladders must be properly tagged and removed from job site
- 28 Keep ladder bases free of debris, hoses, wires, materials, etc
- 29 Build scaffolds according to manufacturers' recommendations and MIOSHA Construction Safety Standard
- 30 Scaffold planks shall be properly lapped, cleated or otherwise secured to prevent shifting
- 31 Use only extension cords of the three-prong type. Use ground fault circuit interrupters at all times and when using tools in wet atmosphere or with any temporary power supply. Check the electrical grounding system daily
- 32 The use of harnesses with safety lines when working from unprotected high places is mandatory. Always keep your line as tight as possible
- 33 Never throw anything "overboard". Someone passing below may be seriously injured
- 34 Open fires are prohibited
- 35 Know what emergency procedures have been established for your job site (Location of emergency phone, first aid kit, stretcher location, fire extinguisher locations, evacuation plan, etc)
- 36 Never enter a manhole, well, shaft, tunnel or other confined space which could possibly have a non respirable atmosphere because of lack of oxygen, or presence of toxic or flammable gas, or has a possibility of engulfment by solids or liquids. Mark certain a qualified person test the confined area with an appropriate detector before entry, that the necessary safety equipment is worn. Standby person may be required to be stationed at the entrance

SAFETY DISCIPLINE

A. Four Step System

First Violation:	Oral warning; notation for personnel files
Second Violation:	Written warning; copy for file or personnel office
Third Violation:	Written warning; removal from job
Fourth Violation:	Written warning and termination if warranted

A record will be maintained of all discipline

LADDER SAFETY

SAFETY PRECAUTIONS

- 1 Never use metallic ladder for electrical work
- 2 Don't set ladders on boxes or other objects to make the ladder taller
- 3 Block any doors that may open toward ladders
- 4 Only allow one person on a ladder at a time
- 5 Never use a defective ladder

SELECTING THE RIGHT LADDER

- 1 Choose one that is long enough; and
- 2 Provides enough support for the job you need to do

INSPECTING THE LADDER

- 1 Look for bent or damaged parts, missing pieces, cracked rails, and loose pieces

USING THE LADDER SAFELY

- 1 Make sure the ladder is on firm footing
- 2 Use a landing if the ladder exceeds 30 feet
- 3 Maintain 20 feet from power lines
- 4 Face the ladder while climbing
- 5 Use both hands and maintain three points of contact
- 6 Never overreach when you are on the ladder

HOISTING AND RIGGING

- 1 Be certain the crane's outriggers are deployed, if necessary. The crane's cable and winch should be checked. The proper slings and hooks should be selected and they should be carefully inspected before being put to use. Attach the sling to the hook, being sure the hook has a safety clip. Attache a guide or tag line to the load to keep it from swaying or hitting anything.
- 2 Only one person at a time should give signals to the crane operator, and that person should always keep his or her eyes on the hoisted load. The signals used should be standard signals approved by the industry. Don't make up signals of your own.
- 3 If the sling legs are vertical, they can support much more of a load than if they are horizontal. The angle of the slings will determine the load capacity
- 4 On the job site, you may use a windlass-operated hoist. Know this equipments lifting capacity so that you don't overload it. Also, try not to life too heavy a load too high. If the windlass is operated with a hand crank, be sure to stay clear of the handle. That way, if the cable snaps or if the cable drum accidentally starts to free spool, the handle won't smash into you
- 5 Before you use a bridge crane, be sure that you thoroughly understand how all the controls operate and how to cut all power to the crane in case of an emergency or a malfunction. Before you hoist anything, check to see that the upper limit stop is working properly. When you're hoisting or moving materials with either a crane moving or a chain hoist, be sure the area is clear. Afterwards, store the equipment out of everyone's way.
- 6 Before you start hoisting, be sure that everyone but the hoisting crew is clear of the immediate area. Never stand under a hoisted load or allow anyone else to do so. Always keep your eyes on the material being hoisted. Use a guide or tag line to control sway and keep the load from hitting anything. Be sure the load is clear of any electric wires
- 7 To find the mechanical advantage of any clock and tackle system, just count the segments of rope supporting the load. Don't count the fall line. Remember that it only changes the direction of pull: it doesn't support the load.
- 8 The average person can be expected to pull about 100 pounds safely. This means that if the load you and one other person have to hoist weights 900 pounds, and the system you have rigged gives a mechanical advantage of only 3, then the system is unsafe. Each of you would have to pull 150 pounds, which is too much. You would have to re rig for a mechanical advantage of at least 5 - 900 pounds divided by 5 equals 180 pounds or 90 pounds per person
- 9 The sling should be long enough so that the sling legs are closer to vertical than horizontal. The angle the sling legs make with the horizontal changes the amount of weight that each leg must support, even though the weight of the load stays the same.

