

# CITY OF PORT ST. LUCIE



## EMPLOYEE SAFETY MANUAL

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*\*\*Further sections may be added as required.\*\**

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1. A comprehensive Safety Program is an essential management tool to provide standards for reducing accidental losses. With adequate utilization, this program should provide some relief from the high direct and indirect costs that accidents generate and their subsequent impact on the operating budget.
2. The purpose of this Safety and Health Loss Control Manual is to provide a program which aligns with goals outlined in the City's Strategic Plan; A Safe, Clean and Beautiful City and High Quality Infrastructure and Facilities.
3. The expected results of this manual will be to eliminate the underlying causes of accidents and incidents which result in injury to employees or the public; damage to property, facilities, and equipment; or damage to the environment and natural resources. These positive results will be accomplished by providing:
  - A) Safe and healthy working conditions for all employees.
  - B) A work environment conducive to good physical and mental health.
  - C) An environment which fosters safe and healthy attitudes and procedures.
  - D) Compliance with all applicable, relevant, and associated local, state, and Federal regulations.
  - E) Minimum standards of loss control for all members of management.

### SCOPE AND PURPOSE

1. The development and implementation of the City of Port St. Lucie Safety and Health Loss Control Program and its assigned responsibilities are in accordance with best practices, the Occupational Safety and Health Act, as well as applicable additional standards as defined by the Occupational Safety and Health Administration (OSHA), and other state and federal regulations. The City of Port St. Lucie, however, is a governmental entity, and as such is not regulated by OSHA.
2. The justification to these guidelines and requirements is essential for a Safety and Health Loss Control Program to complete its primary objective of reducing the frequency and severity of bodily injuries to employees, the general public, damage to property, and liability losses. Inherent in the guidelines and requirements is the charge to provide a safe and healthful work environment in which to pursue.

### OBJECTIVES

1. The objectives of the Safety and Health Loss Control Program are:
  - A) Reduce employee injuries.
  - B) Reduce Workers' Compensation claims.
  - C) Reduce property losses.
  - D) Reduce self-insurance funding requirements.
  - E) Reduce insured losses and resulting insurance premiums.
  - F) Reduce the impact of losses on the operating budget.

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## SAFETY STATEMENT

1. People are the City's most important asset, and their safety is the City's greatest responsibility. This Safety and Health Loss Control Program is a commitment to protect employees against occupational injury or illness, and to prevent damage and interruption of operations. This commitment extends to the protection of those we serve, the public.
2. Management and supervisory personnel will be accountable for the safety of the employees working under their supervision. Supervisors are expected to ensure that all operations are conducted in a safe manner.
3. The expected results of this manual will be to eliminate the underlying causes of accidents and incidents which result in injury to employees or the public; damage to property, facilities, and equipment; or damage to the environment and natural resources. These positive results will be accomplished by providing:
  - A) Employees have a responsibility for their own safety and the safety of fellow employees and the community. All employees are expected to follow safe procedures and take no unnecessary risks. Employees are required to use all safeguards and safety equipment provided and make safety a part of the job.
  - B) Good safety records reflect the quality of management, supervision, and the work force. The City's goal is to accomplish work in the safest possible manner consistent with good work practices. Management at every level is charged with the task of translating this goal into positive action.
  - C) There are several references to OSHA (Occupational Safety & Health Administration) Standards. While the City of Port St. Lucie is not subject to follow or report to OSHA, their standards and guidelines are excellent resources that were considered when writing this manual. The website for OSHA is [www.osha.gov/stateplans](http://www.osha.gov/stateplans).

Approved \_\_\_\_\_, 2022

By \_\_\_\_\_

The City of Port St. Lucie has developed this comprehensive Safety Program as a means of achieving its safety objectives - reducing injuries and managing overall risk to the City.

***This program consists of:***

- Personal responsibility at all levels
- A safety board
- Scheduled safety meetings
- Effective safety training
- Specific safety programs for working under hazardous conditions
- A subset of written safety programs

### **3.01 SAFETY PROGRAM RESPONSIBILITY**

Safety is defined as the condition of being protected from, or unlikely to cause danger, risk, or injury. All City employees bear a responsibility to conduct business with safety in mind. The following section outlines responsibilities held.

### **3.02 RISK MANAGEMENT**

Risk Management is responsible for the direction and administration of the Safety Program and will take all action deemed necessary to produce a positive reduction in accidents and their causes.

***Risk Management will:***

- Provide technical guidance and direction to personnel in all levels of management in the implementation of the safety program.
- Consult with the departments on design and use of equipment and safety standards.
- Inspect the facilities to detect existing or potential accident and health hazards and recommend corrective or preventative measures where indicated.
- Participate in the investigation of accidents and injuries.
- Provide accident data to management for use in promoting accident and property damage prevention programs.
- Evaluate and assist in providing adequate personal protective equipment (PPE) and clothing for use by personnel requiring such items.
- Attend departmental and City Safety Review Board Meetings.
- Stop hazardous jobs when safety precautions are not being enforced.
- Set an example of safe working habits and follow all safety regulations.
- Maintain an effective driver training program for drivers of municipal vehicles.
- Distribute reports to departments promoting the prevention of injuries, occupational disease, vehicular collisions, liabilities, and damage to equipment and materials.
- Stay current on laws and regulations and attend continuing education courses in safety, as necessary, to applied defined functions.

### **3.03 DEPARTMENT HEADS**

Each department head has the full authority and responsibility for maintaining safe and healthful working conditions whether it is in the field, shop, or office. Although personnel exposure to hazards varies widely from department to department, it is expected that an unrelenting effort will be directed toward controlling injuries, liabilities, and waste of material.

***Each department head will:***

- Provide leadership and positive direction essential in maintaining firm loss control policies as a prime consideration in all operations.
- Hold each manager, under their supervision, fully accountable for an explanation of the preventable injuries that occur to his/her employees.
- Call upon Risk Management for any assistance needed in promoting an effective loss control program.
- Ensure that all safety guidelines and procedures are followed by all personnel, always, under his/her direction.
- Demonstrate a personal concern in departmental losses for each worker who has been involved in a job-related injury or a vehicular collision.
- Ensure prompt corrective action is taken whenever hazards are recognized, or unsafe acts are observed.
- Set an example of safe working habits and follow safety regulations.

**3.04 SUPERVISORY PERSONNEL**

A supervisor has responsibility for the safe actions of his/her employees in the safe performance of the jobs within his/her operating area. The supervisor has authority to enforce the provision of this safety program and ensure all safety guidelines and regulations are implemented.

***Each supervisor will:***

- Enforce all work guidelines and procedures, being impartial, and may take disciplinary action against those who fail to conform and give prompt recognition to those who perform well.
- Ensure that each employee is fully trained for the job that he/she is assigned to and that he/she is familiar with published work rules.
- Take the initiative in recommending corrections of deficiencies noted in the facilities' work procedures, employee job knowledge, or attitudes that adversely affects loss control activities.
- Inspect all work areas, tools, and equipment on a regular basis. Correct unsafe acts and unsafe conditions immediately when noted.
- Ensure that untrained employees are not permitted to operate any mechanical or electrical equipment involved in operations, until properly trained on its usage.
- Instruct all employees on reporting all accidents, and the necessity of receiving first aid treatment.
- Conduct thorough accident investigations of all accidents, injuries, and liabilities regarding his/her employees. Offer corrective suggestions and follow-up on all corrections and changes made.
- Set an example of safe working habits and follow all safety regulations.

- Ensure that all equipment, materials, and work conditions are maintained properly.
- Ensure that personnel are trained, and fully understand safe work procedures and existing guidelines.
- Ensure that all employees newly hired or experienced are trained, and retrained when necessary, in safety procedures for each job performed.
- Ensure all employees are instructed in the use and need for protective equipment and understand their applications.
- Ensure all necessary safety equipment and protective devices are available, and used properly.
- Encourage employees to make safety suggestions and written comments, and follow-up as appropriate.

**3.05 EMPLOYEE**

Employees are required as a condition of employment to exercise due care in the course of their work to prevent injury to themselves and fellow workers.

***Each employee will:***

- Report all unsafe conditions and acts to their supervisor.
- Be responsible to keep themselves, fellow employees, equipment, and the public free from incident.
- Always keep work areas clean and orderly.
- Follow prescribed procedures during an emergency.
- Report all accidents immediately to their supervisor.
- Be certain to understand instructions completely before starting work.
- Learn to lift and handle materials properly.
- Avoid engaging in horseplay and avoid distracting others.
- Review educational materials posted on bulletin boards, distributed in work areas, or sent via e-mail.
- In the event of an injury, know how medical help may be obtained.
- Do not damage or destroy any warning or safety device or interfere in any way with another employee's use of them.
- Operate only machines and equipment authorized by their supervisor on which you have been trained.
- Use proper equipment for the job and use it correctly.
- Wear required personal protective equipment (PPE) when performing job duties. Dress safely and sensibly.
- Set an example of safe working habits and follow all safety regulations.

**4.01 PURPOSE**

The purpose of the Safety Review Board is to review and evaluate matters relating to Workers' Compensation injuries, motor vehicle accidents, and damage to City or private property. The Board may formulate suggestions to avoid such incidents in the future.

The Board will review unsafe acts and unsafe conditions. These problems, whenever possible, will be resolved at the department level. When this is not possible, the problem should be brought to the attention of the Safety Review Board for resolution. Risk Management will also follow-up on inspections conducted at various departments for the purpose of hazard identification.

The focus of the Safety Review Board is safety, not discipline, and as such will not recommend or impose discipline for safety related violations, but will focus on what can be done to prevent similar incidents from occurring in the future.

**4.02 SAFETY REVIEW BOARD MEMBERSHIP**

1. The Safety Review Board will consist of employee representatives from various departments throughout the City, as selected by their Department Head.
2. The election of Officers will provide for a Chairperson and a Vice Chairperson. A Recording Secretary will be provided by the City Clerk's Office.
3. The Officers will be elected by the majority vote of the Board during a duly constituted meeting.
4. The term of office for Officers will be for one year. An officer may be elected for consecutive terms.
5. Members may serve on the Board for a two-year term. A maximum of two (2) individuals from each department may be selected by their Department Head.
6. Members can serve consecutive terms.
7. Terms of office will commence at the beginning of each calendar year.

**4.03 RESPONSIBILITIES*****The Safety Review Board will:***

1. Convene bi-monthly at a time and location designated by Risk Management. A schedule of meetings for the year will be posted on the 1st floor of City Hall in December of the previous year, and provided to each Safety Review Board member. The Board may convene at any other time, during normal working hours, as the Chairperson so directs.
2. Review safety suggestions and problems for unsafe acts and unsafe conditions that cannot be resolved at department levels.
3. Review and evaluate the facts in all matters involving on duty employees involved in injuries, motor vehicle accidents, and property damages.
4. Determine the cause of accidents which resulted in property damage or personal injury to an on duty employee while making recommendations for further action and preventative measures.
5. Evaluate accident prevention and illness prevention programs.
6. Follow-up on all recommendations made following inspections conducted at facilities.

***The Recording Secretary will:***

1. Act as the official recorder for the Safety Review Board and send copies of the proceedings to Risk Management for distribution to all City Departments.
2. Maintain adequate records of the proceedings in accordance with the Florida Records Retention Schedule.

#### **4.04 AGENDA AND CRITERIA OF THE SAFETY REVIEW BOARD MEETINGS**

##### **1. Agenda**

- a. Call to order by the Chairperson. (It shall be noted here that if the Chairperson is absent, then the Vice Chairperson will act as Chairperson.)
- b. Roll call by Chairperson.
- c. Introduce any visitors.
- d. Approve minutes from previous meeting.
- e. Review new rules or regulations issued since the last meeting.
- f. Address unfinished business.
- g. Review accidents and preventive measures taken since the previous meeting.
- h. Discuss safety inspections and recommendations.
- i. New business may be brought to the floor.
- j. Adjourn the meeting.

2. Meetings will be held on the third Thursday, bi-monthly. Special meetings will be held as called by the Chairperson. A quorum will consist of half or more of the committee excluding advisory members.
3. Attendance of Safety Review Board members is expected unless they have been excused in advance.
4. Safety Review Board members and/or Officers may be removed from office for unexcused absences of two or more consecutive meetings, or for other reasons as determined by majority vote of the Safety Review Board.

#### **4.05 RULES OF PROCEDURES**

1. A decision of the Board shall be made by the majority vote of those members present. Fifty percent plus one.
2. A Board member may abstain from voting.
3. The Chairperson shall be responsible for calling a motion to vote. If a motion is not seconded, the motion shall go no further.
4. If a tie should occur, it will indicate that no action should be taken by the Board. The issue under consideration will remain as no decision.
5. Each accident/injury will be reviewed on a bi-monthly basis as-reported on the claim log maintained by Risk Management.
6. The Board may also request the employee and/or supervisor to appear before the Board and render their explanation of the incident, or request expertise for guidance.

#### **4.06 BOARD DELIBERATIONS**

The Board will be guided by principal to determine if the damage or injury could have been prevented, and ensure appropriate safeguards and measures are in place to prevent a similar incident from occurring in the future. The Board will give full consideration to the occupational hazards inherent in the nature of the work performed by the employee.

1. Risk Management will work with Department Heads and/or departmental safety personnel after the meeting to disseminate information, and implement new procedures that may result from the meeting.



# 5.0

## SAFETY MEETINGS

Departments may elect to have safety meetings. The meetings can be conducted monthly, bi-monthly, or quarterly. The meetings are to provide employees with up-to-date safety information. Employees will discuss various aspects of job safety and health as it pertains to the work to be performed. In addition to this, accidents that have occurred within the department during the previous months since the last meeting will be reviewed, and a discussion will follow regarding corrective action that must be taken to prevent recurrence.

***Safety issues to be discussed will include:***

- 1.** Unsafe conditions and outstanding deficiencies noted in safety inspections.
- 2.** Accidents that have occurred including cause and corrective action taken.
- 3.** Site audits that have taken place and the results.
- 4.** The discussion of upcoming activity and safety issues to be addressed.
- 5.** Monthly safety objectives will be reviewed.

An attendance log will be kept for each meeting noting the date and each employee's name, signature, and division. Minutes will be done to document the name of the attendees, topics discussed, and length of the meetings. Minutes will be available to all employees in the Department. Retention of these minutes and attendance log will be kept in accordance with Florida Records Retention Guidelines.

# 6.0

## EMPLOYEE ORIENTATION

Every new employee, as part of the general hiring process, will review a Risk Management and safety orientation presentation. During orientation, a positive attitude toward working safely will be emphasized, along with the City's commitment to employee safety and a safe working environment. The safety program will be explained and safety responsibilities will be defined. A representative from the Risk Management Department will conduct the orientation. The employee will complete a Risk Management employee checklist. A copy of the checklist will be maintained in the employee's personnel file.

Additional orientations will be provided as deemed necessary by the department's supervisor, manager, or director.

## **GUIDELINES**

This standard establishes uniform procedures for investigating and reporting accidents and injuries incurred by the City of Port St. Lucie in a timely manner. These procedures will provide the information needed to identify causes of accidents and injuries in our operations and enable management to develop methods to prevent recurrence.

All accidents/incidents having an effect or a potential effect on the safety and well-being of employees or citizens must be reported and recorded immediately following the incident to the employee's immediate supervisor.

When an accident occurs, prompt and appropriate assistance must be provided to the party or parties involved. Supervisory personnel will conduct timely investigations to obtain details of the accident and take immediate actions to prevent a recurrence.

When an accident or injury occurs, it is the employees' responsibility to notify their supervisor. The supervisor will notify Risk Management. The employee will complete an Employee Injury/Incident Report if physically capable. If the employee needs and requests medical treatment, timely medical attention will be provided by the City in conjunction with Workers' Compensation. Note: Failure to report injuries or illnesses immediately following their occurrence may result in loss of benefits to which an employee may be entitled.

The supervisor must immediately determine the factors that led to the incident and take necessary precautions to prevent a recurrence. The supervisor must complete the Supervisor Section on the back page of the Employee Injury/Incident Report and note their findings.

A completed Employee Injury/Incident Report or damage report should be sent to Risk Management.

## **7.01 ACCIDENT INVESTIGATION AND INJURY REPORTING PROCEDURES**

*This standard requires the investigation and reporting of the following:*

- a. Near-miss incidents
- b. Workers' Compensation – Employee work related injuries or illnesses
- c. Automobile Liability – Bodily injury or damages caused to property arising out of ownership, maintenance, or use, including loading, and unloading of any motor vehicle
- d. Property Damage – Damage caused to city property by city employees, public or natural occurrences
- e. General Liability – Damaged caused by an employee to property owned by the public or private citizen

## **RESPONSIBILITY**

The department's Safety Coordinator or Division manager will review and approve all reports and submit them to the Risk Management Department within the specified time frame.

It may not be necessary to conduct an on-site accident investigation for minor cases. The Safety Coordinator shall determine the extent of the investigation necessary, based on the severity of the accident/injury incurred and the circumstances surrounding the accident/injury.

The Risk Management Department shall be responsible for reviewing and analyzing, and then submitting the reports to the City's Third-Party Administrator (TPA). All correspondence, contact, and inquiries with the TPA will be routed through the Risk Management Department.

## **EMPLOYEE'S REQUIRING MEDICAL TREATMENT**

### **Non-Emergency**

The following steps should be followed for work-related injury or illness that is not an emergency:

1. Report the injury to your Supervisor and Risk Management.
2. Complete a Report of Employee Injury/Incident Form.
3. Risk Management will coordinate an appointment with a Workers' Compensation authorized Primary Care Physician (PCP).
4. Keep all medical appointments.
5. Follow instructions given by the medical provider.
6. If a specialist is needed, an appointment will be scheduled by

Workers' Compensation with an authorized Workers' Compensation treating physician.

7. If prescriptions are necessary, inform the pharmacist it is Workers' Compensation related. Do not use personal medical insurance.

**IMPORTANT:** Never schedule an appointment with a personal doctor – PCP or Specialist. Unless the appointment and treatment was authorized by Workers' Compensation, any charges incurred will not be paid for by Workers' Compensation. Charges for unauthorized treatment will be the responsibility of the employee.

### **Emergency**

Follow these steps if involved in a work-related injury anywhere in Florida that is serious and requires immediate emergency treatment:

1. Go to the nearest medical facility that offers emergency care or call 911 for emergency services.
2. Have a representative from the facility contact Risk Management to verify coverage. After hours, emergency care will be given, and coverage will be verified as soon as possible.
3. When the emergency is over, follow steps 2 through 7 above.

### **Traffic Crash Procedures**

The following procedures shall be followed for any crash, including those not involving a second party (i.e. hit a tree, hit a guardrail, etc.).

#### **WHEN A CRASH OCCURS, *STOP*:**

1. Call the police.
2. Call your supervisor. The supervisor will contact Risk Management about post-accident reasonable suspicion drug and alcohol testing.
3. Obtain the name and agency of the investigating police officer.
4. Obtain a case number.
5. If the vehicle is not operable, contact First Vehicle and have the vehicle towed.
6. If you are out of town on travel and are involved in a crash, and the vehicle is not operable, ask the police officer working the crash to contact a tow company and have the vehicle towed back to Port St. Lucie. If you can return to Port St. Lucie at that time, do so with the tow truck driver. If you are not able to return to Port St. Lucie, obtain a ride back to your hotel from a police officer, cab service, etc. and contact Risk Management for information on renting a vehicle. If the crash occurs after hours, contact Risk Management in the morning about obtaining a vehicle. **DO NOT RENT A VEHICLE WITHOUT FIRST SPEAKING TO RISK MANAGEMENT.**
7. If you are injured because of the crash, seek appropriate

medical treatment in accordance with The City of Port St. Lucie's established Workers Compensation procedures.

8. Complete the Injury/Incident Report and submit it to your supervisor within 48 hours.

IF YOU ARE OPERATING A VEHICLE AND IT GETS STUCK, NEVER ATTEMPT TO TOW THE VEHICLE YOURSELF. IF YOU ARE IN PORT ST. LUCIE, CONTACT FIRST VEHICLE SERVICES. IF YOU ARE OUT OF TOWN CONTACT A TOW COMPANY.

## GUIDELINES

The City of Port St. Lucie endeavors to provide a place of employment that is free from recognized hazards that cause, or are likely to cause, death or serious physical harm to employees or the public. Therefore, welding operations will be performed only by authorized and trained employees. When welding hazards exist that cannot be eliminated, then engineering practices, administrative practices, safe work practices, Personal Protective Equipment (PPE), and proper training will be implemented. These measures will be used to minimize those hazards to ensure the safety of employees and the public.

## DEFINITIONS

**Approved** - Listed or approved by a nationally recognized testing laboratory.

**Confined space** – A space that is not designed for human occupancy, has limited openings for entry and exit, may lack adequate ventilation, and may contain or produce dangerous air contamination.

**Hazardous** – Any act, condition, or substance which poses health and safety risk to employees.

**Hot Work Permit** – A permit allowing employees to perform work involving welding, cutting, or any task that would deplete oxygen, create toxic fumes and vapors, or create the potential for fire or explosion.

**Pulmonary** – Any body function related to the lungs.

**Welder/Welding Operator** – Any operator of electric or gas welding and cutting equipment.

## PROGRAM COMPONENTS

### Training

Employees who perform welding operations will be trained to:

- Recognize the hazards associated with various welding operations.
- Know the safe work practices for welding operations.
- Understand the importance and requirements of Hot Work Permits.
- Use the appropriate personal protective equipment (PPE) for the job.
- Recognize confined spaces and the requirements associated with them.
- Understand the importance of regular inspections of welding equipment, attachments, and accessories.
- Attend annual awareness training.

Training shall be made available upon initial employment or job re-assignment. Refresher training shall be provided upon the discretion of the supervisor.

### Types of Welding

Several types of welding operations are used in the City of Port St. Lucie. The most common welding operations include:

- TIG
- MIG
- Stick
- Plasma
- Gas welding and cutting

The gas welding process unites metals by heating. The gas commonly used as the fuel gas is acetylene. The gas cutting process removes metal by a chemical reaction of the base metal with oxygen acting as an accelerant at an elevated temperature.

### Welding Hazards

The hazards associated with welding include health and safety hazards. Health hazards are primarily respiratory hazards due to the generation of fumes and gases. Physical hazards are due to the work site and conditions and materials associated with the work site.

Health hazards associated with the generation of fumes and gases depend upon the welding process, the base material, the filler material, and the shielding gas if any. Metal creates fumes which are tiny metal oxide particles formed when metal vapors cool. Breathing unsafe levels of fumes can result in metal fume fever from welding on galvanized metal with zinc coating and cadmium, copper, or magnesium. Workers may experience sweating, shivering, nausea, fever, aching muscles, weakness, fatigue, and a loss of energy and appetite.

Gases are given off during many different welding operations. Above certain concentrations, these gases, including carbon monoxide, oxides of nitrogen and ozone can irritate the nose, throat and eyes and damage lungs. Ultraviolet light from the arc can react with oxygen in the air to form ozone. Other sources of hazards are electrode fluxes, shielding gases and metal treated with paint, oil, or other protective coatings. In summary, health hazards include exposure to:

- Toxic gases
- Primary pulmonary gases
- Non-pulmonary gases
- Particulate matter
- Irritants and toxic inhalants

Air sampling may be required to identify the fumes and gases emitted from a specific operation by the welders.

Physical hazards associated with welding operations include:

- Fire
- Proximity to combustible materials
- Hazardous locations (rooms containing flammable or combustible vapors)
- Closed containers that have held flammable liquids or other combustibles
- Electric shock (arc welding)
- Infrared and ultraviolet eye damage

Appendix A – presents precautions that should be followed to minimize, control, or eliminate these hazards.

### **Safe Work Practices**

Safe work practices for all welding operations include:

- Placing work at an optimal height to avoid back strain or shoulder fatigue
- Using all protection equipment for work on elevated surfaces more than 4 feet above the floor or ground surface
- Wearing personal protective equipment (PPE) as applicable for the work conditions
- Following special precautions when welding or cutting in a confined space
- Posting warning signs to mark just completed welding or cutting surfaces
- Follow safe housekeeping principles.
- Use equipment as directed by the manufacturer instructions or practices
- Remove any butane lighters, matches, or other combustibles from pockets prior to performing work
- Do not perform welding work with oily clothing (Leathers may need to be worn over clothing)
- Follow fire protection and prevention practices during the welding operation (See Appendix B for further details)
- Use proper ventilation techniques during welding operations (See Appendix C for further details)

### **Hot Work Permits**

Hot Work Permits are a useful accountability tool to ensure that all the necessary precautions are taken prior to commencing welding. They also assure that employees are aware of and use the appropriate safeguards when performing welding operations. Hot work permits are not needed in areas designated for welding and cutting operations such as in the maintenance shop. In confined spaces a hot work permit is required if any welding operations are performed in that space regardless of whether a confined space entry permit is required. (The Hot Work Permit is in the Confined Space program but is included again with this procedure.)

### **Employee Protection**

Employee protection during welding operations must include:

- Safeguards and provisions for fall protection
- Tripping hazard prevention
- Eye Protection
- Protection from arc welding rays
- Protective clothing
- Protection from electrical shock hazards

Additionally, to prevent injury from burns, all areas that have been just welded or cut will be marked to inform other employees that the material or area is hot.

For fall protection, employees will be provided with fall protection such as harnesses and lanyards or railings where falls from heights of 4 feet or more are possible.

Tripping hazards will be minimized by welding lines being placed in order not to create trip and fall hazards. Cables will not block passageways, stairways, or other exits.

Eye protection will be provided by helmets or hand-held shields being used during welding operations. Helpers or attendants will be provided with proper eye protection.

Welding ray protection will be provided by non-combustible or flame-resistant screens, shields or suitable eye protection to workers or other persons adjacent to the welding operations. Booths or screens shall permit circulation of air at floor level.

Protective clothing will vary with the size, nature, and location of the work. Criteria for selection of protective clothing are detailed in Appendix D of this safety guideline and procedure.

Electrical protective devices will be used to protect employees from the possibility of electrical shock when welding operations are performed in wet areas or areas where high humidity is present.

### **Confined Space Work**

No work is to commence until all requirements of the Confined Space Entry Safety Guideline and Procedure are met and a Hot Work Permit is submitted. Refer to Chapter 13 Confined Space Entry in this manual for details.

Mechanical ventilation will be provided during any confined space welding operation to prevent the accumulation of toxic materials, or possible oxygen enrichment or deficiency. All heavy and portable equipment used in confined space welding or torch cutting operations will be secured before operations begin.

When a welder must enter a confined space through a manhole or other small opening, the welder will be attached to a self-retracting lifeline and wench. The lifeline will be attached so as not to interfere with the welding operation, or with the removal of the welder in case of an emergency.

### **CRITERIA FOR PERSONAL PROTECTIVE EQUIPMENT**

#### **Eye Protection Selection**

Arc Welding and Arc Cutting – Helmets and hand shields shall be used by personnel viewing the arc during welding and cutting operations, excluding submerged arc welding. Safety spectacles or goggles shall be worn during arc welding and cutting operations to provide protection from injurious rays from adjacent work and from flying objects. The spectacles or goggles may have either clear or colored glass, depending upon the amount of exposure to adjacent welding or cutting operations.

Shade No.(s) 9 through 14 are recommended for safety spectacles or goggles used for gas metal-arc and shielded metal arc welding. Helpers shall be provided with proper eye protection in accordance with ANSI Standard Z87.1.

Gas Welding and Oxygen Cutting – Goggles or other suitable eye protection shall be used during all gas welding or oxygen cutting operations. Spectacles with suitable filter lenses and without side shields are permitted for use during gas welding operations on light work, for torch brazing, or for inspection. Common sunglasses or safety issue sunglasses are not considered an acceptable alternative.

Resistance Welding and Brazing – All operators of resistance welding or resistance brazing equipment and their helpers shall use face shields, spectacles, or goggles, depending on the job, to protect their faces or eyes, as required.

### **Specifications for Protectors**

**Material Properties** – Helmets and hand-held shield bodies shall be made of material, which is thermally and electrically insulating, non-combustible or self-extinguishing, and opaque to visible ultra-violet, and infrared radiation. Helmets, shields, and goggles shall be capable of withstanding disinfecting.

**Area of Protection** – Helmets and hand-held shields shall be designed to protect the face, forehead, neck, and ears to the vertical lines back of the ears from weld spatter and from direct radiant energy from the arc.

**Window for Filter and Cover Plates** – Helmets and hand-held shields shall be provided with a window for filter plates and cover plates and shall be designed for easy removal and replacement of plates.

**Materials Effect on Skin** – All protective parts shall be constructed of a material which will not readily irritate or discolor the skin.

**Ventilation** – Goggles shall be ventilated to deter fogging of the lenses. Ventilation of cup-type goggles shall be baffled to prevent passage of light rays into the interior of the eyecup.

**Cover Lens or Plates** – Cover lenses or plates shall be provided to protect the filter lens or filter plate in goggles, helmets, or hand-held shields from welding spatter, pitting, and scratching. Cover lenses and plates shall be clear, glass, or self-extinguishing plastic, and need not be impact resistant.

**Filter Lenses or Plates** – All filter lenses and plates shall be impact resistant. All filter lenses and plates shall be substantially free from bubbles, waves, and other flaws. Except when a lens is ground to provide proper optical correction for defective vision, the front and rear surfaces of lenses and plates shall be smooth and parallel.

**Marking** – Filter lenses and plates shall bear some permanent distinctive marking by which the manufacturer and shade number may be readily identified. In addition, all glass filter lenses and plates, when treated for impact resistance, shall be marked with the letter "H" to designate impact resistance.

**Maintenance** – Helmets and goggles shall be well-maintained. Helmets and goggles should not be transferred from one employee to another without being disinfected.



## **Protective Clothing**

**Criteria for Selection** – Appropriate protective clothing required for any welding and torch cutting operation will vary with the size, nature, and location of the work to be performed.

**Gloves** - All welders and oxygen cutters shall wear protective gloves.

- For light work, durable flame-resistant cotton gloves should be used and for heavier work, leather or other suitable durable flame-resistant materials should be used. Insulated linings should be used to protect areas exposed to high radiant energy.

**Aprons** - Aprons made of leather or other suitable flame-resistant materials should be used when additional protection against sparks and radiant energy is desired.

**Treated Clothing** - Clothing treated with non-durable flame-retardant materials shall be retreated after each wetting or cleaning.

- Woolen clothing is preferable to cotton because it is not so readily ignited and helps protect the welder from changes in temperature. Cotton clothing, if used, should be chemically treated to reduce its combustibility. All outer clothing such as jumpers or overalls should be reasonably free from oil or grease.
- Sparks may lodge in rolled-up sleeves or pockets of clothing or cuffs of overalls or trousers. It is recommended that sleeves and collars be kept buttoned and pockets be eliminated from the front of clothing. Trousers or overalls should not be turned up on the outside.
- For heavy work, fire-resistant leggings or other equivalent means should be used.
- A sheet metal screen in front of the worker's legs can provide further protection against sparks and molten metal in torch cutting operations.
- Cape sleeves or shoulder covers with bibs made of leather or other flame-resistant material should be worn during overhead welding or torch cutting operations. Skull caps made from flame-resistant material may be worn under helmets to prevent head burns.

## **COMPRESSED GAS CYLINDERS**

### **Transporting, Moving, and Storing Compressed Gas Cylinders**

- Valve protection caps shall be in place and secured.
- When cylinders are hoisted, they shall be secured on a cradle, sling board, or pallet. They shall not be hoisted or transported by means of magnets or choker slings.
- Cylinders shall be moved by tilting and rolling them on their bottom edges. They shall not be intentionally

dropped, struck, or permitted to strike each other violently.