RIGGING WITH WIRE ROPES

- 1 Wire rope, or wire cable, as it is also called, is made up of strands composed of individual wires. Generally, wire rope has a hemp core. Its type is designated by the number of strands per rope and the number of wires per strand.
- 2 The size of wire rope is determined by its diameter in inches. However, the number of strands per wire does not necessarily affect the size of the diameter.
- 3 You can usually find the safe working load for a particular wire rope directly from the manufacturer's tables. But if the tables aren't available, you can square the diameter of the rope in inches, then multiply the results by 8 to get the safe working load in tons.
- 4 Never tie a knot in a wire rope. It is unsafe and will reduce the rope's strength by over 75%. Always use an eye to join one rope to another or to attach the rope to a hook or shackle.
- 5 When not being used, wire rope should be coiled in such a way that kinks and loops won't form. If the rope is long, coiling it on a spool will help eliminate kinks. Scrape off dirt and grit as soon as possible, and remove rust regularly with a wire brush. Coil and store wire rope and slings in a dry, well-ventilated place. This area should be away from chemicals, acids, and their fumes, which will corrode or damage the rope.

RIGGING WITH FIBER ROPES

- 1 The most common type of rope used for hoisting is #1 grade Manila. Grades 2 and 3 aren't suitable for hoisting. Neither is cotton rope because it's too elastic and slippery. You can recognize Manila rope by its yellowish color and silvery luster. Number 1 Manila comes in many sizes. Each size has a different tensile or breaking strength.
- 2 The industry recommends a safety factor of 10. In other words, divide the breaking or tensile strength by 10 to get the safe working load. For example, the new 1/4 inch Manila rope has a breaking strength of 600 pounds, which, divided by 10, provides a safe working load of 60 pounds.
- 3 This may sound conservative, but there are good reasons for it. If the load bounces, it adds to the strain on the rope. It's also possible that you've underestimated the weight of the load, or the rope may be old or deteriorated and only half as strong as it's supposed to be. A rope that's slung over a hook or one that has a knot in it is 30 percent weaker than its rated strength, even if it's new and in good conditions. If it's bent over a sharp corner, its strength is cut in half.
- 4 It's necessary to give all ropes and slings a thorough inspection at regular intervals. Untwist the strands slightly in several places so that you can examine the inside. It should look as bright and clean as new.
- 5 The rope has been weakened by mildew if it smells musty or if the inner fibers look dark and stained. It's been damaged by chafing if you find dirt or sawdust-like,

powdery material inside the rope. If strands are broken or if the rope has been seriously damaged, it's unsafe to use it for hoisting

- 6 Thousands of knots and hitches exist. You should be able to tie certain basic ones and know when and how to use them. The endless sling is formed by splicing the end of the rope together into a continuous loop. By passing one end of the loop through the other, it automatically tightens and secures the load when it's put under strain. Another common sling is the choker sling. At each end of the sling is an eye. You pass one eye through the other and attach it to the hook. On some occasions, you'll attach both eyes to the hook, making a cradle hitch. Be sure that all eyes and splices are in good condition and remember that , at best, they are only 80% as strong as unspliced rope.
- 7 Whichever hitch or sling you select, be sure to use the proper dunnage wood or other padding to keep the sling from being damaged by chafing or sharp corners or edges or by bending too sharply.
- 8 Lay the rope out and spray it thoroughly with water. The spray should be strong enough to remove the dirt but not so powerful that it forces the dirt into the rope. After you finish spraying, hand the rope up to dry. Wet rope always should be allowed to dry thoroughly and never allowed to freeze. Large ropes should be laid out on gratings of something similar so that air can circulate freely around them.
- 9 To store small ropes, coil them and hang them off the floor on pegs. There should be a piece of at least 4-inch diameter pipe over the pegs. This will keep sharp bends out of the rope, which weaken it.

DANGER OVERHEAD

Accidents involving people working or walking under crane booms and buckets are infrequent, but, when they happen, they often are fatal. Even if the crane is in excellent condition and is being run by a first-rate operator, it still should never be exposed needlessly. Frequently the victim is a mechanic doing an assigned job that has nothing to do with the crane.

The rule is simple: "Don't stand, walk or work under crane booms, buckets or suspended loads." A companion rule is: "Hard hats shall be worn by all persons working in the vicinity of cranes, scaffolds, or any place where an object may fall from overhead."

In concreting operations, it is especially necessary to keep all personnel away from the vicinity of the bucket travel. Chunks of semi-hardened concrete frequently drop from the bucket and can produce a serious injury even if the victim is wearing a safety hat. If the victim is not wearing any head protection, the bump may be fatal.

SCAFFOLD SAFETY

IT'S THE LAW

MIOSHA has numerous regulations for scaffolds. Here are a few of the standards:

- 1 A qualified person must design scaffolds
- 2 Platform planks must have no more than one inch of space between units
- 3 Platforms must be at least 18 inches wide
- 4 Front-end loaders cannot be used to support scaffold platforms unless specifically designed for that by the manufacturer
- 5 If the platform is two feet or more above or below the point of access a ladder or stair system is required

SAFETY GUIDELINES

- 1 Keep platforms fenced and securely fastened
- 2 Keep platforms closely boarded
- 3 Don't stockpile material on the scaffold
- 4 Always wear your hard hat when working on a scaffold
- 5 Remove all materials from the scaffold at the end of the day
- 6 Avoid working on scaffolds during storms or high winds

SAFETY DISCIPLINE

A. Four Step System

First Violation:	Oral warning; notation for personnel files
Second Violation:	Written warning; copy for file or personnel office
Third Violation:	Written warning; removal from job
Fourth Violation:	Written warning and termination if warranted

A record will be maintained of all discipline

SECTION III

HAZARD DETERMINATION
LABELING

HAZARDOUS NON ROUTINE TASKS
INFORMING SUBCONTRACTORS
EMERGENCY PROCEDURES
LIST OF HAZARDOUS CHEMICALS



HAZARD COMMUNICATION PROGRAM

I HAZARD DETERMINATION

- A **Alliance Air Conditioning and Heating, Inc.** will be relying on material safety data sheets (MSDS) from suppliers to meet determination requirements.
- B When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the work the subcontractor, field superintendent or employee shall exercise utmost care and carry on such activities under the supervision of properly qualified personnel.

II LABELING

- A The field superintendent is responsible for seeing that all hazardous materials coming onto the site are properly labeled, tagged or marked.
- B All labels should be checked for identity, hazard warning, name and address of responsible party
- C The field superintendent will be responsible for seeing that all portable containers used in the work area are labeled with identity and hazard warnings if applicable.
- D Piping systems shall be labeled at access points

III MATERIAL SAFETY DATA SHEETS (MSDS)

- A The superintendent will be responsible for compiling a master MSDS file to be kept on the job site.
- B Copies of MSDS's for all hazardous chemicals to which job site employees may be exposed will be kept in a file at a central location on the site and will be available for review to all employees during work hours.
- C The field superintendent will be provided with the required MIOSHA right-to-know posters and postings notifying employees of new or revised MSDS's with (5) days of receipt of new or revised MSDS's.

IV EMPLOYEE INFORMATION AND TRAINING

- A The field superintendent shall coordinate and maintain records of training for **Alliance Air Conditioning and Heating Inc.** employees
- B Before starting work, or as soon as possible each new employee will be given information on:
 - 1 Hazardous Material Safety Information
 - 2 Hazardous Material Emergency Procedures
 - 3 Hazardous Material Identification and Labeling
- C When any new hazardous chemical is introduced into the job site, each

employee will be given information in the same manner as during the orientation. The superintendent will be responsible for seeing that MSDS on the new chemical are available.

V HAZARDOUS NON-ROUTINE TASKS

- A On any occasion that employees are required to do work in hazardous area (e.g. confined spaces), prior to starting the work, each employee will be given information about the hazards involved in these areas. This information will include:
- 1 Specific Chemical Hazards
 - 2 Protection/Safety Measures which can lessen the risks
 - 3 Information about ventilation, respirators, the presence of any other employees and emergency procedures.

VI INFORMING SUBCONTRACTORS

- A It is the responsibility of the superintendent to provide the subcontractors with the following information:
- 1 Hazardous chemicals to which they may be exposed while on the site
 - 2 Location of all Material Safety Data Sheets as coordinated by the superintendent
- B The Project Manager will coordinate with the field superintendent to ensure that subcontractors are given this information prior to entering the job site.
- C The superintendent will request and receive from all subcontractors the following information:
- 1 Subcontractors MSDS sheets for all hazardous chemicals they will be using on the job site.
 - 2 hazardous chemicals other contractors and subcontractors may be exposed to during their time on the job.
- D The superintendent will ensure that all subcontractors have complied with the above requirements before mobilizing on the job site

VII EMERGENCY PROCEDURES

- A If, at any time **Alliance Air Conditioning and Heating Inc.**, the owner or subcontractor becomes aware of the presence of hazardous chemicals, each shall notify the other's designated safety representative and take whatever steps are necessary, in any, with the other to eliminate, terminate abate or rectify the condition to protect people and their property from hazard
- B If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including

- C Local Emergency, Fire and Police phone number shall be posted in a visible location on the job site.
- D All containers of chemical materials used by the subcontractor, including spent materials and unused material, must be removed by the subcontractor from the owner's premises, transported by Environmental Protection Agency-Approved transporters when required, and disposed of in compliance with the Environmental Protection Agency rules and regulations including approved disposal sites.

This is list of chemicals used by **Alliance Air Conditioning and Heating Inc**

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SECTION IV

EMERGENCY PROCEDURE AND FIRST AID



First Aid consists of two basic steps:

- 1) Providing the most important basic treatment to save lives and minimize injuries.
 - 2) Obtaining prompt professional help such as paramedics or a rescue squad.
-

GENERAL TIPS

In case of an injury:

1. Make sure that you're not exposing yourself to the same risk.
 2. Do not attempt to move the injured person unless there is a possibility of fire, explosion or falling walls.
 3. Check to see if the victim is breathing, is bleeding or is unconscious.
 4. Always remain calm and try to comfort and reassure the injured person.
-