- When cylinders are transported by powered vehicles, they shall be secured in a vertical position.
- Valve protection caps shall not be used for lifting cylinders from one vertical position to another. Bars shall not be used under valves or valve protection caps to pry cylinders loose when frozen. Warm, not boiling, water shall be used to thaw cylinders loose.

Unless cylinders are firmly secured on a special carrier intended for this purpose, regulators shall be removed, and valve protection caps put in place before cylinders are moved.

- A suitable cylinder truck, chain, or other steadying device shall be used to keep cylinders from being knocked over while in use.
- When work is finished, when cylinders are empty, or when cylinders are moved at any time, the cylinder valve shall be closed.
- Compressed gas cylinders shall always be secured in an upright position, if necessary, for short periods of time while cylinders are actually being hoisted or carried.
- Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.
- Inside of buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location, at least 20 feet from highly combustible materials such as oil or excelsior. Cylinders should be stored in assigned places away from elevators, stairs, or gangways. Assigned storage places shall be located where cylinders will not be knocked over or damaged by passing or falling objects, or subject to tampering.
- The in-plant handling, storage, and utilization of all compressed gases in cylinders, portable tanks, or motor vehicle cargo tanks shall be in accordance with Compressed Gas Association Pamphlet P-1-1965.

### **Placing Cylinders**

- Cylinders shall be kept far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame will not reach them. When this is impractical, fire resistant shields shall be provided.
- Cylinders shall be placed where they cannot become part of an electrical circuit. Electrodes shall not be struck against a cylinder to strike an arc.
- Fuel gas cylinders shall be placed with valve end up whenever they are in use. They shall not be placed in a location where they would not be subject to open flame, hot metal, or other sources of artificial heat.
- Cylinders containing oxygen or acetylene, or other fuel gas shall not be taken into confined spaces.

### **Treatment of Cylinders**

- Cylinders, whether full or empty, shall not be used as rollers or supports.
- No person other than the gas supplier shall attempt to mix gases in a cylinder. No one except the owner of the cylinder or person authorized by the owner shall refill a cylinder. No one shall use a cylinder's contents for purposes other than those intended by the supplier.
- No damaged or defective cylinder shall be used.

### **Use of Fuel Gas**

- Fuel gas shall not be used from cylinders through torches or other devices which are equipped with shutoff valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.
- Before a regulator to a cylinder valve is connected, the valve shall be opened slightly and closed immediately. (This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might enter the regulator.)
- The cylinder valve shall always be opened slowly to prevent damage to the regulator. For quick closing, valves of fuel gas cylinders shall not be opened more than 1½ turns. When a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel gas flow can be shut off quickly in case of an emergency. In the case of manifold or coupled cylinders, at least one such wrench shall always be available for immediate use. Nothing shall be placed on top of a fuel gas cylinder, when in use, which may damage the safety device or interfere with the quick closing of the valve.
- Before a regulator is removed from a cylinder valve, the cylinder valve shall always be closed, and the gas released from the regulator.
- If when the valve on a fuel gas cylinder is opened, there is found to be a leak around the valve stem, the valve shall be closed, and the gland nut tightened. If this action does not stop the leak, the use of the cylinder shall be discontinued, properly tagged, and removed from the work area.
- If a leak should develop at a fuse plug or other safety device, the cylinder shall be removed from the work area.

### **Fuel Gas and Oxygen Manifolds**

Fuel gas and oxygen manifolds shall bear the name of the substance they contain in letters at least 1-inch high which shall be either painted on the manifold or on a sign permanently attached to it. These manifolds shall be placed in safe, well ventilated, and accessible locations and not be located within enclosed spaces.

Manifold hose connections, including both ends of the supply hose that lead to the manifold, shall be such

that the hose cannot be interchanged between fuel gas and oxygen manifolds and supply header connections. Adapters shall not be used to permit the interchange of hose. Hose connections shall be kept free of grease and oil. When not in use, manifold and header hose connections shall be capped.

Nothing shall be placed on top of a manifold, when in use, which will damage the manifold or interfere with the quick closing of the valves.

### **Hoses**

Fuel gas and oxygen hose shall be easily distinguishable from each other. The contrast may be made by different colors or by surface characteristics readily distinguishable by the sense of touch. Oxygen and fuel gas hoses shall not be interchangeable. A single hose having more than one gas passage shall not be used.

When parallel sections of oxygen and fuel gas hose are taped together, not more than 4 inches out of 12 inches shall be covered by tape.

All hose in use, carrying acetylene, oxygen, natural or manufactured fuel gas, or any gas or substance which may ignite or enter into combustion, or be in any way harmful to employees, shall be inspected at the beginning of each working shift. Defective hose shall be removed from service.

Hose which has been subject to flashback, or which shows evidence of severe wear or damage, shall be tested to twice the normal pressure to which it is subject, but in no case less than 300 p.s.i. Defective hose, or hose in doubtful condition, shall not be used.

Hose couplings shall be of the type that cannot be unlocked or disconnected by means of a straight pull without rotary motion.

Boxes used for the storage of gas hose shall be ventilated.

Hoses, cables, and other equipment shall be kept clear of passageways, ladders, and stairs.

### **Torches**

Clogged torch tip openings shall be cleaned with suitable cleaning wires, drills, or other devices designed for such purpose.

Torches in use shall be inspected at the beginning of each working shift for leaking shutoff valves, hose couplings, and tip connections. Defective torches shall not be used.

Torches shall be lighted by friction lighters or other approved devices, and not by matches or from hot work.



## Regulators and Gauges

Oxygen and fuel gas pressure regulators, including their related gauges, shall be in proper working order while in use.

## Oil and Grease Hazards

Oxygen cylinders and fittings shall be kept away from oil or grease. Cylinders, cylinder caps and valves, couplings, regulators, hose, and apparatus shall be kept free from oil or greasy substances and shall not be handled with oily hands or gloves. Oxygen shall not be directed at oily surfaces, greasy clothes, or within a fuel oil or other storage tank or vessel.

## APPENDIX A: SAFETY HAZARDS PRECAUTIONS

- Welding should be done in a permanent location that can be designed to provide maximum safety and fire protections. Otherwise, if the welding and cutting equipment is portable, the site should be inspected to determine what fire protection equipment is necessary. (CFR 1910.157)
- Where welding is done near combustible materials, special precautions are necessary to prevent sparks or hot slag from reaching such material and starting fires. If the work cannot be removed, the combustible material should be moved a safe distance away.
- Welding or cutting activities should not be allowed in or near rooms containing flammable or combustible vapors, liquids, or dusts. If welding is required in these locations, all the surrounding premises should be thoroughly ventilated and have frequent gas testing performed.
- Closed containers that have held flammable liquids or other combustibles should be thoroughly cleaned before welding or cutting.

## APPENDIX B: FIRE PROTECTION AND PREVENTION PRACTICES

- Supervisors will inspect areas where welding or torch cutting is to take place and take proper measures to ensure fire hazards are eliminated or protected against. If combustibles are within 35 feet of the welding area, welders will use guards or shields to contain sparks and slag.
- Employees trained as fire watchers will be available in areas where welding is taking place. Appropriate fire extinguishers will be immediately available and accessible at the welding operation.
- No welding, torch cutting, or heating shall be done where flammable paints, the presence of other flammable compounds, or heavy dust concentrations exist.
- A Hot Work Permit must be completed and followed where torch cutting and welding operations are

conducted near flammables, combustibles, hazardous materials or processes, and in confined spaces. Hot work permits assure that employees are aware of and use appropriate safeguards when conducting welding operations in these environments.

## APPENDIX C: VENTILATION GUIDELINES FOR WELDING OPERATIONS

- Mechanical ventilation will be provided for welders and helpers when:
  - Welding is being performed in a space less than 10,000 cubic feet per welder.
  - A room has a ceiling height less than 16 feet.
  - A confined space or welding space contains partitions, balconies, or other structural barriers to the extent that obstruct cross ventilation.
- The minimum rate for mechanical ventilation will be 2,000 cubic feet per minute per welder unless exhaust hood or air-supplied respirators are provided.
- When using local exhaust hoods, they will be placed as close to the operation as possible. The exhaust hood will provide a rate of 100 linear feet per minute of air flow in the welding zone.
- Air supplied respirators will be used when mechanical ventilating is not possible or when materials such as beryllium and cadmium are used. (CFR 1910.134)
- Local exhaust ventilation or air-supplied respirators will be used when welding or torch cutting on coated metals (e.g. zinc, mercury, cadmium, lead, etc.) indoors or in confined spaces. Outdoors operations shall be done using respiratory protective equipment.
- A particulate welding respirator can be used when exposed to steel/manganese alloys, stainless steel, aluminum, or galvanized steel. Examples of a particulate respirator are 3M 8000, 8210, or 8511. A respirator with a valve is recommended for work in hot humid work settings such as welding or grinding.
- A half mask respirator is suitable for use with a welding shield or face shield when sparks, particles, ozone and other nuisance gases or vapors are present. Selection of the cartridge and filter should be made according to the hazard.

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## FIRST AID

### GUIDELINES

The following first aid guidelines are provided:

1. All injuries, no matter how minor, are to be reported to the immediate supervisor, and the supervisor will report the incident using the City's "Report of Employee Injury or Incident" report.
2. An injured employee may want to apply first-aid for an injury instead of receiving medical treatment. Therefore, first aid supplies shall be supplied by the City.
3. Adequate first aid supplies shall be readily available in vehicles and work areas. The "Minimum Requirements for Workplace First-aid Kits" in accordance with the American National Standard (ANSI) Z308.1 See Appendix "A" may be used as a guideline for the individual departments. Departments should stock items in their kits according to the nature of the work and accidents. As an example, departments with outdoor workers would stock items for insect or bee stings.
4. Employees will check first aid supplies on a quarterly basis and report to the supervisor to replenish as needed.

### ANIMAL BITES

Due to the possibility of rabies or other diseases, all animal bites must be given prompt medical attention. If an employee is bitten, an attempt should be made to confine the animal. A report of the injury must be made as soon as possible. The Animal Control Division shall be alerted.

### EYE INJURIES

Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.

**Appendix "A"** These are the minimum requirements for Workplace First Aid Kits per ANSI/Z308.1

**ANSI Z308.1-2015, TABLE 1: CLASSES OF FIRST AID KITS & REQUIRED SUPPLIES**

First Aid Supply	Minimum Quantity		Minimum Size or Volume	
	Class A Kits	Class B Kits	(U.S.)	(Metric)
Adhesive Bandage	16	50	1 x 3 in.	2.5 x 7.5cm
Adhesive Tape	1	2	2.5 yd. (total)	2.3m
Antibiotic Application	10	25	1/57 oz.	0.5g
Antiseptic	10	50	1/57 oz.	0.5g
Breathing Barrier	1	1		
Burn Dressing (Gel soaked)	1	2	4 x 4 in.	10 x 10cm
Burn Treatment	10	25	1/32 oz.	0.9g
Cold Pack	1	2	4 x 5 in.	10 x 12.5cm
Eye Covering (with means of attachment)	2	2	2.9 sq. in.	19 sq. cm
Eye Skin Wash	1 fl. oz. total			29.6mL
		4 fl. oz. total		118.3mL
First Aid Guide	1	1	N/A	N/A
Hand Sanitizer	6	10	1/32 oz.	0.9g
Medical Exam Gloves	2 pair	4 pair	N/A	N/A
Roller Bandage (2 inch)	1	2	2 in. x 4 yd.	5cm x 3.66m
Roller Bandage (4 inch)	0	1	4 in. x 4 yd.	10cm x 3.66m
Scissors	1	1	N/A	N/A
Splint	0	1	4.0 x 24 in.	10.2 x 61cm
Sterile Pad	2	4	3 x 3 in.	7.5 7.5cm
Tourniquet	0	1	1 in. (width)	2.5cm (width)
Trauma Pad	2	4	5 x 9 in.	12.7 x 22.9cm
Triangular Bandage	1	2	40 x 40 x 56 in.	101 x 101 x 142cm

# 10.0

## LADDER SAFETY PROGRAM

### GUIDELINES

The City of Port St. Lucie is formally committed to providing each of its employees a safe and healthy working environment. The City program is to comply with all safety laws and regulations applicable to its operation.

This program is designed to provide employees with information about various ladders, their care, and use.

### TRAINING PROGRAM

All authorized and affected employees will receive ladder training to ensure that the purpose and function of the program is understood. Employees should have the knowledge, and skills required to inspect, setup, and work safely from a ladder.

### DEFINITIONS

The most pertinent definitions for all ladder types are shown below. For the most comprehensive list refer to ANSI Definitions found in 29 CFR 1910.21, .25, .26 and .27.

**Angle of inclination** – The preferred pitch of portable non-self-supporting ladders.

**Back leg (rear rail)** – The support members of a self-supporting portable ladder-back section. The back legs are joined by rungs, bars, rear braces, or other bracing to form the back section.

**Cage** – An enclosure that is fastened to the side rails of the fixed ladder or to the structure to encircle the climbing space of the ladder for the safety of the person who must climb the ladder. Also referred to as a basket guard.

**Cleats** – Cleats are ladder crosspieces of a rectangular cross-section placed on edge on which a person may step in while ascending or descending.

**Combination ladder** – A portable ladder capable of being used either as a stepladder or as a single or extension ladder.

**Double front ladder** – A self-supporting ladder, non-adjustable in length, consisting of two (2) sections intended for climbing on both sides.

**Duty rating** – The combination of factors, including but not limited to, ladder type and design features which imply service capability.

**Extension ladder** – A non-self-supporting portable ladder adjustable in length. It consists of two (2) or more sections traveling in guides or brackets so arranged as to permit length adjustment. Its size is designated by the sum of the lengths of the sections measured along the side rails.

**Fastenings** – A device to attach a ladder to a structure, building or equipment.

**Fixed ladder** – A ladder permanently attached to a structure, building, or equipment.

**Grab bars** – Individual handholds placed adjacent to or as an extension above ladders for the purpose of providing access beyond the limits of the ladder.

**Inside clear width** – The distance between the inside flanges of the side rails of a ladder.

**Ladder foot or shoe** – That component of ladder support that is in contact with the lower supporting surface.

**Ladder safety device** – Any device, other than a cage or well, designed to eliminate or reduce the possibility of accidental falls. An example is a sliding attachment.

**Pitch** – The included angle between the horizontal and the ladder, measured on the opposite side of the ladder from the climbing side.

**Railings** – A standard railing is a vertical barrier erected along exposed edges of floor openings, wall openings, ramps, platforms, and runways to prevent falls of persons.

**Rail ladder** – A fixed ladder consisting of side rails joined at regular intervals by rungs or cleats and fastened in full length or in sections to a building, structure, or equipment.

**Rungs** – Ladder crosspieces of circular or oval cross-section on which a person may step while ascending or descending.

**Side-step ladder** – A ladder from which a person getting off at the top must step sideways from the ladder to reach the landing.

**Stepladder** – A self-supporting portable ladder, nonadjustable in length, having flat steps and a hinged back. Its size is designated by the overall length of the ladder measured along the front edge of the side rails.

**Single ladder** – A non-self-supporting portable ladder, nonadjustable in length, consisting of one section. Its size is designated by the overall length of the side rail.

**Steps** – The flat crosspieces of a ladder on which a person may step while ascending or descending.

**Step stool** – (ladder type) – A self-supporting, foldable, portable ladder, nonadjustable in length, 32 inches or less in overall size, with flat steps and without a pail shelf, designed so that the ladder top cap as well as all steps can be climbed on. The side rails may continue above the top cap.

**Through ladder** – A ladder from which a person getting off at the top must step through the ladder to reach the landing.

**Well** – A permanent complete enclosure around a fixed ladder which is attached to the walls of the well. Proper clearances for a well will give the person who must climb the ladder the same protection as a cage.

**Working load** – The maximum applied load, including the weight of the user, materials, and tools, which the ladder is to support for the intended use.

## CARE AND USE OF LADDERS

To ensure safety and serviceability, the following precautions on the care of ladders shall be observed:

1. Ladders shall always be maintained in good condition. The joint between the steps and the side rails shall be tight. All hardware and fittings securely attached, and the movable parts shall operate freely without binding or undue play.
2. Metal bearings of locks, wheels, pulleys, etc. shall be frequently lubricated.
3. Frayed or badly worn rope shall be replaced.
4. Safety feet and other auxiliary equipment shall be kept in good condition to ensure proper performance.

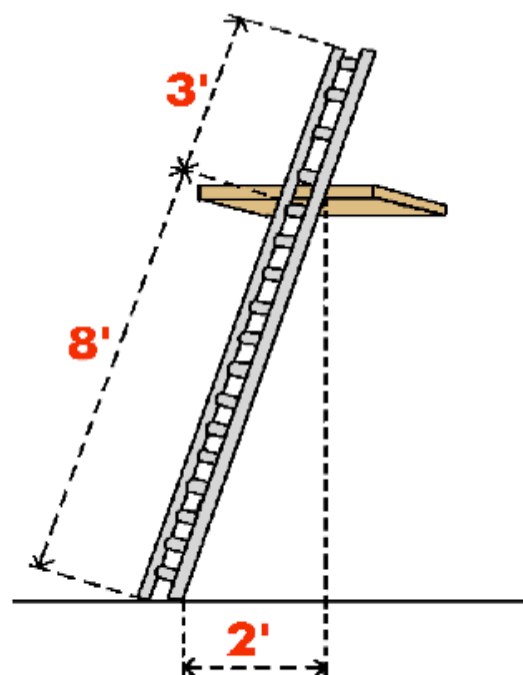
5. Ladders shall be inspected before each use, and those which have developed defects shall be withdrawn from service for repair or destruction and tagged or marked as "Dangerous. Do Not Use."

6. Rungs should be kept free of grease and oil.

7. If a ladder is involved in any of the following, immediate inspection is necessary:

- a. If ladders tip over, inspect ladder for side rail dents or bends or excessively dented rungs. Check all rung-to-side-rail connections, check hardware connections and rivets for shear.
- b. If ladders are exposed to oil and grease, equipment should be cleaned of oil, grease, or slippery materials. This can easily be done with a solvent or steam cleaning.
- c. Ladders having defects are to be marked (as indicated in Item 5 above) and taken out of service until repaired by either the maintenance department or the manufacturer.

A simple rule for setting up a ladder at the proper angle is to place the base a distance from the vertical wall equal to one fourth the working length of the ladder. The following safety precautions shall be observed in connection with the use of ladders:



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Office

1. Portable ladders shall be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is one quarter of the working length of the ladder (the length along the ladder between the foot and the top support). The ladder shall be placed to prevent slipping, or it shall be lashed or held in position. Ladders shall not be used in a horizontal position as platforms, runways, or scaffolds.
2. Ladders designed for one (1) person shall not be used by more than one person at a time or with ladder jacks and scaffold planks when use by more than one (1) person is anticipated. Specially designed ladders with larger dimensions of the parts should be used.
3. Portable ladders shall be placed so the side rails have a secure footing. The top rest for portable ladders shall be rigid and shall have ample strength to support any applied load.
4. Ladders shall not be placed in front of doors opening toward the ladder unless the door is blocked open, locked, and/or guarded.
5. Ladders shall not be placed on boxes, barrels, or other bases to obtain additional height.
6. Ladders with broken or missing steps, rungs or cleats, broken side rails, or other faulty equipment shall not be used. Improvised repairs shall not be made.
7. Short ladders shall not be spliced together to provide long sections.
8. Ladders made by fastening cleats across a single rail shall not be used.
9. Ladders shall not be used as guys, braces, or skids, or for other than their intended purpose.
10. Tops of the ordinary types of stepladders shall not be used as steps.
11. Portable ladders with reinforced rails shall be used only with metal reinforcement on the underside.
12. No ladder should be used to gain access to a roof unless the top of the ladder extends at least three (3) feet above the point of support, at eave, gutter, or roofline.
13. The user should equip all portable ladders with nonslip bases when there is a hazard of slipping. Nonslip bases are not intended as a substitute for care in safely placing, lashing, or holding a ladder that is being used upon oily, metal, concrete or slippery surfaces.
14. The bracing on the back legs of step ladders is designed for increasing stability and not for climbing.
15. Portable ladders are designed as a one-person working ladder based on a 200-pound load.
16. The ladder base section must be placed with a secure footing.

17. The top of the ladder must be placed with the two (2) rails supported on the edge.
18. When ascending or descending, the climber must face the ladder.
19. Ladders must not be tied or fastened together to provide longer sections. They must be equipped with the hardware fittings necessary if the manufacturer endorses extended uses.

## WOODEN LADDERS

1. Wooden ladders shall not be painted so that the wood can be inspected for cracks, damage and/or deterioration. All wood parts shall be free from sharp edges and splinters. Visual inspections should ensure they are free from shake, wane, compression failures, decay, or other irregularities.
2. Wood stepladders shall be no longer than 20 feet. Stepladders as hereinafter specified shall be of three types:

Type I, Industrial Stepladder: 3 to 20 feet for heavy duty work, such as utilities, contractors, and industrial use.

Type II, Commercial Stepladder: 3 to 12 feet for medium duty work, such as painters, offices, and light industrial use.

Type III, Household Stepladder: 3 to 6 feet for light duty work, such as light household use.

3. General requirements for wood stepladders are:
  - a. A uniform step spacing shall be employed not more than 12 inches. Steps shall be parallel and level when the ladder is in position for use.
  - b. The minimum width between side rails at the top, inside to inside, shall be not less than 11.5 inches. From top to bottom, the side rails shall spread at least one (1) inch for each foot of length of stepladder.
  - c. A metal spreader or locking device of sufficient size and strength to securely hold the front and back sections in open positions shall be a component of each stepladder. The spreader shall have all sharp points covered or removed to protect the user. For Type III ladders, the pail shelf and spreader may be combined in one unit.
4. Single ladders shall be no longer than 30 feet.
5. Two-section extension ladders shall be no longer than 60 feet. All ladders of this type shall consist of two (2) sections, one to fit within the side rails of the other and arranged in such a manner that the upper section can be raised and lowered.



### PORTABLE METAL LADDERS

1. The spacing of rungs or steps shall be 12-inch centers.
2. Rungs and steps shall be corrugated, dimple coated with skid-resistant material, or otherwise treated to minimize the possibility of slipping.
3. Extension ladders shall be equipped with positive stops which will ensure the overlap specified in the table above.

### GENERAL SPECIFICATIONS FOR STEP LADDERS

1. Stepladders shall not exceed 20 feet in length.
2. The bottoms of the four (4) rails are to be supplied with insulating non-slip material for the safety of the user.
3. A metal spreader or locking device of sufficient size and strength to securely hold the front and back sections in the open position shall be a component of each stepladder. The spreader shall have all sharp points or edges covered or removed to protect the user.

### FIXED LADDERS

1. The minimum design live load shall be a single concentrated load of 200 pounds.
2. The number and position of additional concentrated live load units of 200 pounds each as determined from anticipated usage of the ladder shall be considered in the design.
3. The weight of the ladder and attached appurtenances together with the live load shall be considered in the design of rails and fastenings.
4. The distance between rungs, cleats, and steps shall not exceed 12 inches, and shall be uniform throughout the length of the ladder.
5. Rungs, cleats, and steps shall be free of splinters, sharp edges, burrs or projections which may be a hazard.
6. No welding shall be allowed on any metal ladders.
7. The preferred pitch of fixed ladders shall be considered to come in the range of 75° and 90° with the horizontal.
8. Fixed ladders shall be considered as substandard if they are installed within the substandard pitch range of 60° and 75° with the horizontal. Substandard fixed ladders are permitted only where it is found necessary to meet conditions of installation. This substandard pitch range shall be considered as a critical range to be avoided if possible.
9. This section covers only fixed ladders within the pitch range of 60° and 90° with the horizontal:
  - a. Ladders having a pitch more than 90° with the horizontal are prohibited.
  - b. Ladders shall be maintained in a safe condition. All ladders shall be inspected regularly before use.

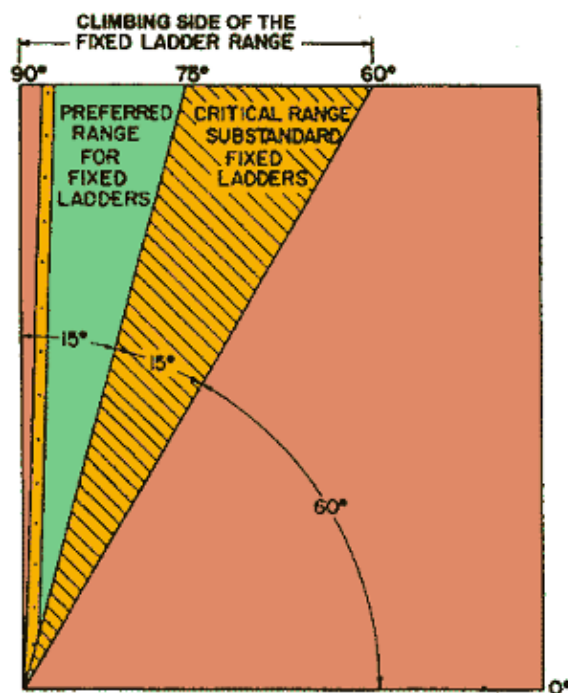


Fig. 1  
Pitch of Fixed Ladders

### SAFE USE OF LADDERS ON OR AROUND ELECTRICAL EQUIPMENT

1. Safety-related work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts when work is performed near or on equipment or circuits which are or may be energized. The specific safety-related work practices shall be consistent with the nature and extent of the associated electrical hazards.
2. Metallic or metal type ladders shall NOT be used around electrical energy, components, and sources.
3. Portable ladders shall have nonconductive side rails if they are used where the employee or the ladder could contact exposed energized parts.

### CLEARANCE AND CLIMBING SIDE OF LADDERS

1. A clear width of at least 15 inches shall be provided each way from the centerline of the ladder in the climbing space, except when cages or wells are necessary.
2. Clearance behind ladder: The distance from the centerline of rungs, cleats or steps to the nearest permanent object in back of the ladder shall be not less than seven (7) inches, except that when unavoidable obstructions are encountered.
3. Clearance behind Grab Bar: The distance from the centerline of the grab bar to the nearest permanent object in back of the grab bars shall be not less than four (4) inches. Grab bars shall not protrude on the

climbing side beyond the rungs of the ladder which they serve.

4. **Step-Across Distance:** The step-across distance from the nearest edge of ladder to the nearest edge of equipment or structure shall be not more than 12 inches.

## **PROTECTION OF LADDERS FROM DETERIORATION**

1. Metal ladders and appurtenances shall be painted or otherwise treated to resist corrosion and rusting when location demands. Ladders formed by individual metal rungs imbedded in concrete, which serve as access to pits and to other areas under floors, are frequently located in an atmosphere that causes corrosion and rusting. To increase rung life in such an atmosphere, individual metal rungs shall have a minimum diameter of one (1) inch or shall be painted or otherwise treated to resist corrosion and rusting.
2. Wood ladders, when used under conditions where decay may occur, shall be treated with a nonirritating preservative, and the details shall be such as to prevent or minimize the accumulation of water on wood parts.
3. When different types of materials are used in the construction of a ladder, the materials used shall be so treated as to have no deleterious effect upon the other.

## **SPECIAL REQUIREMENTS FOR LANDING PLATFORMS**

1. When ladders are used to ascend to heights exceeding 20 feet, landing platforms shall be provided. Each ladder section shall be offset from adjacent sections. Where installation conditions (even for a short, unbroken length) require that adjacent sections be offset, landing platforms shall be provided to each offset.
2. Where a person must step a distance greater than 12 inches from the centerline of the rung of a ladder to the nearest edge of structure or equipment, a landing platform shall be provided.
3. All landing platforms shall be equipped with standard railings and toe boards, so arranged as to give safe access to the ladder. Platforms shall be not less than 24 inches width and 30 inches in length.
4. One (1) rung of any section of ladder shall be located at the level of the landing laterally served by the ladder. Where access to the landing is through the ladder, the same rung spacing as used on the ladder shall be used from the landing platform to the first rung below the landing.

## **LADDER EXTENSIONS**

1. The side rails of through or side-step ladder extensions shall extend 3.5 feet above parapets and landings. For through ladder extensions, the rungs shall be omitted from the extension and shall have not less than 18 inches or more than 24 inches clearance between rails.

## **GRAB BARS**

Grab bars shall be spaced by a continuation of the rung spacing when they are in the horizontal position. Vertical grab bars shall have the same spacing as the ladder side rails. Grab bar diameters shall be the equivalent of the round-rung diameters.

## **LADDER SAFETY DEVICES**

1. Ladder safety devices may be used on towers and water tanks over 20 feet in unbroken length in lieu of cage protection. No landing platform is required.
2. All ladder safety devices, such as those that incorporate sliding attachments, shall meet the design requirements of the ladders which they serve.

# 11.0

## MOTOR VEHICLE SAFETY AND OPERATIONAL GUIDELINES

### GUIDELINES

The City of Port St. Lucie has the responsibility to implement a Motor Vehicle Safety and Operational Program. The City will also provide safe motor vehicles for its employees.

Employees have the responsibility, regardless of classification and whether the employee regularly drives a City-owned vehicle, to take proper care of the vehicle, including proper operation and proper parking of that vehicle. If an employee is involved in an accident, they may be required to attend the next available Defensive Driving Course provided by the City. Every employee who drives a City-owned vehicle is responsible for obeying all traffic laws and for compliance with the rules set forth in this program.

**Note:** Volunteer employees are classified as employees of the City as it pertains to this guideline and may operate City vehicles when their duties require, under the approval of the Department Head.

### DRIVER'S OR COMMERCIAL DRIVER'S LICENSE REQUIREMENTS

1. Current state driver's or commercial driver's license must always be in an employee's immediate possession when they are driving a City-owned vehicle.
2. If an employee does not have a current or valid Florida driver's or commercial driver's license, they will not drive a City-owned vehicle. An employee whose job requires them to operate vehicles may have a job reclassification review if the license is revoked or suspended by court or law enforcement agency.

### INSPECTION OF ADMINISTRATIVE VEHICLES AND SEDANS

Administrative vehicles require minimum inspections and safety practices. Before operating these vehicles, do the following:

1. Outside the Vehicle:
  - a. As you approach the vehicle, do a quick visual inspection for major body damage.
  - b. Check tires to ensure you're not starting with a flat.
2. Inside the Vehicle:
  - a. Adjust your seat and steering wheel to a comfortable driving position.
  - b. Adjust your rear view and side mirrors to give the best visibility possible around the vehicle.
  - c. As you put on your seat belt, make sure it retracts correctly, so it will protect you during a crash.

### INSPECTION OF ALL OTHER VEHICLES

1. Each Department will develop their own Vehicle Inspection Checklist. The checklist may be used as an annual inspection or daily walk around.
2. Emergency equipment is a mandatory requirement for your checklist, for example: (first aid kits, cones, fire extinguisher etc.) Equipment will vary by department and vehicle type.
3. Any defects noted which would affect the safe operation of the vehicle will be reported to the driver's supervisor and/or the fleet maintenance shop for correction before the vehicle is used.