ARTIFICIAL RESPIRATION

1. Act quickly – once a person stops breathing he has only 4 – 6 minutes to live.
2. With one hand, tilt the head back gently so the chin is pointing upward.
3. Place the other hand on the victim's forehead and push his/her head backward.
4. Pinch the victim's nose with thumb and finger of the hand on his/her forehead.
5. Take a deep breath. Cover the victim's mouth completely with your mouth and blow four quick breaths into his/her mouth in 3 – 5 seconds. If the chest doesn't rise, move his/her head back farther and try again.
6. Remove your mouth from the victim's mouth. Stop when the chest is expanded. Watch the chest to see that it falls as air leaves the lungs.
7. If there is still no breathing, blow one breath into the victim's mouth. Stop when the chest is expanded. Watch the chest to see that it falls as air leaves the lungs.
8. Repeat the blowing cycle at the rate of one breath every 5 seconds.
9. Make sure that the chest rises each time you breathe into the victim's mouth.
10. Be sure that you have an airtight seal between your mouth and the victim's mouth so that air does not escape when you blow.
11. Continue giving artificial respiration until the victim starts breathing by himself, until someone else takes over, until the victim is pronounced dead by a physician, or until the rescuer has to stop from exhaustion.
12. Restarting breathing takes priority over first aid treatment.

BLEEDING

1. Injuries involving bleeding are of next importance in order of treatment.
2. Adults can lose one pint of blood without serious effects. However, a loss of two pints begins to be serious. A victim with arterial cuts or internal bleeding can bleed to death in a very short time.
3. First aid for bleeding requires stopping the bleeding quickly and getting the victim to the hospital in case a blood transfusion is needed.
4. If there is bleeding from a wound, apply a sterile dressing or anything else that's clean directly over the bleeding area and press *hard*. You can use your bare hand if nothing else is available.
5. Keep pressing for 20 minutes or more until the bleeding stops. Once you apply a dressing, do not remove it. Let a clot form.
6. Lift a bleeding arm or leg in the air unless the limb is broken.
7. Keep the victim lying still. Moving about increases bleeding and hinders clotting.
8. If there's glass or metal in a small cut or wound and you can flush it out with water, do so.
9. If an object is imbedded or impaled, don't remove it. Apply pressure just above it to stop the bleeding.
10. Cover the wound with a sterile dressing. Do not cough, breathe on, or handle the part of the dressing which covers the wound.
11. The use of a tourniquet is dangerous and one should not be used to stop bleeding unless other methods are completely useless.
12. Head injuries may result in bleeding from the ear or nose. Do not try to stop this bleeding or any draining of fluid. Lay the victim down. Place a loose pad over the ear. Keep the bleeding ear downward, unless there is a neck injury or other reason not to do so.
13. Remember, all cuts or puncture wounds should be treated. However, a minor scrape improperly treated can result in serious infection.
14. Minor cuts should be washed with soap and water, treated with an antiseptic, and covered with a sterile dressing.

UNCONSCIOUS

1. Unconsciousness may occur after a fall, or from head injuries, an electric shock, illness or poisoning. There is a loss of consciousness if a person has trouble talking in sentences or walking or if the victim can't make any response at all.
2. In case the victim is unconscious, skilled professional help is needed immediately.
3. Help the victim get air by clearing the mouth of any debris or foreign matter.
4. If the victim is not breathing, give artificial respiration.
5. When breathing begins, turn the victim on his side so fluids can drain unless there are neck or spinal injuries.
6. If you're not sure, just keep the person lying flat, but watch for strangling or choking.

- cont.

7. Give nothing by mouth to an unconscious person or to someone who is nauseated.
8. Cover the victim with a blanket.
9. Keep a constant watch over an unconscious person or one who has been unconscious.

ELECTRIC SHOCK AND BURNS

1. You may face special problems when the unconscious or injured person is a victim of electric shock. First, the victim may still be in contact with live electricity. Make sure it's safe to approach the person. Do not touch the victim until you are sure the current is off. Use an insulated object such as a wooden pole, a broom or wadded newspaper to get the victim away from the electricity supply.
2. Second, electric shock often stops breathing. Check for breathing immediately and resuscitate if necessary as previously described.
3. Third, the victim may have electrical burns. Whether from heat, friction, chemicals or flash burns, burned areas should be treated as quickly as possible following the burn by showering the affected area in cold water or by immersing it in cold water.
4. Cooling should be continued for 10 minutes, or until help arrives. This lessens the severity of the burn and relieves pain.
5. Cover the burned area with a sterile dressing. Packaged sterile dressings are best, as infection and germs enter through burned skin.
6. Do not use absorbent cotton to cover burns. It will stick to the burned flesh and hinder treatment.
7. If clothing has stuck to a burn, place the sterile dressing quickly over the clothes. Do not remove the clothing.
8. If there is a wound where electricity has entered the body, there will be an exit wound somewhere else. Look for the possibility of bleeding at the exit wound.
9. Severe chemical burns may be caused by sulphuric or hydrochloric acids or by lye, ammonia, caustic soda or caustic potash.
10. Speed is vital in rinsing off chemicals under a water tap or shower. Rinse, shower, or hose for 10 minutes, removing contaminated clothing.
11. Apply a dry, sterile dressing and get medical help quickly.
12. Fluid is lost in burn victims. If medical help won't arrive for some time, offer the victim about $\frac{1}{2}$ cup of water with a little salt in it to sip slowly. Remember, do not give fluids by mouth to an unconscious person or to one who is nauseated.
13. In treating burns, **DO NOT**:
 1. Break blisters;
 2. Apply lotion, antiseptic, grease;
 3. Touch the burned area;
 4. Cough or breathe on the burned area;
 5. Take the dressing off;
 6. Apply absorbent cotton; or
 7. Undress or handle the victim any more than necessary.

EYE INJURIES

1. If a chemical is splashed or sprayed into the eye: Turn the victim's head toward the injured eye so that fluid won't pour into the good eye. Pour large amounts of running tap water into the injured eye. Hold the eyelids apart so that the water can wash the entire eyeball. Continue for 10 to 15 minutes.
2. Cover the injured eye with a sterile pad and get professional help.
3. Keep the victim from rubbing the injured eye.
4. Often, a small object in the eye can be gently removed with the corner of a clean handkerchief or paper tissue. If it doesn't come out easily, don't make any further attempts other than flushing with water.
5. In case of a deep penetrating eye injury, don't remove the object. Cover both eyes with a loose sterile or clean bandage. Covering both eyes keeps the injured eye from moving.
6. Keep the victim lying quietly on the back, while you get professional help.

LIMBS CAUGHT IN MACHINERY

1. Serious injuries can result from getting caught in machinery. Here, your job is to stop the bleeding and give support and encouragement to the victim. Let the injured person know that help is on the way.
2. If it's a complicated removal, don't attempt to remove the victim. If it's a simple matter of lifting off an object, then do so.
3. If an amputation occurs, lay the victim down if possible, elevate the remaining part of the limb, and apply a dressing to the stump and bandage it tightly.
4. Apply firm pressure with the hands around the end of the stump above the amputation site.
5. Recover the severed body part, cover it with ice water if possible, and transport it to the hospital wrapped in a clean dressing. It may be possible for surgeons to reattach it to the body.
6. Sometimes, the most important thing you can do if you are not trained to give First Aid, is to simply see that nothing is done to make the situation worse before help arrives.
7. In deciding what to do you will have to rely on your own common sense.
8. Telephone numbers for professional emergency medical assistance should be conspicuously posted and should include specific accident information for the caller to give.

MOVING THE VICTIM

1. If there is an extreme emergency and the person must be pulled to safety, support him under the shoulders, keeping the body in a straight line; do not let him twist or bend.
2. Be gentle. Pull the person in the direction of the length of the body, not sideways.
3. If possible, place the victim on a board or a stretcher. Secure the victim so he or she won't slide out or fall off if the stretcher tips.
4. If there is no possible way to get an ambulance and you must transport the victim, drive calmly and carefully. This will not only help prevent another possible accident, but it is vital for the victim that you drive at moderate speed, making gentle starts and stops. Transportation can cause exhausting stress to an injured person.
5. People with head and chest injuries, or broken legs, arms, pelvises or backs, should be transported lying down with the injured part immobilized.
6. Remember, don't move them unless no other alternative exists.

HEAT STROKE / HEAT EXHAUSTION

1. Exposure to the weather creates special physical stress for workers in the field. Extreme heat causes large amounts of water and salt to be lost from the body in perspiration and may result in heat stroke, heat exhaustion, or heat cramps. Heat stroke is a life-threatening emergency and requires prompt medical treatment.
2. With heat stroke the body temperature is extremely high. The skin is hot, red and dry. The pulse is strong and rapid. The victim may be unconscious.
3. Cool the body down. Sponge the victim with cool water or rubbing alcohol. Use fans or get the person to an air conditioned room.
4. Don't let the victim be chilled. And don't give stimulants such as coffee, tea, coke or alcohol.
5. Heat exhaustion is very different from heat stroke. The temperature is nearly normal. The skin is pale and clammy. There is a great deal of perspiration and possibly headache, weakness, cramps and nausea. There may be a feeling of faintness.
6. Give the conscious victim sips of salt water, half a glass every 15 minutes for an hour. Use 1 level teaspoon of salt per full glass. Discontinue fluids if the victim is nauseated or vomits.
7. Have the victim lie down with his feet raised and supported 8 to 12 inches from the ground.
8. Loosen the victim's clothing. Sponge the body with cool water or rubbing alcohol. Use fans or get the victim to an air conditioned room.
9. After an attack of heat exhaustion, the person should rest for several days and avoid very high temperatures.
10. Drinking plenty of water and increasing your salt intake can help prevent heat illness. Moderate eating habits and wearing light-colored clothing will also help.