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### **USES OF CITY-OWNED VEHICLES**

1. The use of vehicles owned or leased by the City of Port St. Lucie shall be in accordance with the provisions and restrictions contained in the Code of Ordinances, Personnel Rules and Regulations, and/or any applicable City policy or standard operating procedure.
2. Transporting Persons in City-owned Vehicles – A driver will not transport persons other than on-duty City employees in a City-owned vehicle unless the persons are being transported in connection with official City business, law enforcement matters, or as authorized by a supervisor.
3. Transporting Equipment or Property – When items of equipment, property, supplies, etc., are being transported, the driver will assure that all items are properly secured or tied in place to prevent them from shifting or falling from the vehicle.
4. Driving by Unauthorized Persons – Except in a case of an emergency, a driver will not allow a vehicle which he has been assigned to be driven by any person not authorized to drive a City-owned vehicle.
5. Riding on Fenders, Hoods, or Running Boards - No person will be allowed to ride on running boards, fenders, hoods, tailgates, or rear racks of vehicles.
6. Obstruction to Driver's View - No driver will drive any vehicle when it is so loaded that it obstructs the view ahead, to the right or left side, or interferes with control over the driving mechanism of the vehicle. No more than three (3) people will ride in the front seat of a vehicle at one time.
7. Opening and Closing Vehicle Doors - No person will open the door of a vehicle on the side available to moving traffic unless and until it is reasonably safe to do so, nor will any person leave a door open on the side of a vehicle available to moving traffic for a period of time longer than necessary to load or unload passengers.
8. Unattended Vehicles – No person driving or in charge of any motor vehicle will permit it to be unattended without first stopping the motor, locking the ignition, removing the key, effectively setting the brake, and when standing upon any grade, turning the front wheels to the curb or side of the roadway.
9. Striking Unattended Vehicles - If a moving vehicle strikes a vehicle standing unattended or other property, the driver will immediately stop and endeavor to locate

custodian or owner. A police report will be made by the agency which has jurisdiction.

10. Flags on Projected Loads - Any vehicle having a load which extends more than four (4) feet beyond the rear will have the end of the load marked with a red flag which will be at least a 12-inch square.
11. Coupling Devices – A driver whose vehicle is towing a trailer or other equipment will assure that the trailer hitch is securely latched and that safety chains are properly attached.
12. Alcoholic Beverages or Narcotic Drugs – No person will drive or be required or permitted to drive a City-owned vehicle while under the influence of any alcoholic beverage, narcotic drug, or prescription medication. Prescription medication may affect a person's faculties and possibly interfere with safe driving; therefore, a doctor's note should be requested when in doubt.
13. Obstructing Traffic for Work Requirements -Whenever work requirements make it necessary for a City-owned vehicle to block or obstruct traffic, the driver will place warning signs and/or traffic cones to warn oncoming motorists of the obstruction. Warning signs will be placed far enough from the standing vehicle to give oncoming motorists adequate time in which to stop safely. Distance should be determined by street and weather condition, speed limits in the area and whether the vehicle is standing on a straight or curved roadway. Vehicles so equipped will use revolving strobe lights or blinkers as additional warning devices. Exceptions will be made for emergency vehicles.

### **SPECIAL EQUIPMENT**

1. Special equipment such as tractors, graders, cranes, or any unit which have special devices added for specific types of work will require formal instructions prior to use by the driver. This special training will include the following:
  - a. Explanation and demonstration of all control devices.
  - b. Explanation and demonstration of all safety equipment.
  - c. Knowledge of maintenance items such as fuel, water, oil etc.
  - d. Demonstration of operation.
  - e. New driver operation under supervision with testing.
  - f. Instruction in driving to and from, or on and off a trailer, parking procedures and method for securing. Training should be recorded.

2. Passengers will ride only in seats so designed for passengers.
3. Operators will always look around and have a person guiding them when backing.
4. Construction or trailered type equipment on any major highway will travel at less than 20 miles per hour without exception. This equipment will use the right lane except when a left turn is required. Right-of-way will be given to all other motor vehicles. Headlights will always be on when driving. Triangular orange slow moving vehicle signs will be displayed on the rear of vehicle.

## **TRAFFIC RULES AND REGULATIONS**

### **Speed Limits**

1. No person will drive a vehicle at a greater speed than is reasonable and prudent under the conditions and potential hazards then existing, having due regard for the traffic and the surface and width of the roadway, and the weather conditions.
2. It is unlawful to drive or operate a vehicle in violation of posted speed limit signs.

### **Following Vehicles**

1. The driver of a vehicle will not follow another vehicle more closely than is reasonable and prudent having the regard for the speed of the vehicle, traffic volume, and the condition of the roadway. An easy way is to use the "Two Second Rule" to make sure that you have the correct following distance. If a vehicle operator stays two seconds behind the car in front, you will have the correct distance no matter what your speed. (Example: Watch the vehicle ahead pass some definite point on the street or highway, such as a tar strip or overpass. Then count to yourself, 'one thousand and one, one thousand two.' If you reach the mark before you finish saying those words, you are following too closely.)

### **Backing of Vehicles**

1. Whenever possible, the driver will position the vehicle to avoid the necessity of backing later. Before entering the vehicle, the driver will check the rear clearance of the vehicle. The driver will not back the vehicle unless such movement can be made with reasonable safety and without interfering with other traffic.
2. The driver of a dump truck or similar large vehicle with an obstructed view to the rear will not back such vehicle unless an observer signals that it is safe to do so.
3. Before and during backing movements, the driver will:
  - a. Check blind zones for objects not visible in rear view mirrors.
  - b. Watch both sides for proper clearance and back very slowly.

4. All dump trucks and heavy equipment will have back up alarms.

### **Parking of vehicles**

1. Vehicles are not to park in "No Parking Zone" except in an emergency or in required performance of official duties. In the event a vehicle must park in a "No Parking Zone," the emergency blinker will be on.
2. No vehicle is to be left unattended with the key left in the ignition.
3. All vehicles will be locked when not in use.
4. Parked vehicles must have motor stopped, emergency brakes set, and left in gear or park for automatic transmissions.

### **Use of Safety Cones**

1. When at a job site, safety cones thirty-six inches high made of red-orange fluorescent plastic will be used around all vehicles and trailers.
2. The safety cones will be carried in a manner and location that keeps them from falling off or out of the vehicle when driving.
3. All drivers of City vehicles, including pickup trucks, utility trucks, flatbed trucks, dump trucks, boom trucks, when at a job site, must adhere to these guidelines. City sedans, administrative vehicles, and emergency vehicles are excluded.
4. Supervisors are to ensure that the safety cones are being properly used and placed by City vehicles.

### **Use of Safety Restraints**

1. The City recognizes the proven effectiveness of seat belts in reducing fatalities and severity of injuries resulting from motor vehicle accidents. Accordingly, all City vehicles must be equipped with seat belts and all occupants of City vehicles must properly wear seat belts.

### **Vehicle Crashes**

1. A vehicle crash is defined as an occurrence in which the City-owned vehicle comes into contact with another vehicle, person, object, or animal which results in death, personal injury, or property damage, regardless of who was injured, what property was damaged, or to what extent, where it occurred or who was responsible.
2. If a City-owned vehicle is involved in a crash, please refer to the City of Port. St. Lucie's Traffic Crash Procedures located in the vehicle glove box or other compartment inside the vehicle.
3. An employee involved in a vehicle crash will review the crash in accordance with the traffic crash procedures found in Chapter 7, Accident Reporting.

### **GUIDELINES**

Lockout/tagout procedures will be utilized when any powered machinery, or electrical equipment, and its components that could move in any way, would put employees at risk of being injured.

The City implements a Lockout/Tagout Program where applicable. Managers and supervisors will ensure that all employees within their area of control comply with this program.

Authorized employees are responsible to follow established lockout/tagout procedures.

Affected employees (all other employees in the facility) are responsible for insuring they do not attempt to restart or re-energize machines or equipment which are locked out or tagged out.

### **TRAINING PROGRAM**

All authorized, affected, and all other employees will receive lockout/tagout training annually to ensure that the purpose and function of the program is understood. Employees should have the knowledge, and skills required for the safe application, usage, and removal of energy controls.

### **PREPARATION FOR LOCKOUT OR TAGOUT**

Employees who are required to utilize the lockout/tagout procedure must be knowledgeable of the different energy sources and the proper sequence of shutting off or disconnecting energy means.

More than one energy source can be utilized on some equipment and the proper procedure must be followed to identify energy sources and lockout/tagout accordingly.

### **WHEN SHOULD YOU LOCK OR TAG OUT**

The following are examples when you should lockout/tagout. Lock or tag out whenever you are performing maintenance or service around any machine where you could be injured by:

- Unexpected startup of equipment.
- Release of stored energy.
- When you must remove or bypass a guard or other safety device.
- When you must place any part of your body where you could be caught by moving machinery.
- Repairing electrical circuits.
- Cleaning or oiling machinery with moving parts.
- Cleaning or repairing jammed mechanisms.

### **SIX (6) STEP PROCEDURE FOR LOCKOUT/TAGOUT**

- 1.** Preparation for shut down. Before you turn off any equipment, to lock it or tag it out, you must know the following:
  - a. The types and amounts of energy that power it.
  - b. The hazards of that energy.
  - c. How the energy can be controlled.
- 2.** Equipment shut down:
  - a. Shut the system down by using its operating controls.
  - b. Follow whatever procedure is right for the equipment so you do not endanger anyone during shut down.
- 3.** Equipment Isolation:
  - a. Operate all energy isolating devices so that the equipment is isolated from its energy sources.
  - b. Be sure to isolate all energy sources - secondary power supplies as well as the main one.
  - c. Never pull an electrical switch while it is under load.
  - d. Never remove a fuse instead of disconnecting.
- 4.** Applying Lockout/Tagout devices:
  - a. All energy isolating devices are to be locked, tagged or both.
  - b. Only the standardized devices the City supplies are to be used for the lockout/tagout, and they are not to be used for anything else.

- c. Use a lockout device if your lock cannot be placed directly on the energy control.
- d. When lockout is used, every employee in the work crew must attach his personal lock.
- e. More than one employee can lockout a single energy isolating device by using a multiple lock hasp.
- f. For big jobs, a lockout box can be used to maintain control over many keys.
- g. If tags are used instead of locks, attach them at the same point as you would a lock, or as close to it as possible.
- h. Fill tags out completely and correctly.

**5. Control of Stored Energy:**

Take any of the following steps that are necessary to guard against energy left in the equipment, after it has been isolated from its energy sources.

- a. Inspect the system to make sure all parts have stopped moving.
- b. Install ground wires.
- c. Relieve trapped pressure.
- d. Release the tensions on springs or block the movement of spring driven parts.
- e. Block or brace parts that could fall because of gravity.
- f. Block parts in hydraulic and pneumatic systems that could move from loss of pressure.
- g. Drain process piping systems and close valves to prevent the flow of hazardous materials.

**6. Performing the Work:**

- a. Look ahead and avoid doing anything that could re-activate the equipment.
- b. Don't bypass the lockout when putting in new piping or wiring. Always test and try out energy sources to verify all stored energy has been released.

## **REMOVING THE LOCKOUT/TAGOUT**

**Make sure the equipment is safe to operate:**

- 1. Remove all tools, towels, rags, work-aids etc. from the work area.
- 2. Replace all guards possible. Sometimes a particular guard may have to be left off until the start sequence is over due to possible adjustments, however, all other guards should be put back into place.
- 3. Be sure the system is fully assembled.

**Safeguard all employees:**

- 1. Conduct a head count to make sure everyone is clear.
- 2. Notify everyone who works in the area that lockout/tagout is being removed.

**Remove the lockout/tagout devices:**

- 1. Except for emergencies each device must be removed by the person who applied the devices.
- 2. Remove control devices in the reverse order of which they were applied.
- 3. If that originating person is not available only the supervisor of that person or above may remove the device.
- 4. In some workplaces the supervisor always removes last.

## **PROCEDURE INVOLVING MORE THAN ONE PERSON**

When service and/or maintenance are performed by more than one person, each authorized employee shall place his own lock or tag on the energy isolating source. This shall be done by utilizing a multiple lock scissors clamp if the equipment is capable of being locked out. If the equipment cannot be locked out, then each authorized employee must place his tag on the equipment.

## **INSPECTION**

Periodic Inspections should be conducted annually to ensure that the procedure and requirement of the program are being followed. This inspection should be given from an individual outside the section conducting the lockout/tagout procedures.

## GUIDELINES

This program is designed to provide employees with information and to control employee exposure in the workplace as feasible, by engineering control measures (for example enclosure and/or confinement, general and local exhaust ventilation).

It will aid to ensure employees are using all required Instrument Monitoring System, Fall Protection, Respiratory Protection, if required, as well as are knowledgeable in the selection, application, limitation, inspection, maintenance, and proper usage of such equipment.

## TRAINING PROGRAM

All authorized or affected, and employees will receive either permit required confined space training for entry or attendants, confined space awareness or both annually to ensure that the purpose and function of the program is understood. Affected employees should have the knowledge, and skills required for the safe entry or attendant of confined spaces.

## DEFINITIONS

**Attendant** – An individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

**Authorized Entrant** – An employee who is authorized by the employer to enter a permit space.

**Blanking or Blinding** – The absolute closure of a pipe, line, or duct by fastening a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

**Confined Space** – A space that:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work.
2. Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).
3. Is not designed for continuous employee occupancy.

**Engulfment** – The surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

**Entry** - The action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

**Entry Permit** - Written document provided by the employer to allow and control entry into a permit space and that contains the information specified.

**Entry Supervisor** – The person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned for authorizing entry and overseeing entry operations and for terminating entry as required. An entry supervisor also may serve as an attendant or as an authorized entrant, as long as the person is trained and equipped as required for each role he or she fills. The duties of entry supervisor may be passed from one individual to another during the course of an entry operation.



**Hazardous Atmosphere** - An atmosphere that may expose employees to the risk of death, incapacitation, and impairment of abilities to self-rescue, injury, or acute illness from one or more of the following causes:

1. Flammable gas, vapor, or mist more than 10% of its lower Explosive limit (LEL).
2. Atmospheric oxygen concentration below 19.5% or above 23.5%.
3. Atmospheric concentration of any substance for which a dose which could result employee exposure more than its dose or permissible exposure limit.
4. Any other atmospheric condition that is immediately dangerous to life or health.

**Hot Work Permit** - The employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

**Immediately Dangerous to Life or Health (IDLH)** - Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

**Permit Required Confined Space (permit space)** - A confined space that has one or more of the following characteristics:

1. Contains or has a potential to contain a hazardous atmosphere.
2. Contains a material that has the potential for engulfing an entrant.
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section.
4. Contains any other recognized serious safety or health hazard.

The Following Facilities are considered Hazardous Spaces:

1. All wastewater wet wells.
2. All sewer lines.
3. All manholes.
4. All water well pump houses.
5. All underground vaults.

## SEQUENCE OF CONFINED SPACE ENTRY

1. Before entering a tank or other confined spaces, supervisory authorization must be obtained, and a CONFINED SPACE ENTRY PERMIT must be initiated.

2. Any conditions making it unsafe to remove an entrance cover shall be eliminated before the cover is removed.
3. When entrance covers are removed, the opening shall be guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and will protect each employee working in the space from foreign objects entering the space.
4. Prior to entry, the internal atmosphere shall be tested, with a calibrated Multi-gas Instrument, for oxygen content, flammable gases and vapors, and toxic air contaminants. Any employee who enters the space, or that employee's authorized representative, shall be provided an opportunity to observe the pre-entry testing.
5. There may be no hazardous atmosphere within the space whenever any employee is inside the space.
6. An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.
7. The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.
8. If after ventilating the space, tests indicate an un-breathable atmosphere (less 19.5 percent oxygen) or levels of toxic contaminants hazardous to health, no person will be allowed to enter unless equipped with an approved air-line respirator or a self-contained breathing apparatus, safety harness, and lifeline, and has been properly trained in the use of that equipment.
9. The employee entering the space must wear protective clothing if the contaminant can cause dermatitis, chemical burns or can be absorbed through the skin.

## CONFINED SPACE ENTRY PERMIT PROVISIONS

1. Constant communication and/or observation with an employee in the immediate area who is not in the confined space (Attendant).
2. Adequate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. Retrieval systems shall meet the following minimum requirements.
  - a. Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at the

center of the entrant's back near the shoulder level, above the entrant's head, or at another point which the department can establish presents a profile small enough for the successful removal of the entrant.

- b. The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that retrieval can begin as soon as the rescuer becomes aware that retrieval is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet deep.
3. All employees will utilize 911 in response to any emergency in or outside of the confined space. Unauthorized personnel will not attempt a rescue by entering the confined space.

### **SPECIAL CONSIDERATIONS**

1. Employees will not enter a known immediately dangerous to life and health (IDLH) environment.
2. During a confined space operation if the four-gas instrument goes into alarm mode the employee will immediately exit the space and not re-enter until the hazard has been removed or controlled.
3. In potentially explosive or flammable atmosphere, non-sparking tools and portable vapor proof electric lighting not exceeding 12 volts must be used. Smoking, open flames and cutting or welding will be prohibited.
4. Personal protective equipment, such as coveralls, impervious gloves, boots, face, and eye protection, must be used as required by the nature of the operation to be performed.
5. In the event of a sudden life threatening or otherwise potentially dangerous situation requiring immediate action which involves entry into a confined space as defined in the procedure, and in the absence of time to complete testing and ventilation procedures, the atmosphere will be considered as unsafe to enter without the use of an approved air-supplied breathing device or self-contained breathing apparatus (SCBA).
6. If an injured entrant is exposed to a substance for which a Safety Data Sheet (SDS) or other similar written information is required to be kept at the worksite, that SDS or written information shall be made available to the medical facility treating the exposed entrant.

### **EQUIPMENT**

1. An air sampling Multi-gas Instrument will be used to sample and monitor the atmosphere in the confined space for the duration of the job. This instrument will be capable of sampling for Oxygen (O<sub>2</sub>), Carbon

Monoxide (CO), Hydrogen Sulfide (H<sub>2</sub>S), and Lower explosive level (LEL) continuously.

2. Ventilation: A portable blower with a minimum capacity of 600 cfm at 1.5 inches static pressure should be used to supply air and ventilate the enclosed space prior to and during occupancy. If the space is large enough, additional air volume may be required.

# 14.0

## HAZARD COMMUNICATION/ RIGHT-TO-KNOW

### **GUIDELINES**

The City of Port St. Lucie is formally committed to providing each of its employees a safe and healthy working environment. The City guideline is to comply with all safety laws and regulations applicable to its operation.

This program is designed to provide employees with information about chemicals in the workplace and to inform employees that they have the Right-To-Know about the nature and hazard of these chemicals.

### **TRAINING PROGRAM**

The City of Port St. Lucie has developed a Hazard Communication /Right-To-Know Training Summary for employees and a Training Outline for supervisory personnel in order to facilitate the dissemination of information to City employees.

Everyone who works with, or is potentially exposed to hazardous chemicals, will receive initial training on the Hazard Communication Standard and the safe use of those hazardous chemicals. Whenever a new chemical is introduced, additional training will be provided. Safety meetings will also be used to review the information presented in the initial training.

As part of the assessment of the training program, the Departmental Representative or Risk Management will obtain input from employees regarding the training they have received and their suggestions for improvement.

The employee has a right to refuse to work under specified circumstances if not provided a copy of the SDS within five (5) of the employee's working days.

### **CONTRACTORS AND CITY EMPLOYEES**

Contract and city employees that need to work together or within close proximity to each other and are using chemicals, need to communicate the hazards of those chemicals at the supervisory level. This communication should be made before the employee comes in contact with the chemicals. The minimum communication requirement is the sharing of Safety Data Sheets (SDS). This may also include procedures to follow in case of a leak or a spill that could affect the health of the worker or the environment.

### **DEFINITION OF HAZARDOUS CHEMICAL**

A Hazardous Chemical is any chemical which poses a significant physical or health hazard. This would include: combustible liquid, compressed gas, explosives, flammables, organic peroxide, oxidizer, pyrophoric, reactive (air or water), carcinogen, toxic, reproductive toxin, irritant, corrosive, sensitizer, hepatotoxin (liver), nephrotoxin (kidney), neurotoxin, hematopoietic (blood) toxin, cutaneous (dermal) toxin, pulmonary (lungs) toxin, etc.... (This list is not intended to be all-inclusive).

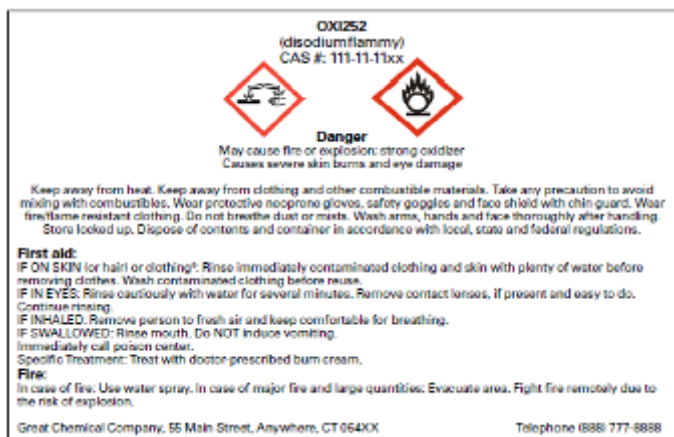
The Department Safety representative will ensure that each department develop an inventory list of all hazardous chemicals and related work practices used in their department and keep the list updated, as necessary. The inventory will identify all the chemicals used in our work process areas. Each list will also identify the corresponding SDS for each chemical, trade name, chemical hazard, storage location, and storage quantity.

The "Hazardous Chemicals Inventory" will be filed with and will serve as an index to the SDS files and will always be available for employee review.

### **LABELING**

1. Per the GHS, signal words must be on labels and safety data sheets. "Danger" and "Warning" are the only words that will be used to identify the threat level, and there will only be one signal word per label indicating the severity of the threat.
2. Precautionary statements shall also be included on labels and safety data sheets. These statements cover four areas: prevention, response in case of accidental spillage or exposure, storage, and disposal.
3. Labels should be affixed to secondary containers.
4. No label is to be defaced or removed when a chemical is received or in use.





Sample label

## PICTOGRAMS

Pictograms are graphic symbols used to communicate specific information about the hazards of a chemical. On hazardous chemicals being shipped or transported from a manufacturer, importer, or distributor, the required pictograms consist of a red square frame set at a point with a black hazard symbol on a white background, sufficiently wide to be clearly visible. A square red frame set at a point without a hazard symbol is not a pictogram and is not permitted on the label.

The pictograms OSHA has adopted improve worker safety and health, conform with the GHS, and are used worldwide.

### HCS Pictograms and Hazards

<b>Health Hazard</b>  <ul style="list-style-type: none"> <li>• Carcinogen</li> <li>• Mutagenicity</li> <li>• Reproductive Toxicity</li> <li>• Respiratory Sensitizer</li> <li>• Target Organ Toxicity</li> <li>• Aspiration Toxicity</li> </ul>	<b>Flame</b>  <ul style="list-style-type: none"> <li>• Flammables</li> <li>• Pyrophorics</li> <li>• Self-Heating</li> <li>• Emits Flammable Gas</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>	<b>Exclamation Mark</b>  <ul style="list-style-type: none"> <li>• Irritant (skin and eye)</li> <li>• Skin Sensitizer</li> <li>• Acute Toxicity (harmful)</li> <li>• Narcotic Effects</li> <li>• Respiratory Tract Irritant</li> <li>• Hazardous to Ozone Layer (Non-Mandatory)</li> </ul>
<b>Gas Cylinder</b>  <ul style="list-style-type: none"> <li>• Gases Under Pressure</li> </ul>	<b>Corrosion</b>  <ul style="list-style-type: none"> <li>• Skin Corrosion/ Burns</li> <li>• Eye Damage</li> <li>• Corrosive to Metals</li> </ul>	<b>Exploding Bomb</b>  <ul style="list-style-type: none"> <li>• Explosives</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>
<b>Flame Over Circle</b>  <ul style="list-style-type: none"> <li>• Oxidizers</li> </ul>	<b>Environment (Non-Mandatory)</b>  <ul style="list-style-type: none"> <li>• Aquatic Toxicity</li> </ul>	<b>Skull and Crossbones</b>  <ul style="list-style-type: none"> <li>• Acute Toxicity (fatal or toxic)</li> </ul>

## SAFETY DATA SHEETS

A Safety Data Sheet (SDS) containing the information required by the OSHA Hazard Communication Standards will be kept for each substance listed on the "Hazardous Chemicals Inventory". The SDS will be the most current one available by the chemical manufacturer, importer, or distributor. Every employee has the right to view the SDS's. Supervisors must insure SDS availability.

The chemical manufacturer or importer preparing the safety data sheet shall ensure that it is in English (although the employer may maintain copies in other languages as well), and includes at least the following section numbers and headings and associated information under each heading, in the order listed:

<b>Section I:</b>	Identification
<b>Section II:</b>	Hazard(s) Identification.
<b>Section III:</b>	Composition/information on ingredients;
<b>Section IV:</b>	First Aid Measures;
<b>Section V:</b>	Fire-fighting measures;
<b>Section VI:</b>	Accidental release measures;
<b>Section VII:</b>	Handling and storage;
<b>Section VIII:</b>	Exposure controls/personal protection;
<b>Section IX:</b>	Physical and chemical properties;
<b>Section X:</b>	Stability and reactivity;
<b>Section XI:</b>	Toxicological information.
<b>Section XII:</b>	Ecological information;
<b>Section XIII:</b>	Disposal considerations;
<b>Section XIV:</b>	Transport information;
<b>Section XV:</b>	Regulatory information; and
<b>Section XVI:</b>	Other information, including date of preparation or last revision.

The SDS and the Hazardous Chemical Inventory should be filed in the work and office area and should be readily accessible to employees in the work area.

## DEFINITIONS OF SAFETY DATA SHEET TERMS

**Chemical** - means any substance or mixture of substances.

**Chemical manufacturer** - means an employer with a workplace where chemical(s) are produced for use or distribution.

**Chemical name** - means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name that will clearly identify the chemical for the purpose of conducting a hazard classification.

**Classification** - To identify the relevant data regarding the hazards of a chemical; review those data to ascertain the hazards associated with the chemical; and decide whether the chemical will be classified as hazardous according to the definition of hazardous chemical in this section. In addition, classification for health and physical hazards includes the determination of this degree of hazard, where appropriate, by comparing the data with the criteria for health and physical hazards.

**Common Name** - Any designation or identification such as code name, code number, trade name, brand name, or generic name used to identify a chemical other than by its chemical name.

**Container** - Any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.

**Exposure or exposed** - An employee is subjected, in the course of employment, to a chemical that is a physical or health hazard and includes potential (e.g. accidental or possible) exposure. "Subjected" in terms of health hazards includes any route of entry (e.g. inhalation, ingestion, skin contact or absorption.)

**Hazard category** - The division of criteria within each hazard class, e.g. oral acute toxicity and flammable liquids include four hazard categories. These categories compare hazard severity within a hazard class and should not be taken as a comparison of hazard categories more generally.

**Hazard class** - The nature of the physical or health hazards, e.g., flammable solid, carcinogen, oral acute toxicity.

**Hazard not otherwise classified (HNOC)** - An adverse physical or health effect identified through evaluation of scientific evidence during the classification process that does not meet the specified criteria for the physical and health hazard classes addressed in this section. This does not extend coverage to adverse physical and health effects for which there is a hazard class addressed in this section, but the effect either falls below the cut-off value/concentration limit of the hazard class or is under a GHS hazard category that has not been adopted by OSHA (e.g., acute toxicity Category 5).

**Hazard statement** - means a statement assigned to a hazard class and category that describes the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard.

**Hazard chemical** - Any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified.

**Health Hazard** - A chemical which is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard. The criteria for determining whether a chemical is classified as a health hazard are detailed in Appendix A to 1910.1200 – Health Hazard Criteria. This is not to be confused with Appendix A in this manual.

**Label** - An appropriate group of written, printed, or graphic information elements concerning a hazardous chemical that is affixed to, printed on, or attached to the immediate container of a hazardous chemical, or to the outside packaging.

**Label Elements** - The specified pictogram, hazard statement, signal word, and precautionary statement for each hazard class and category.

**Mixture** - A combination or a solution composed of two or more substances in which they do not react.

**Physical hazard** - A chemical that is classified as posing one of the following hazardous effects: explosive; flammable (gases, aerosols, liquids, or solids); oxidizer (liquid, solid or gas); self-reactive; pyrophoric (liquid or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; or in contact with water emits flammable gas. See Appendix B to 1910.1200 – Physical Hazard Criteria.

**Pictogram** - A composition that may include a symbol plus other graphic elements, such as a border, background pattern, or color, that is intended to convey specific information about the hazards of a chemical. Eight pictograms are designated under this standard for application to a hazard category.

**Precautionary statement** - A phrase that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical or improper storage or handling.

**Product identifier** - The name or number used for a hazardous chemical on a label or in the SDS. It provides a unique means by which the user can identify the chemical. The Product identifier used shall permit cross-references to be made among the list of hazardous chemicals required in the written hazard communication program, the label and the SDS.

**Pyrophoric gas** - A chemical in a gaseous state that will ignite spontaneously in air at a temperature of 130 degrees F (54.4 degrees C) or below.

**Safety data sheet (SDS)** - Written or printed material concerning a hazardous chemical that is prepared in accordance with this section.

**Signal word** - A word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. The signal words used in this section are "danger" and "warning". "Danger" is used for the more severe hazards while "warning" is used for the less severe.

**Simple asphyxiant** - A substance or mixture that displaces oxygen in the ambient atmosphere and can thus cause oxygen deprivation in those who are exposed, leading to unconsciousness and death.

**Specific chemical identity** - The chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

**Substance** - Chemical elements and their compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the product and any impurities deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition.

## WHAT IS A TOXIC SUBSTANCE?

Any chemical substance or mixture in a gaseous, liquid, or solid state that:

1. Appears on the "Florida Substance List".
2. Is manufactured, produced, used, applied, or stored

in the workplace.

3. Causes significant risk to safety or health during any customary use.

## HOW TO REQUEST A SAFETY DATA SHEET (SDS)

Any employee can obtain an SDS by requesting it from their supervisor.

## EMPLOYEE RIGHTS

- The right to know of the chemicals in the workplace.
- The right to obtain a copy of the SDS for each chemical.
- The right to refuse to work under specified circumstances if not provided a copy of the SDS within five (5) of the employee's working days.
- The right to instruction within thirty (30) days of employment and annually thereafter.
- The right to obtain further information on chemicals in the workplace.
- The right to protection against discharge, discipline, or discrimination for having exercised any of these rights.

## SAFE HANDLING PROCEDURES FOR HAZARDOUS MATERIALS

1. Do not enter areas where chemicals are used or stored unless you work there.
2. Do not allow hazardous materials to come into contact with your skin or eyes.
3. Do not breathe hazardous vapors, fumes, mists, or smoke.
4. Do not attempt to clean spilled hazardous materials alone - always get help.
5. Do not mix hazardous materials except as directed on the label.
6. Do not dispose of hazardous materials in dumpsters, sewers, canals, or the ground.
7. Do not mishandle or break hazardous materials containers.
8. Do not overfill hazardous materials containers.
9. Do not put hazardous materials into containers which may break, dissolve, or leak.
10. Use eye protection to prevent hazardous dusts, mists, and gases from entering your eyes.
11. Use breathing protection (respirators and gas masks) when needed.
12. Remove contaminated clothing and shoes before eating, smoking, drinking, or taking medications.
13. Immediately bathe at the end of each work shift after using or handling hazardous materials.
14. Thoroughly familiarize yourself with emergency

response, first aid, and small spill clean up procedures.

15. Learn the location and proper use of safety showers, eye washes, fire extinguishers, first aid kits, and absorbent materials in your work areas.