HEART ATTACK

1. Stresses from weather and physical exertion can bring on other sudden illnesses, such as heart attack. The victim may never have had any previous indication of heart disease.
2. The attack may result in unconsciousness and if it is severe, the victim may die suddenly.
3. The main symptoms of acute heart attack are shortness of breath and pain in the chest, upper abdomen, shoulders and arms, particularly the left. There can also be indigestion, nausea, and vomiting.
4. Stay calm. Reassure the victim and help him or her find a comfortable position. Administer any medication for heart palpitations the victim may have.
5. Have someone call for an ambulance equipped with oxygen.
6. If the victim is not breathing, apply artificial respiration.
7. Cardiopulmonary resuscitation, or CPR, could save the life of a heart attack victim who has stopped breathing. CPR provides circulation and breathing to a person whose heart and lungs have stopped functioning. It's a combination of external manual manipulation and mouth-to-mouth resuscitation. Thousands of deaths could be prevented each year if CPR were given in the first few seconds after heart failure.
8. CPR should never be attempted, however, by anyone who is not trained. You can receive the necessary training by enrolling in a special CPR course offered by the American Red Cross and the American Heart Association.

SUMMARY

1. Remember to keep calm and don't panic.
2. Notify your supervisor immediately.
3. Treat only the most urgent symptoms.
4. Promptly get professional help.
5. Enroll in a first aid course – learn to give artificial respiration and CPR.

MIOSHA Program - Phone Directory

Fatality Hotline

Weekdays 8 a.m. – 5 p.m.
After 5 p.m. & Weekends

(517) 322-1817
(517) 322-0333

Note: All fatalities and catastrophes must be reported to the Department of Labor within 8 hours. The line is in service 24-hours a day.

MIOSHA Employee Complaint Hotline

(800) 886-4674

Administration

(517) 322-1814

Note: Responsible for overall administration of MIOSHA program, bureau policy decisions, and operations.

Appeals Division

(517) 322-1297

Note: Represents the bureau in formal appeals of citations generated by MIOSHA inspections.

Construction Safety Division

(517) 322-1856

Note: Regulates working conditions of public and private employees by enforcing construction safety standards including accident and complaint investigations on construction sites.

General Industry Safety Division

(517) 322-1831

Note: Regulates working conditions of public and private employees by enforcing general industry safety standards including accident and complaint investigations. GI division regulates employee safety in virtually every type of work setting except mining, domestic and construction.

Office of Employee Discrimination

(248) 256-3620

Note: Administers and enforces provisions of MIOSHA covering employee complaints of alleged discrimination as provided in Section 65 of Act 154 of 1974 as amended.

Occupational Health Division

(517) 322-1608

MIOSHA Publications Library	(517) 322-1809
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Safety Education & Training ("SET") Division	(517) 322-1809
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Standards & Statistical Information Division	(517) 322-1845
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Note: Coordinates management information systems, provides analysis of injury/illness data, prepares MIOSHA statistical reports, distributes MIOSHA record keeping forms and answers questions on record keeping requirements.

MIOSHA Website	www.cis.state.mi.us/bsr/
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National Safety Council	www.nsc.org	(800) 621-7619
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National Fire Protection Assoc.	www.nfpa.org	(617) 770-3000
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NIOSHA	www.cdc.gov/niosh/publistb.html	(800) 35-NIOSH
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OSHA	www.osha.gov	(202) 219-8151
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Accident Investigation

INTRODUCTION

Accident investigation is a useful and necessary tool: A thorough investigation should be made in every situation where an accident has revealed a failure to properly control some aspect of your operations. You may question if the accident did, in fact, result from operational control failure; when the accident occurred as a result of an unsafe act on the part of an employee. Unsafe acts are in themselves an indication of operational failure, since they are evidence of some inadequacy in either job training, job planning, employee motivation, or some other type of personnel problem. Nothing is learned from *unreported* accidents; and nothing is learned from *uninvestigated* accidents. Proper investigation of accident causes will reveal operational deficiencies or failures – so that corrective measures can be implemented to prevent an accident reoccurrence.

PURPOSE OF INVESTIGATION

1. To apply a systematic procedure to determine the causes of an accident. In most cases there will be several causes. To objectively see the "whole picture", all pertinent facts must be considered.
2. To prevent a reoccurrence of accidents and any resulting injuries. By reducing the incidence of accident reoccurrence, we will also be reducing the financial losses associated with "repeat" accidents.
3. To train supervisory personnel in determining accident causes. Practice in this area results in a more acute awareness of job hazards.
4. To demonstrate to employees that management is concerned with their welfare. It must be emphasized that the "investigation" is not a fault finding venture.
5. To stimulate thought on part of all parties involved, with the need for safety and methods of prevention.
6. To publicize the hazards so that others may become aware. This is of fundamental importance in controlling unsafe work practices.
7. To obtain facts bearing on legal liabilities. Documentation of such information is essential.

WHEN TO INVESTIGATE

1. After the occurrence of **any** accident! "Near miss" occurrences should also be investigated, as often times these occurrences could have easily resulted in personal injury and / or serious property damage.
2. As soon as possible after the accident occurrence because:
 - a. Details are quickly forgotten.
 - b. Distortions can occur upon delay. We want objective facts.
 - c. Witnesses unduly influence one another.
 - d. The scene of the accident can change, thus destroying evidence and clues as to what actually happened.
 - e. Remember: Your first responsibility is to attend to the injured person. Don't start your investigation immediately if.....
 - i. doing so delays medical treatment, or
 - ii. the injured employee is extremely upset or in obvious pain.