### **GENERAL SAFETY RULES FOR GASES AND PRESSURIZED GAS CONTAINERS**

1. Do not drop, puncture, or burn compressed gas containers.
2. Store gases in a secure, dry, well ventilated area away from sparks, heat, and flames.
3. Always use safety chains to prevent compressed gas containers from being accidentally knocked over.
4. Keep protective covers in place when gas is not being used or when moving compressed gas containers.
5. Use hand carts to move compressed gas containers.
6. Wear safety shoes and use appropriate personal protective equipment around compressed gases.
7. Frequently check for leaks and material failures.
8. Read the labels and Safety Data Sheets for each gas you use at work.

### **PERSONAL PROTECTIVE EQUIPMENT**

1. Safety goggles protect eyes from splashes and vapors.
2. Face shields protect eyes and faces from splashes.
3. A respirator protects employees from breathing in harmful vapors, fumes, and mists. A medical evaluation, spirometry and fit test shall be performed before an employee can wear a respirator.
4. Aprons protect the front of the body from spills and splashes.
5. Gloves protect the hands from hazardous materials.
6. Protective suits protect arms, legs, and body from spills, splashes, and vapors.
7. Fully protective apparel with Self-Contained Breathing Apparatus protects the entire body from hazardous materials.
8. Chemical resistant boots or booties protect feet from exposure.
9. Safety Data Sheets (SDS) provides information for the proper protective equipment to use for each chemical. Always read the SDS and labels before using or handling chemicals. Be sure you understand how to properly use each type of personal protective equipment. Follow safety procedures carefully.

### **EMERGENCY EQUIPMENT**

1. Emergency showers are used to wash contamination from the body.
2. Eye washes are used to wash contamination from eyes and under eyelids.
3. Fire extinguishers (type ABC) are used to put out small paper, wood, liquid, or electrical fires.
4. First aid kits contain emergency medical supplies.
5. Absorbent materials (kitty litter, vermiculite, oil dry, or sand) are used to pick up spilled hazardous substances.

LEARN THE LOCATION AND PROPER USE OF ALL EMERGENCY EQUIPMENT IN WORK AREAS.

## GUIDELINES

Control of employee exposure in the workplace shall be implemented, as feasible, by engineering control measures such as enclosures and/or confinement, general and local exhaust ventilation, and substitution of less toxic material.

Respiratory protection shall be provided when:

1. An interim measure pending installation of engineering controls is needed.
2. Effective engineering controls are not feasible.
3. A safeguard in addition to engineering controls is needed.
4. There is an emergency response such as a chlorine or ammonia leak.
5. Work is done in atmospheres with unknown exposure levels or oxygen levels are deficient.
6. The Safety Data Sheet (SDS) or chemical label specifically requires the use of a respirator for the task being performed.

## TRAINING

Training of persons required to use respiratory protective equipment routinely or during emergencies shall be conducted initially and then annually thereafter. Training shall include a minimum, the following:

1. Respirator familiarization and fit test.
2. Discussion of engineering controls in use, and why respirators are also required.
3. Explanation of the nature of the respiratory hazard and potential effects if the respirator is not used properly.
4. Explanation of why a particular type of respirator has been selected.
5. Review of respirator limitations and instructions in how to recognize when the respirator is no longer working properly or that the ambient concentration exceeds the respirator's capabilities.

## MEDICAL EVALUATION

The City of Port St. Lucie will provide a medical evaluation by a physician or other licensed health care professional to determine the employee's ability to use a respirator. This will be completed before the employee is fit tested or required to use the respirator in the workplace. This evaluation will follow the guidelines of OSHA Standard 29 CFR 1910.134.

## RESPIRATORY SELECTION

Selection of respiratory protective equipment may be (this is a voluntary publication) based upon the American National Standards Publication, Practices for Respiratory Protection, ANSI Z88.2-1980.

In order to specify respiratory protection equipment for other than emergency use, the potential exposure must be characterized with regard to the following:

1. Nature of the Hazard: The nature of the hazard must be identified to ensure an overexposure does not occur. See Appendix "A", Selection of Respirators.
2. Nature of Hazardous Operation: For proper respirator selection, it is necessary to know the details of operations which require workers to use respiratory devices.
3. Location of the Hazardous Area.
4. Time Respiratory Protection is required.
5. Employee's Health.
6. Work Activity.
7. Respirator characteristics, capabilities, and limitations.
8. Protection Factors.

Respirators can be further categorized into two groups, air purifying and air supplied.

### Air Purifying Respirators -

1. Air-Purifying /Filtering Face piece (Dust Mask) will be selected when maintenance type work is conducted involving dust and/or mists that do not contain gases, vapors or non-absorbed contaminants. Protection will be against dusts and mists not less than 2 million parts per cubic foot (mppcf).
2. Air Purifying Respirator (Half Mask/Full Faced Mask) will be selected when air-purifying filter, cartridge, or canister are needed to remove specific air contaminants by passing ambient air through the air-purifying element.



### **Air Supplied Respirators –**

Self-Contained Breathing Apparatus (SCBA) Selection:

1. The contaminant is above the Immediately Dangerous to Life or Health (IDLH) level.
2. There is less than 19.5% oxygen by volume in the area.
3. In areas containing unknown concentrations of toxic materials.
4. Fighting fires.

### **ISSUANCE OF RESPIRATORS**

1. The correct respirator (including cartridge, canister, filter, etc.) for each job shall be specified by the supervisor of the specific area, indicating the type(s) of exposure and the type(s) of equipment required.
2. The correct respiratory protective equipment should be specified in operator log sheets, operating manuals, job safety analysis (JSA), and Safety Data Sheet (SDS).
3. Respirator selections shall be reviewed at least annually or whenever process changes occur that could influence such selection.
4. Verification of the initially issued respirator to an employee shall be made by the employee's supervisor.
5. Where practical, respirators shall be assigned to individual employees for their exclusive personal use.
6. Disposable type respirators will be used for the required length of time or until expended, and then disposed of properly.

### **SPECIAL PROBLEMS**

1. A proper seal cannot be obtained if the temple bars of eyeglasses extend through the sealing edge of a full-face piece. Where an employee requires corrective eye wear, proper brackets will be used for mounting lenses inside the face piece when routine use of respiratory protection is required.
2. Long sideburns and beards extending through the sealing edge of any respirator make it impossible to achieve a proper seal. Any employee or whose work requires the wearing of respiratory protective equipment, or voluntarily wears this type of equipment, will not have visible facial hair such as a beard, mustache, or sideburns crossing any sealing edge of the respirator face piece if a good seal cannot be achieved.

### **SELECTION OF RESPIRATORS –**

For additional information regarding the selection and use of respirators, please consult the following links.

- <https://www.osha.gov/etools/respiratory-protection>
- <https://www.osha.gov/etools/respiratory-protection/respirator-selection>

### **INSPECTION, MAINTENANCE & STORAGE (NON-EMERGENCY EQUIPMENT)**

All users will familiarize themselves with the City written program for the routine and emergency use of respiratory protective equipment.

#### **I. Cartridge/Canister Type Respirator:**

All filters, cartridges and canisters will be color coded and labeled with the NIOSH approval label. The label must not be removed and remain legible. Manufacturers and distributors can provide a color selection chart of their products. When available, use cartridges or canisters with an end of service life indicator (ESLI) certified by NIOSH for that contaminant. When cartridge or canisters with ESLI are not available the employer will implement a change schedule that is based on objective information or data that will ensure that the cartridges or canisters are changed before the end of their service life.

For protection against particulates, filters certified by NIOSH under 30 CFR Part 11 as high efficiency particulate air filters (P100), or filters certified for particulates under 42 CFR part 84 (N95) will be used. These filters and pre-filters should be replaced whenever noticeable breathing resistance occurs.

**Note:** Cartridges, canisters, filters, etc., and respirators for which they are designed for, are approved as a unit. Interchange of parts among brands voids the approval and is expressly prohibited.

#### **INSPECTION:**

1. Visually inspect all components for damage or wear, especially rubber parts, every time the respirator is donned and/or monthly. Parts will be replaced as needed.
2. Check exhalation and inhalation valves to see that they are in place not misshapen and that no dirt or lint is on the valve or valve seating surfaces.
3. Check the face piece body to see that it is clean and has not been unduly softened, hardened, or distorted by chemical agents, body oils, etc.
4. Check the condition and presence of gaskets and the filter seating surfaces are not damaged.

## **MAINTENANCE:**

The respirator will be cleaned after each day's use and/or monthly. Respirators that are re-issued to different employees shall be cleaned and disinfected before re-issuing.

1. Remove filter and face piece parts.
2. Immerse face piece for two minutes in a cleaner/sanitizer solution available from the manufacturer.
3. Rinse completely in clean warm water, then air dry in clean area.
4. Inspect all components per inspection procedures above.
5. Reassemble the face piece and store in its proper container.
6. All O-Rings and gaskets will be replaced at least once a year.
7. Respirator wipes maybe used for periodic cleaning.

## **STORAGE:**

1. Store in a clean, dry place, or inside the respirator's storage container. Rubber and electrometric parts should not be crushed or stored folded as they will take on this abnormal shape causing a poor fit.
2. Do not expose the respirator, during storage, to excessive heat (above 140 degrees/F - 60 degrees/C), cold, and moisture, contaminating gaseous substances or air-borne particulates.

## **II. Self-Contained Breathing Apparatus**

### **INSPECTION:**

Make certain that the apparatus is in good operating condition with a fully charged air cylinder. Cylinders will be tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR Part 178).

1. Check the regulator to see that it is in proper working condition.
2. Check hose to regulator for cracks and loss of resiliency.
3. Check the face piece for cracked or discolored eyepieces and lack of elasticity and pliability.
4. Check the sealing edges of the face piece to see that they are clean and not unduly softened or distorted by chemical agents or body oils.
5. Check the cylinder harness to see that it is in proper condition to hold the cylinder.
6. Any malfunction of the reducing or admission valve shall be reported to the supervisor immediately. Malfunctioning equipment shall be returned to the

manufacturer for repair.

7. Compressed breathing air will meet at least the requirement of Grade D breathing air described in ANSI G-7.1 1989. Cylinders will be tested and maintained as prescribed in DOT (49 CFR part 173 and 178) includes hydrostatic testing.

## **CLEANING:**

Follow procedures described in Section I, Cartridge/Canister Type Respirators for the face piece only. Hoses may be cleaned in a mild soap solution, as necessary.

## **FIT TESTING**

Requirements in 29 CFR 1910.134 (E)(5) state that respirators shall be fitted properly and shall be tested for their face piece to face seal. Also, 1910.134 (E)(5)(i) states that respirators shall not be worn when conditions prevent a good face seal. Examples listed in the standard conditions that may interfere with facial seal are:

1. Side burns and/or skull caps that project under the face piece.
2. Temple bars on glasses (especially when wearing full face respirators) and/or the absence of one or both dentures.

### **TYPE OF FIT TESTS**

- I. Quantitative Fit Test is used to determine the proper fit and degree of integrity of the face fit under actual wearing conditions. It is intended to provide the best method of fitting the respirator or malfunction.
- II. Qualitative Fit Test involves testing a test subject's response (either voluntarily or involuntarily) to a chemical agent outside the respirator face piece.

These tests are based on the respirator wearer subjective response to the test chemical, therefore, duplication and accuracy will vary. Three (3) of the most popular methods are an irritant smoke test, an odorous vapor test, and a taste test.

### **The Odorous Vapor Test –**

1. The odorous vapor test relies on the respirator wearer's ability to detect an odorous material, usually Isoamyl Acetate (Banana Oil) inside the respirator.
2. The test is performed by passing an Isoamyl Acetate ampule around the outside of the respirator. If the wearer is unable to smell the chemical, a satisfactory fit is assumed to be achieved.
3. The use of Isoamyl Acetate as a test agent has the following limitations:
  - a. The odor threshold varies widely among individuals.

- b. Olfactory fatigue may cause a person to fail to detect the odor.
- c. The test is dependent on the wearer's honest response. There is no involuntary reaction.

When an air purifying respirator is tested, it should be equipped with an organic cartridge or canister which removes the test vapor from the air.

#### **The Irritant Smoke Test -**

1. The irritant smoke test is performed by directing an irritant smoke, usually either stannic chloride, or titanium tetrachloride, from a smoke tube towards the respirator being worn. If the wearer cannot detect the irritant smoke, a satisfactory fit is assumed to be achieved.
2. The respirator wearer will react involuntarily, usually by coughing or sneezing to leakage around or through the respirator. Since this is a qualitative test, the tester is interested in any response to the smoke. The degree of response is not important.

When air purifying respirator is tested, it must be equipped with a high efficiency filter.

**Note:** The test substances are irritants to the eyes, skin, and mucous membranes. Therefore, the respirator wearers should keep their eyes closed during testing.

**III. Field Test Measures** are two tests that will be used in the field to check the seal of the respirator: positive and negative pressure sealing test.

Field test will be performed every time a respirator is donned.

To don a respirator, the following steps should be followed or the manufacturer's instructions:

1. Visually inspect respirator for all components and the respirator to assure respirator is in good working condition.
2. Adjust the face piece head straps to their full outward position.
3. Grasp the head strap harness and with the thumbs through the bands, spread outward.
4. Push the top of the harness up the forehead and place the chin into the chin cup. Continue up and over the head until the harness is centered at the rear of the head.
5. Make sure the face piece is centered on the face and pull both lower headstraps at the same time towards

the rear.

6. Tighten the two upper head straps and any forehead straps.
7. Conduct Negative and Positive Pressure Seal Test.

#### **Negative Pressure Seal Test:**

1. The inlet opening of the respirator's canisters, cartridges, or filters is closed off by covering with the palm of the hands, so that it will not allow the passage of air.
2. The wearer is instructed to inhale gently and hold his/her breath for at least ten (10) seconds.
3. If a face piece collapses slightly, no inward leakage of air into the face piece is detected, it can be reasonably assured that the respirator has been properly donned, and the exhalation valve and face piece are not leaking.

#### **Positive Pressure Seal Test:**

1. Exhalation valves or breathing tubes are closed off and the wearer is instructed to exhale gently.
2. The respirator has been properly donned if a slight positive pressure can be built up inside the face piece without the detection of any outward leakage of air between the sealing surface of the face piece and the wearer's face.
3. Negative and Positive Pressure Tests may be impossible to carry out on valveless respirators and on many disposable (single use) respirators.

### **SELF-CONTAINED BREATHING APPARATUS USE**

#### **Donning and Wearing Face Piece:**

1. Check for proper air pressure.
2. Make sure the straps are in the extended position.
3. Check the pressure hose and mask hose.
4. Make sure the mask is clean (to be cleaned after each use).
5. Adjust the cylinder and regulator apparatus securely to body by harness adjustment.

#### **For the "Up and Over Body" Method:**

1. Grasp the tank, pull it out of the cabinet and place your elbows through the straps.
2. Lift the tank up and over your body and then bend over.
3. Buckle the regulator first.
4. Tighten the shoulder straps then straighten up.

#### **For the "Walk Away" Method:**



1. Back up to cabinet.
2. Place your arms through the shoulder straps and walk forward with the tank on your back and then bend over.
3. Tighten the shoulder straps and straighten up.

**With Either Method:**

1. Buckle and adjust the waist strap,
2. Put the mask on,
3. Tighten the mask straps,
4. Bottom straps first,
5. Then the temple straps,
6. Top straps last.

Check the seal of the face piece before entering any area by either the negative or positive pressure method described:

Close off the inlet opening of the canister by covering it with the palm of the hand or by taping. Inhale so that the face piece collapses slightly and hold breath for ten seconds. If the face piece remains in its slightly collapsed condition and no inward leakage of air is detected, the fit of the mask is satisfactory.

Close off the exhalation valve and exhale gently so that a slight positive pressure is built-up in the face piece. If no outward leakage of air is detected at the periphery of the face piece, the face fit is satisfactory.

**Note:** If leakage is detected and is not attributable to a poor face fit, return the mask for proper maintenance.

**Removal of the Self-Contained Breathing Apparatus (SCBA):**

1. Walk to an uncontaminated atmospheric area.
2. Take off the mask.
3. Turn off the air valve.
4. Take off the air pack.
5. Bleed off air pressure from the line.
6. Remove the air tank and replace it with a full bottle; place it back in the cabinet.
7. Place all the straps to the fully extended position.
8. Clean and disinfect the mask.
9. After the mask is dry, store it appropriately in a clean and proper area. The mask and exhalation valves should rest in a normal position to prevent the rubber or plastic from reforming into an abnormal shape.

# 16.0

## POWERED ELEVATING WORK PLATFORMS

*(Bucket Trucks/Aerial Lifts/Cranes with Man Baskets)*

### **GUIDELINES**

In the interest of employee safety when intending to lift any employee off the ground, there should be a second employee manning the bottom controls and clearing the space around the equipment.

These guidelines will reduce the risk to the elevated employee in case of control failure, personal sickness, other personnel, or outsiders from coming too close, or running into the equipment while the employee is off the ground. Each employee should be wearing appropriate PPE including high visibility safety vests.

### **TRAINING PROGRAM**

All authorized employees will receive training to ensure that the purpose and function of the program is understood. Employees should have the knowledge and skills required to identify lift hazards, inspect the equipment, and demonstrate required precautions needed for the safe operation of powered elevating work platforms prior to utilizing the equipment.

The following inspections apply to all the equipment as appropriate for each.

### **EQUIPMENT INSPECTION BEFORE USE**

Prior to the operation of this equipment the operator or operators must conduct a visual inspection. The following is a list of inspection items to be used, not excluding any items from the individual equipment's operations manual:

1. Conduct a safety / "circle check" of the vehicle to determine hazards, identify damage and leaks,
2. Broken, damaged, loose, or missing parts,
3. Tire bulges, cuts, and pressure,
4. Oil and hydraulic leaks,
5. Weld integrity, such as cracks and rust, and
6. Lighting (beam, directional and safety).
7. All required decals and stickers on or around the articulating boom, must be in place, legible and understandable in accordance with the manufacturer.
8. For the crane truck, check the wire cable for frays, broken strands, and kinks as well as all basket connecting points.
9. Report all defects to your supervisor to schedule for repair.

### **WORKSITE HAZARDS INSPECTION**

1. Try not to park on uneven ground.
2. Keep an eye out for drop-offs, holes, bumps, and debris.
3. Do not operate the boom if wind gusts exceed the limitations described in the operators' manual or there is a threat of an electrical storm.
4. Set emergency brake.
5. Position wheel chocks.
6. Look out for overhead obstructions.

### **TIP-OVER HAZARDS**

1. Do not push or pull toward anything while raised in the bucket.
2. Do not exceed the load capacity.
3. Do not move the truck when bucket is raised.
4. Do not operate in high winds.
5. Park truck on terrain within the limitations of the operating manual.
6. Make sure the outriggers are positioned properly.
7. Never use the bucket truck as a crane, or to push or pull anything.

### **FALL HAZARDS**

1. Always keep feet on the floor of the elevating work platform.
2. Do not sit, stand, or climb on the edge of the elevating work platform.
3. Do not place any item in the elevating work platform for the purpose of increasing work height (ladders, step stools.)
4. Do not try to climb down from the elevating work platform when it is raised.

5. Make sure the elevating work platform floor is clear of debris.
6. ALWAYS WEAR FALL PROTECTION!

### **COLLISION HAZARDS**

1. Watch for traffic and beware of blind spots when driving the truck - take it SLOW.
2. Watch for overhead obstructions.
3. Travel very slow on bumpy or sloped ground and when driving near other workers or pedestrians.

### **ELECTROCUTION HAZARDS**

1. Maintain at least 20 feet of safety clearance from power lines and apparatus.
2. No elevating work platform, insulated or not, provides any electrical protection to the occupant if there is phase-to-phase or phase-to-ground contact.

### **GENERAL POWERED ELEVATED WORKING PLATFORM USE PRACTICES:**

1. When traveling with powered elevated work platforms, ensure the lifting devices are secure and locked in the traveling position prior to moving the vehicle or truck. If the equipment is equipped with outrigger devices insure, they are properly stored prior to moving.
2. Set the brakes and position the outrigger devices (if equipped) on pads or similar solid surfaces and install the wheel chocks before using elevated working platforms (especially on inclines).
3. Do not move powered elevated work platforms with employees located in the elevated position, except for equipment specifically designed or certified as "field modified" for this type of operation.
4. Ensure that elevated work platforms contain both working upper and lower controls. Upper controls are in or beside the elevated platform, within easy reach of the operator. Lower controls are designed to override the upper controls.
5. Check to be sure that controls are plainly marked as to their function.
6. Test lift controls each day prior to use to ensure safe working conditions.
7. Ensure loads and distribution on working platforms and platform extensions are in accordance with manufacturer's rated capacity, and do not exceed rated load limits. Affix stickers to vehicle that indicate manufacturer's rated load capacity of the working elevated platform and/or elevated platform extensions.
8. Ensure all personnel in the elevated work platform are wearing appropriate personal protective devices at all times (e.g. hard hats to protect from overhead falling objects, being struck with nearby objects, struck by flying objects; safety shoes/boots; goggles/safety glasses with side shields/hard hat with shield; gloves; other protective clothing).
9. Ensure that each employee uses an appropriate body belt/harness and lanyard device attached to the elevated work platform or other appropriate passenger device as fall protection when working from elevated work platform.
10. Ensure that only trained and authorized employees operate powered elevated work platforms.
11. Keep feet firmly on the floor of the elevated work platform at all times.
12. Do not sit, climb, or position yourself on the edge of the elevated work platform.
13. Do not use planks, ladders, or other devices as substitute work positions.
14. Do not operate lower controls unless permission has been obtained from the employee(s) in the elevated work platform, except in case of an emergency.
15. Do not position the elevated work platform against another object to steady the platform.
16. Do not use other powered elevating work platforms as a crane.
17. Limit travel speeds of powered elevating work platforms according to the conditions of the ground surface, congestion, visibility, slope, location of personnel, and other factors that may cause hazards to other nearby personnel.
18. Shut down the elevating work platforms engine prior to fueling. Fuel engines or charge fuel cylinders in well ventilated areas free of flames, sparks, or other hazards which may cause fires or explosions.
19. Charge batteries in well ventilated areas free of flames, sparks, or other hazards which may cause fires or explosions.
20. When positioning the elevating work platform be sure to maintain a clear view of the path of travel, maintain a safe distance from other obstacles, debris, drop offs, holes, depressions, slopes, and other hazards.
21. Do not position booms and elevated work platforms in an attempt to jack the wheels off the ground.
22. Do not operate elevating work platforms on grades, side slopes, or ramps that exceed the manufacturer's recommendations.
23. If elevated work platforms become caught, snagged, or otherwise do not operate properly, remove personnel from the platform prior to freeing the elevated work platform using ground controls.

- 24. Do not alter the insulated portion of an aerial lift device in any manner that might reduce its insulating effectiveness.
- 25. Ensure the area surrounding the elevating work platform is clear of personnel and equipment prior to lowering the elevating work platform.
- 26. Perform inspections of powered elevating work platform per manufacturer's, ANSI/SAIA and other regulatory agency schedules. Make repairs immediately.
- 27. Do not operate elevating work platforms with noted, reported deficiencies until repairs are made and equipment is authorized for use.

### **IMPROPER USE**

- 1. Stunt driving and horseplay are prohibited.
- 2. Never leave the truck unattended unless the key is taken out and the truck is secured from unauthorized users.

### **NEVER USE A DAMAGED MACHINE!**

#### **Voltage Testing**

Perform electrical safety test powered elevating work platforms in conformance with requirements of ANSI A92.2

## GUIDELINES

This program applies to work on or near electrical systems or components, both energized and de-energized, regardless of voltages present, and work using electrical equipment. This program focuses on work practices, qualification and training of employees, and the protection of unqualified employees.

For the purposes of this guideline the following definitions apply:

**Qualified person:** One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved.

**Unqualified person:** A person who is not a qualified person.

## TRAINING

Training shall be provided to any employee at risk of being exposed to an electrical hazard as part of their typical job duties. The level of training is dependent on the classification of the employee as either a “qualified person” or “unqualified person.”

A qualified employee shall, at a minimum, be trained and competent in the following:

1. The skills and techniques necessary to distinguish exposed live components from other non-energized electrical components.
2. The skills and techniques necessary to determine the nominal voltage of exposed live components.
3. The minimum approach distances specified in this program corresponding to the voltages to which the qualified employee will be exposed.

4. The proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, insulating tools for working on or near exposed energized parts of electric equipment.
5. The construction and operation of the electrical system or equipment he/she is working on, as well as the hazards associated with it.

An unqualified employee is a person who has received little or no training in electrical safety and is not familiar with the construction or operation of the electrical system or equipment being worked. They will be provided, at minimum, annual awareness training appropriate to the level needed in the performance of their duties.

## QUALIFIED EMPLOYEE

Qualified Persons must have demonstrated skills and knowledge related to the construction and operation of electrical equipment and installations. The employee will also be trained to recognize and avoid the electrical hazards that might be present. Whether an employee is “Qualified” will depend upon the various circumstances in the workplace. It is possible and, in fact, likely that an individual may be considered qualified about certain equipment in the workplace, but “unqualified” as to other equipment.

Whether an employee is a “qualified person” will depend upon various circumstances in the workplace. (See 1910.332(b)(3) for training requirements that specifically apply to qualified persons.)

An employee who is undergoing on-the-job training and who, during such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person is considered to be a qualified person for the performance of those duties.

A qualified employee will also be familiar with the proper use of special precautionary techniques, personal protective equipment including arc-flash, insulating, and shielding materials and insulating tools and test equipment. Qualified personnel are the only employees allowed to work with exposed, energized components with 50 volts or more.

The electrical safety standards contain restrictions regarding who can perform work on electrical equipment or systems. The following is a list of restrictions concerning employee qualification:

- a. Qualified Persons must have demonstrated skills and knowledge related to the construction and operation of electrical equipment and installations.

- b. Only qualified employees may work on or with exposed, energized components.
- c. Only qualified employees may work in areas containing unguarded, un-insulated, energized components operating at 50 volts or more
- d. Only qualified employees shall use test equipment to verify that circuit elements and electrical components, to which employees will be exposed are de-energized.
- e. Only qualified employees shall conduct tests and visual inspections as necessary to verify that all tools, jumpers, shorts, grounds, and other such devices have been removed prior to re-energizing circuits.

## EMPLOYEE IN TRAINING

Employee in training is a person who has received training in electrical safety but may not be familiar with the electrical system or equipment being worked on. Employees in training are considered qualified employees only when working under the supervision of a qualified employee.

An employee who is undergoing on the job training and who in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who under the supervision of a qualified person is considered to be a qualified employee for the performance of those duties.

Employees who face a risk of electrical shock or other electrical hazards shall receive the training listed below. This training is mandatory for electricians and welders and is also required for positions such as stationary engineers, supervisors, operators, mechanics, field techs and painters etc. if their work, or the work of people they supervise, exposes them to electrical hazards. This also includes emergency procedures, related to their work and necessary for their safety.

## UNQUALIFIED EMPLOYEE

Unqualified employee is a person who has received little or no training in electrical safety and is not familiar with the construction or operation of the electrical system or equipment being worked on. Training must be provided before the employee is assigned tasks requiring work around or on electrical systems.

## ELECTRICAL HAZARDS

The most obvious hazard associated with electricity is electric shock. Electric shock occurs when a person becomes part

of the path for current flow. This occurs when a person is in electrical contact with the earth and an energized, ungrounded conductor. It also occurs when a person comes in electrical contact with two conductors, where one is energized and a path for current flow is provided for by the other. The physiological effects of electrical shock depend on the amount of current flowing through the body, as well as the path taken. Table 1 shows the physiological effects of electric shock for various current flows.

Current flow is calculated by dividing voltage by resistance. If a person had a body resistance of 1000 ohms, the resistance of wet skin, and came in contact with 110 volts, the effects could be deadly. (110 volts/1000 ohms = 110 milliamps)

There are various ways of preventing electric shock: 1) *isolating* the conductor from the energy source, 2) *insulating*

Current Flow	Physiological Effects
< 1 ma	no sensation
1 - 10 ma	sensation of shock, mild pain
10 - 20 ma	painful, severe muscle contractions, breathing difficulties
50 - 100 ma	more severe pain, contractions, and breathing difficulties
100 - 200 ma	ventricular fibrillation, DEATH
> 200 ma	Severe burns and muscle contractions, chest muscles stop heart during shock.

Table 1; Effects of Electric Shock

the employee from the conductor, 3) *guarding* the exposed conductor to prevent contact, or 4) *grounding* the circuit.

Electric shock is not the only hazard associated with electricity. When a short circuit occurs or current flow is interrupted, hazards are created from the resultant arcs. If the current is great enough, these arcs can cause injuries such as burns, start fires and cause explosions.



## ELECTRICAL SYSTEMS

This program contains the requirements of two federal OSHA standards that apply to electrical work. The applicability of those standards is based on the type of electrical system being worked on. The two types of systems, both of which apply to the City, are electrical generation systems and electrical utilization systems.

### ELECTRICAL GENERATION SYSTEMS

Electrical circuits and equipment integral to the process of electrical generation include:

Transmission, metering, protection, and control circuits from the generator to the transmission line. Also, the electrical equipment associated with plant systems, including fuel and chemistry related equipment, from the power source, whether in-house generator or utility interconnection to the component itself. Also included are electrical utilization circuits in the generating plant provided they are commingled with installations of power generating equipment or circuits, and the electrical hazards presented by them are less than the hazards presented by the generation equipment or circuits.

### ELECTRICAL UTILIZATION SYSTEMS

Electrical circuits and equipment not associated with the process of electrical generation. Included are installations of electric conductors and equipment, such as lighting, heating, receptacles, and other incidental loads, located within or on buildings or other structures, or in open yards or parking areas. Also included are supplemental electrical generating equipment and circuits used for emergency or standby purposes.

### EQUIPMENT ACCESS & WORKING SPACE

Sufficient access and working space shall be provided and maintained around electrical equipment to permit ready and safe operation and maintenance of such equipment. The following requirements apply to equipment access and working space.

1. Materials shall not be stored within 10 feet of lines or equipment energized at 50 kV or less, or within 10 feet plus 4 inches for every 10 kV above 50 kV.
2. Sufficient access shall be provided to electrical equipment by maintaining a 30-inch-wide clearance in the direction of access to it.
3. A safe working space shall be maintained about electrical equipment. The depth of the working space shall be at least 3 feet and shall be measured from exposed parts or the enclosure front or openings.

4. The workspace shall be free from all obstructions or debris and shall not have any standing water.
5. The workspace shall be sufficiently illuminated for employees to safely perform the work.

## WORK ON OR NEAR EXPOSED DE-ENERGIZED COMPONENTS

Work on or near exposed de-energized components shall only be performed under the protection of a lockout/tagout. Conductors and parts of electrical equipment that have been de-energized but have not been locked or tagged out, regardless of their ability to be locked or tagged out, shall be treated as energized. Only those de-energized conductors or parts of electrical equipment actually tested and verified to be de-energized shall be considered de-energized. The following requirements apply to work on or near exposed de-energized parts:

1. Only qualified employees shall be used to test and verify that circuit elements and electrical components are de-energized prior to commencing work.
2. The qualified employee shall verify that the test equipment is functioning properly both before and after testing.
3. All persons, qualified or unqualified, shall work under the protection of their own lockout/tagout device.
4. Only qualified employees shall conduct tests and visual inspections as necessary to verify that all tools, jumpers, shorts, grounds, and other such devices have been removed prior to re-energizing circuits.

## WORK ON OR NEAR EXPOSED ENERGIZED COMPONENTS

1. The *NFPA 70E Handbook for Electrical Safety* in the Workplace provides enforceable obligations for employers and employees for protecting against electrical hazards to which an employee might be exposed. It is an approved national standard – Internationally accepted – that defines electrical safety-related work practices.
2. When work is performed on or near exposed energized components, qualified employees must be trained on the provisions of NFPA 70E Handbook for Electrical Safety in the Workplace, and the following safety-related work practices shall be observed:
3. Only qualified employees shall be allowed to work on or near exposed energized parts or equipment, or in areas containing unguarded, un-insulated energized parts operating at 50 volts or more.
4. At least two employees, one qualified and the other at least an employee in training, shall be present when working directly with or near electrical circuits or equipment that is energized at more than 600 volts.

5. When working on conductors or equipment energized at 50 volts or more, employees shall not be permitted to touch or work on exposed conductors or equipment unless wearing suitable insulating gloves with protectors or using suitable protective devices.
6. All exposed energized conductors within reach of any part of the body shall be covered with suitable protective equipment.
7. The employee shall work in a position from which a slip or shock will not bring the employee's body into contact with exposed energized parts.
8. When connecting de-energized lines or parts to an energized circuit by means of a conducting wire or similar device, it shall be attached to the de-energized part first. When disconnecting the conducting wire or similar device, it shall be disconnected from the energized part first.
9. When work is performed within reaching distance of exposed energized components, employees shall remove, or render non-conductive, all exposed conductive jewelry and other articles.
10. When there is a potential hazard of flames or electric arc, employees shall not wear clothing made of materials that may cause personnel injury if ignited, such as acetate, nylon, polyester, or rayon.
11. When fuses are removed from or installed in terminals energized at more than 300 volts, or with exposed parts energized at more than 50 volts, the employee shall use tools or gloves rated for the voltage present.

## APPROACH BOUNDARY FOR LIVE COMPONENTS

When working on or near energized components, it is the responsibility of the employee performing the job or task to set up approach boundaries. Qualified employees should rely on *NFPA 70E Annex D* for guidance. There are three types of boundaries that are used to protect other qualified and unqualified individuals:

### (Limited Approach Boundary)

An approach limit is a distance from an exposed live component where a shock hazard exists. Unqualified personnel may be escorted through this boundary by qualified personnel, only after the possible hazards have been explained to them.

### (Restricted Approach Boundary)

An approach limit at a distance from an exposed live component where there is an increased risk of shock, due to

electrical arc-over combined with inadvertent movement for personnel working in close proximity to the live component. Under no circumstances shall an unqualified person be permitted to cross this boundary.

### (Flash Protection Boundary)

For systems that are 600 volts or less, the boundary shall be 4.0ft. For systems above 600 volts, the boundary shall be the distance at which the incident energy equals 5 J/cm<sup>2</sup> (1.2 cal/cm<sup>2</sup>). When working with such voltages, a flash hazard analysis should be conducted and additional PPE may be needed.

## HAZARD/RISK CATEGORY CLASSIFICATION

Refer to *NFPA 70E Annex F* for guidance. This information annex provides guidance regarding a qualitative approach for risk assessment, including risk estimation and risk evaluation, which can be helpful in determining the protective measures that are required to reduce the likelihood of injury or damage to health occurring in the circumstances under consideration.

## PERSONAL PROTECTIVE EQUIPMENT (PPE)

Refer to *NFPA 70E Annex H* for guidance. A risk assessment is required in order to determine controls to employ and to make an educated decision on the type of PPE required for the task at hand.

## ENERGIZED ELECTRICAL WORK PERMITS

If live components are not placed in an electrically safe work condition, the work to be performed will be considered energized electrical work and the supervisor should make a determination on whether a permit is required. Refer to *NFPA 70E Annex J* for guidance.

## WORK PERFORMED NEAR OVERHEAD LINES

If work is to be performed near overhead lines, the lines should be de-energized and grounded, or other protective measures, such as guarding, isolating or insulating, should be provided before work is started. Only qualified employees shall be allowed to install protective devices on or near overhead lines. When this is not possible, the following practices shall be observed. Refer to *NFPA 70E Annex N* for guidance.

## UNQUALIFIED EMPLOYEES

When an unqualified employee is working in an elevated position near overhead lines, the location shall be such that the employee and the longest conductive object he/she

may contact cannot come closer than ten (10) feet to any unguarded, energized overhead line for the first 50 kV, plus 4 inches for every 10 kV over 50 kV. When an unqualified employee is working on the ground in the vicinity of overhead lines, the employee may not bring any conductive object closer than ten (10) feet to any unguarded, energized overhead line for the first 50 kV, plus 4 inches for every 10 kV over 50 kV. (Objects without an insulating rating for the voltage involved shall be considered conductive.)

## QUALIFIED EMPLOYEES

When a qualified employee is working in the vicinity of overhead lines, whether in an elevated position or on the ground, the employee may not approach or take any conductive object without an approved insulating handle closer to exposed energized parts than that shown in table 2 of NFPA 70E unless the employee is properly insulated from the energized part or the energized part is insulated from the employee and any other conductive object at a different potential.

## VEHICLES AND MECHANICAL EQUIPMENT

The following requirements apply to vehicles and mechanical equipment that have the potential to come in contact with energized overhead lines or other exposed energized lines or equipment:

- a. Any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines shall be operated so that a clearance of 10 feet is maintained for the first 50 kV, plus 4 inches for every 10 kV over 50 kV.
- b. A designated employee other than the equipment operator shall observe the approach distances and provide timely warning to the operator before the minimum clearances are reached.
- c. Employees on the ground may not make contact with the vehicle or mechanical equipment or any of its attachments unless the employee is using protective equipment rated for the voltage, or the equipment is located so that no un-insulated part of it may come within the minimum clearances to energized lines or equipment.

## WORK IN UNDERGROUND VAULTS

When work is performed in underground vaults containing electrical installations, additional safety requirements apply. These requirements include, but are not limited to, the following:

1. The guidelines and procedures of the Confined Space Entry Program must be followed for all entries into permit-required confined spaces.

2. A non-conductive ladder shall be used to enter and exit a subsurface vault exceeding 4 feet in depth. Cable trays, hangers, or cables shall not be used for this purpose.
3. Equipment used to lower materials and tools shall be capable of supporting the load, and without defects.
4. At least one trained attendant should be available on the surface in the immediate vicinity to render emergency assistance, as in retrieval, and or calling 911. This person may occasionally and briefly enter the space to provide non-emergency assistance. This person may also be the Confined Space Attendant, but in that case would not be allowed to enter the space.
5. Only qualified employees can enter an underground vault containing unguarded, un-insulated energized lines or parts of electric equipment operating at 50 volts or more.
6. When multiple cables are present in the work area, the cable to be worked on shall be identified electrically unless its identity is obvious by reason of distinctive appearance or other means of identification.
7. When moving energized cables, they shall first be checked for defects. Where a cable in a manhole has one or more known defects, the cable shall be de-energized before any employee may work in the vault. If it is not feasible to de-energize the cable, employees must be adequately protected from the actual or potential hazard prior to entry.
8. When work is performed on buried cable or cables in underground vaults, metallic sheath continuity shall be maintained, or the cable sheath shall be treated as energized.

## SAFETY RELATED WORK PRACTICES

Only Qualified employees will utilize these practices

**Interlocks and Other Safety Devices:** Interlocks and other safety devices shall be maintained in a safe, operable condition. No interlock or safety device may be modified to defeat its function, except for test, repair, or adjustment of the device.

**Changing Brushes:** Before exciter or generator brushes are changed while the generator is in service, the exciter or generator field shall be checked to determine whether a ground condition exists. The brushes may not be changed while the generator is energized if a ground condition exists.

**Work on Capacitors:** Before employees work on capacitors, or lines connected to capacitors, the capacitors shall be disconnected from energized sources, and, after waiting at least five (5) minutes from the time of disconnection, short

circuited. Before the units are handled, each unit in series-parallel capacitor banks shall be short-circuited between all terminals and the capacitor case or its rack. Lines connected to capacitors must be short-circuited to be considered de-energized.

**Current Transformer Secondary:** The secondary current of a current transformer may not be opened while the transformer is energized. If the primary cannot be de-energized before work is performed on an instrument, a relay, or other section of a current transformer secondary circuit, the circuit shall be bridged so that the secondary will not be opened.

## USE OF ELECTRICAL EQUIPMENT

This section pertains to the use of electrical equipment, as opposed to the work on electrical equipment. It includes requirements for both portable and fixed electrical equipment.

### PORTABLE ELECTRICAL EQUIPMENT

The following list of requirements applies to cord and plug connected equipment, including (flex and extension cords):

1. Portable equipment shall be handled in a manner that will not cause damage. Flexible electric cords connected to equipment shall not be used for raising or lowering the equipment.
2. Flexible cords may not be fastened with staples or otherwise hung in a fashion that could damage the outer jacket or insulation.
3. Portable cord and plug connected equipment (flex and extension cords) shall be visually inspected for external defects before use on any shift.
4. If there is a defect or evidence of damage that might expose an employee to injury, the defective or damaged item shall be removed from service until necessary repairs and tests to render the equipment safe have been performed.
5. A flexible cord used with grounding type equipment shall contain an equipment grounding conductor.
6. Attachment plugs and receptacles may not be connected or altered in a manner which would prevent proper continuity of the equipment grounding conductor at the point where plugs are attached to receptacles.
7. Adapters which interrupt the continuity of the equipment grounding connection may not be used.
8. Portable electric equipment and (flex and extension) cords used in highly conductive locations, such as those inundated with water, or job locations where employees are likely to contact conductive liquids, shall be approved for those locations.
9. Employees shall not plug or unplug energized electrical equipment with wet hands, or when the cord conductor is wet.
10. Portable electric tools capable of igniting flammable gases, vapors, liquids, or combustible dusts shall not be used in their vicinity.
11. Portable electric tools with no grounding cords (2 wire) shall be double insulated, and clearly labeled as such.

### PORTABLE GENERATORS

Portable and vehicle mounted generators used to supply plug and cord connected equipment shall meet the following requirements:

1. The generator may only supply equipment located on the vehicle and plug and cord connected equipment through receptacles mounted on the vehicle.
2. The non-current carrying metal parts of equipment and the equipment -grounding conductor terminals of the receptacles shall be bonded to the generator frame.
3. In the case of vehicle mounted generators, the frame of the generator shall be bonded to the vehicle frame.
4. Any neutral conductor shall be bonded to the generator frame.

### TEMPORARY WIRING

During periods of construction, test, experiment, or emergencies, a less permanent class of wiring and equipment may be used other than what is required for permanent installations. Cord and plug connected (flexible and extension) cords shall be considered temporary wiring. Temporary wiring shall not be used for more than 90 days.

### ELECTRIC POWER & LIGHTING CIRCUITS

The following requirements apply to the operation and protection of fixed electric power and lighting circuits:

1. Load rated switches, circuit breakers, or other devices specifically designed as disconnecting means shall be used for the opening, reversing, or closing of circuits under load condition.
2. After a circuit is de-energized by a circuit protective device, the circuit may not be manually re-energized until it has been determined that the equipment and circuit can be safely energized. The repetitive manual re-closing of circuit breakers or re-energizing of circuits through replaced fuses is prohibited.
3. When it can be determined from the design of the circuit

and the over-current devices involved that the automatic operation of a device was caused by an overload rather than a fault condition, no examination of the circuit or connected equipment is needed before the circuit is re-energized.

4. Over-current protection of devices may not be modified, even on a temporary basis.

## INSULATING EQUIPMENT

The rating of the electrical protective equipment shall be sufficient for the highest voltages present. The following table shows the ratings for the five (5) classes of electrical insulating equipment.

### Insulating Equipment Class Ratings & Retest Voltages

#### ADDITIONAL REQUIREMENTS FOR THE USE OF PERSONAL PROTECTIVE EQUIPMENT

1. Only electrical protective equipment meeting the requirements of the applicable ASTM standard shall be used. These standards include ASTM-D-178-93, ASTM-D-1048-93, ASTM-D-1049-93, ASTM-D-1050-90, and ASTM-D-1051-87.
2. If the insulating capability of protective equipment may be subject to damage during use, the insulating material shall be protected. (i.e. Leather protectors or rubber gloves.) Protector gloves need not be used with Class 0 gloves, under limited use conditions, where small equipment and parts manipulations necessitate unusually high finger dexterity. However, extra care is needed in the avoidance of handling sharp objects.
3. Protective equipment shall be maintained in a safe, reliable condition.
4. Insulating equipment, such as gloves, sleeves, or

Class	Max. Use Voltage	Retest Voltage
Class 0	1,000 VAC	5,000 VAC
Class 1	7,500 VAC	10,000 VAC
Class 2	17,000 VAC	20,000 VAC
Class 3	26,500 VAC	30,000 VAC
Class 4	36,000 VAC	40,000 VAC

blankets, shall be inspected for damage before each day's use and immediately following any incident that can reasonably be suspected of having caused damage. Insulating gloves shall be given the air test along with the inspection.

5. Insulating equipment with any of the following defects may not be used: holes, tears, punctures, or cuts; ozone cutting or ozone checking; embedded foreign objects; swelling, softening, hardening, stickiness, or inelasticity; or any other defect that damages the insulating properties. Insulating equipment found to have any of the above-mentioned defects shall be immediately removed from service and shall be repaired in accordance with 29 CFR 1910.137(b) or discarded.
6. Insulating equipment shall be cleaned to remove foreign substances.
7. Insulating equipment shall be stored in such a location and in such a manner as to protect it from light, temperature extremes, excessive humidity, ozone, and other injurious substances and conditions.
8. Rubber insulating equipment shall be tested in accordance with 29 CFR 1910.137 at the following intervals: blankets and sleeves shall be tested before first issue and every 12 months thereafter. Gloves shall be tested before first issue and every six (6) months thereafter. Testing before first issue must have been performed within the 12 months prior to the issue date. Tests shall be conducted at the test voltages shown in Table 3 of NFPA 70 E.
9. Employees may not use insulating equipment failing to pass electrical tests. If the equipment cannot be repaired in accordance with the requirements of 29 CFR 1910.137, it shall be discarded.
10. The employer shall certify that equipment has been tested in accordance with these requirements. The certification shall identify the equipment that passed the test and the date it was tested. Marking the equipment or recording the test results and dates in a test log will accomplish this.
11. Employee shall wear non-conductive head protection wherever there is a danger of head injury from electric shock or burns due to contact with exposed energized parts. Hard hats shall have a class B rating, which provides protection for up to 20,000 volts.
12. Employees shall wear protective equipment for the eyes and face wherever there is danger of injury to the eyes or face from electric arcs, flashes, or from flying objects resulting from electrical explosion.



## GENERAL PROTECTIVE EQUIPMENT & TOOLS

1. When working near exposed energized conductors or circuit parts, each employee shall use insulated tools or handling equipment. If the insulating capability of insulating tools or handling equipment is subject to damage, the insulating material shall be protected.
2. Fuse handling equipment, insulated for the circuit voltage, shall be used to remove, or install fuses when the fuse terminals are energized.
3. Ropes and hand lines used near energized parts shall be non-conductive.
4. Live-line tool rods, tubes, and poles shall be designed to meet the requirements of ASTM-F-11-89.
5. Each live-line tool shall be wiped clean and visually inspected for defects before use each day.
6. If any defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is present after wiping, the tool shall be removed from service and examined and tested prior to being returned to service.
7. Live-line tools used for primary employee protection shall be removed from service when required, and at least every two (2) years, for examination, cleaning, repair, and testing in accordance with 29 CFR 1910.269(j).
8. Portable metal ladders and other portable conductive ladders shall not be used near exposed energized lines or equipment.
9. Ladders and platforms shall be secured to prevent their becoming accidentally dislodged.
10. Safety signs or accident prevention tags shall be used where necessary to warn and protect employees from hazards that may endanger them. Barricades shall be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas exposing employees to un-insulated energized conductors or parts.

## BASIC ELECTRICAL TOOL SAFETY

1. Make sure all electrical tools and equipment are properly grounded or double insulated. Visually inspect daily for kinks, cuts, ripped or cracked jackets.
2. If an electrical tool sparks or tingles, take it out of service and tag for repair.
3. Always disconnect tools from power source before making adjustments or attachment changes. Follow lock-out, tag-out procedures.
4. Use three wire conductor ground receptacles and extension cords. Do not use cords with ground pins missing.

5. Protect cords from damage caused by traffic, sharp corners, and pinching.
6. Do not use electrical power tools or equipment while standing in water.
7. Keep cords out of puddles.
8. Do not splice or repair cords.
9. Temporary lighting must have guards over the bulbs.
10. Place cords so that they will not trip the operator or other personnel.
11. Disconnect by pulling the plug, not the cord.
12. Never use water to extinguish an electrical fire. Use a multipurpose dry chemical fire extinguisher or one with a "C" rating on the label.



# EMERGENCY RESPONSE PROCEDURES FOR HAZARDOUS MATERIALS

## GUIDELINES

In the event of a spill or release of a hazardous substance the City is to follow the process provided by the Florida Division of Emergency Management at FloridaDisaster.org at the web site: <https://www.floridadisaster.org/hazards/hazmat/>.

A significant spill or release is a situation where there is an imminent threat to health, property, or the environment, or where injury or death occurs. It is important that you understand each element of the following procedure.

### 1. CLEAR ALL PERSONNEL AWAY FROM THE SPILL AREA

Spills, leaks, or releases of hazardous substances are to be treated as very serious situations. Many chemical vapors are heavier than air and can travel across floors, under doors, and into ventilation ducts. Therefore, spills of volatile or corrosive materials can affect much larger areas than the physical site of the spill. Clear the immediate area of the spill and determine the need to clear adjacent areas and traffic paths. Don't be conservative as it is better to relocate too many people than too few.

### 2. SECURE SPILL AND AFFECTED AREAS FROM ACCIDENTAL ENTRY.

A minimum of 4 certified and trained employees should secure the spill area from accidental entry. One person will act as a safety observer to prevent anyone from entering the hazardous area. Physical barriers are useful in marking the safe perimeters and restricting entry. Do not allow persons to enter area until the area is declared safe.

Disconnect ignition sources (electrical switches, machinery, equipment, etc.) at the main electrical panel. Turn off all gasoline and gas filled equipment. Get assistance - DO NOT attempt to rescue an injured person by yourself or without proper personal protective equipment.

### 3. MAKE EMERGENCY NOTIFICATIONS - EMERGENCY NOTIFICATION LIST.

The employee will contact 911 and their supervisor. The Supervisor will take responsibility for completing the remaining emergency notification list for the release.

### SPILL OR RELEASE OF A HAZARDOUS MATERIAL, 25 GALLONS OR MORE

- Call 9-1-1, if hazard is unknown or a road hazard
- Notify your Department Head
- Notify State Warning Point
- Notify St. Lucie County EOC
- Notify Risk Management

### SPILL OR RELEASE OF A HAZARDOUS MATERIAL, 25 GALLONS OR LESS

- Call 9-1-1, if applicable
- Call your Supervisor
- Notify your Department Head
- Notify Risk Management

### 4. PROVIDE THE FOLLOWING INFORMATION TO 9-1-1.

- a. Your name, the name of your employer, and work address, including building name and room number if applicable. Also provide the telephone number from which you are calling.
- b. Give the trade name of the spilled or released substance and its chemical name and Chemical Abstract Service number (CAS), if known.
- c. Identify the quantity of the spill (i.e., 1 gallon, 5 gallons, 55 gallons, a tank, car, etc.).
- d. Identify the hazards of the substance if known (i.e., flammable, corrosive, toxic, or reactive with water).
- e. Identify other chemicals that may be stored in the area and affected by the spill.
- f. Report if spill or release of materials is near a storm sewer or surface water (ditch, canal, pond, or lake).
- g. Report injuries, fire, and property damage.
- h. Report whether the spill has occurred on a pervious (grass or soil) or impervious (concrete or asphalt) surface.

### 5. ASSIST IF REQUESTED

Assist your chain of command, the emergency response team, and authorities if your help is requested. If your help is not needed, stay clear of the cleanup and other related actions.

### 6. THE MEDIA

Do not talk to reporters or other persons about the hazardous material incidents. Statements to reporters

and media personnel will be issued by the City Manager or his/her designee. Refer questions from media to the City Manager's designee.

#### **CLEAN UP PROCEDURES FOR NON-HAZARDOUS MATERIALS, 25 GALLONS OR LESS**

1. Clear work area where spill or leak has occurred and get help. Do not try to clean up the spill alone.
2. Call your supervisor or your departmental Compliance office and notify Risk Management.
3. Put on appropriate protective equipment as indicated on the SDS sheets.
4. Absorb liquids with the most effective sorbent material needed such as pads, kitty litter, sand, clay, or oil dry.
5. Pick up materials with a non-sparking (plastic or brass) tool.
6. Place material in a suitable storage container and label.

#### **TWO VALUABLE SOURCES OF FIRST AID INFORMATION FOR SUBSTANCES ARE:**

1. Labels
2. Safety Data Sheets (SDS)

#### **ADMINISTRATIVE GUIDELINES FOR MANAGING HAZARDOUS MATERIAL INCIDENTS**

The primary responsibilities of supervisory personnel during hazardous material incidents are:

1. Take immediate action to reduce the potential for personal injury, property damage, or environmental pollution.
2. Acquire, report, and keep information concerning the incident.
3. The affected Supervisors and Risk Management should stay in close communication with each other during emergency situations.

#### **RESPONSIBILITIES OF WORK AREA SUPERVISORS**

In the event of a significant spill of (25) gallons or release of hazardous materials, work area supervisors will be responsible for:

1. Evacuating and securing the affected areas.
2. Shutting off power, equipment, and sources of ignition.
3. Notifying and assisting 9-1-1 if required.
4. Referring questions from media to the City Managers designee.
5. Notifying employees when the affected area is safe to re-enter.

#### **RISK MANAGEMENT**

In the event of a significant spill or release of a hazardous material, the Risk Management Department in conjunction with the department Safety Representative will be responsible for:

1. Assisting the affected work area supervisors in implementing the emergency response procedures.
2. Ensuring supervisors have Safety Data Sheets (SDS) information.
3. Acquiring copies of all medical reports and release forms for injured employees.
4. Maintaining program files relative to the incident.
5. Keeping administrators informed of the events.
6. Performing other duties as directed.
7. As soon as the situation is stabilized, the Risk Management Department in conjunction with the Departmental staff will begin acquiring information and data concerning the incident.

## GUIDELINES

The City of Port St. Lucie is formally committed to providing each employee a safe and healthy working environment. This program is designed to provide employees with information and to control employee exposure in the workplace as feasible, by engineering control measures.

Guidelines from OSHA's General Industry Fall Protection Requirements can be found at <https://www.osha.gov/fall-protection/standards>.

## TRAINING

All employees who might be exposed to fall hazards will receive fall protection training to ensure employees are using all required fall protection equipment, and are knowledgeable in the selection, application, limitation, inspection, maintenance, and proper usage of such equipment.

Training shall include the following:

1. Proper donning and sizing of body harnesses and application limits.
2. Proper anchoring and tie-off techniques.
3. Estimation of free fall distance, including determination of deceleration distance, and the total fall distance to prevent striking a lower level.
4. Methods of using equipment.
5. Inspection and storage of the system.

*Careless or improper use of the equipment can result in serious injury or death.*

## DEFINITIONS

**Anchorage** – A secure point of attachment for lifelines, lanyards, or deceleration devices.

**Body Harness** – Straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with means for attaching it to other components of a personal fall arrest system.

**Body Belt** – A strap with means both for securing it about the waist and for attaching it to a lanyard, or lifeline.

**Buckle** – Any device for holding the body belt or body harness closed around the employee's body.

**Connector** – A device which is used to couple parts to the personal fall arrest system and positioning device systems together. It may be an independent component of the system such as a carabiner.

**Deceleration Device** – Any mechanism, such as a rope grab, rip-stitch lanyard, tearing or deforming lanyard, self retracting lifeline, etc. which serves to dissipate a substantial amount of energy during a fall arrest.

**Deceleration Distance** – The additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of the body harness attaching point at the moment of activation of the deceleration device during a fall and the location of the attaching point after the employee comes to a full stop.

**Free Fall** – The act of falling before a personal fall arrest system begins to apply force to arrest the fall.

**Free Fall Distance** – The vertical displacement of the fall arrest attachment point on the employee's body harness.

**Lanyard** – A flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body harness to a decelerating device, lifeline, or anchor.

**Leading Edge** – The edge of a floor, roof, or framework for a floor or other walking/working surfaces. A leading edge is considered to be an unprotected side or edge that a fall may occur from.

**Lifeline** – A component consisting of a flexible line for connecting an anchorage at both ends.

**Personal Fall Arrest System** – A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a full body harness including a lanyard or decelerating device, lifeline, or suitable combination of these. The use of a body belt for fall arrest is prohibited.

**Personal Fall Restraint System** – A system which prevents an employee from approaching a fall hazard; therefore, preventing the possibility of free fall. It consists of an anchorage, connectors, a body holding device and rescue/ or escape. The use of a body belt is allowed.

**Powered Platform** – Aerial lift, bucket truck, scissors lift, and cranes etc.

**Rope Grab** – A decelerating device which travels on a lifeline and automatically frictionally engages the lifeline to lock to arrest the fall of the employee. A rope grab usually employs the principle of inertial locking, cam/lever locking or both.

**Self Retracting Lifeline (SRL)** – A device which contains drum-wound line which may be slowly extracted from or onto the drum under slight tension during normal movement of the user. The line has means for attachment to the fall arrest attachment on the body support. After onset of a fall, the device automatically locks off and arrests the fall.

**Snap Hook** – A connector comprised of a hook shaped member with a normally closed keeper, which may be opened to permit the hook to receive an object and when released.

**Swing Fall** – Swing Fall is a pendulum-like motion that can occur when a worker moves in a horizontal direction away from a fixed anchorage, and then falls, possibly colliding with a structure such as a building or platform. (See Appendix 2.)

**Tripod/Davit Arm** – A portable anchorage system intended to act as a support structure for a fall arrest, positioning, or evacuation system.

**Unprotected Sides and Edges** – Any side or edge (except at entrances to points of access) of a walking/working surface, e.g., floor, roof, or runway where there is no wall or guardrail system at least 39 inches high.

**Walking/Working Surface** – Any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to floors, roofs, ramps, runways, but not including ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.

## HAZARD IDENTIFICATION

As a rule, anytime a worker is at a height greater than (4) feet, a fall hazard exists. Where a fall hazard exists, there are two acceptable options; (1) eliminates the hazard, or (2) provide protection against it. Ideally it is best to eliminate the hazard. Since this is not often possible, the City requires that fall protection be worn when an employee has the potential of falling 4 feet or greater. This includes employees working in bucket or aerial lift trucks.

## FALL ARREST SYSTEMS

A fall arrest system is made up of a series of components that function together to prevent a worker from free falling to the ground. This system can be either temporary or permanent and is selected based upon the type of job, and hazards involved with performing the job.

### Fall Arrest Components:

1. Anchor system: Systems for fall arrest can be engineered or improvised.
2. Connecting means: The connecting means in a fall arrest system includes devices that attempt to limit the distance and / or reduce the impact force of a free fall. An energy, or personal shock absorbing lanyard is one type of device.
  - a. It is important to remember that the shock absorbing lanyards, though the most effective, also extends total fall distance by 3 ½ feet.
  - b. A lanyard is the connecting means consisting of a flexible line of rope, wire rope or nylon strap which has a double locking snap hook or scaffold hook at each end. One end should be attached to a shock absorbing device. Lanyards are also normally 3 to 6 feet long and in some cases the length can be adjustable. It is always best to keep the lanyard as short as possible.
3. Body support: The body support used in a fall arrest system is the full body harness. The full body harness works to distribute forces of a fall to areas of the body best able to withstand deceleration forces. Because there are several differently designed full body harnesses, the employee must understand which type has the most appropriate attaching point for the type work they are doing.
  - a. The most common harness is a Fall Arresting Harness which has a single forged D-ring affixed to the shoulder straps and positioned between the shoulder blades. The positioning of the D-ring allows the employee to hang in an upright position after a fall and the forces are distributed correctly.

- b. The Fall Arresting Harness should be the only harness available for employees confronting fall hazards unless the harness is required to serve another purpose.

4. Rescue and retrieval: The fall arrest system is generally more complicated than the rescue in a fall restraint system. It is very important to have a pre-planned rescue or retrieval procedure in place be it manually extracting, use of wench, or emergency self-retracting lifeline.

## FALL DISTANCE

Fall distance is a very important aspect of the system. Two distances must be considered: free fall distance and total fall distance. The free fall distance permitted by the system is critical – the longer the free fall, the greater the impact force. If a 6-foot lanyard is attached to an anchorage at the worker's feet and the worker is 6 feet tall and the dorsal D-ring is at 5 feet above the ground, the free fall distance would be 11 feet. Always try to keep the anchorage point as far over the employee's head as possible. Total fall distance incorporates all aspects of the fall protection system including free fall distance, activation distance, and deceleration distance. (See Appendix 1)

## SUBSYSTEMS

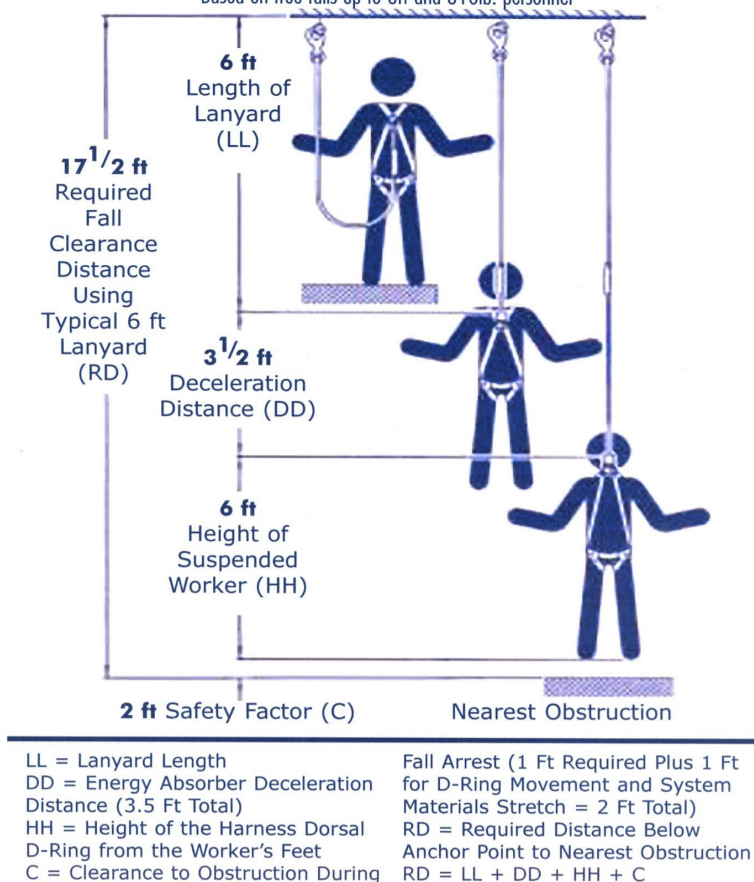
1. Shock Absorbing Lanyard
  - a. Lanyards should be the appropriate type, either a fall arrest (shock absorbing) or travel restraint (positioning) type lanyard. You must add the length of lanyard and declarative device to overall fall distance.
  - b. Never tie a knot in a lanyard because that is where it will come apart during a fall.
2. Full Body Harness
  - a. When stopping a fall, the harness shall limit the maximum arresting force on an employee to 1,800 lbs.
  - b. Wear the harness fully donned and fastened otherwise it will not protect you.
3. Snap Hooks
  - a. Snap hooks must be connected to compatible hardware and must never be attached to another snap hook.
  - b. Check the snap hook for damage, pitting, and distortion.

## SYSTEM SPECIFICATION

Safety harness lanyards should be a minimum of 1/2-inch nylon, or equivalent, with the maximum length to provide

## Typical Fall Clearance Calculation

Based on free falls up to 6ft and 310lb. personnel



Appendix I

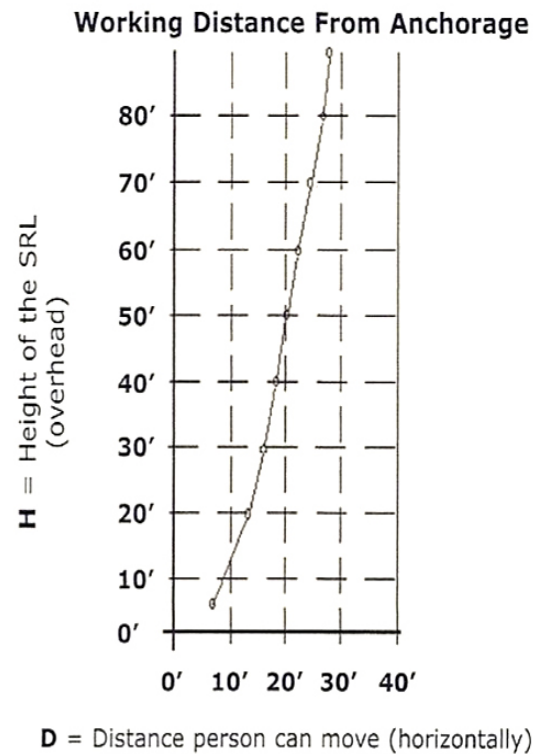
for a fall of no greater than 6 feet, with a nominal breaking strength of 5,000 pounds. A full body harness consists of components made of nylon straps such as, but not limited to chest, shoulder, thigh, and waist strap designed with a tensile strength of 5,000 pounds. The harness shall be designed to allow for suspension by a fall and prevent the employee from tilting or falling out of the harness while suspended. Surface shall be smooth and free of sharp edges. Lanyard hardware, except for rivets, shall be capable of withstanding a tensile loading of 5,000 pounds without cracking, breaking, or taking a permanent deformation.



## Swing Fall Hazard

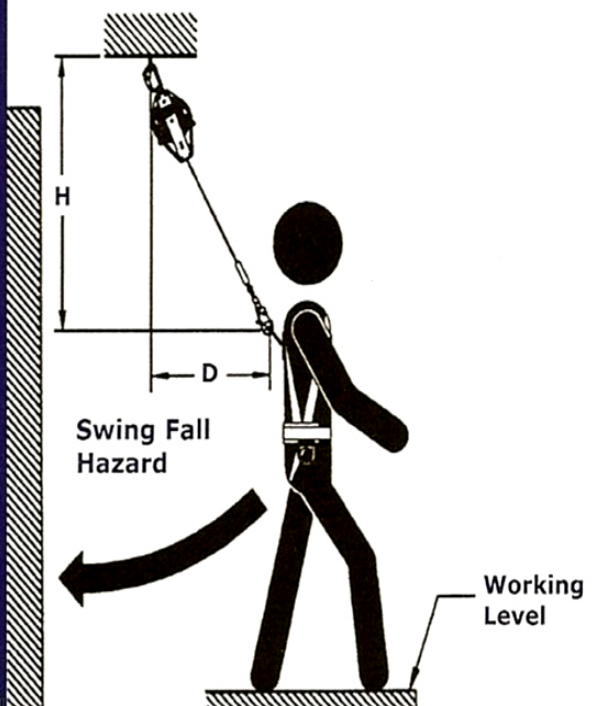
Swing falls occur when the anchorage point is not directly above the point where a fall occurs. The force of striking an object while swinging (horizontal speed of the user due to pendulum effect) may cause serious injury. In a swing fall, the total vertical fall distance will be greater than if the user had fallen when directly below the anchorage point. The user must therefore account for an increase in the total free fall distance. Self-Retracting Lifelines (SRLs) provide greater horizontal and vertical mobility than lanyards, increasing the opportunity for swing falls. See the adjoining chart for recommended horizontal working distances for SRLs. Minimize swing falls by working as close to directly below the anchorage point as possible.

**See user instructions supplied with each product for complete details on swing fall.**



**Example:** If the worker is 40 feet directly below the SRL, the recommended work zone is 18 feet in any direction.

## SRL Swing Fall





## GUIDELINES

The City of Port St. Lucie is formally committed to providing each of its employees a safe and healthy working environment.

This program is designed to provide employees with information to control employee exposure in the workplace as feasible, utilizing administrative controls, engineering control, and personal protective equipment.

## TRAINING PROGRAM

All authorized and affected employees will receive training to ensure that the purpose and function of the program is understood. Employees should have the knowledge in the selection, application, limitation, inspection, maintenance, and proper usage of such equipment prior to utilizing the equipment.

## PERSONAL PROTECTIVE EQUIPMENT (P.P.E.) DEFINITIONS

- Refer to the operator's manual for proper selection of P.P.E.
- The City of Port St. Lucie shall provide appropriate P.P.E. for all city employees including protective footwear.
- Respirator – Particulate mask to be worn in dusty conditions. It will be supplied by City of Port St. Lucie.

## TYPES OF EQUIPMENT

- Mowers
- Trenchers
- Weed Whackers
- Chainsaws
- Woodchippers
- Tamper

## OPERATING PROCEDURES

1. Do not operate equipment until operator is thoroughly trained by Supervisor.
2. Operators must become familiar with the controls and know how to stop the engine quickly.
3. Equipment shall never be left unattended with motors running.
4. Whenever the equipment is left unattended, make sure the key is removed from the ignition switch and the parking brake is set.
5. Do not run the engine in a confined area without adequate ventilation. Exhaust fumes are dangerous and could be deadly.
6. All bystanders should be warned by the operator of the danger of flying objects.
7. Keep all shields, safety devices, and decals in place. If a shield, safety device or decal is defective or damaged, repair or replace it before operating equipment.
8. Do not carry passengers on equipment and keep everyone away from areas of operation.
9. Areas to be mowed must be inspected for foreign objects. Wires, stones, bottle caps, sticks, etc. should be removed before mowing.
10. If a cutting unit strikes a solid object or vibrates abnormally, stop immediately, turn engine off, wait for all motion to stop, remove spark plug wire, and inspect for damages. A damaged reel, blade, or bed knife must be repaired or replaced before operation is continued.
11. Keep hands and feet away from the undercarriage of the mower.
12. Check the safety interlock switches daily for proper operation. If a switch should fail, replace the switch before operating the machine.
13. All equipment must be equipped with approved hand and foot guards

when in use.

14. Raise the mowers cutting units when driving from one work area to another.
15. Operate equipment only in daylight or when there is good artificial lighting.

## HAZARD IDENTIFICATION

1. Do not touch equipment engine, muffler, or exhaust pipe while engine is running or soon after it has stopped because these areas could be hot enough to cause burns.
2. Before servicing or adjusting the equipment, stop the engine, remove the key from switch, and spark plug wire to prevent accidental starting of the engine.
3. To assure entire machine is in good operating condition, keep all nuts, bolts, screws, and hydraulic fittings tight.
4. To reduce potential fire hazard, keep the engine area free of excessive grease, grass, leaves and accumulation of dirt.
5. If the engine must be running to perform a maintenance adjustment, keep hands, feet, clothing, and any other parts of the body away from the cutting units and any other moving parts of the machine. Keep everyone away.
6. Engine must be shut off before checking oil or adding oil to the crankcase.
7. After grounds maintenance work is completed, disconnect the equipment's spark plug wire from the spark plug, remove dirt, grass, or other debris from the equipment and place in a dry location undercover.
8. Never refuel equipment while it is running. Allow engine to cool two (2) minutes before filling.
  - a. Use approved gasoline container.
  - b. Do not remove the cap from fuel tank when engine is hot or running.
  - c. Do not smoke while handling fuel.
  - d. Fill fuel tank outdoors and not over one (1) inch from the top of the tank, or filler neck.
  - e. Wipe up any spilled fuel.

# BLOODBORNE PATHOGENS: EXPOSURE CONTROL PLAN

## GUIDELINES

The City of Port St. Lucie is responsible for implementing and managing the Bloodborne Pathogen Exposure Control Plan. The City will also provide and maintain appropriate controls, personal protective equipment and implement safe work practices.

All employees are responsible for complying with this plan by responding to and reporting any exposure in a timely manner.

## TRAINING PROGRAM

At risk employees will receive training pertinent to the scope of their responsibilities and work activities. Employees shall receive a review at least annually. Other employees whose duties have the potential for only a collateral duty exposure may also receive this training. Additional training is needed when existing tasks are modified, or new tasks are required which affect the employees' occupational exposure. This program will aid employee's knowledge in understanding what bloodborne pathogens are, protection from and response to exposures of bloodborne pathogens.

## DEFINITIONS:

**Biohazard Label** - A label affixed to containers of regulated waste, refrigerator/freezers and other containers used to store, transport or ship blood and other potentially infectious materials (OPIM). The label must be fluorescent orange (orange-red in color with the biohazard symbol and the work "biohazard" on other lower part of the label.

**Blood** - Human blood, blood components, and products made from human blood.

**Bloodborne Pathogens** - Pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, Hepatitis B Virus (HBV), Hepatitis C Virus (HCV) and Human Immunodeficiency Virus (HIV).

**Contaminated** - The presence or other reasonably anticipated presence of blood or OPIM on an item or Surface.

**Contaminated Laundry** - Laundry, which has been, soiled with blood or OPIM.

**Contaminated Sharps** - Contaminated objects that can penetrate the skin including, but not limited to needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires.

**Decontamination** - The use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.

**Engineering Controls** - Isolate or move BBP hazards from the workplace.

**Exposure Incident** - A specific eye, mouth, other Mucous membrane, non-intact skin, or parenteral contact with blood or OPIM that results from the performance of an employee's duties.

**HBV** - Hepatitis B Virus

**HCV** - Hepatitis C Virus

**HIV** - Human Immunodeficiency Virus

**Licensed Healthcare Professional** - A person legally permitted to allow him or her to independently perform the activities required by "Hepatitis B Vaccination and Post-Exposure Evaluation and follow-up."

**Occupational Exposure** - Reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials of another person that results from the performance of the employee duties.

**OSHA** - Occupational Safety and Health Administration.

**OPIM** - Other Potentially Infectious Materials

The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva, body fluids visibly contaminated with blood, and all body fluids in a situation where it is difficult or impossible to differentiate between body fluids,

**Parenteral** - Piercing mucous membranes or the skin barrier through such events as needle sticks, human bites, cuts, and abrasions.

**Personal Protective Equipment** - Specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts or blouses) not intended to function, as protections against a hazard are not considered to be personal protective equipment.

**Source Individual** - Any individual, living, or dead, whose blood or OPIM may be a source of occupational exposure to the employee.

**Sterilize** - The use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

**Universal Precautions** - Is a method of infection control in which all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, HCV, and other bloodborne pathogens. Universal precautions are to be observed in all situations where there is a potential for contact with blood or other potentially infectious material.

**Work Practice Controls** - Controls that reduce the likelihood of exposure by altering the way a task is performed.

## **EXPOSURE DETERMINATION - AT RISK EMPLOYEES**

This plan applies to specific employees either full or part-time in departments who are 'REASONABLY ANTICIPATED' to face occupational exposure to blood and OPIM during routine work functions and are therefore classified as "AT RISK." Examples are:

**POLICE:** All "sworn" Police Officers, Property Evidence Aides, Crime Scene Investigators

**BUILDING FACILITIES MAINTENANCE:** Plumbers, Janitorial Attendants, Building Maintenance

**PARKS & RECREATION:** All Maintenance Workers and Maintenance Supervisors, Operations Managers and Operations Supervisors, Irrigation Specialists, Plumbers, Maintenance and Safety Coordinator, Park Leaders, Recreation Aides, Supervisors, Turf/Landscape Specialists and Turf/Landscape Supervisors

**UTILITY OPERATIONS:** Operations Managers/Supervisors, Electricians, Engineers, Crew Leaders, Utility Field Inspectors, Utility Service Workers and Operators

**ANIMAL CONTROL:** Animal Control Officers and Supervisors

## **CONTROL METHODS:**

1. Universal precautions (UP) is the preferred approach to infection control. It is the practice of assuming all blood and OPIM are potentially infectious regardless of the source.
  - a. Universal Precautions shall apply to human blood, blood products, and OPIM as well as any body fluids, tissues, or inanimate objects contaminated or potentially contaminated with same.
  - b. Universal Precautions requires placing effective barriers between the employee and the blood or OPIM to interrupt the transmission of bloodborne pathogens through contact with the skin, eyes, or mucous membranes.
2. Personal Hygiene
  - a. Wash hands with soap and water immediately, or as soon as feasible, after removal of gloves or other personal protective equipment.
  - b. Wash hands and any other skin with soap and water immediately or as soon as feasible following contact of such body areas with blood or OPIM.
  - c. Rinse mucous membranes with water immediately or as soon as feasible following contact of same with body fluids, blood, or OPIM.
  - d. In the event hand washing facilities are not available, a substitute antiseptic hand cleaner or towelette will be used. Hands shall be washed with running water and soap as soon as possible.
  - e. Cleanup procedures involving blood or OPIM shall be performed in such a manner as to minimize splashing, spraying, spattering, and generation of droplets of these substances.

### 3. Internal Absorption

- a. Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited while working where an occupational exposure exists.
- b. Food and drinks shall not be kept in refrigerators, freezers, shelves, cabinets, or on counter tops where blood or OPIM are present.

### 4. Handling of Sharps

- a. Sharps shall be handled by employees using absolute caution to avoid skin injury by using puncture proof gloves or using a device to pick up the needle to without coming in direct contact with it.
- b. Sharp items shall be properly disposed of in puncture resistant containers.

### 5. Tools & Equipment Handling

- a. Equipment, which may become contaminated with blood or OPIM, shall be decontaminated as necessary.
- b. If the item or portions of the item cannot be decontaminated, a readily observable warning, label shall be attached indicating which portion remains contaminated.
- c. Notice of such possibility of contamination must be given to all affected employees, servicing-representatives, and/or manufacturer, prior to handling so that proper precaution may be taken.

### 6. Cleaning and Disinfection

Personnel will clean contaminated area or items with soap and water, then apply disinfecting solution. A solution of bleach and water at a 1:10 dilution ratio is acceptable. A fresh disinfectant solution must be made for each occurrence. DO NOT use bleach solution in the cleaning of electronic equipment. Refer to the SDS for each disinfectant solution to decide what personal protective equipment may be needed.

### 7. Contaminated Clothing

- a. Employee clothing with contact from bodily fluids of an unknown nature because of work-related activities shall be considered contaminated. This may include civilian clothing, uniforms, turnout gear, or personal protective equipment.
- b. If a garment is penetrated by blood or OPIM, the employee shall immediately, or as soon as possible and before continuing work, remove the garment and place it in a plastic bag securely tied then labeled for laundering by the employer.
- c. Boots and leather goods may be brushed with soap and hot water to remove contamination.

- d. Disposable personal protective equipment such as gloves, face shields or masks shall be placed in a labeled waste bag and discarded.

## PERSONAL PROTECTIVE EQUIPMENT (PPE)

1. Personal Protective equipment will be chosen based on the anticipated exposure to blood or OPIM. When the use of personal protective equipment is indicated, the employee is required to use such equipment.
2. Personal Protective Equipment (PPE) - Gloves, face shields, masks, and eye protection, shall be considered "appropriate" only if they do not permit blood or OPIM to pass through to or reach the wearer's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time which the protective equipment will be used.
3. Employees shall use appropriate personal protective equipment whenever there is a potential for occupational exposure.
4. Gloves shall be worn:
  - a. Whenever it can be reasonably anticipated that there will be contact with blood or OPIM.
  - b. When handling or touching contaminated surfaces.
  - c. Disposable (single use) gloves shall be replaced as soon as practical when contaminated or as soon as feasible if they are torn, punctured, or when their ability to function as a barrier is compromised.
  - d. Disposable gloves shall not be washed or decontaminated for re-use.
5. Masks shall be worn alone or in combination with eye protection devices whenever splashes, spray, spatter, or droplets of blood or OPIM may be generated.
6. Protective clothing such as aprons, lab coats, or similar outer garments shall be worn in extreme occupational exposure situations. The type and characteristics of such protective clothing must be appropriate to the task and degree of exposure anticipated.
7. Shoe covers shall be worn in instances when gross contamination can reasonably be anticipated.

## HOUSEKEEPING

1. Work sites shall be maintained in a clean and sanitary condition.
2. Methods of cleaning and decontamination shall be made available by the department to ensure proper attention is given to potentially infectious areas.
3. All equipment, environmental and working surfaces shall be cleaned and decontaminated after contact with blood or OPIM. Contaminated work surfaces shall be

- decontaminated with an appropriate disinfectant.
4. Broken glassware, which may be contaminated, shall not be picked up directly with the hands. It shall be cleaned up using mechanical means only or with appropriate hand protection.

### **REGULATED WASTE - BIOHAZARD CONTAMINATED SHARPS:**

1. Contaminated sharps shall be discarded immediately or as soon as feasible in sharps containers.
2. When moving containers of contaminated sharps, they shall be closed and if leakage is likely, placed in a secondary closable, leak proof, and appropriately labeled or color-coded container.

### **CONTAMINATED LAUNDRY:**

1. Universal precautions will be used when handling all soiled laundry.
2. Shall be handled as little as possible, with a minimum of item agitation.
3. Shall be bagged or containerized where used or found.
4. If wet and presents a reasonable likelihood of soaking through or leaking, it shall be placed in bags or containers which will prevent same.
5. Shall be placed and transported in appropriately labeled or color-coded bags or containers.
6. When shipping contaminated laundry to a facility that does not utilize universal precautions, laundry containers shall be appropriately labeled or color-coded.
7. Employees should warn the supervisor if clothing is contaminated.

### **BIOHAZARD WARNINGS**

1. Labels shall contain the word "Biohazard" and the following biohazard symbol.
2. Will be fluorescent orange with symbols and lettering in contrasting color.
3. Shall either be an integral part of the container or affixed to it in such a fashion as to prevent their loss or unintentional removal.

### **HEPATITIS B VACCINATION**

1. All employees with jobs which may be "reasonably anticipated" to bring them in contact with items contaminated by blood or bodily fluids shall be offered Hepatitis B vaccine free of charge within 10 working days of the placement in the job classification. These workers must be immunized against Hepatitis B or sign a declination form. Any employee who declines



the vaccine initially may request it, free of charge, at any future date. An employee may decline because they have previously received the vaccination series, or they may request antibody testing to determine antibody titers to reveal immunity.

2. The vaccine shall be offered at a reasonable time and place.
3. The vaccine shall be administered under the supervision of a physician or other licensed health care professional.

### **EXPOSURE INCIDENT EVALUATION PROCEDURES**

1. All exposure incidents and blood or body fluid contact must be reported to a supervisor immediately after occurrence and an employee Injury/Incident report should be completed. The following elements should be included in the documentation of an Exposure Incident.
  - a. Engineering controls in place at the time of the exposure incident.
  - b. Work practice controls in place at the time of the exposure incident.
  - c. Personal protective equipment and clothing utilized.
  - d. Control failures, if any.
2. The goal of this evaluation is to identify and correct problems to prevent recurrence of similar incidents.
3. An employee who has had an exposure can request to meet with medical staff to determine proper medical treatment and counseling.

### **POST EXPOSURE MEDICAL EVALUATION AND FOLLOW-UP**

1. Post-exposure counseling shall be given to employees following an exposure, if requested.
2. Post exposure records shall be maintained by the medical facility the employee visited.
3. Medical records are maintained by the Medical Facility treating the employee. Employee injury reports pertaining to exposure incidents shall be scanned to the employee's medical file.
4. Employee medical records shall be kept confidential. Information contained in employee medical records shall not be disclosed to any person without the employee's express written consent, except as provided by law.
5. Employee records shall be maintained for the duration of employment plus thirty (30) years.

### **RECORDKEEPING**

1. The medical record for an exposure incident includes the name and social security number of the employee,



a copy of the employee's Hepatitis B vaccination status including the dates of all the Hepatitis B vaccinations, and any medical records relative to the employee's ability to receive the vaccination; copies of all results of examinations, medical testing, and the follow-up procedures; copies of the healthcare professionals written opinion, and a copy of the information provided to the healthcare professional.

2. Training records. Training records must be retained for three (3) years from the training date.
3. Documentation of employee's non-use of personal protective equipment. Refer to "Personal Protective Equipment.", as noted on injury report.
4. Employee's medical records shall be provided upon request to the employee or anyone having his/her written consent.

### **ADDITIONAL INFORMATION AND TRAINING:**

Training shall include:

1. Explanation and location of 29 CFR 1910.1030, Bloodborne Pathogen Standard. <https://www.osha.gov/bloodborne-pathogens/standards>
2. General explanation of the epidemiology and symptoms of bloodborne diseases.
3. Explanation of the modes of transmission of bloodborne pathogens.
4. An explanation of this plan.
5. An explanation of the appropriate methods of recognizing tasks and other activities that may involve exposure to blood or OPIM.
6. PPE and work practice controls and clean up kits and methods.
7. Information on the Hepatitis B vaccination.
8. Information on appropriate actions to take in the event of an exposure incident, including an explanation of proper signs, labels and color-coding.
9. An opportunity for interactive questions and answers with the person conducting the training.
10. Records of each training session shall be kept, including:
  - a. Dates of the training session.
  - b. The content or a summary of training.
  - c. Names and qualifications of person(s) conducting the training.
  - d. Names and of all persons attending training.
  - e. Training records shall be maintained by the department for a period of three (3) years from the date of training.
  - f. A Safety Training Record shall be sent to Risk Management for insertion in each such employee's training file.

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## PERSONAL PROTECTIVE EQUIPMENT PROGRAM

### **GUIDELINES**

Personal Protective equipment will be provided, used, and maintained when it has been determined that its use is required and that such use will lessen the likelihood of occupational injury and/or illness.

This program addresses eye, face, head, foot, hearing, and hand protection. A separate program exists for respiratory safety.

### **TRAINING PROGRAM**

All authorized and affected employees will receive PPE training to ensure that the purpose and function of the program is understood. Employees should have the knowledge, and understanding required to select, inspect, and wear appropriate PPE required for specific tasks.

### **PROGRAM COMPONENTS**

#### **Hazard Assessment and Equipment Selection**

OSHA requires employers to conduct inspection of all workplaces to determine the need for PPE and to help in selecting the proper PPE for each task performed. The supervisors should conduct a walk-through survey of each work area to identify sources of hazards, including impact, penetration, compression, chemical, heat, dust, electrical sources, material handling, and light radiation. Surveys should be documented using the Hazard Assessment Form (Appendix A) which identifies the workplace surveyed, the person conducting the survey, findings of potential hazards, and date of the survey.

Once the hazards of a workplace have been identified, the supervisor will determine the suitability of the PPE presently available and as necessary select new or additional equipment which ensures a level of protection greater than the minimum required to protect the employees from the hazards. Care will be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards will be provided or recommended for purchase.

#### **Protective Devices**

All personal protective clothing and equipment will be of safe design and construction for the work to be performed and shall be maintained in a sanitary and reliable condition. Only those items that meet ANSI (American National Standards Institute) standards or ASTM (American Society of Testing Material) standards will be procured or accepted for use. Newly purchased PPE must conform to the updated ANSI or ASTM standards which have been incorporated into the OSHA PPE regulations, as follows:

- a. Eye and Face Protection ANSI Z87.1
- b. Head Protection ANSI Z89.1
- c. Foot Protection ANSI Z41 (Superseded by ASTM – American Society of Testing Material. Standard # is F2413—05
- d. Hand Protection. There are no ANSI standards for gloves; however, selection must be based on the performance characteristics of the glove in relation to the tasks to be performed.
- e. Hearing Protection. There are no ANSI standards for hearing protection; however, selection must be based on the performance characteristics of the hearing protection in relation to the tasks to be performed.

Careful consideration will be given to comfort and fit of PPE to ensure that it will be used. Protective devices are generally available in a variety of sizes. Care should be taken to ensure that the right size is selected. Additional Information can be found at the ISEA and CDC websites.

- <https://safetyequipment.org/isea-standards/list-of-isea-standards/>
- <https://wwwn.cdc.gov/PPEInfo/>

### **Eye and Face Protection**

Prevention of eye injuries requires that all persons who may be in eye hazard areas wear protective eyewear. This includes employees, visitors, researchers, contractors, or others passing through an identified eye hazard area to provide protection for these personnel.

Supervisors of such areas shall procure enough goggles and/or plastic eye protectors which afford the maximum amount of protection possible. If these personnel wear personal glasses, they shall be provided with a suitable eye protector to wear over them.

Suitable protectors shall be used when employees are exposed to hazards from flying particles, molten metal, acids or caustic liquids, chemical liquids, gases, or vapors, bioaerosols, or potentially injurious light radiation.

- Wearers of contact lenses must also wear appropriate eye and face protection in a hazardous environment.
- Side protectors shall be used when there is a hazard from flying objects.
- Goggles and face shields shall be used when there is a hazard from a chemical splash or water or sewage.
- For employees who wear prescription lenses, eye protectors shall either incorporate the prescription in the design or fit properly over the prescription lenses.
- Protectors shall be marked to identify the manufacturer.
- Equipment fitted with appropriate filter lenses shall be used to protect against light radiation. Tinted and shaded lenses are not filter lenses unless they are marked or identified as such.

### **Emergency Eyewash Facilities**

Emergency eyewash facilities meeting the requirements of ANSI Z358.1 will be provided in all areas where the eyes of any employee may be exposed to corrosive materials. All such emergency facilities will be located where they are easily accessible in an emergency.

### **Head Protection**

Hard hats are required to be worn when employees are exposed to falling objects and overhead hazards. Hard hats that have been altered by drilling or cutting will not be permitted. The hard hat will always be worn with the brim facing forward.

### **Foot Protection**

Safety shoes shall be worn in shops, warehouses, maintenance, or other areas as determined by the Risk Management Department. Generally, where there is a danger of foot injuries due to falling or rolling objects or objects piercing the sole and where such employee's feet are exposed to electrical hazards. If the footwear conforms to the ANSI standard referenced above, a steel-toed boot and a composite-toed boot/shoe will be acceptable for falling or rolling objects.

### **Hand Protection**

Suitable gloves shall be worn when hazards from chemicals, cuts, lacerations, abrasions, punctures, burns, biologicals, and harmful temperature extremes are present. Glove selection shall be based on performance characteristics of the gloves, conditions, durations of use, and hazards present. One type of glove will not work in all situations.

The first consideration in the selection of gloves for use against chemical is to determine, if possible, the exact nature of the substances to be encountered. Read instructions and warnings on chemical container labels and MSDS before working with any chemical.

Recommended glove types are often listed in the section for personal protective equipment.

All glove materials are eventually permeated by chemicals. However, they can be used safely for limited time periods if specific use and other characteristics (i.e., thickness and permeation rate and time) are known. The Risk Management office or Department Safety offices can assist in determining the specific type of glove material that should be worn for a particular chemical.

### **Selection and Use of PPE in Laboratories**

PPE may be required to reduce the risk of exposure of an employee by contact, inhalation, or ingestion of an infectious agent, toxic substance, or radioactive material. For biological agents, the Lab Manager and Lab Supervisor will determine the Biosafety level for the lab and the appropriate type of PPE required to be worn while working in the lab.

### **Laboratory Coats and Gowns**

The lab coat can be used to protect street clothing against biological or chemical spills as well as to provide some additional body protection. The specific hazard(s) and the degree of protection required must be known before selecting coats for lab personnel.

### **Hearing Conservation Program**

OSHA has established guidelines for on-the-job prevention of hearing loss. Hearing protectors are of first importance. Hearing tests determine an employee's baseline hearing and are followed up by annual tests to discover any changes in hearing.

### **Hearing Tests**

Every employee in an area with loud machinery or operations may potentially be at risk and are given a hearing test to establish a baseline audiogram and show whether a hearing problem already exists. Hearing tests will be given every year thereafter to compare baseline hearing results with current hearing results.

A standard threshold shift has occurred when the hearing threshold has changed by an average of ten decibels or more in either ear in 2000, 3000, or 4000 hz. The audiogram is reviewed to determine whether the results are consistent with excessive noise exposure. If an employee shows a change in hearing he/she will be notified.

It is important to avoid high noise exposures for 14 hours prior to having a hearing test. Ideally, the hearing test should take place first thing on a Monday morning prior to beginning a work shift for the day. If this is not possible, during the day prior to having the hearing test, it is advised that hearing protection be worn to provide a noise free environment.

### **Hearing Protectors**

Any employee exposed to a noise level of 85 dBA over an eight (8) hour period must be provided with hearing protection. The effectiveness of the hearing protection depends on proper fitting. Training will be provided as to how to properly use hearing protection and how to care for it. The wearing of hearing protection is an extremely important part of an overall hearing conservation program.

### **Workplace Testing**

Periodically, noise levels may be measured in the work area utilizing sound level meters as well as dosimeters.

By using the sound level meter, the City will be able to determine the noise frequency at any given time.

### **Types of Hearing Protection**

Radio headsets are not substitutes for hearing protectors and should not be worn where hearing protectors are required against exposure to noise. Employees shall wear only hearing protection that is supplied to them by their supervisor.

There are three (3) basic types of hearing protection:

- Ear plugs are inserted to block the ear canal. They may be premolded (preformed) or moldable (foam ear plugs). Ear plugs are sold as disposable products or reusable plugs. Custom molded ear plugs are also available.
- Semi-insert ear plugs which consist of two ear plugs held over the ends of the ear canal by a rigid headband.
- Earmuffs consist of sound-attenuating material and soft ear cushions that fit around the ear and hard outer cups. They are held together by a head band.

Manufacturers provide information about the noise reducing capability of a hearing protector as an NRR (noise reduction rating) number. The NRR ratings are based on noise reduction obtained in laboratory conditions. The NRR was developed by the Environmental Protection Agency (EPA). According to EPA regulation, the NRR must be shown on the hearing protector package. The NRR is then related to an individual worker's noise environment in order to assess the adequacy of the attenuation of a given hearing protector.

**Remember:** Ear plugs can be worn with earmuffs to increase protection. Below is a comparison of ear plugs to earmuffs.

## Comparison of Hearing Protection

EAR PLUGS	EAR MUFFS
<b>Advantages</b> <ul style="list-style-type: none"> <li>• Small and easily carried</li> <li>• Convenient to use with other personal protection equipment (can be worn with earmuffs)</li> <li>• More comfortable for long-term wear in hot, humid work areas</li> <li>• Convenient for confined space areas</li> </ul>	<b>Advantages</b> <ul style="list-style-type: none"> <li>• Less attenuation variability among users</li> <li>• Designed so that one size fits most head sizes</li> <li>• Easily seen at a distance to assist in the monitoring of their use</li> <li>• Not easily misplaced or lost</li> <li>• May use with ear infections</li> </ul>
<b>Disadvantages</b> <ul style="list-style-type: none"> <li>• Requires more time to fit</li> <li>• More difficult to insert and remove</li> <li>• Require good hygiene practices</li> <li>• May irritate the ear canal</li> <li>• Easily misplaced</li> <li>• Difficult to see and monitor</li> </ul>	<b>Disadvantages</b> <ul style="list-style-type: none"> <li>• Less portable and heavier</li> <li>• More inconvenient for use with other personal protective equipment.</li> <li>• More uncomfortable in hot, humid work area</li> <li>• More inconvenient for use in confined work areas</li> <li>• May interfere with safety or prescription glasses; wearing glasses result in breaking seal between muff and skin and results in decreased hearing protection</li> </ul>

## GUIDELINES

In the interest of employee safety when using hand and power tools, the following best practices apply to all the equipment as appropriate for each.

## TRAINING PROGRAM

All authorized and affected employees will receive hand and power tool training to ensure that the purpose and function of the program is understood. Employees should be able to recognize the hazards associated with the different types of tools and safety precautions required prior to utilizing the equipment.

## GENERAL HAND TOOL SAFETY

Employees who use hand tools are exposed to the hazards of falling, flying, abrasive, and splashing objects, or to harmful dusts, fumes, mists, vapor, or gases. Employees must be provided with the appropriate personal protective equipment (PPE).

Seven basic safety rules will help prevent injuries using hand tools.

1. Use the right tool for the job.
2. Keep all tools in good condition with regular maintenance.
3. Examine each tool for damage before each use and do not use damaged tools.
4. Store tools in proper storage units including tool boxes, tool racks, or cabinets.
5. Do not leave tools on overhead work areas where they may fall and strike someone below.
6. Do not carry a sharp or pointed tool in pockets or belts unless the point or edge is protected with a cover or in a closed and locked position.
7. Always use the appropriate PPE.

The following sections identify various hand tools and their potential hazards. They also identify ways to prevent employee injury through proper use of tools and the use of appropriate PPE.

Iron or steel hand tools may produce sparks that can be an ignition source around flammable substance. Where this hazard exists, spark-resistant tools made of non-ferrous material will be used where flammable gases, highly volatile liquids, and other explosives are stored or used.

## HAMMERS, SLEDGES, AND AXES

Basic tools such as hammers, sledges, and axes can cause serious injuries when not used properly. A hammer can cause broken bones, bruising, cuts, and scrapes. For example, if a wooden handle on a hammer, sledge, or axe is loose, splintered, or cracked, the head of the tool may fly off and strike the user or other employees. When using a hammer, sledge, or axe:

1. Always wear appropriate eye protection.
2. Check behind you before swinging a hammer, sledge, or axe.
3. Keep your eyes on the object to be hit.
4. Never use a damaged hammer, sledge, or axe.
5. Choose a hammer with a cushioned handle to protect you from vibration, impact and squeezing pressure.
6. Use hammers with electric insulated handles for work on or around exposed energized parts.



7. When pulling nails or prying material apart, ensure that the claw of the hammer is in the proper position and the right leverage is applied.

### **DRIFT PINS, WEDGES, PUNCHES, AND CHISELS**

Impact tools such as drift pins, wedges, punches, and chisels must be free of mushroomed heads. The wooden handles of the tools must not be splintered. When using drift pins, wedges, punches, and chisels:

1. Always wear appropriate eye protection.
2. Use a hammer or mallet with a striking face at least 3/8 inch larger than the punch or chisel face.
3. Keep chisels sharp and in good condition. Repair or replace dull or damaged tools.
4. Strike blows squarely; aim chisel/punch away from your body.
5. All mushroom heads of chisels and punches shall be ground down to prevent spalling.

### **WRENCHES**

1. A wrench is an indispensable tool, but it is also a tool that can cause hand, finger, and knuckle injuries. When using wrenches:
2. Ensure jaws are not sprung to the point that slippage occurs.
3. Never use an extension device (cheater) to increase leverage.
4. Whenever possible, pull on the wrench handle rather than push. Adjust your distance to avoid a fall if the wrench slips.
5. Repair or discard any worn or damaged wrenches.
6. Never use a hammer on a wrench unless it is the striking face type.
7. Pay special attention to the jaws when inspecting pipe wrenches. Make sure they are still sharp, or they can cause slippage that may lead to injury.

### **PLIERS**

Pliers are a hand tool that utilizes leverage to manipulate objects. They have a varying degree of safety depending on the size of the pliers and material being worked on. Pliers are made for gripping, cutting, crimping, and electrical work. When using pliers:

1. Do not use them for cutting hardened wires unless specifically made to do so.
2. Never use pliers as a striking tool or a blunt force object to hit nails, wood or any other materials. It may damage the tool and make it unsafe to use.

3. Use dielectric pliers and shut off power when working with electricity.
4. Do not use pliers to fasten or unfasten nuts, bolts, or screws as this will damage the tool and will minimize stripping.

### **SCREWDRIVERS**

Screwdrivers are manufactured for the purpose of driving or removing screws. Misuse of the screwdriver, such as striking it with another tool or using as a pry tool, could cause the screwdriver to break causing serious personal injury. When using a screwdriver:

1. Use a screwdriver with the right type of blade, and that properly fits the screw.
2. Never use a bent or damaged screwdriver. Always discard a screwdriver with a worn or broken handle.
3. Do not use a screwdriver as a cold chisel or for prying, punching, chiseling, scoring, or scraping.
4. Keep handles free of grease and oil.
5. Never depend on a screwdriver's handle or covered blade to insulate you from electricity. Vinyl covered blades are intended only as a protective measure against shorting out components.
6. Don't use pliers on handle or shank of screwdriver to get extra turning power.
7. A wrench should be used only on a square shank designed for that purpose.

### **POCKET KNIVES AND BOX CUTTERS**

Pocket knives and box cutters come in many sizes, and types, and if not used correctly may cause a serious injury. Pocket knives and box cutters are often misused taking the place of the correct tool, like screwdrivers or pry bars. When using pocket knives and box cutters:

1. Don't use pocket knives or box cutters as a replacement for the proper tool for the intended job.
2. Always keep the blade folded or drawn back when not being used or carried.
3. Always cut away from your body and keep a ring of safety around you from others.
4. Never point or throw a knife or cutter at anyone.
5. If the knife or cutter falls don't try and catch it.
6. Always hand a knife or cutters to someone with the blade folded or drawn back.
7. Keep the pocket knife blade sharp and box cutters blades replaced when getting dull. Dull blades are more dangerous than sharp ones.

## MACHETE

A machete is a long sharp metal blade with a handle up to 30 inches long and if not used correctly can cause serious injuries. Machetes should be used for its intended purpose which is primarily cutting a path through dense foliage such as brush, small trees, and vines. When using a machete:

1. Keep the machete blade sharp, it requires less strength to cut through dense foliage. Also, a sharp blade will help prevent the possibility of the blade bouncing back from an object it did not cut through. Employees may sharpen the blade with an appropriate commercial machete sharpener, sharpening stone, or honing on a grinder, as long as it is approved by the supervisor.
2. Do not use the machete if the handle is not tightly attached to the blade.
3. One technique of gripping the machete when swinging it, is to grip it similarly to holding a hammer. This will help keep a balance between the blade and your hand.
4. Before you swing the machete make sure you are clear of all people or obstructions.
5. Do not swing blade straight down; swing away and at an angle, never at your legs.
6. Swing the blade at a comfortable distance from your body. Try not to stretch your arm out when you swing to avoid an unbalanced condition.
7. Always wear gloves and safety glasses or goggles. Leg protection is recommended.
8. When not using the machete always store in a sheath or protective container in a secure location.

## SHOVELS

Shovel blade edges should be kept trimmed and handles checked for splinters. Before shoveling, be sure to wear proper work gloves, work shoes with sturdy soles, and other personal protective equipment, if necessary. When using a shovel:

1. Keep a safe distance from other employees while shoveling.
2. Keep your feet separated for good balance. Always keep your knees flexed.
3. Use the proper type of shovel for the task:
  - a. Short handle shovels for spreading or laying asphalt or dirt etc.
  - b. Long handle pointed shovels are used for digging. This shovel should also be held close to the load when carrying material.
4. Never use a shovel as a pry bar or hammer.
5. Never twist your body when spreading or laying dirt

or other material. Twisting increases the risk of back injury. Turn your feet and body toward where you want to toss or lay your load.

6. Do not flip or toss material over your shoulder.
7. When shoveling wet, sticky, or hard packed materials, be sure to loosen the material before lifting. Do not jerk the load when lifting. This will help reduce back injuries.

## HAND SAWS

Hand saws only have two parts; the handle and the blade, but they are responsible for thousands of injuries due to operator error or inattention. When using hand saws:

1. Always inspect the handle, blade and blade teeth. Look for loose saw blade connection, bent saw blade or frame handles. If you find any faults, do not use the saw and report it to your supervisor for repair or replacement.
2. Use the proper type of hand saw for the type of material to be cut, or type of cut to be made. For example, use a rip saw for cutting along the grain of wood, or a cross cut saw for cutting across the grain, and a hack saw for metal materials.
3. When sawing always wear appropriate eye and hand protection.
4. Keep saw blades sharp. Sharpen, or replace blades that have lost good cutting teeth.
5. Lubricate hacksaw blades with light machine oil to prevent heat build-up which can cause the blade to break.
6. Store saws so there is no chance for someone to fall on or bump into the blade.

## POWER TOOL SAFETY

Most power tools must be fitted with guards and safety switches and are extremely hazardous when used improperly. The type of power tools is determined by their power source: electric, pneumatic, liquid fueled, hydraulic, and power-actuated. To prevent hazards associated with the use of power tools, employees should observe the following general precautions.

## GENERAL

1. Follow all manufacturer's instructions regarding the safe storage, operation, and maintenance of power tools.
2. Do not use a power tool unless you have been trained on how to use it properly and safely.
3. All guards must be in place before operating the tool.

4. Appropriate eye protection must be worn when operating or working near power tools.
5. Wear proper apparel for the task. Do not wear loose fitting clothing such as ties or jewelry, even long hair which can get caught in moving parts.
6. Disconnect tools when not in use, before servicing, cleaning, and changing accessories such as blades, bits, and cutters.
7. Remove chuck key, etc. before using a power tool.
8. Never yank or pull the cord or hose to disconnect it from the receptacle; use the plug.
9. Never carry a tool by its cord or hose, and keep the cord or hose away from heat, oil, and sharp edges.
10. Make sure that tools are either double-insulated or have three 3-prong plugs with grounded extension cords and receptacles.
11. Avoid accidental starting. Do not hold your finger on the switch button while carrying a plugged-in tool and keep your finger off the trigger and make sure the switch is "off" before you plug in a tool.
12. Do not use electric tools that have worn or damaged plugs or cords.
13. Secure small pieces of work with a clamp, or in a vise, freeing hands to operate the tool and maintain good footing and balance.
14. Never use compressed air to blow off equipment or clothing; use a brush.
15. Remove all damaged portable electrical tools from use and tag them: "Do Not Use."
16. Verbally tell all personnel not involved with the work to keep a safe distance from the work area.

## GUARDS

The exposed moving parts of power tools need to be safe-guarded. Belts, gears, sprockets, spindles, drums, flywheels, chains or other rotating, or moving parts of equipment must be guarded. Machine guards, as appropriate, must be provided to protect the operator and others from the following:

1. Point of operation
2. In-running nip points
3. Rotating parts
4. Flying chips and sparks

## CHAIN SAWS

Operating a chain saw can be extremely hazardous, but it is also one of the most efficient and productive portable power tools used in industry. By learning how to operate it properly and maintaining it in good working condition

coupled with the use of proper PPE the potential for injury can be greatly minimized. When operating a chain saw, utilize the manufacturer's instructions. When using a chain saw:

1. Before Starting the Saw:
  - a. Check controls, chain tension, and all bolts and handles to ensure they function correctly.
  - b. Fuel the saw at least 10 feet away from any ignition sources.
2. While Running the Saw:
  - a. Keep hands on the handles and maintain secure footing while operating.
  - b. Clear the area of obstacles that might interfere with cutting the tree or using the retreat path.
  - c. Do not cut directly overhead.
  - d. Shut off or release throttle prior to retreating.
  - e. Shut off or engage the chain brake whenever the saw is carried more than 50 feet, or across hazardous terrain.
  - f. Be prepared for kickback danger; use saws that reduce kickback danger (chain brakes, low kickback chains, guide bars, etc.).
  - g. Avoid making cuts with the saw between your legs, always cut the saw to the out side of your legs.
  - h. Keep in mind where the chain will go if it breaks, never position yourself or other people in line with the chain.
3. Personal protective equipment is required for the head, ears, face, hands, legs, and feet. Chaps are recommended to protect the legs.

## CIRCULAR SAWS

Portable circular saws having a blade greater than 2 inches in diameter must always be equipped with guards. An upper guard must cover the entire blade of the saw. A retractable lower guard must cover the teeth of the saw, except where it contacts the work material. The lower guard must automatically return to the covering position when the tool is withdrawn from the work material. When using a circular saw:

1. Wear appropriate eye protection.
2. Do not retract the lower guard while the blade is moving.
3. Use the retracting handle or safety lift lever to move the lower guard.
4. Do not clamp or tie the guard open.
5. Do not operate the saw if the guard is not working properly. Inform your supervisor to tag for repair or replace the saw.

6. Keep your hand away from the blade while using the saw.
7. Keep the power cord out of the line of the saw cut.
8. Keep feet from wrapping around cord as this could cause you to fall and the saw may cut off an appendage.

## **BAND SAWS**

Band saw safety is serious because you can literally lose a body part or lose your life from uncontrolled bleeding from a severed artery. When you strictly follow these safety rules you will help prevent traumatic injury.

1. Always wear safety goggles or glasses to keep safe from flying debris that is shot from the blades with extreme speed.
2. Pay close attention to the job. If someone else is cutting do not interrupt them.
3. Keep all guards in place and of proper length.
4. Always handle stock with care and keep it in or on its retaining device.
5. Never leave a band saw running unattended.
6. Keep hands in a safe position. The stock should never be held in the position of the saw blade. Instead hold it on its side.
7. Never wear loose clothing as it can easily get caught in the blade and pull your arm toward it. Short sleeve shirts are the most ideal. If gloves are needed ensure they are safe for the job type.

## **DRILLS**

Drills are great tools and make many jobs easier, but can cause serious injuries if not used with safety in mind. When using a drill:

1. Always wear the appropriate PPE as required by the operator's manual, and avoid wearing loose clothing.
2. Do not use dull or chipped bits.
3. Let the bit cool down before changing or adjusting anything as it will be hot.
4. Do not force the drill into materials.
5. Use a clamp or vise if available to hold your work or ask a co-worker to hold it.
6. Use only the charging system that came with the drill to recharge the batteries. Using a charger other than the one it came with may cause serious damage to the drill and the charger.

## **DRILL PRESS**

It is very important to give the drill press a pre-inspection before it is used for damage or disrepair. In addition, assure both the drill presses' chuck and spindle are functioning properly. Also inspect the electrical cord and

plug. If the drill press fails, red tag it and do not use. When using a drill press:

1. Always wear safety glasses and appropriate PPE as required by the operator's manual and avoid wearing loose clothing.
2. Never wear gloves, a tie, loose clothing, a watch, ring, or jewelry.
3. Center punch the drill hole location.
4. Use clamp or vise to securely fasten the stock to the drill press table.
5. Insert bit into drill chuck and tighten the chuck key then remove the key before starting the drill press.
6. Keep hands and fingers at least 2 inches from the rotating drill bit.
7. When drilling deep holes, frequently raise the drill bit from the hole to remove cuttings and cool the bit. When drilling metal, use cutting oil to cool the bit.
8. Never try to stop the drill bit with your hands.

## **PORTABLE ABRASIVE WHEEL TOOLS/GRINDERS**

Portable abrasive grinding, cutting, polishing and wire buffing wheels create special safety problems because they may throw off flying fragments. Abrasive wheel tools must be equipped with guards that cover the spindle end, nut, and flange projections, maintain proper alignment with the wheel, and do not exceed the strength of the fastenings.

Before an abrasive wheel is mounted, it must be inspected closely for damage and should be ring or sound tested to insure it is free from cracks or defects. To test, wheel should be tapped gently with a light, non-metallic instrument. If the wheel sounds cracked or dead, it must not be used because it could fly apart in operation.

An abrasive wheel may disintegrate or explode during start-up. Allow the wheel to come up to operating speed prior to grinding or cutting. The employee should never stand in the plane of rotation of the wheel as it accelerates to full operating speed. Portable grinding tools need to be equipped with safety guards to protect workers not only from the moving wheel surface, but also from flying fragments in case of wheel breakage. When using a portable abrasive wheel tool or power grinder:

1. Always wear appropriate PPE as required by the operator's manual and avoid wearing loose clothing, gloves, a tie, a watch, rings, or jewelry.
2. Grinding wheels must be covered with a safety guard.
3. Tool rests must be well supported and be no more

than 1/8 inch from the wheel. Never adjust a tool rest while the wheel is in motion.

4. Do not grind on the side of the wheel unless it is designed to be used as a side grinder.
5. Never leave a running grinder unattended.
6. Make sure the work area around the grinder is clear before starting it up. Stand off to one side of the grinder when starting up.
7. Never clamp a hand-held grinder in a vise.

## **PNEUMATIC TOOLS**

Pneumatic tools are powered by compressed air and include chippers, drills, hammers, and sanders. There are several dangers associated with the use of pneumatic tools. First and foremost is the danger of getting hit by one of the tool's attachments, or by a fastener the employee is using with the tool.

Pneumatic tools must be checked to see that the tools are fastened securely to the air hose to prevent them from becoming disconnected. A short wire or positive locking device attaching the air hose to the tool must also be used and will serve as an added safeguard.

Pneumatic tools that shoot nails, rivets, staples, or similar fasteners that operate at pressures more than 100 pounds per square inch must be equipped with an automatic or visible manual safety device that will prevent pulling the trigger until the safety device is manually released. When using pneumatic tools:

1. Wear appropriate eye, face, and hearing protection.
2. Pneumatic power tools must be securely attached to the compressed air hose.
3. Do not adjust pneumatic tools until you are sure there is no air pressure being supplied to the hose or tool.
4. Do not hoist, lower, or carry a tool by the hose.
5. Pneumatic impact tools must have safety clips or retainers to retain toolbits.
6. Follow the manufacturer's guidelines for safe operating pressures.
7. Locate all air hoses so they do not present a tripping hazard.
8. Compressed air should never be pointed toward anyone.

## **LIQUID FUEL TOOLS**

1. Fuel-powered tools are usually operated with gasoline. The most serious hazard associated with the use of fuel-powered tools comes from fuel vapors that can

burn or explode and give off dangerous exhaust fumes. The employee must be careful to handle, transport, and store gas or fuel only in approved flammable liquid containers.

2. Before refilling a fuel-powered tool tank, the employee must shut down the engine and allow it to cool to prevent accidental ignition of hazardous vapors. When a fuel-powered tool is used inside a closed area, effective ventilation and /or proper respiratory protection must be utilized to avoid breathing carbon monoxide. Fire extinguishers must be available in the area.

## **HYDRAULIC POWER TOOLS**

The fluid used in hydraulic power tools must be an approved fire-resistant fluid and must retain its operating characteristics at the most extreme temperatures to which it will be exposed. The exception to fire-resistant fluid involves all hydraulic fluids used for the insulated sections of derrick trucks, aerial lifts, and hydraulic tools that are used around energized lines.

The manufacturer's recommended safe operating pressure for hoses, valves, pipes, filters, and other fittings must not be exceeded. A jack should never be used to support a lifted load. Once the load has been lifted, it must immediately be blocked up. Put a block under the base of the jack when the foundation is not firm and place a block between the jack cap and the load if the cap might slip. To set up a jack, make certain of the following:

1. The base of the jack rests on a firm, level surface.
2. The jack is correctly centered.
3. The jack head bears against a level surface.
4. The lift force is applied evenly.

Proper maintenance and lubrication of jacks should be conducted by supervisors or the cities contracted mechanics.

## **ELECTRIC TOOLS**

Employees using electric tools must be aware of dangers such as electrical burns and shocks.

Electrical shocks can lead to injuries such as heart failure and burns and are among the major hazards associated with electric powered tools. Even a small amount of electric current can result in fibrillation of the heart and death. An electric shock also can cause the user to fall off a ladder or other elevated work surface and be injured due to the fall.

To protect the employee from shock and burns, electric tools must have a three-wire cord with a ground and be plugged into a grounded receptacle, be double insulated, or be powered by a low-voltage isolation transformer. Three-wire cords contain two current carrying conductors and a grounding conductor. When an adapter is used to accommodate a two-hole receptacle, the adapter wire must be attached to a known ground. The third prong must never be removed from the plug.

Double-insulated tools provide protection against electrical shock without third-wire grounding. An internal layer of protective insulation completely isolates the external housing of the tool.

The following should be followed when using electric tools:

- 1.** Operate tools within their design limitations.
- 2.** Use gloves and appropriate safety footwear when using electric tools.
- 3.** Store electric tools in a dry place when not in use.
- 4.** Do not use in damp or wet locations unless they are approved for that purpose.
- 5.** Keep areas well lighted when operating electric tools.
- 6.** Ensure cords do not present a tripping hazard.



**GUIDELINES**

This program applies to employees working in office settings in the City of Port St. Lucie.

**TRAINING PROGRAM**

This program provides employees who work in office settings an awareness of general office safety practices. This includes causes of accidents, housekeeping practices, hazardous materials, slips trips and falls, office ergonomics, and other topics.

Common causes of office accidents include the following:

1. Slipping, tripping, and falling hazards.
2. Burning, cutting, and pinching hazards.
3. Improper lifting and handling techniques.
4. Lack of situational awareness.
5. Improper office layout and arrangement.
6. Overloaded electrical wiring.
7. Horseplay.

**GENERAL OFFICE SAFETY**

1. Avoid carrying objects that obstruct view.
2. Walk with special care over wet floors or with wet shoes.
3. Wipe wet shoe soles when entering the workplace.
4. Report to a supervisor if any carpet or floor coverings are frayed or loose.
5. Utilize handrails when going up and down stairways.
6. Walk with caution over wet surfaces outside the buildings.
7. Report unusual conditions to a supervisor to ensure that a proper treatment of walking surfaces is performed.
8. Chairs, files, bookcases, and desks shall be repaired or replaced when they pose a hazard to personnel safety.
9. Materials stored in supply rooms shall be neatly stacked and easily accessed by employees and have adequate aisle width.
10. Stack boxes in straight columns, with the largest on the bottom.
11. Place wastebaskets and boxes where they do not cause a tripping hazard.

**GOOD HOUSEKEEPING PRACTICES**

Many office accidents are caused by poor housekeeping practices. Keep the office floor neat and clean, to eliminate slipping, tripping, and falling hazards. Other good housekeeping practices include the following:

1. Ensure that office lighting is adequate and available. Report burned out light bulbs and fluorescent tubes, and have additional lighting installed, as necessary.
2. Ensure that electrical cords and phone cords do not cross walkways or otherwise pose a tripping hazard. If a cord cannot be moved, have a new outlet installed, or secure the cord to the floor with cord covering strips. Do not tape cords down or run them underneath carpet.
3. Report or repair tripping hazards such as defective tiles, boards, or carpet immediately.
4. Clean spills and pick up fallen debris immediately.
5. Keep office equipment, facilities, and machines in good condition.
6. Store items in an approved storage space. Take care to not stack boxes too high or too tight. Ensure that boxes are clearly labeled with their contents.

## HAZARDOUS MATERIALS

Hazardous materials should not be stored in the general office. Safety data sheets should be provided for hazardous chemicals used in the workplace. Consumer products, if their use is of the same duration or frequency as that of normal consumer use, are exempt. Hazardous materials include, but are not limited to, the following:

- Combustibles
- Flammables
- Gas cylinders
- Irritants
- Oxidizers
- Reactives

## PREVENTING CUTS AND PUNCTURES

Cuts and punctures happen when people use everyday office supplies without exercising care. Follow these guidelines to help reduce the chance for cuts and punctures:

1. When sealing envelopes, use a liquid dispenser, not your tongue.
2. Be careful when using scissors, staplers, letter openers, and box openers. Any of these items could cause a painful injury.
3. Do not pick up broken glass with bare hands. Wear gloves and use a broom and dustpan.
4. Place used blades or broken glass in a rigid container, such as a box, before disposing in a wastebasket.

## PREVENTING MACHINE ACCIDENTS

Never attempt to operate an unfamiliar machine without reading the machine instructions or receiving directions from a qualified employee. In addition, follow these guidelines to ensure machine safety:

1. Secure machines that tend to move during operation.
2. Do not place machines near the edge of a table or desk.
3. Ensure that machines with moving parts are guarded to prevent accidents. Do not remove these guards.
4. Unplug defective machines and have them repaired immediately.
5. Do not use any machine that smokes, sparks, shocks, or appears defective in any way.
6. Close hand-operated paper cutters after each use and activate the guard.
7. Take care when working with copy machines. When the machine is opened for maintenance, repair, or troubleshooting, some components may be hot. Always follow the manufacturer's instructions for troubleshooting.
8. Unplug paper shredders before conducting maintenance, repair, or troubleshooting.

Clothing and jewelry can be very dangerous when worn around machinery with moving parts. Avoid wearing the following items around machines within unguarded moving parts:

- Loose belts
- Jewelry
- Long, loose hair
- Long, loose sleeves or pants
- Scarves
- Ties

## PREVENTING SLIPS AND FALLS

The easiest way to avoid slips and falls is to pay attention to surroundings and avoid running or rushing. To ensure safety for others in the office, however, follow these guidelines:

- Arrange office furnishings in a manner that provides unobstructed areas for movement.
- Keep stairs, steps, flooring, and carpeting well maintained.
- Ensure that glass doors have some type of marking to keep people from walking through them.
- Clearly mark any difference in floor level that could cause an accident.
- Secure throw rugs and mats to prevent slipping hazards.
- Do not place wastebaskets or other objects in walkways.

## FILE CABINETS AND SHELVES

File cabinets and shelves support heavy loads, therefore, treat them with special care.

### FILE CABINETS

- Ensure that file cabinet drawers cannot easily be pulled clear of the cabinet.
- Do not block ventilation grates with file cabinets.
- Close drawers when they are not in use.
- Do not place heavy objects on top of cabinets. Be aware that anything on top of a cabinet may fall off if a drawer is opened suddenly.
- Close drawers slowly using the handle to avoid pinched fingers.
- Keep the bottom drawer full. This will help stabilize the entire cabinet.

### SHELVES

- Place heavy objects on the bottom shelves to keep the entire structure more stable.
- Ensure that there is at least 18 inches between the top shelf items and the ceiling. This space will allow ceiling sprinklers (if present) to function properly if a fire occurs.
- Do not block ventilation grates with shelves.
- Never climb on shelves. Use an approved ladder.

## DESKS

- Keep desks in good condition (i.e., free from sharp edges, nails, etc.).
- Desks should not block exits or passageways.
- Ensure that glass-top desks do not have sharp edges. Do not climb on desks. Use an approved ladder.
- Keep desk drawers closed when not in use.
- Repair or report any desk damage that could be hazardous.

## CHAIRS

- Do not lean back in chairs, particularly swivel chairs with rollers.
- Do not climb on any chair. Use an approved ladder.
- Desk chairs should have adjustable back supports and seat height. Make sure the chair's back support position and seat height are comfortable.
- Take care when sitting in a chair with rollers. A chair with rollers can roll out from under an employee when sitting.
- Repair or report any chair damage that could be hazardous.
- Do not roll chairs over electrical cords.

## AISLES AND STAIRWAYS

Aisle space allows for the movement of people, products, and materials. Arranging aisles properly encourages people to use them so that they do not take shortcuts.

- Aisles should be wide enough to accommodate people comfortably and safely.
- Materials shall not be stored so they project into aisles and passageways.
- Aisles and stairways should not be used for temporary "overflow" or "bottleneck" storage. Stairways and aisles also require adequate lighting.

## WORKSTATION ARRANGEMENT

With the extensive use of computers and other automated desk devices in the workplace, employees must take special care to ensure proper workstation arrangement. For this manual, a workstation consists of the equipment and furniture associated with a typical desk job (i.e., desk, chair, and computer components).

Improper workstation arrangement combined with repetitive motion may contribute to visual and musculoskeletal fatigue.

Cumulative trauma disorders, such as carpal tunnel syndrome may result from the stress of repetitive motion. Therefore, it is very important to arrange a workstation

properly and to take breaks frequently.

The following sections offer recommendations for ensuring employee comfort through proper workstation arrangement.

## OPERATOR'S POSITION

The seating position at work is important to comfort and safety. To reduce the painful effects of repetitive motion, follow these guidelines when working with computers.

- Always sit up straight. Make sure the chair is adjusted to provide adequate back support.
- Place feet flat on the floor or on a footrest. Lower legs should be approximately vertical, and thighs should be approximately horizontal. Most of the weight should be on the buttocks.
- Ensure that there is at least 1 inch of clearance between the top of your thighs and the bottom of the desk or table.
- Keep wrists in a natural position. They should not rest on the edge of the desk.
- Keep the front edge of the chair approximately 4 inches behind your knees.

## EQUIPMENT ARRANGEMENT

Properly arranging equipment can help reduce the harmful effects of repetitive motion. Follow these guidelines for arranging office equipment:

### ■ Lighting:

Lighting around computer workstations should illuminate the work area without obscuring the images or causing glare. Position computer screens, draperies, blinds, and pictures to reduce glare during work hours.

### ■ Computer Screen:

Images should be clear and well defined. Adjust the screen's brightness, contrast, and display size. The screen should be 20-28 inches away from the employee's face. The center of the screen should be approximately 15 to 25 degrees below the employee's line of vision.

### ■ Keyboards:

Position computer keyboards so that the angle between the forearm and upper arm is between 80 and 120 degrees. Place the keyboard in an area that is accessible and comfortable.

### ■ Wrist Support:

Use wrist supports made of a padded material. The support should allow an employee to type without bending their wrists.

### ■ Telephones:

Neck tension is a common problem caused by holding the telephone between the head and neck. Use a headset or speakerphone if using the telephone for extended periods of time.

## **LOCKER AND SHOWER SAFETY**

Locker rooms and showers are provided for the convenience of employees in various City departments according to job requirements.

There may be specific guidelines that each department has for the use of the showers and locker rooms. The guidelines below are general safety rules.

- Food, drinks, and glass are prohibited.
- There should be no horseplay, running, or throwing items.
- Do not stand on benches or misuse lockers.
- Lockers should be locked to secure items. The City is not responsible for lost or stolen items.
- Avoid bringing valuables to work.
- Report problems to a supervisor.

## **KITCHEN SAFETY**

There are many different types and sizes of break rooms and kitchens throughout the City departments. Below are general guidelines.

- Dishes and trash must be disposed of properly or taken with the employee.
- No open flames are permitted.
- Food in the microwave or toaster oven should not be left unattended.
- Use caution when opening lids as steam could escape and cause burns.
- Report any problems to a supervisor.

# BACK SAFETY AND LIFTING PROGRAM

## GUIDELINES

All employees should be trained in proper lifting technique. Every employee does work that may affect their back. Using techniques listed in this program will lessen the likelihood of occupational injury.

## TRAINING PROGRAM

Employees with training will have the knowledge, and skills required recognize the risk factors, signs, and symptoms of musculoskeletal disorders (MSDs). Understand our program for identifying, reporting, and controlling MSDs. Know how to protect themselves from MSD injuries and reduce their risk and understand the principles of ergonomics

There are safe lifting techniques which will eliminate most back injuries:

1. Keep the load as close to you as possible.
2. Keep your back straight and avoid twisting.
3. Turn your feet outward and push your buttocks out. (Picture a professional weightlifter.)
4. Bend your knees not at your waist.
5. Keep your head forward. Your lift will be more balanced and the curves in your spine will stay balanced and aligned.
6. Tighten your stomach muscles.
7. Lift with your legs.
8. Breathe out as you lift.

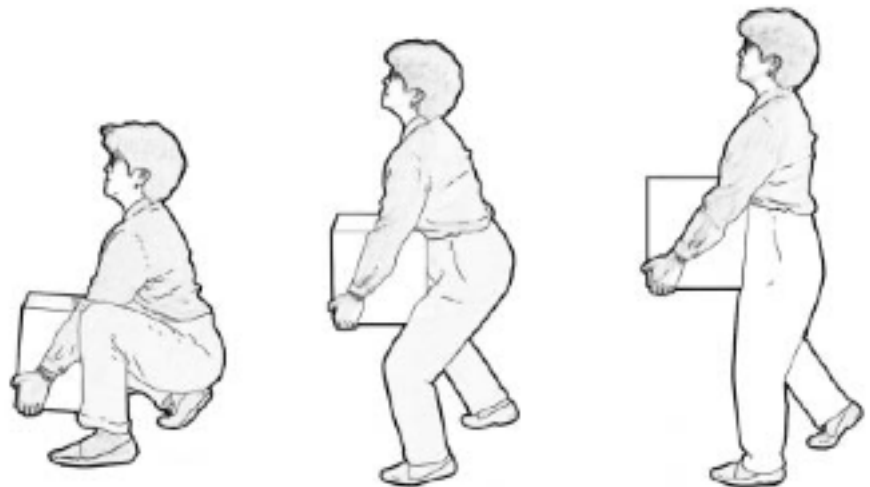
## GENERAL OFFICE SAFETY

Other conditions to consider are:

- Store items within easy reach, rather than high or low.
- Break up loads.
- Make shelves less deep.
- Arrange the space so workers do not have to lift and twist. Twisting while under a load increases the potential for injury four-fold.
- Provide stools or footrests for stationary standing jobs or rotate task so that periods of standing alternate with movement or sitting.

## PROGRAM COMPONENTS

**Basic Lift (Diagonal Lift)** - This lift is the most common method of good lifting technique. Use the basic lift for objects small enough to straddle where you have enough room to use a wide stance.



1. Get close to the object.
2. Stand with a wide stance: put one foot forward and to the side of the object.
3. Keep your back straight, push your buttocks out, and use your legs and hips to lower yourself down to the object.
4. Move the load as close to you as possible.
5. If the box has handles, grasp the handles firmly and go to step 9.
6. Put the hand (that is on the same side of your body as the forward foot) on the side of the object furthest from you.
7. Put the other hand on the side of the object closest to you. Your hands should be on opposite corners of the object.
8. Grasp the object firmly with both hands.
9. Prepare for the lift: look forward.
10. Lift upwards following your head and shoulders. Hold the load close to your body. Lift by extending your legs with your back straight, your buttocks out, and breathe out as you lift.

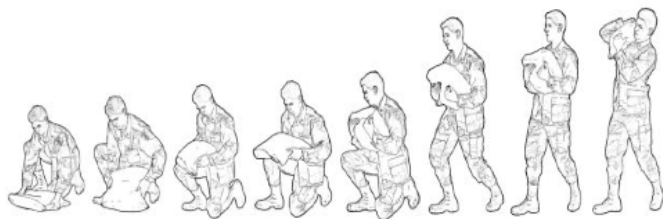
**Note:** If you are doing this lift correctly, your head will lift first, followed by your straight back. If your hips come up first and you must bend your back as you straighten up, you are doing this lift incorrectly.

**Power Lift** – Use the power lift for objects too large for you to straddle. This lift is very similar to the basic lift. In the power lift, the object shifts your center of gravity forward, and you must push your buttocks out to compensate. (Professional weightlifters lift using this position.)



1. Put one foot in front of the other using a wide stance.
2. Keep your back straight, push your buttocks out and use your legs and hips to lower yourself down to the object.
3. Move the load as close to you as possible.
4. Grasp the object firmly with both hands.
5. Prepare for the lift: look forward.
6. Lift upwards following your head and shoulders. Hold the load close to your body. Lift by extending your legs with your back straight, your buttocks out (exaggerate this position), and breathe out as you lift.

**Tripod Lift** - Use the tripod lift for objects that uneven weight distribution (example: sacks of food).



Recommended for people with decreased arm strength. Not recommended for people with bad knees.

1. Put one foot next to the object. Keep your back straight, push your buttocks out and slowly lower yourself down onto one knee. (For support as you lower yourself down, put one hand on a stool or on your thigh for support.)
2. Position the object close to the knee on the ground.
3. Grasp the object firmly with both hands.
4. Slide the object from the knee on the ground to mid-thigh. Keep your head forward, your back straight, and your buttocks out, and lift the object onto the opposite thigh.
5. Put both of your forearms under the object (with your palms facing upward) and hug the object to your stomach and chest.

6. Prepare for the lift: look forward.
7. Lift upwards following your head and shoulders. Hold the load close to your body. Lift by extending your legs with your back straight, your buttocks out, and breathe out as you lift.

**Partial Squat Lift** – Use the partial squat lift for small light objects with handles close to knee height.

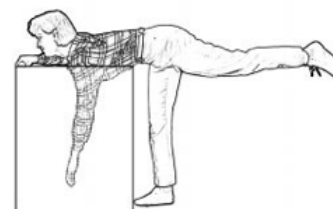


1. Stand with the object close to your side.
2. Place your feet shoulder width apart, with one foot slightly ahead of the other.
3. Place one hand on a fixed surface (such as a table or a stool) or on your thigh.
4. Keep your back straight, push your buttocks out and slowly lower yourself down to reach the object's handles.
5. Prepare for the lift: grasp the object and look forward.
6. For support as you lift, push down on the fixed surface (or on your thigh.)
7. Lift upwards following your head and shoulders.

Lift by extending your legs with your back straight, your buttocks out, and breathe out as you lift.

**The Golfer's Lift** – Use the golfers' lift for small light objects in deep bins and to pick small objects off the floor. Recommended for people with knee problems or decreased leg strength.

1. Place hand near the edge of a fixed surface (such as the edge of a table or bin). This hand will support your upper body during the lift.

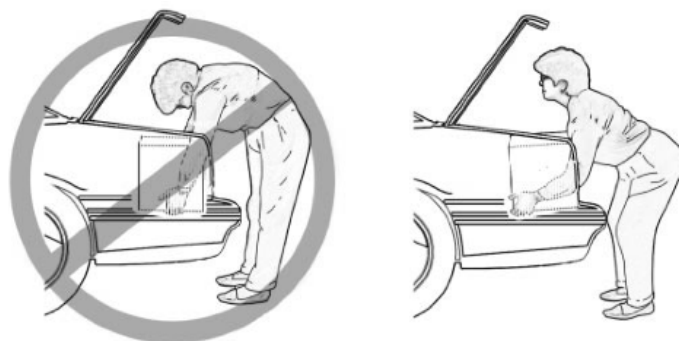




2. Keep your back straight and raise one leg straight out behind you as you lean down to pick up the object. The weight of your leg will counterbalance the weight of your upper body.
3. Grasp the object firmly.
4. Prepare for the lift: Look forward. Keep your leg raised as you initiate the lift.
5. To lift, push down on the fixed surface as you lower your legs. Keep your back straight and breathe out as you lift.

**Straight Leg Lift** – Use the straight leg lift when obstacles prevent you from bending your knees. Be careful! Lifts over obstacles that prevent you from bending your knees put you at increased risk for muscle strain. If possible, avoid this lift. Only use this lift when absolutely necessary (i.e. lifting out of a grocery cart, car trunk).

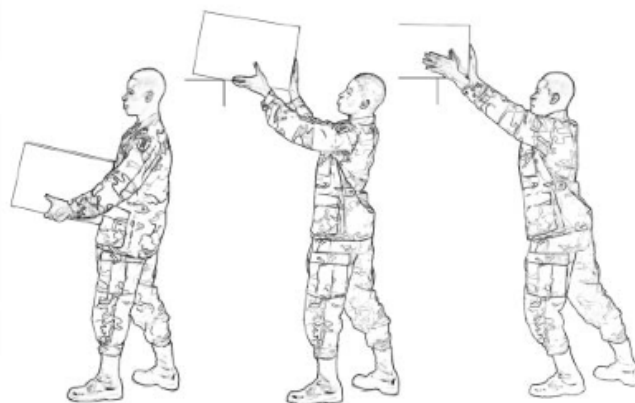
1. Stand as close to the object as possible with knees slightly bent.
2. Do not bend your waist! Push your buttocks out.



3. If the obstacle (preventing you from bending your knees) is stable, lean your legs against the obstacle for support. Use your legs and hips to lower yourself down to the object.
4. Grasp the object firmly with both hands.
5. Prepare for the lift: look forward.
6. Lift upwards following your head and shoulders. Hold the load close to your body. Lift by extending your legs with your back straight, your buttocks out (exaggerate this position), and breathe out as you lift.

**Overhead Lift** – Use the overhead lift to place objects on an overhead shelf. This lift begins with the object in your hands. Be careful! Overhead lifts put you at increased risk for muscle strain. It can be difficult to maintain balance during the lift. If possible, avoid this lift. Only use this lift when necessary.

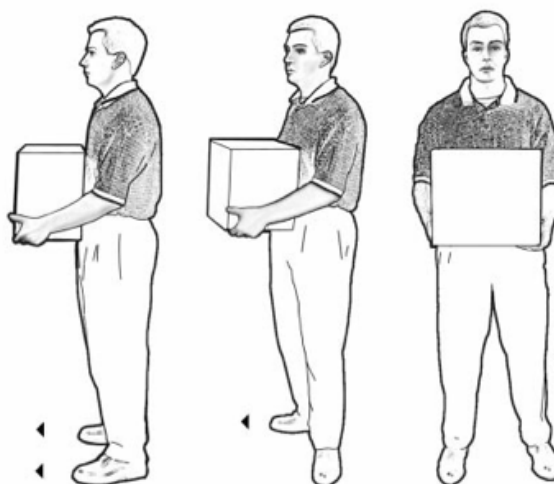
1. Hold the object very close to your body.
2. Keep feet shoulder width apart, one foot slightly ahead of the other.



3. Prepare for the lift: look forward.
4. Raise the object to shelf height using the arm and shoulder muscles. Keep the object close to your body and breathe out as you lift.
5. As you reach the shelf, slowly shift your weight from your back foot to your forward foot. Keep your back straight.
6. When the load reaches the edge of the shelf, push the object onto the shelf.

**Pivot Technique** - When you must lift an object and then turn to carry it away, it is common to twist the body. Twisting while lifting can cause serious damage to the tissues of the back. Use the pivot technique to avoid twisting while lifting.

1. Lift the load using any of the previous techniques.
2. Hold the load very close to your body at waist level.
3. Turn the leading foot 90 degrees toward the direction you want to turn.
4. Bring the lagging foot next to the leading foot. Do not twist your body!



## GUIDELINES

The City of Port St. Lucie is formally committed to providing each of its employees a safe and healthy working environment.

This program is designed to provide employees with information on hazards of excavation and trench safety.

## TRAINING PROGRAM

All authorized and affected employees will receive excavation and trenching training to ensure that the purpose and function of the program is understood. Employees should have the knowledge, and skills required to recognize trenching hazards, setup protective systems, and work safe inside and around a trench.

## DEFINITIONS

**Cave-In** – The separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.

**Competent Person** – One who can identify existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

**Excavation** – A manmade cut, cavity, trench, or depression in an earth surface, formed by earth removal.

**Faces or Sides** – The vertical or inclined earth surfaces formed as a result of excavation work.

**Failure** – The breakage, displacement, or permanent deformation of a structural member or connection to reduce its structural integrity and its supportive capabilities.

**Protective System** – A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping systems, shield systems, and other systems that provide the necessary protection.

**Sloping (Sloping System)** – A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

**Trench** – A narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m). If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet (4.6 m) or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.

## EXCAVATION REQUIREMENTS

1. Utilities and Pre-Work Site Inspection
  - a. Prior to excavation, the site shall be thoroughly inspected by a competent person to determine if special safety measures must be taken.
2. Surface Encumbrances
  - a. All equipment, materials, supplies, permanent installations, (i.e., buildings or roadways), trees, brush, and other objects at the surface that could present a hazard to employees working in the excavation shall be removed or supported as necessary to protect employees.
3. Underground Installations
  - a. The location of sewer, telephone, fuel, electric, water, natural gas, or any other underground installations or wires that may be encountered during excavation work shall be determined and marked prior to opening an excavation. Arrangements shall be made as necessary by the responsible person for the protection, removal, shutdown, or relocation of underground installations.
  - b. If it is not possible to establish the exact location of these installations, the work may proceed with caution if detection equipment or other safe and acceptable means are used to locate the utility.
  - c. Excavations shall be done in a manner that does not endanger the underground installations or the employees engaged in the work. Utilities left in place shall be protected by barricades, shoring, or other means to protect employees.

## PROTECTION OF THE PUBLIC

1. Barricades, walkways, lighting, and posting shall be provided as necessary for the protection of the public prior to the start of excavation operations.
2. Guardrails, fences, or barricades shall be provided on excavations adjacent to walkways, driveways, and other pedestrian or vehicle thoroughfares. Warning lights or other illumination shall be maintained as necessary for the safety of the public and employees from sunset to sunrise.
3. Wells, holes, pits, shafts, and all similar hazardous excavations shall be effectively barricaded or covered and posted as necessary to prevent unauthorized access. All temporary excavations of this type shall be backfilled as soon as possible.

## PROTECTION OF EMPLOYEES

Stairs, ladders, or ramps shall be provided at excavation sites where employees are required to enter trench excavations over four (4) feet deep. The maximum distance of lateral travel (along the length of the trench) necessary to reach the means of egress shall not exceed 25 feet.

### 1. Structural Ramps

- a. Structural ramps used solely by employees as a means of access or egress from excavations shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a person qualified in structural design and shall be constructed in accordance with the design.
- b. Ramps and runways constructed of two or more structural members shall have the structural members connected to prevent movement or displacement.
- c. Structural members used for ramps and runways shall be uniform thickness.
- d. Cleats or other appropriate means used to connect runway structural members shall be attached to the bottom of the runway or shall be attached in a manner to prevent tripping.
- e. Structural ramps used in place of steps shall be provided with cleats or other surface treatments on top surface to prevent slipping.

### 2. Ladders

- a. When portable ladders are used, the ladder side rails shall extend a minimum of three (3) feet above the upper surface of the excavation.
- b. Ladders shall have nonconductive side rails if work will be performed near exposed energized equipment or systems.
- c. Ladders shall be used only on stable and level surfaces unless secured.
- d. Employees are not permitted to carry any object or load while on a ladder that could cause them to lose their balance and fall.

## EXPOSURE TO VEHICULAR TRAFFIC

Employees exposed to vehicular traffic shall be provided with and shall wear vests made of reflectorized or high-visibility materials. Emergency lighting such as spotlights or portable lights shall be provided as needed to perform work safely.

## **EXPOSURE TO FALLING LOADS**

1. No employee is permitted underneath loads being handled by lifting or digging equipment. Employees are required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles provide adequate protection for the operator during loading and unloading operations.

## **WARNING SYSTEM FOR MOBILE EQUIPMENT**

1. A warning system shall be used when mobile equipment is operated adjacent to the edge of an excavation if the operator does not have a clear and direct view of the edge of the excavation. The warning system shall consist of barricades, hand, or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

## **PERSONAL PROTECTIVE EQUIPMENT**

1. All employees working in trenches or excavations shall wear approved hardhats and steel-toed shoes or boots.
2. Employees exposed to flying fragments, dust or other materials produced by drilling, sawing, sanding, and grinding shall wear approved safety glasses with side shields. NIOSH respiratory equipment shall be used as necessary.
3. Employees performing welding, cutting, or brazing operations, or are exposed to the hazards produced by these tasks, shall wear approved spectacles or a welding face shield or helmet.
4. Employees shall wear approved gloves or other suitable hand protection. Each employee working at the edge of an excavation six (6) feet deep or more shall be protected from falling. Fall protection shall include guardrails systems, fences, barricades, or covers meeting OSHA requirements.

## **PROTECTION FROM WATER ACCUMULATION HAZARDS**

1. Employees are not permitted to work in excavations that contain or are accumulating water unless precautions have been taken to protect them from the hazards posed by water accumulations. Precautions may include shield systems, water removal to control the level of accumulating water, or the use of a safety harness and lifeline.

2. If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operations shall be monitored by a competent person to ensure proper operation.

## **STABILITY OF ADJACENT STRUCTURES**

1. A competent person will determine if the excavation work could affect the stability of adjoining buildings, walls, sidewalks, or other structures.
2. Sidewalks, pavements, and appurtenant structures shall not be undermined unless a support system or other method of protection is provided to protect the employees from the possible collapse of such structures.
3. Where review or approval of a support system by a registered professional engineer is required, the competent person shall secure this review and approval in writing before the work begins.

## **PROTECTION FROM FALLING OBJECTS AND LOOSE ROCKS OR SOIL**

1. Adequate protection shall be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face.
2. Personnel shall not be permitted to work above one another where the danger of falling rock or earth exists.
3. Employees shall be protected from excavated materials, equipment or other materials that could pose a hazard by falling or rolling into the excavation.
4. The spoil pile or materials and equipment shall be kept at least two (2) feet from the edge of excavations.
5. Materials piled, grouped, or stacked near the edge of an excavation must be stable and self-supporting.

## **PROTECTIVE SYSTEM REQUIREMENTS**

### **Protection of Employee**

1. Employees in an excavation shall be protected from cave-ins by using either an adequate sloping system or an adequate support or protective system.
2. Protective systems shall be capable of resisting all loads that could reasonably be expected to be applied to the system.
3. The slope and configuration of sloping systems shall be selected and constructed by the competent person.
4. Slopes shall be properly excavated depending on soil type as shown in 29 CFR 1926, Subpart P, Appendix B which is duplicated at the end of this document.
5. Designs shall be in written form and shall include at least the following:

- a. Maximum height and angle of the slopes that were determined to be safe.
- b. The identity of the registered professional engineers.
- c. At least one copy shall be maintained at the jobsite while the slope is being constructed.

### Design of Support, Shield, and Other Protective Systems

The design of support systems, shield systems, and other protective systems shall be selected and constructed in accordance with 29 CFR 1926, Subpart P, Appendices A, C, and D.

### SOIL TYPES

OSHA categorizes soil and rock deposits into four basic types as follows:

1. STABLE ROCK is a nature solid mineral matter that can be excavated with vertical sides and remain intact while exposed. Most of the time it is identified by a rock name such as granite or sand sandstone. Determining if a deposit is of this type may be difficult unless it is known whether cracks run into or away from the excavation.
2. TYPE A SOILS are cohesive soils with an unconfined compressive strength of 1.5 tons per square foot or greater. These types of soils are often clay, silt clay, sandy clay, clay loam and in certain cases, silty clay loam and sandy clay loam.
3. TYPE B SOILS are cohesive soils with an unconfined compressive strength greater than 0.5, but less than 1.5 tons per square foot. Examples of types of soils within this category are angular gravel silt, silt loam, and/or previously disturbed soils unless otherwise classified as Type C soil category.
4. TYPE C SOILS are cohesive soils with an unconfined compressive strength of 0.5 tons per square foot or less. Granular soils like gravel, sand and loam sand, submerged soil, soil form which water is freely seeping and submerged rock that is not stable fall into the Type C soil category.

Work in the City of Port St. Lucie will always assume that Type C soils are the standard.

### APPENDIX B – SLOPING

Below is the appendix without reference to benching to show various sloping methods.

**(a) Scope and application.** This appendix contains specifications for sloping when used as methods of protecting employees working in excavations from cave-ins. The requirements of this appendix apply when the design of sloping protective systems is to be performed in accordance with the requirements set forth in § 1926.652(b)(2).

**(b) Definitions.** Actual slope means the slope to which an excavation face is excavated.

Distress means that the soil is in a condition where a cave-in is imminent or is likely to occur. Distress is evidenced by such phenomena as the development of fissures in the face of or adjacent to an open excavation; the subsidence of the edge of an excavation; the slumping of material from the face or the bulging or heaving of material from the bottom of an excavation; the spilling of material from the face of an excavation; and raveling, i.e., small amounts of material such as pebbles or little clumps of material suddenly separating from the face of an excavation and trickling or rolling down into the excavation.

Maximum allowable slope means the steepest incline of an excavation face that is acceptable for the most favorable site conditions as protection against cave-ins, and is expressed as the ratio of horizontal distance to vertical rise (H:V).

Short term exposure means a period of time less than or equal to 24 hours that an excavation is open.

### (c) Requirements.

(1) Soil classification. Soil and rock deposits shall be classified in accordance with appendix A to subpart P of part 1926.

(2) Maximum allowable slope. The maximum allowable slope for a soil or rock deposit shall be determined from Table B-1 of this appendix.

(3) Actual slope.

(i) The actual slope shall not be steeper than the maximum allowable slope.

(ii) The actual slope shall be less steep than the maximum allowable slope, when there are signs of distress. If that situation occurs, the slope shall be cut back to an actual slope which is at least ½ horizontal to one vertical (½H:1V) less steep than the maximum allowable slope.



- (iii) When surcharge loads from stored material or equipment, operating equipment, or traffic are present, a competent person shall determine the degree to which the actual slope must be reduced below the maximum allowable slope and shall assure that such reduction is achieved. Surcharge loads from adjacent structures shall be evaluated in accordance with § 1926.651(i).
- (4) Configurations. Configurations of sloping systems shall be in accordance with Figure B-1.

TABLE B-1

### MAXIMUM ALLOWABLE SLOPES

*Footnote(1) Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.*

*Footnote(2) A short-term maximum allowable slope of 1/2H:1V (63°) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth shall be 3/4H:1V (53°).*

SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPES (H:V)(1) FOR EXCAVATIONS LESS THAN 20 FEET DEEP(3)
STABLE ROCK	VERTICAL (90°)
TYPE A (2)	3/4:1 (53°)
TYPE B	1:1 (45°)
TYPE C	1 1/2:1 (34°)

*Footnote(3) Sloping for excavations greater than 20 feet deep shall be designed by a registered professional engineer.*

Figure B-1

### Slope Configurations

*(All slopes stated below are in the horizontal to vertical ratio)*

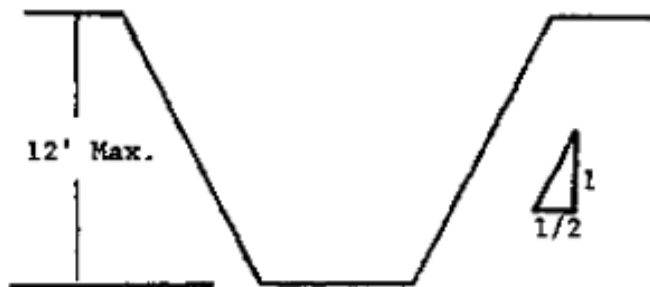
#### B-1.1 Excavations made in Type A soil.

1. All simple slope excavation 20 feet or less in depth shall have a maximum allowable slope of 3/4:1.



#### SIMPLE SLOPE -- GENERAL

Exception: Simple slope excavations which are open 24 hours or less (short term) and which are 12 feet or less in depth shall have a maximum allowable slope of 1/2:1.



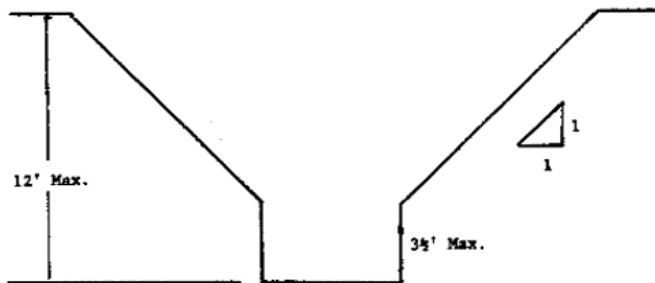
#### SIMPLE SLOPE -- SHORT TERM

2. All excavations 8 feet or less in depth which have unsupported vertically sided lower portions shall have a maximum vertical side of 3 1/2 feet.

UNSUPPORTED VERTICALLY SIDED LOWER PORTION -- MAXIMUM 8 FEET IN DEPTH)

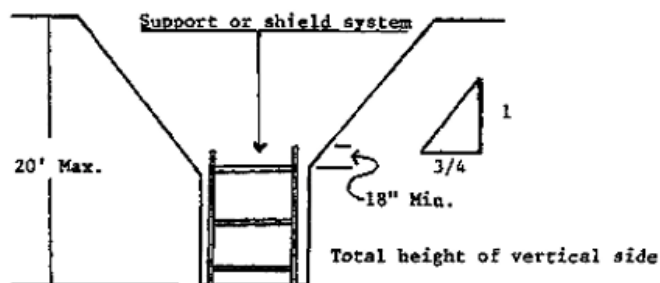
All excavations more than 8 feet but not more than 12 feet in depth with unsupported vertically sided lower portions shall have a maximum allowable slope of 1:1 and a maximum vertical side of 3 1/2 feet.





### UNSUPPORTED VERTICALLY SIDED LOWER PORTION — MAXIMUM 12 FEET IN DEPTH)

All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of  $\frac{3}{4}$ :1. The support or shield system must extend at least 18 inches above the top of the vertical side.

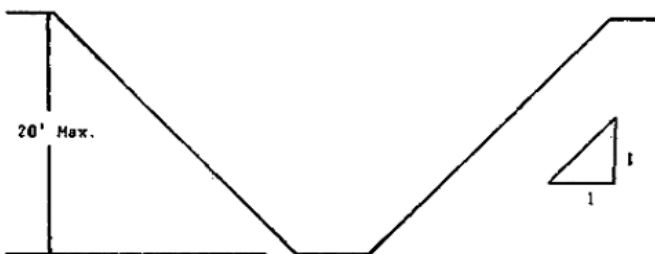


### SUPPORTED OR SHIELDED VERTICALLY SIDED LOWER PORTION

3. All other simple slope, compound slope, and vertically sided lower portion excavations shall be in accordance with the other options permitted under § 1926.652(b).

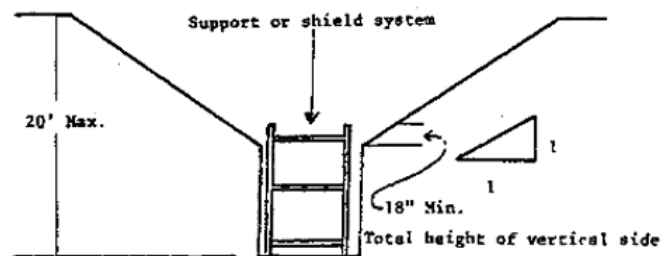
#### B-1.2 EXCAVATIONS MADE IN TYPE B SOIL

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1.



### SIMPLE SLOPE

2. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1:1.

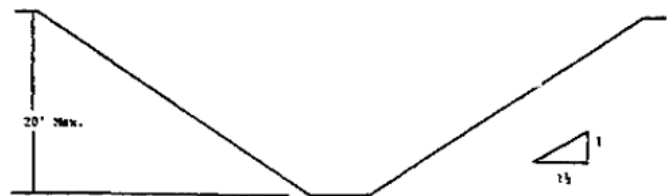


### VERTICALLY SIDED LOWER PORTION

3. All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

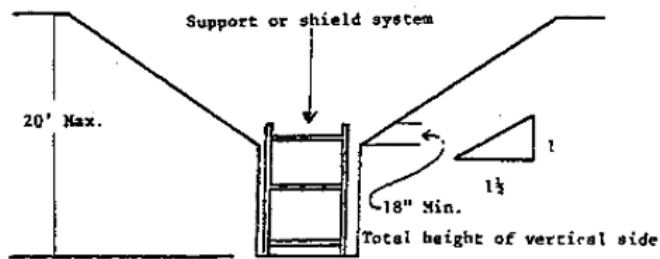
#### B-1.3 EXCAVATIONS MADE IN TYPE C SOIL

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of  $1\frac{1}{2}$ :1.



### SIMPLE SLOPE

2. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of  $1\frac{1}{2}$ :1.

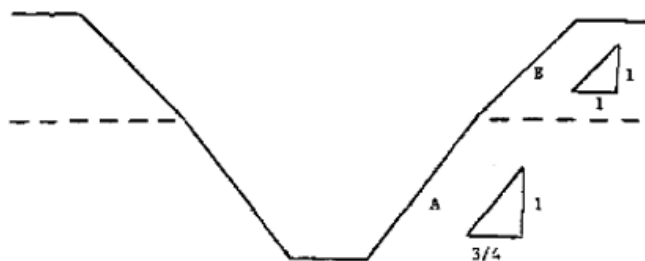


#### VERTICAL SIDED LOWER PORTION

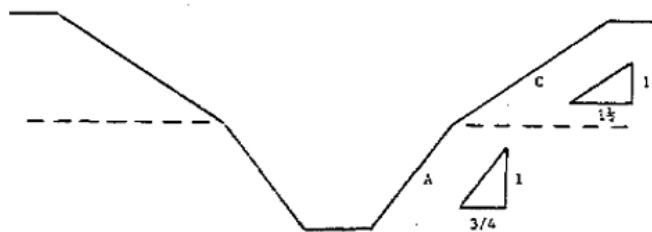
3. All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

#### B-1.4 EXCAVATIONS MADE IN LAYERED SOILS

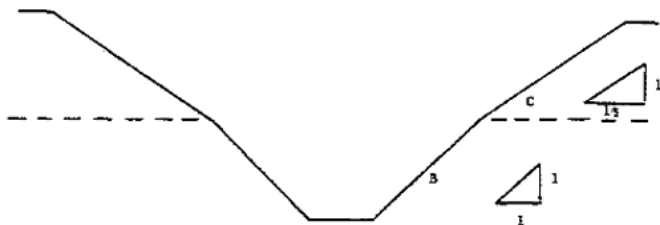
1. All excavations 20 feet or less in depth made in layered soils shall have a maximum allowable slope for each layer as set forth below.



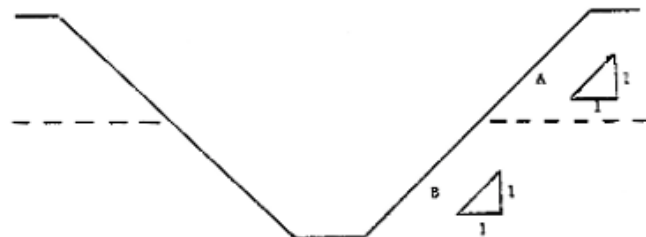
B OVER A



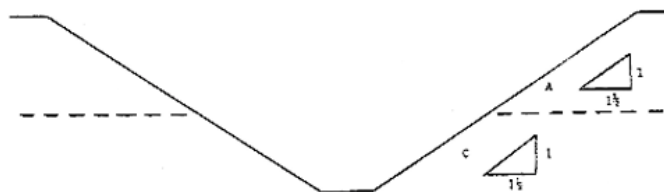
C OVER A



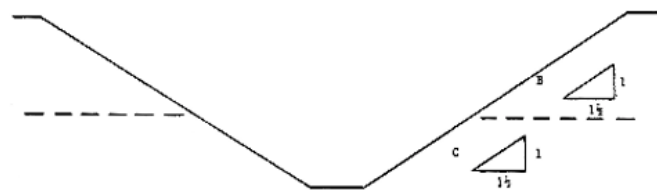
C OVER B



A OVER B



A OVER C



B OVER C

2. All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).



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