WHO SHOULD INVESTIGATE

1. Supervisor or Superintendent should conduct the initial investigation – he knows his operations and people. The supervisor is responsible for all job related activities within his area of control.

2. Other interested management personnel – to obtain information for insurance purposes, and possibly as a follow up activity based on the initial investigation report information.
3. Other outside parties such as government inspection persons, law enforcement agencies, and insurance investigators, may have the occasion to conduct their own investigations. These activities may very well require a review of your initial investigation report. This further emphasizes the need for a comprehensive and accurate initial investigation (and report).

WHERE TO INVESTIGATE

Any location where pertinent, useful information may be obtained. This may include:

1. Observations at the accident scene.
2. Discussion with each witness or any involved persons.
3. Possible review of personnel records or maintenance and equipment logs.

Do not restrict yourself! Go wherever necessary to obtain **pertinent, objective, and factual** information.

HOW TO INVESTIGATE

1. Learn investigation techniques. Be familiar with what you are going to do at an investigation.
2. Be equipped – bring proper tools, including possibly a tape measure, camera, blank report, and above all an "open mind"! The investigation should not be considered as a burden, but as an opportunity to do something useful to prevent further accidents.
3. Be objective and fair. Try not to make judgements and form conclusions until you are satisfied that all of the facts have been obtained.
4. Qualify each independent source of information such as, "according to.....", "from my observations....", etc. Talk to each witness individually.
5. Avoid evasion in any form – the purpose of this investigation is defeated if true conditions and facts are "swept under the rug".

ANALYZE YOUR INFORMATION

1. Do not complete the final investigation report form until all facts have been analyzed, and conclusions drawn.
2. Your analysis of the facts is not complete unless you have identified the causes of the accident, and have arrived at some meaningful conclusion as to the course of corrective action necessary to prevent reoccurrence. It stands to reason that the proper choice of corrective action will strongly depend upon your accurate gathering and analysis of the accident facts.

MODES OF CORRECTIVE ACTION

Necessary corrective action may take the form of any one of, or a combination of the following items:

1. Eliminate the hazard.
2. Guard the hazards.
3. Protect or guard the employees.
4. Instruct and warn – employ the basic E's of safety: Engineering, Education and Enforcement.

FACTORS TO CONSIDER

1. Will the employees accept the proposed solution?

2. Will the "solution" create other hazards?
3. How will the solution affect normal job flow?
4. How much will it cost?
5. Delegation of responsibility – who will implement the solution? And when?

FOLLOW THROUGH

1. You haven't achieved a thing unless the "solution" to the problem is implemented and working. Someone must be assigned to monitor the progress.
2. Very often loss control efforts are abandoned at the "corrective action" state, and for no good reason other than lack of good follow up. If this is allowed to occur, your investigative efforts have been wasted. Good follow through and enforcement of corrective measures is essential.
3. Most importantly, COMMUNICATE with your managers regarding progress or lack of progress on corrective measures.

Accident Report

(to be completed immediately after accident / illness)

1. DATE: _____ TIME: _____ pm am
2. ACCIDENT CATEGORY: ☐ Injury ☐ Illness ☐ Fatality ☐ Other
3. INJURED PERSON:
Name: _____
Address: _____
City, State, Zip: _____
Phone: _____ Birthdate: _____ Sex: _____
4. EMPLOYED BY:
Company Name: _____
Address: _____
City, State, Zip: _____
Phone: _____ Supervisor Name: _____
5. ACCIDENT LOCATION:
Job Name: _____
Address: _____
City, State, Zip: _____
Phone: _____ Superintendent Name: _____
6. DATE OF ACCIDENT: _____ TIME OF ACCIDENT: _____ am / pm
7. SEVERITY OF ACCIDENT: ☐ First Aid ☐ Medical Treatment ☐ Lost Workday ☐ Restricted Work ☐ Fatality
8. WAS AMBULANCE CALLED? ☐ Yes ☐ No Hospital / Clinic Name: _____
9. INJURY DESCRIPTION:
 - a. Describe nature of injury or illness: _____
 - b. Part of body affected: _____
 - c. Degree of disability (temporary total; permanent partial; permanent total): _____
10. ACCIDENT DESCRIPTION:
 - a. Place accident occurred (specifically): _____
 - b. What part of job was being performed at time of incident? _____
 - c. What happened? (describe in sequence): _____

d. Physical Surroundings at time of incident: (weather, equipment, machinery, aisles, features, etc.): _____

e. What caused incident? (Describe): _____

f. Complete checklist:

Was the employee:	Y	N	Was the tool or equipment:	Y	N	Was the area:	Y	N
Placed on the right job?	<input type="checkbox"/>	<input type="checkbox"/>	Right for the job?	<input type="checkbox"/>	<input type="checkbox"/>	Well lighted?	<input type="checkbox"/>	<input type="checkbox"/>
Properly trained in the job?	<input type="checkbox"/>	<input type="checkbox"/>	Working properly?	<input type="checkbox"/>	<input type="checkbox"/>	Too hot or too cold?	<input type="checkbox"/>	<input type="checkbox"/>
Experienced in the job?	<input type="checkbox"/>	<input type="checkbox"/>	Adjusted correctly?	<input type="checkbox"/>	<input type="checkbox"/>	Congested?	<input type="checkbox"/>	<input type="checkbox"/>
Physically fit?	<input type="checkbox"/>	<input type="checkbox"/>	Properly guarded?	<input type="checkbox"/>	<input type="checkbox"/>	Noisy?	<input type="checkbox"/>	<input type="checkbox"/>
Under emotional stress?	<input type="checkbox"/>	<input type="checkbox"/>	In proper condition?	<input type="checkbox"/>	<input type="checkbox"/>	Filled with smoke or vapors?	<input type="checkbox"/>	<input type="checkbox"/>
In an unsafe position?	<input type="checkbox"/>	<input type="checkbox"/>	Was the material:			Was the floor clean?	<input type="checkbox"/>	<input type="checkbox"/>
Distracted?	<input type="checkbox"/>	<input type="checkbox"/>	Correct?	<input type="checkbox"/>	<input type="checkbox"/>	Was the floor in good condition?	<input type="checkbox"/>	<input type="checkbox"/>
			Positioned correctly?	<input type="checkbox"/>	<input type="checkbox"/>			

g. Other factors necessary to fully describe incident: _____

11. PERSONAL PROTECTIVE EQUIPMENT:

a. What personal protective equipment is required for job being performed? (glasses, safety shoes, safety hat, hearing protection, respirator, etc.) _____

b. Was injured using required safety equipment? _____

c. Date employee was last trained in proper use of required safety equipment: _____

12. WAS THERE A VIOLATION of a published safety/health rule, regulation, procedure or specific instructions? (Explain) _____

13. WAS EMPLOYEE PROPERLY INSTRUCTED on how to do the job safely and properly exposed in training to those items listed in previous question? (Explain) _____

14. WERE MECHANICAL / PHYSICAL / ENVIRONMENTAL conditions safe at the time of the incident? (Explain) _____

15. WHAT CORRECTIVE ACTION should be taken to avoid a reoccurrence of this type of injury? (state who – what – engineering changes; written procedure development or improvement; enforcement of safety rules & regulations; specific training): _____

16. ACTIONS ALREADY TAKEN to correct and/or eliminate the hazard, injury, causing agent(s): _____

17.

1.

Employed by: _____

2.

Employed by: _____

3.

Employed by: _____

18.

ADDITIONAL INFORMATION OR COMMENTS:

SIGNATURE OF INVESTIGATING SUPERVISOR:

PRINT NAME: _____

[illegible]

Initials _____

Incident Report

(to be completed immediately after incident)

1. DATE: _____ TIME: _____ pm am
2. INCIDENT CATEGORY: ☐ Fire ☐ Theft ☐ Property Damage ☐ Other
3. INCIDENT LOCATION:
Job Name: _____
Address: _____
City, State, Zip: _____
Phone: _____ Superintendent Name: _____
4. DATE OF INCIDENT: _____ TIME OF INCIDENT: _____ am / pm

FIRE

DESCRIPTION:

1. Location fire occurred (specifically): _____
2. Was Fire Department called? ☐ Yes ☐ No
3. What happened? (describe in sequence):

5. Cause of fire (if known): _____
4. Were there any injuries? ☐ Yes (if so, complete Accident Report Form) ☐ No
5. List damage (complete, partial, minimal) (explain):

6. Date of last Fire Prevention Checklist (attach copy): _____

THEFT

DESCRIPTION:

1. Item stolen (include color, model number, etc.): _____
2. Name of person or company owning stolen item: _____
3. Where was the item stolen from? (specifically): _____
4. Was Police Department called? ☐ Yes ☐ No
5. What happened? (describe in sequence):

PROPERTY DAMAGE

DESCRIPTION:

1. Item damaged (include color, model no, etc.): _____
2. Name of person or company owning damaged item: _____
3. Location damage occurred (specifically): _____
4. Was Police Department called? ☐ Yes ☐ No
5. Party responsible for causing damage: _____
6. What happened? (describe in sequence): _____

7. Were there any injuries? ☐ Yes (if so, complete Accident Report Form) ☐ No
8. List damage (complete, partial, minimal) (explain): _____

9. Action taken: _____

SIGNATURE OF INVESTIGATING SUPERVISOR: _____

PRINT NAME: _____

For Office Use Only

Initials _____

SECTION V

MISC FORMS

Cleanliness checklist
Electrical Hazards Checklist
Fire Equipment Checklist
Equipment Checklist
Cylinder Checklist
Self Inspection Checklist

CLEANLINESS CHECKLIST

In Shop and On Site

	YES	NO
Are waste receptacles provided, and are they emptied regularly?		
Do your toilet facilities meet the requirements of applicable sanitary codes?		
Are washing facilities provided?		
Are all areas of your business adequately illuminated?		
Are aisles and workshops kept clear of obstructions?		

Action Needed:
