

# Doylestown Township & Municipal Authority

## Safety and Health Manual



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# The Doylestown Township & Municipal Authority Safety Manual

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It is the sincere desire of Doylestown Township to conduct our existing safety management program in such a manner that every possible safety hazard is eliminated. Every unsafe act shall be immediately detected and corrected; safety consciousness shall be deeply instilled in all employees to the end that a perfect safety record may be achieved.

It is the Safety Committee's desire to do everything possible to provide the safest of working conditions. However, even the most elaborately planned program will function only to the extent that each employee does his/her best to work with and strengthen our safety management program.

Approved by the Safety Committee:

Date:

October 7, 2013

**Updated Manual October 2013**

## **TO ALL EMPLOYEES AND VISITORS**

It is the objective of Doylestown Township to prevent accidents and provide a safe environment for all employees and visitors. In keeping with the spirit of this objective, it is incumbent upon all employees and visitors to share in this most necessary responsibility and actively participate in the promotion of accident prevention.

The information in this manual, compiled from sources believed to represent the best opinions on safety, is intended to provide basic guidelines for safe practices. However, this manual is not all conclusive and one cannot assume that all necessary warnings and precautionary measures are included in this manual or that additional information or measures may not be required. This manual is a starting point for good safety practices and does not claim to specify minimal legal standards required by codes and/or regulations issued by Federal, State or Local authorities in a particular matter or subject.

Sincerely,

Stephanie J. Mason  
Township Manager

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## **Section 1: Purpose, Policy and Responsibilities**

### A. Purpose

The purpose of the Safety Management Program in Doylestown Township is to indicate the Township's concern for the safety and well-being of employees and visitors. Doylestown Township hopes to promote this concern by stating basic policy procedures and responsibilities.

### B. Policy

Doylestown Township, with the support of the Board of Supervisors, Township Manager and staff has established a Safety Management Program designed to maintain overall safety for all employees and visitors.

It is also the policy of the Township that all occurrences involving accidents will be documented, reported and processed in accordance with existing incident reporting requirements for the purpose of generating and maintaining adequate records for compliance with the Pennsylvania Worker's Compensation Act.

Due to the detailed nature of these policies and procedures, a separate binder titled *The Doylestown Township Safety Manual* shall be maintained and available in all Township departments. These policies and procedures are reviewed and approved by the Township Safety Committee and as circumstances warrant updated periodically.

### C. Responsibilities

1. Doylestown Township is responsible for the safety, health and well-being of all visitors and employees while on Township properties. All employees share in this accountability by their participation in and support of the safety program.
2. The Township staff will provide active leadership and support in effective programs, practices and procedures throughout the buildings and grounds.
3. The Safety Committee, appointed by the Township Manager, will provide Township-wide direction and coordination of the safety program by:
  - a. Establishing safe working conditions for the safety of Township employees and visitors as a primary objective of each department within the Township.
  - b. Assisting the Chairperson of the Safety Committee in the determination of Township-wide safety policies, programs, standards, practices and procedures by reviewing and acting as a clearinghouse for recommendations in this regard. Effectuating adopted policies, programs, standards, practices and procedures in their respective departments. These departmental safety policies and procedures shall be reviewed on an annual basis.
  - c. The Safety Committee shall review this manual and make recommendations to the Township Manager to update this manual as needed.

The Safety Committee shall meet at least every other month, or more periodically as may be determined by the Chairperson of the Safety Committee. The Committee will include representatives from all Township departments.

The findings and action recommendations of this Committee shall be reported to the administration and Department Heads and minutes posted in the lunchroom so that all employees can see what the Committee is working on.

- D. Under the guidance of the Safety Committee, the Chairperson of the Safety Committee is the administration's representative in all safety activities and will administer the Safety Program in accordance with official policy. He/she shall have the authority to take appropriate action when a hazardous condition exists that could result in personal injury or property damage. The Chairperson of the Safety Committee is a member of the Safety Committee. He/she assists and coordinates the efforts of Department Heads and the Safety Committee in all matters pertaining to safety education, accident prevention, fire prevention and occupational illness to insure optimum employee and visitor safety.

The duties of the Chairperson of the Safety Committee shall include, but are not limited to the following:

1. Become familiar with departmental operations to the degree that unsafe conditions can be recognized, discussed and corrected.
  2. Provide the leadership and stimulation necessary to assure and maintain full employee interest and participation in the safety program.
  3. Plan, direct and/or conduct safety-related training and orientation programs for new employees as well as providing continuous education for all employees.
  4. Establish procedures for the completion and handling of accident and incident reports involving visitors and staff that include evaluation, conclusion, recommendations and actions taken.
  5. Advise staff on the development and progress of the Township's safety program.
  6. Prepare, maintain and distribute the Township safety manuals.
  7. Conduct an annual evaluation of the effectiveness of the safety program.
- E. Safety Inspection Committee, appointed by the Chairperson of the Safety Committee, will conduct hazard surveillance inspection of all departments on a semi-annual basis.
1. The Safety Inspection Committee will include various members of the Safety Committee as well as representatives of other departments as may be required from time to time.
  2. The Safety Inspection Committee will conduct inspections of Township buildings and grounds and will make recommendations for the correction of deficiencies. They shall compile inspection reports documenting the findings.
- F. Department Heads are responsible for the following:

1. Communicating safety policies, practices and procedures to their respective employees.
2. Motivating employees to maintain good safety practices and to avoid violating Township and departmental safety procedures.
3. Maintaining continuous surveillance of activities, procedures, equipment, buildings and grounds for safety hazards.
4. Recommending action to preclude or eliminate unsafe departmental conditions.
5. Ensure the processing of appropriate incident reports.

G. Individual employees are responsible for the following:

1. Applying safe work practices in accordance with Township departmental policies and procedures.
2. Being alert for evidence of hazards on the job and informing department heads of these hazards.
3. Reporting accidents in accordance with the Township's incident report procedures.
4. Reporting of unsafe action to Department Heads.

## **Section 2: Responsibilities of the Safety Committee**

The Township Safety Committee shall meet at least every other month or more frequently, as determined by the Chairperson of the Safety Committee. Written notes of each meeting shall be maintained reporting the committee's activities, recommendations and follow-up actions. These minutes shall be prepared for distribution to all members of the Safety Committee.

Responsibilities of the Safety Committee shall include, but are not limited to the following:

- A. Develop written policies and procedures designed to enhance the safety management program within the confines of Doylestown Township, including its buildings and grounds. Review and update these policies and procedures on an as needed basis.
- B. Investigate, evaluate, review and document actions taken related to safety incidents involving visitors and employees.
- C. Conduct hazard surveillance inspections of all Township buildings and grounds on an annual basis.
- D. Establish and maintain a safety reference library of all pertinent publications, codes and standards.
- E. Maintain compliance with all local, state and federal standards and regulations applicable to the Township.

### **Hazard Surveillance Inspections and Department Safety Audits:**

It shall be the policy of the Doylestown Township Safety Committee to conduct an annual hazard surveillance inspection of all Township buildings along with random department safety audits by Department Heads. While it is desirable that all employees provide feedback on hazardous situations, these inspections and audits serve as a mechanism to assist the committee to formally evaluate the effectiveness of the safety program.

### **Procedure:**

The Chairperson of the Safety Committee, along with selected members of the Safety Committee shall conduct annual hazard surveillance/safety inspections of all buildings and grounds. The inspection team will tour the entire facility including outside areas, roofs and interiors. A reporting form shall be generated after every inspection and distributed to the Township Manager.

The Safety Committee will review all areas of concern at their bimonthly meetings and will evaluate and recommend all follow-up actions to be taken to maintain a safe environment.

The Chairperson of the Safety Committee shall:

- A. Prepare an annual schedule for hazard surveillance inspection.
- B. Review results of the inspection and prepare to report the findings at the next scheduled Committee meeting.

- C. Complete a hazard surveillance inspection form listing deficiencies found, referencing code and actions to be taken.
- D. Forward complete forms to the administration, other Committee members and all involved departments.
- E. Maintain file of all inspection documentation for regulatory review.

The inspection team shall:

- A. Inspect areas assigned by the Chairperson of the Safety Committee.
- B. Schedule date and time of the inspection.
- C. Document all environmental and safety hazards.

Inspection Criteria for Unsafe Conditions:

FLOORS

- A. Wet floors
- B. Foreign objects
- C. Loose or broken floor tile

ELECTRICAL

- A. Frayed electrical cords
- B. Improper grounding
- C. Broken plugs
- D. Open electrical panels
- E. Uncovered junction boxes

GASES

- A. Leading outlet
- B. Inaccessible or inoperable shutoff
- C. Improper labeling of line or tank
- D. Damaged gas line or tank

STORAGE

- A. Equipment or supplies stored too high (18" from ceiling)
- B. Storage in fire exit corridors or blocking fire exits
- C. Unauthorized storage in mechanical rooms
- D. Storage on floor not on approved shelving

FIRE EXITS

- A. Exit signs not illuminated

- B. Panic hardware out of adjustment
- C. Unauthorized storage in a fire exit
- D. Broken closer on door
- E. Emergency Lighting Operational / Sufficient

#### FLAMMABLE MATERIALS

- A. Improper storage of flammables
- B. Improper labeling of flammables
- C. Improper ventilation of flammables
- D. Accumulation of rubbish around storage areas
- E. Sprinkler/Fire Alarm Systems Inspection tag dated within one year
- F. Spare sprinklers and wrench available in cabinet

#### FIRE EXTINGUISHERS

- A. Gauge in recharge position
- B. Fire extinguisher missing
- C. Inspection tag dated within one year

#### CEILINGS AND WALLS

- A. Ceiling tiles missing
- B. Wall and ceiling penetrations
- C. Fixtures hanging or broken
- D. Loose or broken runners

#### ENVIRONMENTAL

- A. Waste receptacles not covered
- B. Regulated waste not in proper storage container
- C. Storage rooms found unlocked

#### OTHER UNSAFE CONDITIONS

- A. Sharp edges on equipment on furniture
- B. Damaged or ineffective lighting
- C. Poor housekeeping

#### UNSAFE ACTS (IF OBSERVABLE DURING INSPECTION)

- A. Walking
- B. Running
- C. Taking two steps at a time

- D. Wearing inappropriate shoes/clothing or not wearing required personal protective equipment

#### LIFTING

- A. Improper lifting technique
- B. Lifting too heavy of a weight (no more than 51lbs. per individual)

#### CLIMBING

- A. Climbing on the furniture
- B. Improper use of ladders

#### SMOKING

- A. Smoking in room where flammables are in use
- B. Smoking near flammable materials
- C. Smoking in "NO SMOKING" areas

#### MOVEMENT OF EQUIPMENT AND MATERIALS

- A. Pushing without full forward view
- B. Carrying without full forward view
- C. Movement of carts at high speed

#### ELECTRICAL

- A. Use of untested personal equipment
- B. Overriding of three wire plug (bad grounding)
- C. Improper use of extension cords
- D. Use of octopus outlets

#### PROCEDURES

- A. Not following departmental working procedures
- B. Not following infection control procedures
- C. Not following fire/safety procedures
- D. Improper use of safety equipment (goggles, gloves, face shields, earplugs, clothing, etc.)

#### OTHER UNSAFE ACTS

- A. Horseplay or practical jokes

## **Section 3: General Safety for Employees and Volunteers**

### Safety for Employees:

All Township employees, in addition to safeguarding volunteers and visitors who are dependent upon them, must assume the responsibility for their own on-the-job safety by using safe procedures and techniques. The planning of safety programs is wasted if employees do not cooperate in preventing accidents. Good safety programs train employees in procedures that require them to maintain a safe environment by performing each job safely. Pride emanates from well-trained staff members who can act with confidence in a hazard-free workplace.

All Township employees should follow these fundamental rules of safety:

- A. Use approved procedures for all job functions.
- B. Report all accidents/injuries to their supervisor immediately.
- C. Know and comply with the safety rules and use the safety equipment provided.
- D. Report all unsafe or hazardous conditions to their immediate supervisor.
- E. Obey safety signs and notices.
- F. Know personal responsibilities in the event of a fire or other disaster.
- G. Keep personal work area neat and clean.
- H. Refrain from horseplay.
- I. When in doubt, ask the person in charge.

### Orientation and Training

Regulatory agencies dictate the types of safety information that must be presented in employee orientation programs. They require safety orientations to include Township procedures for coping with fire, disaster, hazard communication, hazardous and infectious exposures, incident reporting system and other safety related issues. Each employee should also be instructed in the use of fire extinguishers.

### Work Environment

Orderliness of personal housekeeping, whereby each employee keeps his/her work area neat and clutter-free, is important in maintaining an environment free of hazards. If every unnecessary personal item, unused piece of equipment, item in need of repair and long-range replacement were stored away from the work area or discarded, the potential for a safe environment would be greatly increased, the causes of possible accidents removed and response to incidents and disasters accelerated.

Housekeeping is the responsibility and obligation of every employee. Overall safety is improved when every employee takes a personal role in Township upkeep and maintenance. (ie: Light bulbs are replaced sooner when the first person to spot a burned-out bulb reports it. Equipment is in better operating order when serviced at the first sign of disorder. Slips are fewer if everyone picks up debris.)

### Communication

Many accidents result from misunderstanding or lack of communication between employees; between supervisors and their employees; between employees and volunteers; between employees and visitors. Clear, concise directions and information must be given and the recipient should question points he or she does not understand or does not agree with. Communicators should:

- A. Know what they want to say and be sure they actually say it.
- B. Be sure the persons to whom they speak understand the instructions when the language in use is not the recipient's primary language, when the person addressed is hearing deficient or has other disabilities that impede hearing comprehension, or when the person is in an unusual or stressful situation.
- C. Watch until the instructions have been carried out completely.
- D. Write instructions when necessary.

### Uniforms and Special-Purpose Clothing

Many Township employees wear uniforms designated to accommodate job procedures. Each employee is responsible for keeping his/her uniform clean and in good repair. Each employee must be sure it is the proper size and fit.

Employees should wear clothing that is appropriate to their job assignment.

Personal grooming habits sometimes also play a safety role. Fingernails so long that they catch in equipment or harbor bacteria are inappropriate. Likewise, long hair should be tied up or back so that it does not obstruct vision or tangle in equipment.

Certain procedures and services require special protective clothing. Such clothing and instructions for its use are provided to employees, who must use it as instructed.

### Handling Materials

Improper handling of all types of materials accounts for occupational injuries, such as strains, sprains, fractures, cuts and bruises. Improper handling includes not only improper lifting, gripping and carrying but also the failure to observe proper foot and hand clearances, grabbing at falling objects, unsafe actions around sharp objects and failure to wear proper protective equipment. All Township employees who handle materials should take caution to:

- A. Wipe off greasy, wet, slippery or dirty objects before trying to handle them.
- B. Keep hands free of oil and grease.
- C. Wear protective gloves and use extra caution around running machinery.
- D. Use the appropriate equipment. Remember that hand trucks, dollies and wheelbarrows are designed to handle heavy, bulky or loose materials; whereas utility carts are designed for office supplies.

- E. Get a firm grip of the object.
- F. Keep fingers away from pinch points, especially when setting down materials, passing through doorways, and closing drawers and doors.
- G. Be alert to the hazard of burns while handling hot application of any kind.

#### Avoiding Cuts and Punctures

Employees who practice the following simple measures spare themselves cuts and punctures:

- A. Put away sharp tools when not in use. Do not cover any spindles, kitchen knives, or sharp tools on a desk, table or workbench with cloth or paper.
- B. Avoid trying to catch a sharp object or a glass object if it starts to fall. Let it go; then pick it up (if it is a knife or tool) or sweep it up (if it is broken glass).
- C. Dispose of any broken glass and crockery immediately.
- D. Avoid breaking fluorescent light bulbs. They become hazardous waste due to mercury leaching.
- E. Aerosol spray cans should never be incinerated. Carefully follow all directions on aerosol cans for disposal.
- F. Avoid "digging into" a wastebasket. Hold it by the sides and empty it onto a sheet of paper.

#### Preventing Slips, Trips & Falls

Falls can be prevented if employees:

- A. Never, under any circumstances, leave articles on stairs or in a passageway.
- B. Wet-mop only half of a corridor or stairway, leaving the other half for safe passage of traffic; use "Wet Floor" signs and block off slippery areas.
- C. Keep halls and stairs free of water, sand, paper and other materials that can cause slipping and serious injury.
- D. Avoid climbing on storage-room shelving and never use crates, boxes, or other substitutes for ladders.
- E. Keep handhold and stair rails in good condition.
- F. Use handrails when ascending/descending stairs.

#### Safety for Volunteers:

The Township must guarantee its volunteers a safe work environment. We request that volunteers (except public safety volunteers) performing work on behalf of the Township, sign a waiver informing them that PA Workers Compensation only applies to paid employees when injured.

Volunteers are required to observe all rules that govern staff and they should be trained and supervised on the job and encouraged or corrected in the same manner as staff members. In particular, volunteers should be instructed in any procedure they are permitted to perform.

Incidents involving volunteers should receive the same attention as those involving staff; incidents should be logged, reported and, if further instruction or medical attention is in order, it should be administered.

## General Safety Rules:

### A. General Safety

Be sure you understand the safest way to perform your job. There is a right way and wrong way ... if in doubt, ask your supervisor.

1. The workplace is no place for practical jokes because serious injuries often result.
2. Use every safeguard to protect your own health.
3. Know your department's emergency plans and your duties for each plan.
4. Report any unsafe conditions immediately to your supervisor.
5. All accidents, no matter how minor, will be reported and an incident report filled out.
6. If an accident requires immediate treatment, proceed directly to the appropriate network physician. If after hours, or in extreme emergency, proceed directly to the Emergency Room.

### B. Walking and Working Surfaces

Good housekeeping is to be practiced in all areas. Corridors and stairways are to be kept free of obstructions.

1. All spills are to be cleaned up immediately.
2. Electrical cords should be placed so that trips or falls are eliminated.
3. Walk, never run. Take time to be safe.
4. Approach corridor intersections carefully. Always keep to the right to avoid collisions.
5. If doors have vision panels, always make sure the other side is clear before proceeding through them.
6. Do not overreach. Always use an approved step stool or ladder. Never use a box or chair.
7. Keep all exits clear. If an exit must be blocked for a short period, make sure signs are placed and show alternate routes.
8. Approved "Exit" signs must be placed at all exits.
9. If it is necessary to place materials, charts or other obstacles in a corridor or hallway for a short period of time, place everything on the same side, so there is a clear passage.

### C. Personal Protection

Always use proper techniques for lifting and carrying.

1. Heavy bulk containers should always be placed on lower shelves in storage areas.
2. Do not pick up broken glass with bare hands. Dispose of all sharp broken plastic or glass appropriately.
3. Keep your work area clean.
4. Warn others of chemical spills. Be careful to avoid inhaling noxious fumes.
5. Read instructions on containers for proper disposal methods.

6. Never leave equipment unattended or standing in the flow of pedestrian traffic. Return all equipment to its proper location after use.
7. Wear appropriate footwear for your job.

D. Hazardous Materials

1. Secure all gas cylinders in an upright position. If it is necessary to lay a cylinder flat, then it must be locked in place.
2. Cylinder caps must be securely in place when cylinder is not in use.
3. All cylinders must be stored in a definite assigned location, preferably where it is cool, dry, well ventilated and above ground.
4. A separate storage area should be provided for flammable gases.
5. Cylinders must be moved only in the prescribed, safe method of transportation.
6. Proper clothing for the job is to be worn.
7. Warning signs will be posted and observed in any place where the work being performed might create a hazard.
8. Sanitary conditions will be maintained at all times including the proper disposal of trash and waste materials.

E. Also Remember the Following:

1. Maintain good posture in all activities.
2. Use the longest and strongest muscles of the arms and legs for power.
3. Work as close to an object to prevent unnecessary reaching and strain on muscles.
4. Slide, roll, push, pull an object rather than lift it.
5. Use the weight of the body to push an object by rocking forward and to pull an object by rocking backward.
6. Place the feet apart in order to provide a wide base of support when stability is necessary.

## **Section 4: Occupational Injury Reports**

The basis of an effective Township safety management program lies in the incident reporting system. Detailed record keeping can help the Township Safety Coordinator identify accident trends, high hazard areas and the frequency and severity of incidents involving employees, visitors and volunteers. Therefore, records of accidents or exposures involving employees, volunteers and visitors must be maintained.

A thorough and complete system for reporting incidents and inspections can usually provide information on trouble areas before a serious accident occurs. Reporting individual injury cases is indispensable to a Township's accident and fire control program so an understanding of causes and their related frequency and severity can be reached.

Reports of all employee, visitor and volunteer incidents or exposures that have significant causes, regardless of whether they result in a disabling injury, provide another means for the Coordinator to find areas that may need correction. Such reports, which include incidents when an accident has been averted before it started or in which injury is minor but could have been serious, also afford an excellent means of keeping all personnel alerted to potential hazards.

### **Pertinent Information**

Every incident report form used in the Township should be reported on the Incident Report form located at I:\ECOPY\Incident Reports\Form.pdf

The function of our incident reporting system is to determine where the hazards lie and what follow-up education, engineering and enactment are needed to eliminate such hazards.

### **Reporting Work-Related Injuries, Illnesses and Exposures**

Doylestown Township provides workman's compensation coverage, as prescribed by law, which provides coverage for work-related injuries/illnesses under the Worker's Compensation Act and the Occupational Disease Act.

This coverage or act requires employees, who are injured while on duty in the Township or while carrying out Township duties elsewhere must report the incident promptly to his/her immediate supervisor and complete an incident report form. If work-related injury/illness results in medical treatment and/or hospitalization, an Authorization for Medical Reports and Records must accompany the Employer's Report of Occupational Injury or Disease. All forms must be completed and forwarded to the Township Manager or designee who will notify the appropriate departments. All forms must be filed within forty-eight hours of the injury/illness.

When a work related injury/illness is reported, the supervisor must notify the Assistant Manager

immediately so a determination can be made regarding depth of investigation necessary and the need to document the related circumstances or facts.

Failure to report a work related injury/illness to the appropriate supervisor as soon as possible is a violation of policy and could adversely affect Worker's Compensation benefits and/or result in disciplinary action.

An employee that fails to report a work-related injury/illness by the end of the shift must submit a signed statement to his/her supervisor explaining the details related to the injury/illness. The employee must also include the reason for not reporting the incident within a reasonable time after the incident occurred as required.

For information and/or clarification in regard to this subject, employees may contact the Assistant Manager.

The following page shows a sample of the incident report form available from your supervisor, who will file it with the Assistant Township Manager.

# DOYLESTOWN TOWNSHIP

425 Wells Road, Doylestown, PA 18901  
215- 348-9915

## INCIDENT REPORT

TYPE OF INCIDENT  
(Circle all that are applicable)

Accident =     A     Park =     P     Drainage =     D  
Zoning =     Z     Highway =     H

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NAME \_\_\_\_\_ JOB TITLE \_\_\_\_\_  
ADDRESS \_\_\_\_\_ DATE OF INCIDENT \_\_\_\_\_  
\_\_\_\_\_ TIME OF INCIDENT \_\_\_\_\_  
HOME PHONE \_\_\_\_\_ STARTING TIME \_\_\_\_\_  
SOCIAL SECURITY# \_\_\_\_\_ SEX: MALE \_\_\_\_\_ FEMALE \_\_\_\_\_  
DEPARTMENT \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_  
(if employee incident)  
Employee \_\_\_\_\_ Visitor \_\_\_\_\_ Other \_\_\_\_\_  
SUPERVISOR NOTIFIED \_\_\_\_\_ DATE FORWARDED TO OFFICE \_\_\_\_\_  
(last name)

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EXACT LOCATION OF INCIDENT \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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DESCRIPTION OF INCIDENT (who, what, when, where, how) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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ACTION TAKEN \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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INJURIES INVOLVED \_\_\_\_\_ YES \_\_\_\_\_ NO

(If yes, provide description of injury, where treated, possible return-to-work date)

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SAFETY OFFICER COMMENTS

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PROPERTY DAMAGE \_\_\_\_\_ YES \_\_\_\_\_ NO  
(If yes, provide description)

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RESPONSE REQUIRED \_\_\_\_\_ YES \_\_\_\_\_ NO

REPORT ORGINATOR

## **Section 5: Hazard Communication / Right-to-Know Program**

### Policy

To ensure that information regarding the dangers of all hazardous chemicals used within all Doylestown Township buildings is known by all affected employees, a hazardous information program has been established in which departments of the Township will participate in the Hazard Communication / Right-To-Know Program.

### Purpose

The purpose of this program is to define and protect the rights of employees and the general public in matters of occupational health and safety involving specific hazardous and toxic substances. In an effort to create a safer environment for its employees and visitors, Doylestown Township has implemented procedures to comply with the Commonwealth of Pennsylvania's Worker and Community Right-To-Know Act; The Occupational Safety and Health Administration's Hazard Communication Standard; and the Superfund Amendment and Reauthorization Act of 1986, Title III.

### Product Labeling

All containers in the workplace containing hazardous substances, hazardous mixtures, single chemicals and mixtures must be properly labeled. The appropriate Department Head will ensure that each label, sign, placard or other operating instruction is marked and identified appropriately so employees can easily identify the substance. Labels should list at least the chemical identity, appropriate hazard warnings and the name, address and emergency telephone of the manufacturer, importer or other responsible party. The fire marshal or delegate from the fire marshal's department will ensure all pipelines and ports of all pipelines will also be properly labeled.

To meet the labeling requirements of the Hazard Communication Standard for all in-house containers, pipelines and ports, refer to the label supplied by the manufacturer on the original product containers.

Immediate use containers (small containers into which materials are drained for use on that shift by the employee drawing the material) do not require labeling.

The Department Heads are responsible for verifying label information with the Material Safety Data Sheets (MSDS) and review all containers in their departments on a timely basis to ensure proper and up-to-date labeling.

### Employee Training and Information

Workplace notice: Posters informing employees of their rights under the Pennsylvania Worker and Community Right-To-Know Program will be prominently posted throughout the buildings.

New employees should be made aware of the Hazard Communication Standard and Right-To-Know laws through mandated video training sessions.

Each employee who works with or is exposed to potentially hazardous substances and/or mixtures shall receive annual training on the Hazard Communication Standard and Right-To-Know laws as well as training specific to the evaluation, health, safety and exposure to the hazardous substances prior to entering the work place. He or she shall receive annual training every year after that. Additional training shall also be provided for employees whenever a new chemical is introduced into their work areas.

Documentation of these training sessions will be maintained in the employee's individual department. The original documentation must be kept on file at the Township building.

#### Inventory

Each Department Head will be responsible for conducting an on-going inventory of potentially hazardous substances. A current inventory will be kept on file in each individual department.

#### Material Safety Data Sheet (MSDS)

A Material Safety Data Sheet (MSDS) is a document that provides information on chemical substances. An MSDS must be obtained for each product considered a potential hazard. When it is received, the information is reviewed for accuracy and completeness and then included in the department's Material Safety Sheet Binder.

The Material Safety Sheet Binder will be available to all employees, and its contents reviewed by the Department Head at the time of the annual employee training. Any new materials coming into the Township should be added to the binder.

#### Contractor Employers

The appropriate Department Head will advise outside contractors of any chemical hazards that may be encountered in the normal course of their work on the premises. It is the responsibility of the contractor to obtain information about hazardous chemicals used by other employees to which employees of the Township may be exposed.

#### Chemical in Unlabeled Pipes

Employees sometimes work in areas where chemicals are transferred through unlabeled pipes. Prior to starting work in these areas, the employee shall contact the Public Works director for information regarding:

- A. The chemical in the pipes
- B. Potential hazards
- C. Safety precautions which should be taken

### Non-Routine Tasks

Employees contemplating a non-routine task must consult with the appropriate Department Head and will ensure that employees are informed of the chemical hazards associated with the performance of these tasks and appropriate protective measures.

## **Section 6: Infection Control Program**

Doylestown Township recognizes the potential for its employees to be exposed to communicable diseases in the performance of their normal work. Consequently, the Township is committed to a program that will minimize the threat of exposure and will take all necessary measures to protect the health of its employees.

To minimize the risk of exposure, the Township will provide its employees with proper infection control equipment including disposable medical gloves, facemasks, gowns and eye wear along with necessary cleaning and disinfecting supplies.

The Township will also provide initial instruction and continuing education in preventative health care practice so employees possess a basic awareness of infectious diseases, understand the risks and severity of various types of exposures and exhibit proper skills in infection control.

Standard medical treatment will be given free of charge to exposed employees, and necessary immunizations will be made available to protect employees from potential exposure to infectious disease.

Township employees may contact the Assistant Township Manager after any actual or suspected exposure to a contagious disease or a blood borne pathogen. The infection control liaison officer will contact the hospital to initiate and determine the need for treatment of the exposed employee.

### **Training and Education**

The Township will conduct annual training and education programs for all employees who are involved in work practices that pose a potential occupational health risk.

The training program shall include proper use of personal protective equipment, standard operating procedures for safe work practice in infection control, proper methods of disposal of contaminated articles and medical waste, exposure management and medical follow-up. Information on applicable government regulations shall also be provided.

### **Immunization**

The Township shall make available to all employees an appropriate immunization program, including vaccination against hepatitis B.

### **Exposures**

If an employee has been exposed to a contagion, the exposed area shall be thoroughly washed immediately after exposure. If the contaminated area is a mucosal surface, use water. Use soap and running water on skin surfaces. If soap and running water are not available, alcohol or other skin cleaning agents that do not require running water may be used until soap and running water can be obtained.

All employees are to report exposures immediately to their supervisor, and the Township is to be notified within three hours of the exposure.

The Township will ensure that any employee who has sustained an exposure receives medical guidance, evaluation and, where appropriate, treatment as soon as possible, within at least forty-eight hours.

All exposures shall be recorded in writing as soon as possible after the incident using the incident report form. The form shall become part of the employee's confidential permanent health file and shall be maintained for the length of his or her employment plus thirty years. A complete record of the employee's exposures must be available to the employee upon request.

### Emergency Medical Operations

In the emergency care setting, the infectious disease status of patients/victims is frequently unknown by emergency responders. All patients/victims must be considered infectious and therefore, blood and body fluid precautions must be taken with all patients.

Prior to any patient/victim care situations that might precipitate large splashes of body fluids, all employees providing treatment must wear masks, splash resistant eyewear and fluid-resistant clothing. Due to the variety of diseases, modes of transmission and unpredictable nature of the work environment, employees engaging in any emergency care must:

- A. Wear medical gloves prior to initiating care. Medical gloves are a standard component of emergency response equipment.
- B. Medical gloves must be removed as soon as possible after the termination of care, taking precautions to avoid skin contact with the gloves' exterior surface and must be disposed of in accordance with this policy.
- C. Hands shall be washed as described in the exposure section of this policy following removal of medical gloves.
- D. Employees must not eat, drink, smoke, apply cosmetics or lip balm or handle contact lenses while wearing gloves.

### Disposal of Materials

Contaminated disposable medical supplies and equipment, contaminated disposable infection control garments and contaminated wastes shall be placed into leak-proof bags, sealed and disposed of as medical waste.

Contaminated clothing with large amounts of body fluids must be disposed in bags, sealed and transported for proper cleaning or disposal. To avoid the possibility of spreading infectious diseases contaminated clothing or uniforms must not be taken home.

The Following are a Few Definitions with Infectious Diseases:

**Body Fluids** - Body fluids include, but are not limited to, blood, semen, mucus, feces, urine, vaginal secretions, breast milk, amniotic fluids, cerebrospinal fluid, synovial fluid, pericardial fluid, and fluids that might contain concentrated HIV or HBV viruses.

**Cleaning** - The physical removal of dirt and debris; generally accomplished with soap and water and physical scrubbing.

**Contaminated** - Having come in contact with body fluids.

**Disease Transmission** - The process that involves the following: a sufficient quantity of an infectious agent, such as a virus or bacteria; a mode of transmission, such as blood for HBV and HIV or airborne droplets for tuberculosis; a portal of entry, such as a needle stick injury, abraded skin, or mucous membrane contact; and a susceptible host.

**Disinfection** - The process used to inactivate virtually all recognized pathogenic microorganisms but not necessarily all microbial forms, such as bacterial endospores. Disinfecting is not the same as sterilization.

**Emergency Medical Operations** - Delivery of emergency patient/victim care and/or transportation prior to arrival at a hospital or other health care facility.

**Exposure** - Contact with an infectious agent such as body fluids through inhalation, percutaneous inoculation or contact with an open wound, non-intact skin or mucous membrane.

**Fluid-Resistant Clothing** - Clothing that provides a barrier against splashing or spraying body fluids or other potentially infectious material.

**Gloves** - Also known as "surgical gloves." Gloves that are designed to provide a barrier against body fluids meeting the requirements of ASTM D 3578. (Standard Specification for Rubber Examination Gloves) (non-sterile).

**Immunization** - The process or procedure by which a person is rendered immune to a specific communicable disease.

**Infection Control Liaison** - The person or persons within the Township responsible for coordinating efforts to investigate an exposure incident.

**Leak-Proof Bags** - Bags sturdy enough to prevent tearing or breaking that can be sealed securely to prevent leakage. Such bags are red in color and/or display the universal biohazard symbol.

**Medical Waste** - Items contaminated with human waste, blood or body fluids in need of disposal. Human waste, tissue, blood or body fluids that require special handling precautions are also considered medical waste.

**Patient/Victim** - An individual, living or dead, whose body fluids, tissues or organs may be a source of exposure to the employee.

**Protective Clothing** - Garments primarily intended for rescue operations.

**Splash-Resistant Eyewear** - Safety glasses, prescription eyewear, goggles or chin length face shields that, when properly worn, provide limited protection against splashes, spray, spatter, droplets or aerosols of body fluids and/or other potentially infectious material.

## Section 7: Fire Safety

### Definition and Classes of Fire

**Definition of Fire:** Fire is the rapid oxidation of any combustible material, caused by a chemical reaction involving fuel, heat and oxygen. These three elements, in the right proportions, will always produce a fire. Below is a fire triangle that illustrates the three elements required for a fire; removing any one side of the triangle will extinguish the fire.



**Classes of Fire:** The classification of fire depends mainly upon the fuel involved. There are three classes of fire.

**Class "A"** - these fires are fueled by ordinary combustible materials such as wood, paper, rags, bedding, etc. This type of fire burns when an ember leaves ash and is best extinguished by removing the heat (of the triangle). When upholstered objects are involved, complete saturation is required. Extinguishers suitable for Class "A" fires should be identified by a triangle containing the letter "A." The triangle with the letter "A" is usually color-coded green. \*

**Class "B"** – these fires are classified as involving flammable liquids since they are usually fueled by flammable solvents, greases, fats, oils, etc. This type of fire burns on the surface of the fuels and is best extinguished by a blanketing or smothering action. A fire of this type spreads quickly and is capable of engulfing a large area in a very short amount of time. Extinguishers suitable for Class "B" fires should be identified by a square containing the letter "B." The square with the letter "B" is usually color-coded red. \*

**Class "C"** – these fires occur in energized electrical equipment. Blanketing this type of fire with a non-conducting extinguishing agent is of prime importance. Water, or solutions containing water, are never to be used on a Class "C" fire. A circle containing the Letter "C" should identify extinguishers suitable for Class "C" fires. The color blue is usually used to identify the circle with the letter "C."

**NOTE: If possible, shut off the source of electricity as soon as possible. Extinguishers suitable for more than one class of fire may be identified by multiple symbols A, B and/or C.**

### Operation and Types of Extinguishers

Portable fire extinguishers are an integral part of any fire safety program. They are designed to combat fires in their early stages. For this reason, the use of portable fire extinguishers to combat well-established fires is not recommended. Since an employee may be in a work area where an early stage of a fire occurs, and since the reaction to grab a fire extinguisher is common, the following brief description of how to properly use one is given.

**A. In Case of Fire:**

1. Notify everyone to clear the area immediately and sound the building alarm.
2. Assign someone to dial 911.
3. If the fire is small and contained to one area, you may choose to use a fire extinguisher. If a fire extinguisher is used, it is most important that the operators are familiar with the proper operation and contents of extinguisher. Check the nameplate if in doubt. If the fire is too large, evacuate.
4. Stay low to avoid heat and smoke and do not get trapped in a corner - leave an escape route.
5. Never attempt to go it alone, get help.

**B. Be Sure:**

1. Extinguishers have been charged and tagged within the prescribed period of time (one year).
2. The extinguisher location is clearly visible from a distance.
3. Each extinguisher has not been tampered with or removed from its designated place.

Types of Extinguishers

**A. Pressurized Water Extinguishers (2 ½ gal.)**

*For use on Class A fires*

**To Operate:**

Carry the extinguisher to the fire.

1. Pull out the pin or push lever on top of the extinguisher handle to the rear.
2. While squeezing handles together, grasp the hose and direct the stream at the base of the fire.
3. Turn on or off at will by squeezing or releasing the handles.

**B. Carbon Dioxide Extinguishers**

*For use on BC fires*

**To Operate:**

Carry the extinguisher to the fire.

1. Remove the safety pin or locking device, point the horn at the base of the fire, and discharge by squeezing the handles together. Be sure not to place your hand on the horn when discharging the contents of the extinguisher, or you could get frostbite.
2. Discharge at the base of the fire and move horn from side to side at a moderate speed. Too rapid a movement will dissipate the vapor, and too slow a movement may discharge more than is needed at one time.
3. Continue to apply contents for a short time after the fire has been extinguished to prevent a possible reflash." "

### C. **Dry Chemical Extinguishers**

*For use on Class "B" and "C" fires*

#### **To Operate:**

1. Carry the extinguisher to the fire by its handle and operate according to the instructions on it (instructions usually read: remove safety pin or locking device, grasp nozzle and squeeze handles).
2. To reduce the intensity of the flames, direct the stream at the base of the flames, moving rapidly from side to side to gain full coverage.
3. In small spill fires, where the entire width can be covered by the sweep of the dry chemical stream, attack the fire from the front. The stream is discharged over the entire spill area.

### D. **Halon 1211 Extinguishers**

*For use on Class "B" and "C" fires*

#### **To Operate:**

1. Carry the extinguisher to the scene of the fire in an upright position.
2. Pull the ring lock pin and aim the nozzle at the base of the fire. Squeeze the carrying handle and the trigger together.
3. Sweep the extinguisher from side to side while in use.

### E. **All Purpose Extinguishers**

*For use on Class "A", "B" and "C" fires*

#### **To Operate:**

1. Carry the extinguisher by its handle and operate according to the instructions on the side of it. (Instructions usually read: Remove nozzle from clip, pull locking pin, squeeze operating lever and discharge at the base of the flame).
2. To reduce intensity of the flame, direct the stream at the base of the flames, moving rapidly from side to side to gain full coverage.
3. In small spill fires, where the entire width can be covered by the sweep of the stream attack the fire from the front. The stream is discharged over the entire spill area, extinguishing the flames from the front to the rear.

## **Section 8: Office Safety**

Safety is defined as freedom from danger or hazards. Safety in the office, like safety anywhere else, does not just happen -- it is the result of individual effort. If you take a good look around your office, you will find it can be as potentially hazardous as industrial work places.

It is just as easy, and as dangerous, to trip over an extended file drawer as it is to trip over a steel girder. Accidents, regardless of where they occur, are expensive in terms of money spent, time lost and personal misery. They are detrimental to the operation; the individual involved, and quite often directly affect the family.

Apathy and poor attitudes toward safety are the most difficult problems to correct. Negative attitudes that set the stage for accidents include temper and recklessness, "I'll do it my way, or else," cynicism or over confidence, "safety is kid stuff; I'll never get hurt," fatalism and carelessness, "I can't do anything to stop accidents, so why bother?" Add forgetfulness, laziness, ignorance and showing off to the list and the numerous injuries occurring in offices each and every day are understandable.

Most accidents are caused by and happen to one person. If you accept personal responsibility for your safety, the chance of becoming a victim is considerably reduced. Learning how to recognize hazards and prevent office accidents are the first steps in creating a safe working environment.

Improper lifting and carrying can cause back injuries. Know your strength, and when in doubt make it a two-person job. Use arm and leg muscles, not your back. This means keeping your back straight and the load close to your body. Grasp materials firmly and make sure you can see over your load. When setting objects down, rest one corner first so your fingers are not caught underneath. Plan ahead so you have a place to deposit your burden. And be sure all obstacles are removed from your path, doors are open and appropriate lighting is provided.

File and storage cabinets, when improperly used, can be a major cause of injury. Avoid overloading or front-loading top drawers. Unbalanced distribution at the top could cause the cabinet to topple. Close one drawer before opening another. If the top drawer is open while you are working in a lower one, you could come up and hit your head, while leaving the bottom drawer open presents a trip hazard. Close drawers gently, using the handle to prevent pinched fingers. Do not strain with stuck drawers -- you could injure your back or cause the cabinet to fall. Find someone to assist you if you cannot open the drawer.

Most falls in the office are on level ground and could be avoided. Keep file and desk drawers closed when not in use. Keep the floor clean -- even something as small as a pencil can cause someone to lose footing because of the roller skate-type action under a shoe. Wear shoes with moderate heels, they provide better footing and ease fatigue. Do not read while walking. Wipe up wet spots immediately. Keep chairs on all four legs -- tilting back often results in overbalancing and serious back injury. Stepladders of the

appropriate height should be used for reaching files and records stored above normal reach. Standing on desktops, chairs, etc., is unsafe and is often the direct cause of serious injuries. Always use designated aisles and avoid between-desk shortcuts where wastebaskets and phone lines are waiting to trip you.

Pay attention to written and oral instructions related to using office machines. Make certain that all guards are in place before you turn on the power. If you need to make adjustments or work on the equipment for any reason, turn off the power and replace the guards when the work is completed. If a machine overheats, smokes, sparks or if you feel even a slight shock, unplug it and call a service person. Make a sign that warns others not to use the machine. See that typewriters, adding machines and other portable units are placed firmly on a sturdy working surface and keep their electrical cords clear of aisles. Remember that loose clothing, long hair and dangling jewelry are dangerous around equipment with moving parts.

Cuts and puncture wounds are the most common office accidents. To prevent them, keep pointed or sharp objects in a separate box in your desk drawer. Sharp knives should have appropriate shields or be retracted so that the cutting edge is not exposed. Wrap blades before disposing of them, they could cut someone else. Paper cutters require your complete attention; do not attempt to cut too many sheets at a time. Keep your fingers clear of power staplers. Unplug it first. Be especially cautious when working on a jammed stapler, this is when most accidents of this type occur. Sweep up broken glass -- do not pick up splinters with your fingers pick them up with a damp towel. Wrap broken glass securely in paper and mark prior to disposal to avoid injury to housekeeping personnel. Good housekeeping and cleanliness makes work easier and safer for everyone. Dispose of shipping and packing materials as soon as possible to eliminate fire and tripping hazards. When opening packages; inspect them for sharp projections and rough edges. When using a cutting tool, cut away from your body. Keep packages to be shipped out of aisles and away from work areas.

Report all injuries to your supervisor. Prompt treatment can keep injuries from becoming major problems.

## **Section 9: Head Protection (Hard Hats)**

### General

Employees working in areas where there is a possible danger of injury from impact, falling or flying objects, electrical shock and burns must be protected by an approved type protective helmet.

- A. Protective helmets (hard hats) must comply with the design specifications of the current **ANSI Z89.1**
- B. Protective helmets shall bear a manufacturer's label indicating design compliance with the appropriate ANSI standard.
- C. Helmets usually provide limited protection; however, they do reduce the effect of the force of falling objects that strike the top of the shell.
- D. Never alter or modify the shell or suspension system unless it is in accordance with manufacturer's instruction.
- E. Avoid contact with live electrical wires.
- F. *Do not place or carry* objects between the suspension and shell, or between the suspension and your head.
- G. This space is needed when the shell/suspension absorbs the force of an impact.
- H. The helmet should be worn square on the head; not tipped forward, backward or to either side.
- I. Materials such as solvents, chemicals, adhesives or gasoline should not be used on your helmet and it should not be painted. These materials could potentially reduce the impact resistance of the helmet, which may not be readily detectable by the wearer.
- J. Inspect your helmet and its suspension every time you wear it. Examine for cracks, brittleness, discoloration or chalky appearance. Any of these conditions indicate a loss of impact resistance and helmet should be replaced. Check for pliability of the suspension. Examine for cracks, breaks or frayed straps. If you detect any sign of wear or damage, replace the suspension and or the shell.
- K. Keep helmet clean with mild soap and warm water.

### Designated Hard Hat Area

- A. Any construction employee, supervisor, inspector, manufacturer's representative and visitor shall wear protective helmets when entering or working in an area that has been designated as a Hard Hat area.
- B. The contractor must enforce hard hat areas and the regulations at the entire job site, with the exception of the offices and the parking area.
- C. Signs at least 3 by 4 feet in size with the following wording: "Hard Hat Area" shall be posted at the entrance to designated location.

## **Section 10: Hearing Conservation**

Exposure to high noise levels can cause hearing loss or impairment, creating both physical and psychological stress. There is no cure for noise-induced hearing loss and as result; prevention of excessive noise exposure is the only way to avoid damaged hearing. Specially designed protection is required, depending on the type of noise encountered in the workplace. Preformed or molded earplugs should be individually fitted. Waxed cotton, foam or fiberglass wool earplugs are self-forming. When properly inserted, they work as well as most earplugs. Plain cotton, however, is ineffective as a protection against hazardous noise. Some earplugs are disposable; they are designed for one use before being discarded. Non-disposable earplugs should be cleaned after each use in order to have proper protection. Earmuffs can be effective; however, they must have a good seal around the ear. Anything that breaks the seal, such as glasses, sideburns or long hair decreases their effectiveness. Facial movements can also break the seal. In areas where the noise level is excessive, earplugs should be worn in addition to earmuffs for maximum protection. The supervisor should insist that all employees wear the proper ear protection where noise levels tend to be a problem.

### **Noise Control**

Excessive noise can cause permanent hearing damage. At noise levels averaging higher than 85 dba over an eight-hour period, an effective hearing conservation program, including annual audiometric testing must be administered. Engineering controls (i.e. enclosing noisy equipment) or administrative controls (i.e. limiting the duration of the exposure) must be used where the average of 85 dba per eight hours is exceeded. If such control measures are not feasible, then effective personal protective equipment must be provided to employees and it must be used.

There are several types of personal hearing protection devices that can be used, such as those noted above. Some devices are more useful than others, depending on the noise level, the frequency of the noise and how well the device fits the ear. Devices that do not provide a good seal offer little hearing protection and will not satisfy the hearing standard. Protection for the ears should be effective and reasonably comfortable to wear. If an employee suspects the existence of a noise problem, he/she should contact his/her immediate supervisor. A noise survey by properly trained and equipped personnel should be made before engineering or administrative controls are put into effect.

### **Hearing Loss**

Many test results indicate that hearing loss is a major problem in the work force. Work-related hearing loss is greater than that resulting from the natural aging process. About nine million Americans either now work or have worked in areas where noise exposure levels are 80 decibels or higher. Hearing conservation programs should emphasize engineering controls and purchasing of noise-engineered equipment, assurance that protective devices fit properly, provision of training and periodic testing for hearing loss. Workers routinely exposed to high noise levels ( > 85 dba), should be subject to annual audiometric testing.

## **Section 11: Eye Protection**

Eye injuries are tragic because they are much too common in the workplace. Over 1000 people suffer industrial eye injuries every day. Of these injuries, 90 percent could have been prevented. With each eye injury, the ultimate risk is blindness.

Proper eye protection depends on you. The proper protective devices needed to protect your eyes are readily available, but only you can put them on.

The four most common eye hazard categories are:

- A. Flying chips
- B. Splashing liquids
- C. Glare or radiation
- D. Dust, fumes and vapors

To protect your eye against flying chips from wood, metal, glass or plastic, employees should use one of the following:

- A. Safety glasses with side shields
- B. Safety goggles for more severe exposure
- C. An approved face shield over glasses or goggles to prevent facial injury when using a grinder, chipper or air tool
- D. Welding glasses

Safety glasses differ from regular glasses because they have thicker lenses that are required to be at least four times as resistant to impact. They also have tougher frames than regular glasses in order to withstand impact.

Safety glasses and face shields should indicate they meet the **ANSI Z87.1** standard. This standard defines the minimum performance requirements for eye and face protection.

Face shields are designed to protect the face and are not intended for use as primary eye protection. Face shields should be used only in conjunction with safety glasses or goggles.

Toxic or corrosive material presents one of the most severe hazards to the eyes. When working with these materials, chemical splash-type goggles and a face shield for more extreme exposure risks should be worn.

If an accident occurs when working with chemicals, thoroughly flush eyes with water and immediately seek medical help. If possible, continue flushing for 15 minutes or until the victim is under a physician's care.

Welding presents other types of hazards such as glare and flash burn, caused by infrared or ultraviolet radiation, flying chips, sparks or molten metal.

Welding goggles represent proper protection for the eyes against glare or flash burn. They should have the proper shade of lens when welding, cutting with acetylene, or to protect the face from hot slag. A welder's helmet should also be used.

Contact lenses are not approved safety glasses. They are not recommended when working with chemicals that could splash in your eyes or for use in welding operations.

Products are also available to help prevent glasses from fogging.

Since flash burn can affect others in the area of welding and burning, use protective curtains to seal off the surrounding area.

When protecting the eyes from dust, fumes and vapors, goggles with indirect openings are recommended.

Protection against fumes vapors or gasses may require gas-tight goggles or full face respiratory protection.

## EYE AND FACE PROTECTION GUIDE

<b>APPLICATIONS</b>		
<b><u>OPERATION</u></b>	<b><u>HAZARDS</u></b>	<b><u>PROTECTION</u></b>
Acetylene - Burning - Cutting - Welding	Sparks, Rays, Molten Metal, Flying Particles	Welding goggles or Welder's helmet
Corrosive Handling	Splash, Acid Burns, Fumes	Safety-goggles and Face Shield Combination
Chipping	Flying Particles	Safety glasses and Face Shield Combination
Electric Welding	Sparks, Rays, Molten Metal	Welder's helmet
Grinding	Flying Particles	Safety glasses And Face Shield Combination

<b>Welding Operation</b>	<b>Lens, Shade Numbers</b>
Arc Welding	
Shielded metal – arc welding	10
Gas-shielded arc welding (nonferrous)	11
Gas-shielded arc welding (ferrous)	12
Shielded metal – arc welding	12
Atomic hydrogen welding	14
Carbon arc welding	14
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1 inch to 6 inches	4 or 5
Heavy cutting 6 inches and over	5 or 6
Gas welding (light) up to 1/8 inch	4 or 5
Gas welding (medium) 1/8 inch to 1/2 inch	5 or 6
Gas welding (heavy) 1/2 inch and over	6 or 8

**Note: In gas welding or oxygen cutting where the torch produces a high yellow light, it is desirable to use a filter or lens that absorbs the yellow or sodium line in the visible light of the operation.**

## **Section 12: Illumination**

The following is a guide to determine the minimum illumination required for various areas.

<b><u>Area or Operation</u></b>	<b><u>Lighting Intensities (Foot-candles)</u></b>
Access ways, indoor	5
Access ways, outdoors	3
Automotive service	30
Construction - indoor area	10
Construction - outdoor area	5
Construction plant & shops (carpenter - electrical)	10
Exit ways	5
General work areas	5
Mechanical and electrical equipment rooms	10
Offices	50
Storage areas- active indoor area	10
Storage areas - active outdoor area	5
Toilets, washrooms and locker rooms	10
Tunnels, shafts and general underground	5
Welding	30

- A. In addition to providing required minimum illumination intensities shown above, consideration shall be given to the selection and placement of lighting equipment that will reduce glare, eliminate dark shadows and provide safe and efficient maintenance.
- B. All artificial lighting circuits shall be inspected regularly and defective lamps replaced.
- C. All electrical facilities shall be installed in conformance with the latest edition of the National Electrical Code.

## Fire and Explosion Hazard

- A. Explosion proof lighting and electrical systems shall be used for artificial illumination in areas where flammable liquids, vapors, fumes, dust or gases constitute a hazard.
- B. Electrical equipment installed in such areas shall be explosion-proof type as listed and approved by the Underwriters Laboratories, Inc., or an authoritative organization.
- C. Electrical installations in such areas shall also conform to the requirements of the National Electrical Code relating to hazardous locations.

## **Section 13: Handling Flammable and Combustible Liquids**

### Flammable & Combustible Liquids

The lowest temperature at which the vapors from the liquid will ignite when an ignition source is supplied determines whether a liquid is considered "flammable," or combustible. Vapors from flammable liquids ignite at a lower temperature than those of combustible liquids. Examples of flammable liquids are gasoline, acetone and lacquer thinner; examples of some combustible liquids are kerosene and fuel oils. Connection on all drums and piped systems of flammable and combustible liquids must be vapor tight as well as liquid tight.

### Safety Cans

Only Factory Mutual or Underwriter Laboratories listed safety cans should be considered acceptable for handling flammable liquids. Self-closing spring-loaded lids, pressure relief features and flame arresters are all recognized safeguards of approved safety cans. Safety cans are generally painted red and should clearly indicate the content and the hazards of each can's contents. Flammable liquids are often purchased in small lightweight containers with screw caps. Although these vessels must meet certain standards to qualify as shipping containers, they do not afford adequate fire protection for handling, dispensing or carrying a flammable liquid.

### Checking for Leaks

To check a safety can for leakage, hold a full can on its side over an open bench can. If the leakage is more than two drops, the can should not be used for storing or handling flammable liquids. Self-closing caps should be opened and allowed to close two or three times before testing the can for leaks. Also, any time a metal safety can is dropped or dented; it should be checked for leaks before continuing to use the can.

### Flame Arrestors

Flame arrestors prevent propagation of a flame into the container, and must not be removed from the safety can opening. The arrestor, by absorbing and dissipating heat, prevents vapors in the container from being ignited by an external source. Most flame arrestors are made of layers of metal screen and are placed in accessories used to dispense and fill drums, plunger cans and other safety containers.

### Grounding

When flammable class liquids are transferred from one container to another (i.e. from a drum to a portable safety can), the containers must be effectively bonded and grounded. It is recommended that all containers be individually grounded to a bus bar to help assure that a proper ground is maintained at all times. Bonding and proper grounding prevent electrical discharge (sparks) arising from the accumulation of static during liquid transfer.

### Pressure Relief Devices

Expanding vapor within a container can cause pressure to build. This happens when the can is exposed to heat. If the pressure is not relieved, the container may rupture and cause the vapor to ignite, possibly causing fire to spread in the area. Bung vents operate as pressure relief devices for storage drums. Pressure forces a valve to rise against a spring so vapors are released. Once the pressure decreases, the valve closes automatically and seals. Vacuum-relief vents are also available and are commonly built into containers having small dispensing openings. These vents are necessary so that the space vacated by a liquid being dispensed is vented to counteract the formation of a vacuum.

### Safety Covers

Spring action covers are used on portable safety containers to relieve excess pressure, seal a container against a leak and prevent vapor from escaping. The cover is held open by the pressure of the hand during filling and dispensing. When a person removes his/her hand, the cover closes and automatically forms a tight seal around the opening. Gravity keeps the cover open on dip tanks and oily waste containers. Depressing a treadle bar opens these covers. A cover that combines these two types of seals uses a fusible link to hold the cover open and is used in such cans used for washing and cleaning operations, trash cans and drums. The link will melt at a temperature of 160 degrees, cover the container and extinguish the fire by smothering.

### Spills

Small spills can be cleaned up following the spill response procedures indicated on the MSDS.

Large spills of flammable class liquids and combustible class liquids should be confined immediately, if possible by closing a door. Remove all ignition sources. Evacuate the building and report the spill to the fire department.

### Storage Cabinets

Storage cabinets must be clearly labeled "Flammable - Keep Fire Away." Metal cabinets must be grounded and constructed of at least 18-gauge sheet iron, double-walled and leak-proof joints with a 2-inch sill. Cabinets should be placed in the area where the liquid is to be used, if possible. This prevents the employee from having to carry containers of flammable liquids, which must always be kept to a minimum. There must be "No Smoking" signs posted in the area along with the placement of a fire extinguisher suitable for Class "B" fires. Keep the immediate area around the cabinet free of combustibles.

### Transportation

Transportation of flammable/combustible liquid – precautions should be taken in the transport of flammable/combustible liquid in properly sealed containers. Containers should be properly secured to prevent them from shifting and/or tipping over.

## **Section 14: Compressed Gases: Storage, Handling and Usage**

### Cylinder Storage

All cylinders stored inside buildings must be located in a well-protected, well-ventilated area. Stored oxygen cylinders must be kept separated from stored fuel gas cylinders, as well as flammable or combustible materials (including oil and grease) by a minimum distance of 20 feet. If this distance is not possible then a non-combustible barrier at least five feet high and having a 1/2 hour fire resistance rating, will suffice. A sheet metal partition is not an acceptable material for separating cylinders. Cylinders should be kept away from radiators and any other heat sources.

Areas for cylinder storage should be clearly designated as such.

All cylinders must be capped, or have valves closed during storage, or when not in use (even temporarily). All cylinders must be closed when work is finished. Where a special wrench is required, it must be left in position on the stem of the valve while the cylinder is in use. This will allow the fuel flow to be quickly turned off in case of an emergency. In a manifold or coupled cylinder, at least one such wrench must always be available for immediate use.

No cylinder should be permitted to stand alone without being secured with chains. This will prevent accidental knocking over.

### Cylinder Storage

- A. When cylinders are transported by powered vehicles, they shall be secured in a vertical position.
- B. Cylinders shall never be used as rollers or supports, whether full or empty. The numbers and markings stamped into cylinders shall not be tampered with.
- C. If cylinders are found to have leaky valves or fittings that cannot be stopped by closing of the valve, the cylinder shall be taken outdoors away from any sources of ignition, slowly emptied and properly tagged "Out of Service."
- D. A hammer or wrench shall not be used to open cylinder valves with fixed hand wheels. If valves cannot be opened by hand, the cylinder shall be properly tagged "Out of Service" and removed from the work area.
- E. No one, except the supplier or person authorized by the supplier, shall refill a cylinder. No one shall tamper with safety devices in cylinders or valves.
- F. Before connecting a regulator to a cylinder valve, the valves shall be opened slightly and closed immediately. The valves shall be opened while standing to one side of the outlet -- never in front of it. Never crack a fuel-gas cylinder valve near other welding work or near sparks, flame or other possible sources of ignition.
- G. Electrodes shall not be struck against a cylinder to strike an arc. Cylinders shall not be dropped or otherwise roughly handled.

- H. When welding or cutting in confined spaces care must be taken to assure proper ventilation.
- I. Before a regulator is removed from a cylinder valve, the cylinder valve shall be closed and the gas released from the regulator.
- J. Cylinders should 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.
- K. 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.
- L. A suitable cylinder truck, chain or other steadying device shall be used to keep cylinders from being knocked over while in use.
- M. When work is finished, cylinders are empty, or moved at any time, the cylinder valve shall be closed.
- N. Compressed gas cylinders shall be legibly marked for the purpose of identifying the gas content with either the chemical or trade name of the gas and associated hazards. Such markings shall be by means of stenciling, stamping or labeling and shall not be readily removable.
- O. Cylinders, cylinder valves, couplings, regulators, hose and related apparatus shall be kept free from oily or greasy substances and no attempt should be made to alter either.
- P. A jet of oxygen must never be permitted to strike an oily surface, greasy clothes or enter a fuel or other storage tank because this could result in an intense fire.

## **Section 15: Care and Use of Portable Ladders**

### **Maintenance**

The incorrect use of a ladder results in numerous accidents and is a major cause of injury in the performance of overhead work. Makeshift ladders are not permitted on any job and only ladders of good quality material, properly designed and constructed should be used. All ladders should be maintained in good condition at all times. The joint between the step and side rail must be tight. All hardware and fittings must be securely attached and moveable parts shall operate fully without binding or undue play. Frayed or worn rope shall be replaced. Safety feet and other auxiliary equipment shall be kept in good condition. Rungs must be kept free of oil and grease. Ladders should be stored properly in a dry area when not in use.

All ladders that develop defects will be removed from service for repairs or destroyed if they cannot be repaired. Any ladder that is temporarily placed out of service for repairs should be tagged "Dangerous - Do Not Use." The tag should also contain the supervisor's name and date. Once the supervisor has placed the tag, it should not be removed by anyone until the supervisor has checked and is satisfied that the ladder is properly repaired and safe. Only then should the supervisor remove the tag.

Wooden ladders stored horizontally should be supported at both ends, and in the middle, to avoid sagging and loosening the rungs or warping the rails. Ladders transported on township vehicles must be properly secured and have proper signs denoting the overhang. Ladders should not be painted because paint can hide structural defects.

*Do not remove safety instruction tags from the ladder.*

### **Ladder Selection**

When selecting a ladder, make sure it is of sufficient height to reach the work area. Avoid standing on the top rung. For personal safety, the ladder should be long enough so the employee can work standing no higher than the fourth rung from the top. If it is necessary to reach the roof area, there should be at least three rungs extended above the roofline. Do not use metal ladders near electrical lines.

### **Ladder Placement**

Ladders should always be secured, either by tying them or having someone hold them to prevent the ladder from shifting (Does not apply to step ladders). Safety shoes can be used to make portable ladders safer. Make sure ladders are not placed against window glass. Ladders placed against a pole or round column could shift or turn. Never stand ladders on makeshift objects to increase height. Before climbing a ladder, make sure it is at the proper angle. A 4:1 ratio is suggested for every 4' of rise, 1' of setback. If the base is moved out further, the stress on the side rails is more severe and the wider angle may cause slippage. Ladders should be placed on flat, non-slippery surfaces. Do not place ladders in front of doors used by pedestrians. The job supervisor should notify occupants to use an alternate exit and the door must

be properly guarded to ensure that they do so. During an emergency, an adequate number of exits must be available.

Keep Base of Ladder Free of Tools, Debris, etc.

- A. Ladders should not be left standing when not in use. They should be placed out of the way to prevent a tripping hazard.
- B. Ladders should not be used in a horizontal position as a platform or scaffold.
- C. Stepladders should not be used as extension ladders by leaning them against equipment. All ladders must be fully opened with spreaders locked. No one is permitted to work on the top step or rung at any time.
- D. Keep both feet on the ladder rungs. Keep the body inside the side rails. Do not reach out; change the position of the ladder to reach the work. Face the ladder when working from it. Only one person is permitted on a portable ladder at a time.
- E. Both hands are required when going up or down a ladder. Tools and materials should be hoisted to upper areas by use of a rope. Dropping materials from any height creates a hazardous condition.
- F. Proper barricades and signs are necessary when ladders are being used, i.e. "Keep clear - working above."

## **Section 16: Hand Protection**

Injuries to the hands are the result of many on the job accidents. A substantial number of these accidents are serious and result in permanent damage. Whatever the craft: mechanic, electric, carpentry, plumbing, etc., the hands is used to do the task. Your hands and fingers are the instruments of your mind. They apply the tools of your craft to the task that needs completing -- and to preserve them, special precautions must be taken.

### **Hand Traps**

Accidents to the hand do not just happen -- they are caused. Lack of concentration or "chance-taking" by the person involved causes most of the accidents.

Many of the common causes of hand injuries are present in the workplace: rough material, objects to be stacked, supplies to be piled/stored, use of various tools, working in a confined space and not using the proper tool.

A common kind of hand trap is the untidy toolbox that cuts and bruises the hands of anyone who reaches in without looking. Narrow aisles through which material must be moved can also be a hazard to hands and fingers. More serious hand traps can result from the unexpected shifting or movement of pipes, lumber and steel. The shearing action and the weight of material make injuries of this sort especially serious. Knowing where the danger lies and paying attention to the job is your best protection.

### **Hand Care**

No matter how tough your hands may be they are not tough enough to stop glass, steel or other sharp objects from puncturing your skin. As a result, appropriate gloves must be worn.

Since there are often many sharp pointed objects around most renovation/ construction jobs, precautions should be taken to remove them immediately. Unless clean-up precautions are taken at all times and there are constant reminders to do so, puncture wounds will happen.

### **Hand Protection**

The following is a brief summary of some types of gloves that should be used.

- A. Knitted cotton-work gloves are used for light abrasive work and general handling of dry objects.
- B. Leather gloves - for heavy abrasive work, welding and some hot work.
- C. Neoprene or vinyl gloves for use when working with oils.
- D. Heavy rubber unlined elbow length gloves are recommended for handling acids and caustics.
- E. Avoid wearing gloves around machinery as the gloves could catch on moving parts and pull the wearer's hand into the equipment.

## **Section 17: Proper Lifting and Material Handling**

Accidents that result from the manual handling of materials are primarily the result of lifting improperly, carrying a load that is too heavy, gripping the load in an unsafe manner and failure to use personal protective equipment. Since these inappropriate habits are so common, proper training and supervision of employees is necessary to minimize lifting accidents and to reduce back injuries. Unfortunately, back injuries are one of the most common work-related problems on the job. In fact, according to the National Safety Council estimates, 20 percent of the approximate two million disabling work injuries per year are to the back. This means that approximately 400,000 workers suffer new back strains, sprains, fractures and bruises each year.

Manual lifting - It must be understood that physical differences make it impractical to set up safe lifting limits for all workers because height and weight do not necessarily indicate a person's lifting ability. Generally, a single individual should not lift more than 51 lbs. prior to lifting a load; a person should give a "quick test" to see if he/she can make the lift. This is accomplished by lifting the corner of the load. If this is not possible, then the employee should seek assistance.

Proper manual lifting involves:

- A. Feet set solidly with one foot slightly ahead of the other. It may be easier to put one knee on the floor while keeping the other leg bent at a 90-degree angle.
- B. Crouch as close to the load as possible, with the knees bent at a 90-degree angle.
- C. Get a firm grip on the object, lifting one end slightly and sliding one hand under it.
- D. The back is kept as straight as possible so it is locked into position.
- E. While gripping the load with both hands, the legs are straightened. This means that the legs are doing the lifting.

*Never bend at the waist to lift a load*

### **Lifting and Handling**

While equipment is available for handling some materials, many boxes, crates, bundles or piles of materials still need to be moved manually. The manual moving of loads can lead to some of the most painful and costly work injuries an employee can suffer. Proper lifting is a learned skill that needs to be practiced. Improper lifting is usually just a bad habit. For example, if you stoop over to lift, retrain yourself to lift with your legs instead.

Moving heavy materials - When walking with a load, it is important to keep the load squarely in front of you and at waist level. This allows you to see the path ahead. If you are going to have to place the load at a higher level it is important to have it waist high so you can change your grip or seek help. If you are ready to set a load down, let the leg muscles do the work. Squat down and rest one corner of the load on the floor so your fingers are clear. The hands are then slid up the sides as the load is eased to the floor.

When setting the load down, it is just about the same as lifting, but in reverse. Here are some important rules to remember when lifting:

- A. Wear gloves when handling rough equipment.
- B. Be sure to have a good grip and footing.
- C. Keep the load close to your body.
- D. See that fingers and toes are "in the clear."
- E. Bend your knees and use your leg muscles.
- F. Do not twist your body when you lift.
- G. Do not try to lift or carry a load that is more than you can handle.

*Get help!*

## **Section 18: Spray Painting**

Spray painting should be confined to a properly protected area or if necessary, done when only a minimum number of people in the immediate area. Good ventilation is absolutely necessary to keep vapors at tolerable levels. Since spray paint vapors may be flammable, no smoking is permitted in a spraying area. The painter should be familiar with the paint being used and the required solvent for that paint. Where required, painters must wear proper respiratory protection while working.

Excessive quantities of paint and solvent are not permitted to be stored in any Township building, except related to the work in progress. All stored materials must be kept in a secured place at all times. Dirty rags used in painting operations should be placed in a proper safety can and emptied at the end of each shift. Waste solvents should be properly disposed of and stored in approved containers.

A suitable fire extinguisher should be available in the vicinity of all spray painting work.

Precautions required for spray painting areas:

- A. There should be no open flame or sparks in the spray painting area.
- B. Only the minimum quantity of flammable or combustible liquids required for operations shall be kept in the vicinity of the spraying operations. This quantity should ordinarily not exceed the necessary supply for one day, one shift.
- C. "No Smoking" signs must be posted in a spray painting area.
- D. Eating or drinking is not permitted in the spray painting area.
- E. Sprinkler heads, heat or smoke detectors shall never be painted. Sprinkler heads may be covered with a single paper bag during painting operations. However, the heads must be uncovered by the end of each work day or sooner, if the job is complete.
- F. After obtaining proper permission, smoke detectors may be zoned out to prevent premature activation in the painting area. Township procedure must be followed to accomplish this.

## **Section 19: Power Actuated Tools**

### **Fasteners**

Fasteners used in power actuated tools have a tip, an eyelet or another type of guide which helps to keep the fastener aligned in the tool as it is being fired. The fasteners are made of heat treated steel which makes the fastener hard while still remaining somewhat pliable. If the fastener is too hard and brittle, the fastener would break when being driven into hard surfaces such as wood or steel.

As with the power loads, there are two basic types of fasteners. Drive pins resemble a nail and permanently fasten materials (such a wood, concrete, etc.) together.

Threaded studs are made of a shank piece which is driven into the material. A threaded piece allows an object to be attached to the shank without using a nut.

### **Shields**

Special features built into the power actuated tools increase the safety of the tool. Shields must be attached to medium and high velocity tools before they are fired. The tool cannot be discharged until the tip is depressed against the material surface with five pounds of pressure; this is to avoid accidental discharge of a fastener.

### **Safety Precautions**

- A. Operators and co-workers must always wear eye protectors, and may be required to wear ear protection in confined spaces or if a tool is being constantly used.
- B. The tool should be used only for its intended use and only by qualified, trained Township employees.
- C. The operator should be familiar with both the materials being fastened and the surface being fastened to.
- D. Operators working on ladders or scaffold must be securely stationed.
- E. Loaded tools should not be carried from one area to another; the tool should be loaded when the operator is ready to use it, and it should be fired only when it is in contact with the work surface. Never assume a tool is empty - check it!
- F. Never put your hand over the muzzle end of the tool or point it at someone.
- G. Power actuated tools should not be used in an explosive or flammable atmosphere.
- H. Before using the tool, it should be inspected to determine that it's clean, that all moving parts operate freely, and the barrel is free from obstructions.
- I. If the tool misfires, the operator should wait at least 30 seconds, and then try firing it again. If it still will not fire, wait another 30 seconds so that the faulty cartridge is less likely to explode, and then carefully remove the load. The bad cartridge should be placed in water.
- J. Always select the proper power level necessary to do the work without excessive force.

- K. Fasteners must not be fired into material which would let them pass through to the other side. The fastener must not be driven into materials like brick or concrete any closer than three inches to an edge or corner. In steel, the fastener must not come any closer than a half-inch from a corner or edge.
- L. If the tool develops a defect during use, the operator's supervisor should immediately place a **Defective Tool - Do Not Operate** tag on it. The supervisor's name and date should also appear and the tool must remain out of service until properly repaired. After proper repairs the supervisor should remove the tag.

## Section 20: Snowthrowers

Do not operate without proper instruction. Familiarize yourself with the controls. Know how to stop the engine and disengage controls quickly.

Wear adequate winter clothing and footwear that will improve footing on slippery surfaces. Always wear safety goggles and hearing protection as required.

Since fuel is highly flammable, handle it with care.

- A. Use only UL approved safety container for storing flammable liquid. Check manufacturer's guide for proper fuel mix.
- B. Fill fuel tank outdoors. Do not fill tank when engine is running or when engine is hot.
- C. Replace gasoline container cap and fuel tank cap, and remove any spilled gasoline before starting the engine.
- D. Keep everyone away from the area of operation.
- E. Thoroughly inspect the area where the snow thrower will be used.
- F. Remove all doormats, boards, wires, and any other foreign objects from area of operation.
- G. Keep all shields and safety devices in place. If a shield or safety device is defective, make all repairs before operating snow thrower. Also, tighten loose nuts, bolts, and screws to assure machine is in safe working condition.
- H. Before operating, start engine and let it warm up outdoors for about two minutes to adjust to outdoor temperatures.
- I. Never operate snow thrower without good visibility and lighting. Always maintain secure footing and keep a firm grip on the handle when clearing snow
- J. **WALK--NEVER RUN.**
- K. **DO NOT RUN ENGINE INDOORS**
- L. Keep face, hands, feet and clothing away from concealed, moving, or rotating parts. Stay behind the handle while operating the snow thrower.
- M. **STAY CLEAR OF DISCHARGE OPENING AT ALL TIMES.**
- N. Do not attempt to make adjustments while engine is running.
- O. Use extreme caution when clearing snow from gravel walk, road or gravel drive. Push down on handle to raise skid and impeller blades so rocks are not picked up and thrown. Stay alert for hidden hazards and traffic on roads.
- P. Never direct discharge or operate snow thrower near bystanders, glass enclosures, automobiles or trucks.
- Q. Exercise extreme caution when operating on slopes and never operate on steep slopes.
- R. Do not overload the snow thrower by clearing snow at too fast a rate. If a solid object is hit or if the snow thrower vibrates abnormally, turn engine off and wait for engine and all moving parts to stop before leaving the operator's position. Next, check snow thrower for possible damage or obstruction.

- S. Before adjusting, cleaning, repairing, inspecting or unclogging the discharge guide, shut down and wait for all moving parts to stop.
- T. **IMPORTANT DANGER**-Jammed blades may be under tension and rotate when an obstruction is removed.
- U. **KEEP HANDS AWAY FROM MOVING PARTS.**
- V. Let engine run for a few minutes after clearing snow so moving parts do not freeze.
- W. Never leave fuel in the tank when snow thrower is stored in a building.
- X. Allow engine to cool before storing.
- Y. Do not refuel or operate unit while smoking.

## **Section 21: Motorized Utility Carts**

- A. Operator should check all mechanical operating parts before driving, including brakes, horn, lights, etc.
- B. Do not overload vehicle.
- C. Your feet should always be kept inside the driver's compartment while the vehicle is in motion.
- D. Avoid sudden stops. Vehicle must be kept under control at all times
- E. Turn corners at a safe speed. Use caution in making a turn on an incline.
- F. Speed should always be reduced when operating on a rough road or uneven surface.
- G. Always signal your turn. Be sure that your signal is recognized by other drivers before proceeding with your turn.
- H. Never hang anything from the steering wheel or carry objects or packages in the driver's compartment area.
- I. When parking, the brake should be applied and the key removed. It is advisable to turn the front wheel toward the curb when parking on an incline.
- J. Anticipate the behavior of other drivers and pedestrians and avoid all situations that require quick or erratic turns.
- K. Vehicle must be operated at a safe speed.
- L. Refueling should take place outside of buildings.

## Section 22: Lawn Mowers

- A. Thoroughly inspect the area where the equipment is to be used and remove all stones, sticks, wires, bones and other objects from the area.
- B. Do not operate the equipment when barefoot or wearing open sandals. Always wear substantial footwear and protective eye goggles.
- C. Check the fuel before starting the engine. Do not fill the gasoline tank indoors, when the engine is running or while the engine is still hot. Replace gasoline cap securely and clean up the spilled fuel.
- D. Disengage the self-propelled mechanism (or drive clutch on units so equipped) before starting the engine.
- E. Never attempt to make a wheel height adjustment while the engine is running.
- F. Mow only in daylight or in good artificial light.
- G. Never operate the equipment in wet grass. Always be sure of your footing; keep a firm hold on the handle and walk; **NEVER RUN.**
- H. Plan the cutting operation so it is not necessary to pull the mower towards you.
- I. Do not attempt to fill gas tank from fuel container unless the container spout or funnel fits INSIDE the fuel tank filler neck.
- J. Do not change the engine governor settings or over speed the engine.
- K. Do not put hands or feet near or under rotating parts. Keep clear of the discharge opening at all times.
- L. Stop the blade(s) when crossing gravel drives, walks or roads.
- M. After striking an object, stop the engine and remove the wire from the spark plug. Thoroughly inspect the mower for any damage and repair the damage before restarting or operating the mower.
- N. If the equipment should start to vibrate abnormally, stop the engine and check immediately for the cause.
- O. Vibration is generally a warning sign of trouble.
- P. Stop the engine and disconnect the spark plug wire whenever you leave the equipment, before cleaning the mower housing or when making any repairs or inspections. Make certain the blade and all moving parts have stopped and keep the wire away from the plug to prevent accidental starting.
- Q. Do not run the engine indoors.
- R. Mow across the face of slopes, never up and down. Exercise extreme caution when changing direction on slopes.
- S. Never operate the mower without proper guards, plates or other protective devices in place.
- T. Keep washout ports and other mower-housing service openings closed when mowing.
- U. Give complete and undivided attention to the job at hand.
- V. Check the blade and the engine mounting bolts at frequent intervals for proper tightness.
- W. Keep all units, bolts and screws tight to help make sure the equipment is in safe working condition.

- X. Do not operate unit while you are smoking.

### Rotary Riding Lawn Mowers

- A. Only authorized persons shall operate mower. Operator should wear proper safety equipment as required (safety glasses, ear protection). Know the controls and how to stop quickly.
- B. Passengers are not permitted on the lawn mower.
- C. Clear the work area of objects that might be picked up and thrown (sticks, glass, and cans).
- D. Disengage all attachment clutches and shift into neutral before attempting to start the engine.
- E. Disengage power to attachment(s) and stop the engine before leaving the operator's position.
- F. Disengage power to attachment(s) and stop the engine before making any repairs or adjustments.
- G. Disengage power to attachment(s) when transporting or not in use.

Take all possible precautions when leaving the vehicle unattended, such as disengaging the power-take-off, lowering the attachment(s), shifting into neutral, setting the parking brake, stopping the engine and removing the key.

Do not stop or start suddenly when going uphill or downhill. Mow up and down the face of steep slopes; never across the face.

Reduce speed on slopes and when making sharp turns to prevent tipping or loss of control. Exercise extreme caution when changing direction on slopes.

Stay alert for holes in the terrain and other hidden hazards such as tree stumps, etc.

Use care when pulling loads or using heavy equipment. Consult owner's manual.

- A. Use only approved hitch points.
- B. Limit loads to those you can safely control.
- C. Do not turn sharply. Use care when backing.
- D. Safety chains must be used at all times and safety latch securely fastened.

Watch out for traffic when crossing or near roadways, and use proper warning signals.

When using any attachments, never direct discharge of material toward bystanders or allow anyone near the vehicle while in operation.

When using the mower, proceed as follows:

- A. Mow only in daylight or in good artificial light.
- B. Never make a cutting height adjustment while the engine is running.

Handle gasoline with care, it is highly flammable.

- A. Use UL approved safety cans only.
- B. Never remove the cap of the fuel tank or add gasoline to a running or hot engine, or fill the fuel tank indoors. Spilled gasoline should be cleaned up immediately.
- C. Open door of building if the engine is running indoors. However, every effort should be made to avoid operating mower indoors.

#### Maintenance/Power Care

- A. Keep the vehicle and attachments in good operating condition, and keep safety devices in place.
- B. Keep all nuts, bolts and screws tight to be sure the equipment is in safe working condition.
- C. Never store the equipment with gasoline in the tank inside a building where vapors may reach an open flame or spark.
- D. To reduce risk of fire, keep the engine free of grass, leaves or excessive grease.
- E. The vehicle should be stopped and inspected for damage after striking an object and the damage should be repaired before restarting and operating the equipment.
- F. Do not change the engine governor settings or over speed the engine.
- G. Follow manufacturer's operating instructions.

## **Section 23: Electric Fans**

### Proper Uses

- A. Fans that are within seven (7) feet of the floor must be guarded with a grille or mesh that has openings no more than 1/2 inch wide.
- B. Electric cords for fans should be properly secured and should not be placed in an aisle.
- C. Fans should not be used in areas where flammable vapors are present, unless the fan is equipment with an explosion-proof motor and switch.
- D. Fans should be properly serviced at regular intervals.
- E. Fans must be secured so they cannot fall or be knocked over.
- F. Frayed cords must be repaired (if possible) or replaced.
- G. Fans should not stand in a damp or wet area.

## **Section 24: Electric Drill – Grinders – Pneumatic Tools**

### Proper Operation

Employees using hand or power tools who are exposed to the hazard of falling, flying, abrasive and splashing objects should be provided with the particular personal protective equipment necessary to protect them from the hazard.

- A. Only authorized employees who have been trained or had previous experience should be permitted to operate power tools.
- B. All electric power operated tools should be either approved double-insulated or grounded.
- C. When making adjustments or oiling any power tools, disconnect the power first.
- D. When using an electric drill, always use a prick punch to provide a starting point for the drill bit.
- E. Wear proper clothing to prevent sleeves and other loose garments from being wound around the drill.

### Grinders

All portable wheel grinders should be equipped with hood guards. In addition:

- A. Wheels used on portable grinders should be inspected regularly.
- B. Replace cracked wheels immediately; they could fly to pieces and cause a serious injury.
- C. Use a wheel with the proper RPM rating on all portable grinders
- D. All grinders should have abrasive wheels protected by guards and work rests.
- E. Grinder shield should be in the proper operation position and a face shield must be worn by the operator.
- F. The safety guard should cover the spindle end, nut and flange projections. The safety guard should be mounted so as to maintain proper alignment with the wheel.
- G. Work rests should be used at all times to support the material that is being altered. They should be of rigid construction and so designed to adjust closely to compensate for wheel wear. Work rests should be kept adjusted closely to the wheel with a maximum opening of one-eighth of an inch to prevent the work from being jammed between the wheel and the rest, which can cause wheel breakage. The work rest should be securely clamped after each adjustment.
- H. The upper (tongue) guard should be adjusted to within ¼” of the wheel.

### Pneumatic Tools

Pneumatic Power tools should be secured to the hose or whip by positive means to prevent the tools from becoming accidentally disconnected. Along with the above:

- A. Safety clips or retainers shall be securely installed and maintained on pneumatic (percussion) tools to prevent attachments from being accidentally expelled.
- B. The manufacturer’s safe operating pressure for hoses, pipes, valves, filters and other fittings shall not be exceeded.

- C. The use of hoses for hoisting or lowering tools is not permitted.
- D. All hoses exceeding one-half inch inside diameter should have a safety device at the source of supply or branch line to reduce pressure in case of hose failure.
- E. The operating trigger on portable hand-operated equipment should be so located as to minimize the possibility of its accidental operation and arranged to close the air inlet valve automatically when the operator's hand is removed. (Dead man's grip)

### Nailers

Pneumatically driven nailers, staplers and similar equipment that has an automatic fastener feed and operates at more than 100 pounds per square inch, should have a safety device on the muzzle to prevent the ejection of the fasteners unless the muzzle is in contact with the work surface.

### Hand Tools

#### PROPER USE & CARE

- A. All hand and power tools must be maintained in safe working condition, whether the tools belong to the employee or the Township. If the tools are unsafe, they must be identified, tagged and removed from the work area.
- B. Tools that are designed to have guards must have guards in place at all times.
- C. All tools should be kept neat, orderly and in good repair.
- D. All tools issued should be in safe, operable condition.
- E. When not in use, tools should be returned to the tool room or stored in suitable boxes or containers, or hung on racks. Cutting edges should be protected. Tools should not be placed where they will roll off benches or tables. Storage areas should be moisture-free to prevent corrosion. Heavier tools should be placed where they will not be tripped over.
- F. Keep tools properly dressed and in good condition at all times. Dull tools contribute to accidents.
- G. If tools cannot be repaired properly, do not make any temporary or make-shift repairs. This could lead to a serious accident
- H. Keep hand tools off ladders.
- I. Keep screwdriver points sharp and square.
- J. All chisels should be checked for mushroomed heads. If a mushroomed head is found, don't use that chisel. Plastic hand guards should always be used to provide proper hand protection for ½" or greater chisels and above.
- K. Exercise extreme care in using hand tools to prevent their contact with live circuits or equipment.
- L. Wooden handles of tools should be free of splinters and cracks. Lubricate moving and adjustable parts to prevent wear and misalignment.
- M. Wrenches, including adjustable, pipe, open-end or socket, should not be used when jaws are sprung to the point that slippage occurs.
- N. Use hammers with a flat striking head. Gloves should not be worn; the hammer could slip from your grip.

## Woodworking Tools

When automatic restarting can create a hazard, electrically driven equipment should be controlled with a device that prevents automatic restarting following a power failure.

### Push Sticks

A push stick, block or similar safe means should be used for all operations close to high-speed cutting edges.

### Planers and Joiners

Planers and joiners should be equipped with cylindrical cutting heads and should be fully guarded.

### Clean Up

Work areas should be kept clean. Provision should be made to clean up sawdust, chips and shavings at the end of each shift.

### Unattended

Power saws should not be left unattended while running.

### Sawdust Collectors

Bench-type circular saws and radial saws should be equipped with enclosed-type sawdust collectors.

### Radial Saws

- A. Radial saws shall have an upper guard which completely encloses the upper half of the saw blade. The sides of the lower exposed portion of the blade should be guarded by a device that automatically adjusts to the thickness of, and remains in contact with, the material being cut.
- B. Radial saws used for ripping should have non-kickback fingers or dogs.
- C. All swing or sliding cut-off saws should have a hood that completely encloses the upper half of the saw.
- D. Limit stops should be provided to prevent swing and sliding type cut-off saws from extending beyond the front or back edges of the table.
- E. Each swing or sliding cut-off saw should have an effective device to return the saw automatically to the back of the table when releases at any point of its travel.
- F. Inverted sawing with sliding cut-off saws requires the use of a hood that will cover the part of the saw that protrudes above the top of the table or material being cut.

### Circular Saw

- A. Circular table saws should have a hood over the portion of the saw above the table, mounted so that the hood will automatically adjust itself to the thickness of, and remain in contact with, the material being cut.

- B. Circular table saws should have a spreader aligned with the blade, spaced no more than one-half inch behind the largest blade mounted in the saw. This provision does not apply when grooving, dadoing or rabbeting.
- C. Circular table saws used for ripping should have non-kickback fingers or dogs.
- D. Feed rolls and blades of self-feed circular saws should be protected by a hood or guard to prevent the hands of the operator from coming in contact with the in-running rolls at any time.
- E. All portions of band-saw blades shall be enclosed or guarded, except for the working portion of the blade between the bottom of the guide rolls and the table.
- F. Band-saw wheel shall be fully encased.

### Belt Sanding

Belt sanding machines should have guards at each nip point where the sanding belt runs onto a pulley. The unused run of the sanding belt shall be guarded against accidental contact.

### Inspection and Maintenance

Dull, improperly filed or improperly tensioned saws should be immediately removed from service before they begin to cause the material to stick, jam or kick back when it is fed to the saw at normal speed.

Bearings should be well lubricated. Sharpening of saw blades or cutters shall be done only by persons who are qualified to do this type of work. Emphasis should always be placed on cleanliness around woodworking machinery, particularly as it regards to the effective functioning of guards and the prevention of fire hazards in switch enclosures, bearings and motors.

## Section 25: Performing Chain Saw Operations

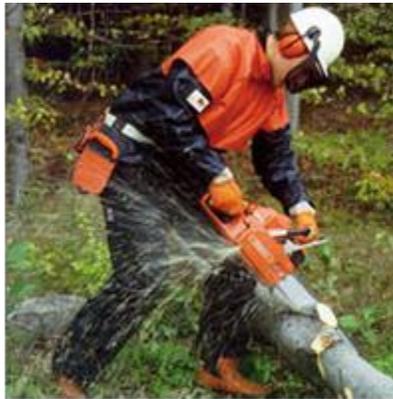


Photo source: OSHA

The following standard operating guidelines shall be followed by employees performing chain saw operations:

- A. Only trained and authorized employees shall attempt to perform work using a chain saw. Employees under 18 are prohibited from using a chain saw.
- B. Operators shall review the equipment operating manual to familiarize themselves with proper equipment procedures.
- C. Personal protective equipment when using a chain saw shall include:
  1. Clothing shall fit well and be free of dangling or ragged edges which can become tangled in the saw
  2. Nylon mesh chain saw “chaps” protect the legs from inadvertent contact with the running saw
  3. A hard hat protects the head from falling limbs or branches.
  4. A full face shield or safety goggles/glasses that have side shields prevent injury from flying wood chips, twigs, and sawdust.
  5. Ear muffs or ear plugs protect your hearing from the high level noise produced by the saw.
  6. Safety Boots or shoes with high tops protect ankles in the event of unintentional contact with a moving saw blade.
  7. Steel toed boots will help protect the feet from falling limbs or logs.
  8. Lightweight leather gloves protect hands from cuts, splinters and abrasion.

Keep the saw in good repair. Consult the operator's manual and check for needed maintenance before each use. The operator's manual can be the best source of information for this procedure.

- A. Before starting the saw:
  1. Check controls, chain tension and all bolts and handles to ensure they are functioning properly and adjusted according to the manufacturer's instructions.
  2. Fuel the saw (cold if possible) at least 10 feet from sources of ignition.

3. Start the saw at least 10 feet from fueling area, with chain brake engaged, and with the chainsaw on the ground or otherwise firmly supported.
  4. Check the fuel container for the following requirements:
    - a. Shall be metal or plastic
    - b. Shall not exceed a 5 gallon capacity
  5. Shall be approved by Underwriters Laboratory, Factory Mutual, Department of Transportation or other national recognized testing laboratory
- B. While running the saw:
1. Keep hands on the handles and maintain secure footing while operating the chainsaw.
  2. Clear the area of obstacles that might interfere with cutting the tree or using the retreat path.
  3. Do not cut directly overhead.
  4. Shut off or throttle released prior to retreating.
  5. Shut off the chain brake engaged whenever the saw is carried more than 50 feet or on hazardous terrain.
- C. Sharpen the saw if:
1. The chain tends to "walk" sideways while cutting
  2. The cut shows fine powder instead of chips
  3. It becomes necessary to press hard to cut
  4. You smell burnt wood
- D. Monitor chain tension. Good cutting action and a long chain life, increase with correct chain tension. If too loose, a chain will derail; if too tight, a chain will bind.
- E. Lubricate the chain saw according to the manufacturer's recommendations. Proper lubrication prolongs the life of the saw and increases safety.
- F. When fueling the chain saw:
1. Only refuel the engine when it is cool.
  2. Never smoke when working with a power saw.
  3. Start by putting one foot on the bracket to the rear of the saw.
  4. Grip the top handle of the saw firmly with one hand and use the other to pull the starting rope.
  5. Never drop start the saw.
- G. Transport a power chain saw in a chain guard or a carrying case. Do not carry the saw in the passenger area of a vehicle. Brace the saw so that it cannot tip.
- H. When storing the saw, drain the fuel tank in a safe area, and run the engine at the idle until it stops. Remove the chain and store in oil. Disconnect the spark plug to reduce an accidental starting.
- I. Maintain the saw according to the manufacturer's instructions.

## Section 26: Performing Wood Chipper Operations

The following standard operating guidelines shall be followed by employees performing wood chipper operations:

- A. Employees feeding limbs into wood chippers are at risk of getting caught in the equipment and being pulled into the high speed chipper blades. They are also at elevated risk of being injured due to being struck by limbs, chipper components or vehicular traffic.
- B. Only trained and authorized employees shall attempt to perform work using a wood chipper. Employees under 18 may not perform work involving a chipper.
- C. Users should familiarize themselves with all emergency stops (E-stops):



Photo Source: OSHA

- D. Inspect and test the chipper at the start of each work shift to ensure that all parts and safety devices are functioning properly. Look for broken parts, cracks, worn hinges and missing parts and pins. Ensure the blade enclosure/guard is securely fastened. Ensure no foreign object is in the infeed area. Use lockout/tagout before performing any service to equipment.

- E. Test all emergency shut-off devices to ensure they will work when needed.
- F. Personal Protective Equipment (PPE) for chipper operators shall consist of head protection, eye and face protection, hand protection and work shoes with non-slip soles. Gloves should be cuff-less (non-gauntlet).
- G. Clothing should be close fitting without stray straps or strings. Tuck in shirts and remove jewelry. Class 2 traffic safety apparel is required if working near traffic.
- H. If chipping will be performed near traffic, establish a highway work zone and if feasible, place a shadow vehicle between the work area and oncoming traffic.
- I. Ensure that the discharge chute is positioned to prevent chips from hitting employees.
- J. Do not stand in front of the feed table when the chipper is running.
- K. Inspect materials to be fed to ensure that it is free of metal and other foreign objects.
- L. Stand to the side of the infeed chute when feeding material into the chipper. This reduces the "caught-in" hazard and allows quick access to emergency stop devices.
- M. Keep hands and feet out of the immediate infeed chute area while the chipper is running.
- N. Push material into the feed rollers with a wooden tool or a long branch.
- O. Feed branches into the chipper butt-end first. This technique reduces the likelihood of a jam.
- P. Place shorter branches on top of longer branches being fed into the chipper.
- Q. Keep the area around the chipper clear to prevent slips, trips and falls. Periodically rake up small debris into trash cans instead of feeding it into the chipper.
- R. Never stand, sit or climb onto any part of the chipper while it is running.
- S. Shut down the chipper and remove the ignition key when it is unattended.
- T. Use proper locking pins to immobilize the disc cutting wheel when attempting to clear a clogged chipper chute or changing chipper blades.

## Section 27: Electrical/Mechanical Equipment, Lock Out/Tag Out Procedure

Only “authorized employees” should perform work that exposes them to hazardous energy. All other employees are referred to as “affected employees”.

- A. Each mechanic shall be provided with a lock out device and an individually keyed lock. Each lock shall have only two keys. One key will remain in the possession of the mechanic; the other will be placed in a secure location in the respective Supervisor’s office. Blocking tags will be provided for those disconnect means where no locking ring is available. The mechanic’s name and the date will be placed on each tag.
- B. Supervisors will maintain a current list of key assignments, signed by the individual receiving the key. A duplicate copy will be forwarded to the Director of Public Works.
- C. All locked out equipment shall be reported to the Supervisor when locked out and when returned to normal service. The remote shutdown of equipment is not a lock out. All equipment must be locked out locally.
- D. This procedure shall apply to all power circuits 440 volts and above. Additionally, all equipment/machinery having moveable parts will be de-energized and locked out/tagged out.
- E. **ALL LOCKED OUT / TAGGED OUT POWER CIRCUITS, EQUIPMENT AND MACHINERY SHALL BE TESTED PRIOR TO THE START OF ANY WORK.**
- F. In that many pieces of equipment are remotely or automatically started, the primary visible air break disconnect shall be the device locked out.
- G. In the case of high voltage electrical distribution systems, the substation breaker shall be racked down and locked out. At the building end of the feeder, the incoming breaker or switch shall also be racked down or opened and locked out. The purpose of this requirement is to prevent a back feed on the system through a local bus tie breaker.
- H. The failure to remove a lock out prior to leaving the area upon completion of a job, thus requiring the mechanics return to remove it, or under dire emergency conditions the use of the supervisor’s key, is a direct violation of this policy.
- I. All outside contractors performing work in Township Buildings will be informed of Township policy on this subject.
- J. **THE GOING THROUGH TAG (STARTING A PIECE OF EQUIPMENT THAT IS LOCKED OR TAGGED) CREATES AN EXTREMELY DANGEROUS CONDITION AND IS STRICTLY PROHIBITED.**

### Standard Operating Procedure:

#### LOCKOUT AND TAGOUT

##### A. **Applicability**

1. This procedure details the hazardous energy control procedures for the location.

##### B. **Responsibilities:**

1. Management is responsible for communicating the requirements of the location's lockout/tag out procedure to the workforce, enforcing compliance with lockout/tag out procedures and performing an annual review of the lockout/tag out program to ensure its ongoing effectiveness.
2. Employees who are authorized to perform work on equipment containing potentially hazardous energy are responsible for using lockout/tag out procedures whenever their work exposes them to hazardous energy sources. These employees are referred to as "authorized employees" in their procedure.
3. Employees not authorized to perform work using lockout/tag out procedures but who may be affected or who may come into contact with lockout/tag out devices shall not tamper or attempt to by-pass these devices. These employees are referred to as "affected employees" in this procedure.
4. Outside contractors shall be responsible for implementing their own lockout/tag out program. If the contractor does not have a program or it does not meet the standards of the location, they shall comply with the location's program.

### **C. Procedures**

1. Lockout/tag out shall not be required for machinery/equipment where equipment is controlled by unplugging from the energy source and the plug remains under the exclusive control of the employee performing the serving or maintenance.
2. An adequate supply of locks with single keys, tags with "do not operate" wording and lockout devices shall be readily available for use in the workplace.
3. All energy isolation points on equipment and any special procedures shall be identified using a tag mounted on the equipment or by equivalent means.
4. Prior to performing work that could expose an employee to hazardous energy sources, the authorized employee shall:
5. Verify the disconnect points for all hazardous energy sources (i.e., electrical, hydraulic, steam, etc.). In addition, the authorized employee shall notify all affected employees that the equipment will be taken out of service.
6. Shut down the machinery/equipment using the equipment's normal operating controls.
7. Operate all energy isolation devices (i.e. circuit breakers, valve controls, etc.) to isolate the equipment from primary and secondary energy sources.
8. Apply lockout/tag out devices to the energy isolating devices. Tags shall bear the name of the employee and the current date. Keys to lockout devices shall remain under the exclusive control of the employee applying the lockout.
9. Relieve, disconnect, restrain or otherwise render safe all stored energy.
10. Verify that the energy isolation is complete through use of test equipment and/or trying the controls or other equivalent means. After isolation has been verified, work can proceed.
11. When all work is completed, the authorized employee shall inspect the machinery/equipment to verify all employees are clear and all non-essential items have been removed. Any affected employees shall then be notified that lockout/tag out devices are to be removed. The

authorized employee shall then remove their lockout/tag out devices from all energy isolation points and start-up the machinery/equipment.

## **Section 28: Respirator Program**

### Introduction

While most operations in the Township do not involve harmful concentrations of air contaminants there are some operations that may require the use of respiratory protection. This procedure describes the Township's policy regarding the use of respirators.

### Responsibility

- A. Where feasible, the Township will use engineering and/or administrative controls to limit employee exposure to harmful concentrations of air contaminants.
- B. The Township will provide respirators should such equipment be necessary to protect the health of employees.
- C. The Public Works Department will select the appropriate respirator based on the nature of the hazard.
- D. The Township will establish and maintain a respiratory protection program, including when to change-out respirators. Employees shall be medically cleared prior to being issued a respirator.
- E. The Public Works Department will fit test each employee issued a respirator.

### Employee Responsibility

- A. The employee will use the respirator in accordance with the instructions and training received.
- B. The employee will report any damage or malfunction of his respirator to his supervisor.
- C. The employee will guard against damage to his respirator

### Operating Procedures for Respirator

- A. The Township will provide a respirator for each employee required to use a respirator.
- B. The employee will clean and disinfect his respirator after each use.
- C. When the respirator is not in actual use, it will be sealed in a clean plastic bag.
- D. Respirators will not be worn when conditions prevent a good face seal (such as a growth of beard or missing dentures).
- E. The employee must before and after using a respirator make an inspection which includes at a minimum: a check of tightness of connections and the condition of the face piece, headbands, valves, filter holders and filters. If any questionable items are found, they must be corrected immediately.
- F. To assure proper protection, the face piece fit must be checked by the wearer when the respirator is first put on and periodically during each use.

## Fit Tests

- A. **Positive Pressure Test:** Close off the exhalation valves (usually found on the bottom of the respirator) with your hand, breathe into the face piece. The fit is considered satisfactory if a slight pressure can build up inside the face piece without air leaking.
- B. **Negative Pressure Test:** Close off the inlet openings of the cartridge covering them with the palm of the hand. Some respirators require that the filter holder be removed to seal off the intake valve. Inhale gently so that a vacuum occurs within the face piece. Hold your breath for about 5 seconds. If the vacuum remains, and no inward leakage is detected, the respirator is properly fit.

## Dangerous Atmospheres

During normal operations no dangerous atmospheres should be present, as long as established work procedures are followed.

In emergency situations where an atmosphere exists in which the wearer of the respirator may be overcome by a toxic or oxygen- deficient atmosphere, the following rules must be adhered to:

- A. Do not enter an area with the potential for a dangerous atmosphere without first obtaining the proper protective and monitoring equipment and permission to enter from the department supervisor.
- B. Test the Atmosphere before entering
- C. Never enter a dangerous atmosphere without at least one additional person present to remain in the safe atmosphere.
- D. Communications (voice, visual or signal line) must be maintained between both or all individuals present.
- E. The persons remaining in the safe atmosphere must have on hand proper rescue equipment to enable the person within the dangerous atmosphere to be rescued.

## Selection, Issuance and Training Practices

- A. **Selection of Respirators:**
  - 1. Respirator type and make will be selected by the Public Works Department.
  - 2. Only respirators approved by NIOSH may be used.
  - 3. The proper type of respirators for the specific hazard involved will be selected in accordance with figure 1 and the American National Standard: Practices for Respiratory Protection Z88.2-1980 Standards.
- B. **Issuance of Respirators:**
  - 1. The Department reserves the right to determine if a respirator is necessary.
  - 2. Employees may be required to wear breathing zone sampling equipment when air sampling tests are conducted. These tests will be done from time to time to determine if a respirator is necessary.

3. Respirators will be permanently issued to employees who use respirators. For those who use respirators occasionally, no respirator will be assigned. A supply of clean and sanitized respirators will be kept for occasional use.

**C. Training Practices:**

Minimum training arranged by the Public Works Departments will include the following items:

1. Instruction in the nature of the hazard and an appraisal of what may happen if the respirator is not used.
2. An explanation of why engineering and/or administrative controls are not feasible.
3. A discussion of why this is the proper type of respirator for the particular hazard.
4. A discussion as to when the respirator or cartridge elements need to be changed.
5. An explanation of the care and cleaning program.
6. A discussion of the respirator's capabilities and limitations.
7. Instruction and training in positive and negative fit testing to assure proper use.

**D. Medical Limitations:**

1. Persons will not be assigned tasks requiring the use of respirators unless they are physically able to perform work and use the equipment.
2. The respirator user's medical status will be reviewed prior to being assigned to work with a respirator or if the user's medical status changes.

**E. Inspection of Respirators:**

1. Routinely used respirators must be inspected before and after each use.
2. Respirators kept for emergency use must be inspected after use and at least monthly.
3. A record must be kept of inspection dates and findings for respirators maintained for emergency use.

**F. Cleaning and Disinfecting Respirators:**

1. All respirators must be cleaned after use (shift).
2. Cleaning Procedures:
3. Remove all filters, cartridges, headbands and disassemble the major respirator parts.
4. Wash all respirator parts (except cartridges and elastic headbands) in water with a cleaner-disinfectant solution, at about 120 degree F. Use a hand brush to remove dirt if necessary.
5. Rinse parts in hot water (140 - 160 degrees F.).
6. Air-dry in a clean area.
7. Inspect all parts: valves, head straps and all other parts. Replace all defective parts with the proper repair parts.
8. Reassemble the respirator and insert new filters or cartridges. Make sure they are sealed properly.
9. Place the clean respirator in a new plastic bag and seal it for storage.

**G. Respirator Storage:**

1. Clean respirators must be stored to protect them against dust, sunlight, heat, extreme cold, excessive moisture or damaging chemicals.

2. Routinely used respirators must be placed in plastic bags when not being used. They may be stored in lockers.
3. No respirator may be stored in department areas unless authorization has been granted.

Any questions regarding this procedure should be directed to the Director of the Public Works Department.

## **Section 29: Scaffolding**

### **Scaffolding – General**

This section covers only General scaffolding design and construction requirements.

- A. All scaffolds and work platforms shall be designed and constructed to meet minimum Federal and/or State safety requirements and specifications.
- B. To avoid the use of makeshift platforms, each job should be carefully planned ahead so that all proper and necessary scaffolding will be available on the job site when required.
- C. Scaffolds shall be provided for employees engaged in work that cannot be done safely from the ground or from solid construction, except jobs of a short duration that can be done safely from properly secured ladders.
- D. When space is limited so that scaffolding cannot be equipped with standard platforms, with standard handrails or complete decking, personnel must wear fall protection that is tied off to independent lifelines or tied off to a secure building structure.
- E. All scaffolds and work platforms and all component parts shall be designed and constructed for supporting four times the maximum intended load.
- F. All scaffolds shall be erected level and plumb, on a firm base. The poles of scaffolds shall be securely braced to prevent swaying and displacement.
- G. All scaffolds or working platforms shall be securely fastened (with wire or cable) to the building or structure or, if independent of the building, shall be braced or guyed to prevent sway.
- H. Footing for scaffold support (minimum 2"x10"x10' boards or 1/4" steel plate) shall be placed on a firm, rigid, smooth foundation that will prevent lateral movement. (Boxes, boards, concrete blocks, brick or tile shall not be used as scaffold footings or supports).
- I. Employees shall not ride rolling scaffolds or attempt to move rolling scaffolds by pulling on overhead pipes or structures. All material and equipment shall be removed from the platform or secured before moving the scaffold. When moving rolling scaffolds, watch out for holes and overhead obstructions. Caster brakes shall be applied at all times when works are on scaffolds.

### **Scaffolding – Inspection**

Scaffolds shall be inspected by a competent person before use and daily thereafter for damaged or weakened components, loosened or pulled-out nails, unsafe guardrails, toe boards and other defects. Inspection is particularly important after high winds or job shutdowns.

- A. All scaffolds shall be maintained in safe condition and no scaffold shall be overloaded.
- B. Any scaffold that is found damaged or weakened from any cause shall be immediately repaired and Township employees shall not be allowed to use it until repairs have been completed. If repairs cannot be performed immediately, the scaffolding shall be tagged unsafe and removed from service. The supervisor's name and date should appear on the tag. The tag should only be removed by the supervisor who signed the tags after he/she is satisfied the proper repairs have

been completed. When necessary to remove platform planks or other parts of the scaffold for the purpose of dismantling and removing equipment, the scaffold part must be replaced and secured to its original design before re-use.

- C. All lumber used in the construction of scaffolds and work platforms shall be inspected before use and shall conform to specifications for construction quality, stress grade and be free of cracks, splits, unsound knots or decay, etc.

### Scaffolding – Design

- A. Nails used in the construction of scaffolds, staging and supports shall be of ample size and length and used in sufficient quantities at each connection to develop the designed strength of the scaffold. Double-headed nails shall not be used on scaffolds in walking or work areas.
- B. A minimum of two, 2' X 10' boards (dressed lumber) is required on any scaffold platform. Single plank scaffolds are prohibited.
- C. Scaffold platforms shall be completely decked with safety plank or manufactured scaffold decking. Each plank must be rigidly secured to prevent movement, either by flush nailing, wiring or proper clearing and must extend a minimum of 6 inches and not over 12 inches from the bearing point.
- D. All scaffolds or work platforms, four feet or over in height, shall be equipped with rigidly secured standard 42-inch high handrails.
- E. Scaffolds or work platforms 10 feet or over in height shall be equipped with rigidly secured standard handrails, midribs and toe boards.

The specifications for wood constructed guardrail assemblies shall be as follows:

- |                    |  |
|--------------------|--|
| 1. Handrail        | 2x4 inches, 42 inches high to the top                                |
| 2. Midrail         | 1x6 inches, or equivalent space mid-way between handrail and decking |
| 3. Toe Board       | Minimum of 4 inches high   |
| 4. Posts           | 2x4 inches, not more than 8 foot on center                           |
| 5. Design Criteria | Withstand 200 pounds of force any direction                          |
- 
- F. Straight and/or extension ladders shall be provided for safe access to all scaffolds and work platforms. The top of each ladder shall be secured with either wire or rope and the ladder shall extend at least 3 feet above the work platform. Never permit climbing on cross bracing.
  - G. The use of stepladders on scaffolds, and for access to scaffolds, shall be prohibited.
  - H. Scaffolds under which personnel are required to pass or work shall be provided with No.18 gauge 1/2-inch mesh screening installed between toe board and handrail.
  - I. No scaffold shall be used for the storage of material except that being currently used and at no time shall any scaffold be overloaded. Brick, tile block or similar material may not be stacked higher than 24-inches on a scaffold platform.
  - J. Scaffolds and platforms shall be kept free of ice, snow, grease, mud or any other material or equipment which will render them unsafe or hazardous to persons using them.

- K. Where walkways and work surfaces are slippery, abrasive material shall be used to assure safe footing.
- L. Overhead protection shall be provided for employees on a scaffold exposed to overhead hazard.

#### Scaffold Safeguards

- A. Discard any planks that show any signs of weakness.
- B. Wooden scaffolding and planking should not be painted because it will cover defects which may develop.
- C. Proper signage and barricades must be used to warn and protect pedestrians from falling objects.

## **Section 30: Fall Protection**

Safety harnesses, lifelines and lanyards shall be used when working over 6 feet above ground level for guarding against falls when other means are not feasible.

Some examples of areas where safety belts and lanyards would be required are as follows:

- A. Sloping roofs
- B. Flat roofs without handrails within four feet of the edge or roof opening
- C. Any suspended platform or stage
- D. Any scaffold with incomplete handrail or decking
- E. Ladders near edge of roofs and floor openings
- F. Generally, elevated work without protection

Lifelines must have a minimum breaking strength of 5400 pounds and anchored so as not to allow a fall of more than 6 feet and shall be a minimum of 1/2-inch nylon rope or equivalent.

Safety belts and lanyards hardware must withstand a tensile loading of 4000 pounds.

### **Nets**

- A. Safety nets are required when working more than 25 feet above ground or water where other means of fall protection are impractical.
- B. Mesh size may not be more than 6 inches by 6 inches and the design criteria must meet 17,500 foot-pounds impact resistance.
- C. A label noting the impact resistance and proof test certified by the manufacturer must be attached to the net.
- D. Safety nets shall be installed as close under the work surface as practical, but not over 25 feet below the working level. Nets shall extend at least 8 feet beyond the perimeter of the work area.

## **Section 31: Standard Operating Procedures Working at Elevation (Ladders and Aerial Lifts)**

### Applicability

This procedure details requirements for employees who are required to work at elevation to protect them from falls.

### Responsibilities

Management is responsible for communicating and enforcing the requirements of this procedure.

Employees are responsible for complying with the requirements of this procedure.

### Procedures

#### A. General

1. Fall protection shall be provided for all employees that are required to work at six feet or greater elevation above a lower level, holes or unprotected edges; over dangerous equipment (at any level); at the edge of an excavation six feet or more in depth; and at the edge of a well, pit, shaft, manhole or similar excavation six feet or more in depth.
2. Fall protection shall be in the form of fixed guardrail systems (preferred). If fixed guardrails are not feasible, safety net systems or personal fall arrest systems shall be utilized. All employees exposed to fall hazards shall be trained in the procedures and equipment for protecting them from falls.
3. Guardrail systems shall be 42 inches high (3 inches) with mid-rails or a screen/mesh material. The top rail shall be capable of withstanding 200 lb. force.
4. Safety net system shall be installed no more than 30 feet below the working surface. Safety nets must be capable of withstanding a 400 lb. drop test. Openings in the net cannot exceed 6 inches in any dimension.
5. Personal fall arrest systems shall require the use of a 5 point harness. Anchorages used for attachment shall be separate from those used to support platforms or other devices and shall limit free fall to no more than six feet. Self-retracting lifelines and lanyards may limit free-fall to two feet. Body belts shall not be used as a personal fall arrest system.

### Aerial Lifts

During work with aerial lifts, extra care shall be exercised in order to be alert for the main causes of incidents: contact with high voltage power lines; improper positioning of outriggers and blocking, poor bearing surface for outriggers; overreaching beyond safe operating range; failure to wear personal fall prevention systems, moving the vehicle while the boom is raised, not having the vehicle checked and

brakes engaged; swinging the boom against obstructions, boom movement/positioning where it interferes with traffic or other operating equipment; and inadequate training of personnel.

Safe operating of the aerial lift involves operating according to manufacturer's instructions; testing operating mechanisms each day before use for proper function; inspecting the entire unit for defects: posting load limits and operating angles; performing a complete warm-up and test of hydraulic systems; verifying the insulation integrity of the bucket and other operating parts; posting the travel clearance in the cab; not permitting anyone in the bucket during transit unless in cradled position; providing for proper footing for the outriggers; ensuring adequate clearances around equipment with respect to the general public and other workers; prohibiting transfers between baskets or aerial structures; and requiring that operators face the direction that the bucket is moving in order to observe and react to obstructions. Aerial lifts shall be inspected prior to use. This inspection shall focus on: attachment welds between actuating cylinders and booms/pedestals; pivot pins for security of locking devices; cables, sheaves, and leveling devices for wear; visual inspection of hydraulic system for leaks and wear especially of seals and gaskets; check of lubrication and fluid levels; check of boom and bucket for cracks and abrasions; and check of boom operating controls (run through one complete cycle from the ground).

Bucket safeguards shall include requiring that all individuals in the bucket wear a safety harness or lanyard and hard-hat; ensuring fall protection equipment is connected to a manufacturer certified attachment point and training each operator in the proper use of the equipment.

When using the aerial lift, traffic shall be controlled by using work zone traffic controls including: the placement of barricades, having workers wear reflective vests in safety yellow/lime green; and utilizing the vehicle's four-way flashers, light bars and rotating lights to ensure maximum visibility.

## **Section 32: Power Tools**

It is the supervisor's responsibility to see that employees operate power tools in the correct manner and that the rules listed below are explained and obeyed.

In the work area, employees should:

- A. Keep all work areas free of clutter.
- B. Be alert to hazards in the working environment (for example: damp locations, highly combustible materials nearby, pits and other confined spaces where flammable vapors may gather).
- C. Never surprise or distract anyone using a power tool.
- D. Secure all work with clamps, bench stops and keep hands free.

Employee requirements for using power tools:

- A. Know the application, limitations and hazards of the tools used.
- B. Select the proper tools, bits or cutting blades for the job and keep them sharp.
- C. Remove chuck keys and adjusting wrenches before turning the power on.
- D. Keep all guards in place and in good working order.
- E. Check tools equipped with dust collectors regularly to make sure the collector is working efficiently.
- F. Change and/or clean filters in exhaust as required.
- G. Never force tools or run them beyond recommended speeds.
- H. Anticipate situations where a tool may act differently depending on the material being worked.
- I. Carry a tool by its handle.
- J. Have ground prongs in place and only use 3—wire extension cords plugged into grounded receptacles or use tools marked "double insulated".
- K. Use a ground fault circuit interrupter at the outlet or breaker box in addition to grounding in wet or damp conditions.
- L. Use earmuffs or earplugs when noise levels exceed 85 decibels.
- M. Read the manufacturer's operating manual.
- N. Have repairs to power tools made by only by qualified persons.
- O. Never use tools with frayed cords or loose or broken switches.
- P. Dress to prevent loose clothing, jewelry or long hair from getting caught by moving parts.
- Q. Always use Ground Fault Circuit Interrupter protected outlet when using electrical power tools outside.
- R. Use safety glasses, face shields, respirators and other clothing or equipment when required.

## **Section 33: Welding, Burning and Drilling**

- A. In welding, cutting or drilling operations, suitable fire extinguishing equipment shall be maintained in a state of readiness for instant use. Such equipment shall consist of sufficient portable extinguishers, depending upon the nature and quality of combustible material exposed.
- B. A welder's helper, or firewatcher, shall be required whenever cutting or welding is performed in locations where a fire might develop. It is also a requirement of the Township Fire Prevention Code, Section F-2204.2 to continue watching the area for at least 30 minutes after completion of the welding operations in order to detect and extinguish possible smoldering fires. The department head must be notified if a fire extinguisher is used.
- C. Cutting and welding are major producers of fires on renovation and construction projects because of molten metal and sparks. During cutting and welding, sparks may be showered 25 to 30 feet away and may retain heat for several seconds. This is sufficient to ignite combustible material.

### **Personal Protection**

- A. Appropriate gloves must be worn to protect the hands and wrists. Flying chips travel a considerable distance and may be dangerous to other personal in the area. Therefore, screening or shielding should be provided to afford proper protection.
- B. Flame resistant aprons of leather or other suitable materials must be worn as protection against radiated heat and sparks. Welders must wear long protection. Leather gauntlets, spats and leggings can provide additional protection. Clothing should be free of oil and grease. Woolen clothing is not as readily ignited as untreated cotton and aids in protecting the welder from changes in temperature. Synthetic clothing has a tendency to melt and cause burns and should therefore not be worn.
- C. Pockets and cuffs can catch sparks. Collars should be buttoned and cuffs turned inside the pants. Pockets should be eliminated from fronts of vests, shirts and aprons or have buttoned flaps. Butane or propane cigarette lighters should not be carried in shirt or trouser pockets.
- D. Fire resistant leggings, high boots or other leg protection should be worn for very heavy work. Safety shoes are recommended. Low—cut shoes with unprotected tops provide very little protection.
- E. Fire—resistant capes or shoulder covers shall be worn during overhead welding operations.
- F. The proper shade of welding lens and an adequate supply of cover lenses shall be provided. Employees assisting a welding operator shall also wear protection lenses to avoid welding flash to the eyes. Refer to Section 11 for selection of eye/face protection.

### Precaution/Good Housekeeping

Remove all loose and easily combustible materials and remove all highly volatile materials, such as gasoline and other flammable solvents from the work area.

Shield all wood planking, scaffolds, wooden forms and other combustible materials that cannot be removed. Fire retardant blankets, sheet metal or other suitable material can be used for this purpose.

Use extreme caution in cutting or repair welding of closed containers that may have contained a flammable product. Purge the container first with live steam or fill it with water. It is also recommended to check with a vapor tester before cutting or welding is attempted. A vent or opening shall be provided for the release of any build-up pressure during the application of heat.

When removing excess weld metal, or slag, the welder often removes or raises the shield in order to see. The chips flying from the welders hammer are dangerous, especially to the eyes, so safety goggles or a protective face shield must be worn.

### Ventilation

Where natural ventilation is not effective, mechanical ventilation will need to be supplied. This would occur in confined spaces and areas where the overhead height is less than 16 feet. Follow confined space entry procedures.

### Never Use Pure Oxygen for Ventilation

Where there is a chance of oxygen deficiency or the presence of toxic fumes, special breathing equipment is required.

The surest way to be safe is for the welder to be very familiar with the materials being used, the toxic fumes that may be produced and how to properly protect him/herself.

### Torches, Regulators and Gauges

- A. Clogged torch tip openings shall be cleaned with proper cleaning wires and other devices designed for such purpose.
- B. Torches in use shall be inspected at the beginnings of each working shift for leaking shutoff valves, hose couplings and tip connections. Defective torches shall be tagged "Out of service" and shall not be used.
- C. Torches should be lit by friction lighters or other approved devices and not by matches.
- D. Torches, when not in use, shall be stored in a proper place to prevent being walked on or having tools and materials stored on them.

- E. Oxygen and fuel gas pressure regulators, including their related gauges, shall be in proper working order while in use, or have necessary repairs made as required. Otherwise, they should be replaced.
- F. All hoses and burning tips must be removed from confined spaces when not in use in order to eliminate the possible build-up of gases through leaks.
- G. All hoses carrying acetylene, oxygen, natural gas, manufactured fuel gas or any gas substance that may ignite, combust or be in anyway harmful to employees, shall be inspected at the beginning of each working shift.
- H. Hose that has been subjected to flashback or shows evidence of severe wear or damage shall be properly tagged "Out of service" and removed from the work area immediately.
- I. Oxygen cylinders and fittings must be kept away from oil and grease. Cylinders, cylinder caps and valves, couplings, regulator hose and apparatus should be kept free from oil and greasy substances and must not be handled with oily hands or gloves.
- J. Secure all hoses to prevent tripping hazards.

## **Section 34: Housekeeping and Sanitation**

A neat and orderly shop/job site is fundamental to efficient, accident—free performances and supervisors should establish a sound program of housekeeping.

Good housekeeping shall be planned at the beginning of the job and carefully supervised and followed to the final clean up. Housekeeping should be the concern of each and every worker and not left for the cleanup crew alone. Confusion will be reduced and operations will be more efficient when the work area is neat and orderly at all times.

- A. Rubbish, debris, waste and discarded material constitute fire and accident hazards on the job and shall be removed from the work area as fast as they accumulate.
- B. All scrap materials shall be removed from the immediate work area as the work progresses and be neatly piled and stacked or placed in trash containers.
- C. Special instructions shall be given concerning the hazards of projecting nails. All boards, planks, blocks, debris and other material having projecting nails shall be immediately removed from the job site or placed in orderly piles where no one will be likely to stumble or fall on them. Employees removing such material should always wear heavy gloves and proper footwear.
- D. All stairways, corridors, ladders, catwalks, ramps, passageways and work platforms shall be kept clear of loose material and trash.
- E. Changing rooms and toilet facilities shall be kept in a sanitary condition. Provision for waste receptacles shall be made. Such receptacles shall be emptied daily.
- F. Hoses, welding cables and electrical cords shall be placed overhead or in such a manner as to eliminate tripping hazards.
- G. Oil rags, flammable liquids and other similar materials that are easily ignited shall be placed in approved safety cans and disposed of daily.
- H. Flammable or combustible liquids must not be dumped in catch basins or sewers since pockets of explosive gas may accumulate.
- I. Materials and supplies shall be kept away from edges of stairways, floor openings and the edges of roofs when working overhead.
- J. Tools shall not be strewn about where they may cause tripping or falling hazards and shall at the end of each workday, be collected and returned to the storeroom or its designated place.
- K. Each employee should be instructed to practice required housekeeping as a part of his/her assigned duties.
- L. All eating shall be separated from work areas to decrease potential food exposure to toxic materials including fumes and mists. A wash up area shall be provided if employees are handling hazardous or toxic materials.

## **Section 35: Working in Permit-Required Confined Spaces**

The following standard operating guidelines shall be followed by employees engaging in permit-required confined space operations.

- A. A space is considered to be a permit-required confined space if it has the following features:
  - 1. Large enough to allow access by an employee
  - 2. Exhibits limited openings for employees to enter and exit
  - 3. Not intended for continuous human occupancy
  - 4. Potential to contain hazards such as oxygen deficiency, toxic vapors/gases or physical hazards

Entering a confined space is defined as breaking the plane of the opening with a body part.

In the municipal workplace, such spaces usually include:

- A. Water and wastewater manholes
- B. Subgrade meter pits deeper than four feet
- C. Excavations deeper than five feet

The following procedures apply to all permit-required confined spaces:

- A. Where feasible, permit-required confined spaces shall be identified with “Confined Space – Permit Required for Entry” signage, stencils or equivalent. Under no circumstances are personnel allowed to enter these spaces unless the requirements of this procedure are followed.
- B. Non-entry rescue equipment (full-body harness, tripod, and winch/fall arrest system) and active ventilation shall be used whenever feasible. If not feasible, then other arrangements shall be made to provide an equivalent level of protection.
- C. Only personnel trained in confined space entry procedures are authorized to perform an entry or act as an outside attendant.
- D. The entry team supervisor or equivalent shall be responsible for authorizing each entry permit.
- E. Before entering a confined space, entry personnel shall:
  - 1. Communicate the intent to enter a permit-required confined space to all impacted personnel.
  - 2. Provide for adequate vehicle traffic protection.
  - 3. Ensure the space is empty/drained/flushed as appropriate.
  - 4. Isolate the space from hazardous energy sources and/or feed/drainage lines using lockout/tagout, installing blinds, misaligning piping or using other energy isolation means.
  - 5. Open all access ways and ventilate using active means (e.g., blower).
  - 6. Monitor the internal atmosphere of the space at the low, middle and upper levels. First verify that oxygen levels are adequate. Then check for explosive and toxic atmospheres. Toxic atmospheres depend on the space to be entered. For example, hydrogen sulfide is a common contaminant associated with wastewater collection or treatment systems. Use a calibrated multi-gas meter. Confined spaces in which there is a potential for changing atmospheric

conditions shall require continuous atmospheric monitoring. The results of monitoring shall be recorded on the entry permit. Acceptable measurements for entry are as follows:

<u>Parameter</u>	<u>Acceptable Levels</u>
Oxygen	Between 19.5 and 23.5%
Lower Explosive Limit	Less than 10%
Hydrogen Sulfide	Less than 5 ppm (1/2 ACGIH TLV)
Carbon Monoxide	Less than 12.5 ppm (1/2 ACGIH TLV)
Toxic Contaminants	Less than ½ exposure limit

- F. A hot work permit shall be required if work will involve use of an open flame or spark producing equipment. Forced ventilation and continuous monitoring is mandatory when performing work under a hot work permit.
- G. A ladder or equivalent means shall be provided for easy access and egress from the confined space.
- H. A trained entry attendant shall be stationed outside of the space for the duration of the entry. The attendant shall maintain continuous communications with the entrants and order an evacuation if:
  - 1. A condition not allowed by the permit occurs
  - 2. If the entrant(s) show signs of distress
  - 3. In the event an outside emergency occurs

The entrant shall not enter the space to perform a rescue unless trained and equipped to do so and another trained employee is available outside the space.

- A. Emergency procedures shall be reviewed prior to entering the space. In most cases when non-entry rescue equipment is used, outside emergency responders will be called on in the event of an emergency, it shall be confirmed in advance that the rescue service is equipped to provide confined space rescue services. Otherwise, the entry team shall be trained in performing confined space rescue. This training shall include an annual hands-on rescue simulation in a representative confined space.
- B. All information on the permit shall be completed. The permit shall be authorized by the entry supervisor and posted near the entry point. A sample entry permit is attached.
- C. The space shall be evacuated at the first sign of danger or if directed to do so by the entry attendant.
- D. At the conclusion of the entry, the entry permit shall be archived for a minimum of 1 year.
- E. Contractors shall be expected to perform confined space entry work in accordance with their own confined space entry procedures. If the contractor does not have confined space entry procedures or these are judged to be inadequate, the contractor shall be required to comply with facility's procedures.

### Procedures for entering ventilated sewer pump stations designed for continuous human occupancy

- A. Upon arriving on-site, turn on atmosphere monitoring equipment (gas meter) and ensure the equipment is functioning properly.
- B. Open the access hatch to the pump station and turn on the exhaust ventilator.
- C. After a minimum of five minutes of forced ventilation, lower the gas meter into the space to measure atmosphere at multiple levels (high, middle and low). If the alarm sounds, wait another five minutes before testing again. Continue ventilating and testing until acceptable test results are obtained. If acceptable air quality cannot be obtained, notify supervision.
- D. Document the atmospheric test results on the daily work record.
- E. After the safety of the atmosphere has been verified, attach the gas meter near the employees breathing zone and proceed into the space.
- F. If at any point the alarm sounds, evacuate the space and notify supervision.

### Procedures for entering sewer and stormwater manholes

- A. Do not enter sewer or stormwater manholes if high flow is expected (i.e., heavy rain, half-time during the Super Bowl). If necessary, install a drain plug or take other precautions to control high flow hazards.
- B. Protect the vicinity of the entry from vehicular and pedestrian traffic. In addition to work zone signage and cones, park a shadow vehicle in the potential path of oncoming traffic.
- C. Remove the manhole lid using an approved manhole lifter. Take precautions to protect hands, feet and back.
- D. Start the electric generator and place the ventilator into the manhole. Ventilate the space for a minimum of five minutes.
- E. While waiting to test the atmosphere, set up the retrieval system (tripod and winch). Put on personal protective equipment consisting of:
  1. Muck boots
  2. Disposable coveralls
  3. Full body harness
  4. Impermeable gloves
  5. Hard hat
  6. Eye protection

After a minimum of five minutes of forced ventilation, test the atmosphere in the confined space from the outside. Test the atmosphere at various levels (top, middle, bottom).

If gas testing measurements are acceptable, document the results of the atmospheric testing and complete the confined space entry permit. If testing results are unacceptable, continue ventilating the space for an additional five minutes before testing again. Do not enter the space until the air quality in the space falls within the acceptable ranges.

Connect the entrant to the retrieval system and provide slack which the entrant enters the space via manhole rungs or ladder. The ventilator and gas testing equipment shall continue to run while the entrant is in the space. If possible, the entrant shall wear the gas meter near their breathing zone.

The safety attendant shall maintain continuous contact while the entrant is in the space. They shall have immediate access to a cell phone or other means to summon rescue services.

In the event of an emergency, the safety attendant shall notify the entrant to evacuate the space. If the entrant is non-responsive, then the attendant shall operate the winch and attempt to extract the entrant. If this is not effective, then the attendant shall call 911 and ask for local rescue service. Under no circumstances shall the safety attendant enter the space to attempt a rescue. Two victims could result!

Archive the completed permit for at least one year.

#### Resources

- A. Confined space entry permit sample. Obtain a copy from your supervisor and have completed approval before starting confined space work. (Next page)

**CONFINED SPACE ENTRY PERMIT**

(Post permit at jobsite. When complete, archive for 1-year)

Name and Location of Confined Space: \_\_\_\_\_  
\_\_\_\_\_

Work to be Performed in Confined Space: \_\_\_\_\_  
\_\_\_\_\_

For Emergencies - Call 911

Permit Valid From: \_\_/\_\_/\_\_ Time: \_\_:\_\_ to: \_\_/\_\_/\_\_ Time: \_\_:\_\_ (Valid One Shift)

Results of Atmospheric Monitoring:

Test Equipment Used (Name & Serial Number): \_\_\_\_\_

<u>Parameter</u>	<u>Results</u>	<u>(Acceptable Range)</u>
Time:	_____	
Oxygen (%)	_____	(19.5 to 23.5%)
LEL(%)	_____	(<10%)
H <sub>2</sub> S (ppm)	_____	(<5 ppm)
CO (ppm)	_____	(<12.5 ppm)
Other Toxic Contaminants:	_____	(<1/2 PEL/TLV)
(Specify)	_____	_____

Required Signatures

Entrant(s): \_\_\_\_\_  
 Safety Attendant: \_\_\_\_\_  
 Crew Leader: \_\_\_\_\_  
 Supervisor of Area: \_\_\_\_\_  
 (if applicable)

=Over for Compliance Checklist=>

ENTRY PROCEDURE CHECKLIST (CHECK TO VERIFY)

- \_\_\_\_\_ Did you communicate your intent to enter the confined space to impacted personnel?
- \_\_\_\_\_ Has the space been emptied/drained/flushed of its contents?
- \_\_\_\_\_ Has the space been isolated from hazardous energy sources including flow, electrical, potential energy, mechanical agitators, etc.?
- \_\_\_\_\_ Have material feed/drain piping (steam, nitrogen, raw material, etc.) been misaligned or blinds installed? (Note – simply locking out a valve alone is not considered adequate

protection).

- \_\_\_\_\_ Have all access ports to the space been opened and is the space being actively ventilated?
- \_\_\_\_\_ Have the atmospheric levels of oxygen, explosive atmospheres and toxic contaminants been determined to be within acceptable ranges?
- \_\_\_\_\_ Is there a potential for changing conditions requiring continuous atmospheric monitoring and non-entry rescue equipment?
- \_\_\_\_\_ Has a hot work permit been obtained for any hot work to be performed in the space?
- \_\_\_\_\_ Has a ladder or other means of quick exit been provided?
- \_\_\_\_\_ Is a trained safety attendant posted outside the space at all times during the entry?
- \_\_\_\_\_ Does the attendant have emergency communications equipment and does the attendant know what to do in the event of an emergency?
- \_\_\_\_\_ Has personal protective equipment appropriate for the work to be performed been selected?
- \_\_\_\_\_ Has the proper non-entry rescue equipment been selected?

## **Section 36: Working Alone**

The following standard operating guidelines shall be followed by employees working alone:

- A. Work activities that require lone workers shall be evaluated to determine if the tasks are necessary or discretionary. The level of risk associated with the work activity shall be determined and a decision made as to whether the level of risk justifies performing the work in conjunction with a partner (e.g. buddy). A list of activities shall be identified that may not be performed alone due to excessive risk (e.g., confined space entry).
- B. Individuals who will be assigned to work as a lone worker shall be evaluated in order to determine if there are any relevant medical restrictions that may need to be accommodated. It shall also be verified that the lone worker has the adequate skill, experience and maturity level to work independently.
- C. A contact person shall be designated in the workplace whom will be responsible for knowing details concerning the whereabouts of the lone worker such as the destination, estimated time of arrival, return time or date, mode of travel and alternate plans.
- D. The lone worker shall be provided with the means to summon assistance if they run into a problem. Cell phones are useful for this purpose.
- E. A check-in procedure shall be implemented that is appropriate to the level of risk. A simple procedure might be to call a supervisor prior to departing and upon returning from the work location. A password shall be designated and used to signal a need for assistance in the event of criminal activity.
- F. A response plan for what to do in the event the lone worker fails to check in shall be prepared. The plan shall at a minimum address the prompt location of the lone worker and the delivery of emergency medical care.

## **Section 37: Working in Temperature Extremes**

The following standard operating guidelines shall be followed by employees working in cold temperatures (i.e., temperatures below 40°F):

- A. Employees shall protect themselves with insulated dry clothing when exposed to cold temperatures. Water impermeable insulated clothing shall be utilized if there is a possibility of exposure to water.
- B. Employees that work in cold temperatures shall be medically fit to work in such extreme environments. Employees shall discuss any medical restrictions with their supervisor.
- C. Consider limiting all outdoor working in extreme temperatures.
- D. Lone operator work shall be avoided during temperatures less than 10°F.
- E. Frostbite is the most significant cold weather concern for municipal employees working outside. Cover vulnerable areas such as the ears and fingers with hat and gloves, respectively to avoid frostbite.
- F. If frostbite is suspected remove victim to a warm environment. Gently warm frost bitten areas in warm (not hot) water. Do not rub as this may cause tissue damage. Seek medical attention as soon as possible.

The following standard operating guidelines shall be followed by employees working in hot temperatures (i.e., temperatures above 90°F):

- A. Employees shall receive a period of acclimatization (e.g., ramp-up) following extended periods away from the job.
- B. Employees shall wear light-weight clothing, ensuring proper hydration and using sun screen products to protect exposed skin from harmful ultraviolet sunrays.
- C. Employees shall drink small volumes (e.g., approximately 1 cup) of cool, palatable water every 20 minutes.
- D. Employees that work in hot temperatures should be medically fit to work in such extreme environments. Employees are encouraged to discuss any medical restrictions with their supervisor.
- E. Limit outdoor work to cooler hours.
- F. Lone operator work shall be avoided during hot temperatures.
- G. Heat exhaustion and heat stroke are the most significant hot weather concerns for municipal employees working outside. Avoid these medical conditions by drinking plenty of fluids, covering exposed skin areas with light clothing, utilizing shade and taking frequent breaks in cool areas.
- H. Heat stroke is a medical emergency requiring immediate action. Heat stroke can often be recognized by the victim being red faced; however, no longer sweating. This is a sign that the body is overheating. Immediately remove the victim to a cool location. Use cool compresses, cool (not cold) water and fanning to bring down the victim's core body temperature. Contact 911 and seek immediate medical attention.

## **Section 38: Driving for the Employer (Fleet Operations)**

The following standard operating guidelines shall be followed by employees who operate motor vehicles on behalf of their employer:

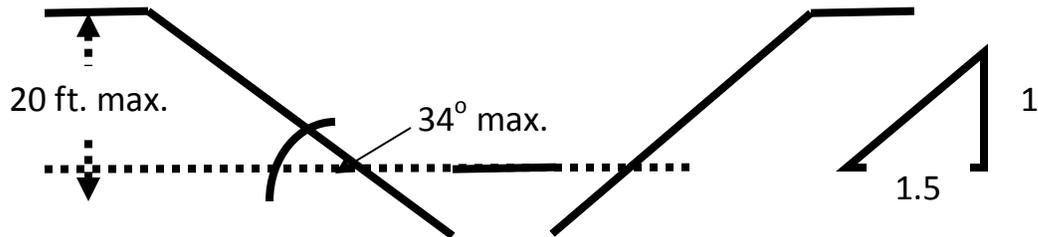
- A. Use of fleet vehicles shall be limited to personnel who are employees of the organization and have business of the organization to complete.
- B. Drivers shall possess a valid driver license and shall drive within listed limitations of class and commercial/medical restrictions as specified on their driver's license. Each vehicle shall have a valid insurance card.
- C. Drivers who are unfit to drive due to excessive fatigue or are under the influence of impairing pharmaceuticals, illegal drugs or alcohol shall not operate fleet vehicles.
- D. Drivers shall abide by all traffic laws including mandatory use of seat belts when on public highway and private roads including park lots.
- E. Drivers shall complete a general vehicle check before operating the vehicle. Items to check include: tires, wipers, headlights, turn signals, operation of brakes, fluid levels and any other special accessories such as snow plow attachments or trailers. Any deficiency in essential equipment shall be brought to attention of the fleet manager for repair. Vehicles shall not be operated with known deficiencies in essential equipment.
- F. Drivers shall familiarize themselves with the vehicle prior to operating it. This familiarization may range from reviewing the owner's manual to formal training depending on the type and complexity of the vehicle to be operated. In some cases, such as with a vehicle that requires a commercial driver's license (CDL), a road test may be necessary.
- G. Drivers shall have knowledge of the performance characteristics of the vehicles they operate before driving in adverse weather. Drivers shall understand the limitations relative to weather and road conditions. Drivers of vans, utility vehicles, light trucks, and similar motor vehicles need to recognize the special handling requirements under a variety of load and driving conditions.
- H. Drivers shall comply with all posted traffic signals and adopt a defensive driving posture when operating company vehicles, (e.g. giving right of way to more aggressive drivers, not engaging in certain behaviors that could escalate to "road rage", maintaining a conservative driving demeanor).
- I. Drivers shall avoid using hand-held electronic devices while the vehicle is moving. The eyes of the driver shall remain on the road when the vehicle is in motion.
- J. Drivers of law enforcement or emergency vehicles may need to drive more aggressively; however, shall exercise extreme caution while doing so due to the elevated risk of collisions. For these vehicles, non-compliance with traffic signals and markings shall only occur if the vehicle has its emergency lights and siren activated. The vehicle shall still slow down and exercise caution when approaching intersections or blind spots as the sudden appearance of a law enforcement or emergency vehicle traveling at high speeds may not be expected by other vehicles.
- K. Drivers shall secure the vehicle when not being used to prevent theft or misuse. Driver shall be alert for possible criminal activities such as staged accidents or car-jacking where personnel may be at risk of robbery or personal harm. No hitch hikers are to be picked up under any circumstances.

- L. Drivers may offer assistance to other drivers in distress but shall exercise extreme caution when doing so in order to prevent becoming victims themselves. Drivers shall be selective in the incidents they involve themselves in. When in doubt, 911 shall be notified.
- M. If involved in an incident, notify local law enforcement as soon as possible in order to ensure proper documentation of the incident. An attempt shall be made to identify any injured parties. Medical assistance shall be obtained if necessary. Insurance information shall be exchanged (note: obtain license number first in the event the other party leaves the scene of the accident). Take the names of any witnesses to the accident and the nature of any damage to vehicles and other private property. A disposable camera in the glove compartment can be useful for this purpose. The municipality's insurance carrier shall then be contacted as soon as possible. Drivers shall not engage in discussions of right and wrong, but shall complete an accident report while the facts are still fresh.

## Section 39: Performing Trenching/Excavation Operations

The following standard operating guidelines shall be followed by employees who perform trenching and excavation operations:

- A. Before opening any trench or excavation, check for underground gas mains, fiber optic cables and other utility installations by contacting Pa. One Call (811). Even after utilities are marked, proceed with caution!
- B. Protect the excavation site against unauthorized entry; and, if applicable, implement work zone safety practices to protect against vehicular traffic.
- C. A competent person (e.g. management designated individual who possesses the necessary training and experience) shall approve all aspects of the excavation including shoring, sloping and support systems. Excavations shall be inspected for safety at the start of the shift each day and following rain or other events that could change the characteristics of the excavation site.
- D. Conditions at the site that may need to be controlled include: groundwater infiltration, air quality, confined space entry issues, hot/cold temperature extremes, noise and other factors that could adversely affect the working environment.
- E. Excavated material shall be kept at least two feet from the edge of the excavation in order to reduce loading on the face of the excavation and to prevent material from falling onto workers in the excavation.
- F. Based on the size of the excavation, excavations shall have at least two means of egress (e.g., ladder) if there is a risk that the primary means of egress may not be available in the event of an emergency. The distance to a means of egress shall not exceed 25 feet.
- G. If the excavation is over four feet in depth, a means to prevent soil collapse shall be provided. Appropriate controls shall include benching, sloping and shoring. When in doubt and provided the real-estate is available, slope the excavation to 34° (1.5 : 1). This is the most conservative slope angle and is permitted for excavations up to 20 feet deep.



- H. When mobile equipment is used near the excavation opening, stop logs, barricades or spotters shall be utilized to prevent the equipment from falling into the excavation or contributing to a trench collapse.
- I. Caution shall be exercised when backfilling and removing trench supports. Work shall proceed from the bottom of the excavation to the top. The supports shall be released slowly and if in unstable soil, removed using remote means such as ropes.

## **Section 40: Working Near Traffic (Highway Work Zone)**

The following standard operating guidelines shall be followed by employees performing work near vehicular traffic:

- A. The specific characteristics of the work area shall be considered in developing the work zone traffic control plan. Characteristics which can influence the layout of the work zone include type of work zone (static or moving), roadway speeds, equipment required for the work, weather and time of day. Those planning the work shall ensure that the work zone complies with the current edition of:
  - 1. PennDOT Publication 213 - Work Zone Traffic Control Guidelines
  - 2. PennDOT Publication 234 – Flagging Handbook
  - 3. Manual on Uniform Traffic Control Devices – Current Version
- B. Prior to performing the work, all employees shall be familiar with the safety protocol for performing the work. Elements to review include:
  - 1. Use of personal protective equipment as required for the job activity, including the use of high-visibility work clothing
  - 2. Procedures for conducting the work
  - 3. Emergency procedures
    - a. Highway work zones shall be laid out according to the dimensions provided in the current edition of Penn DOT Publication 213. Note: A copy of the work zone diagram used shall be included in the project file to protect the municipality from liability.
    - b. ROAD WORK AHEAD (W20-1) signage shall be installed in advance of the work zone according to distances specified in Penn DOT Publication 213.
    - c. When using a flagger, ROAD WORK AHEAD (W20-1), ONE LANE AHEAD (W20-4) and FLAGGER (W20-7A) signs shall be installed in advance of the work zone on both approaches to the work zone according to distances specified in Penn DOT Publication 213.
    - d. Whenever feasible, place a dump truck or other heavy shadow vehicle in advance of the work zone on all approaches as a physical barrier to oncoming traffic. Shadow vehicles are much more effective than signs and traffic cones in keeping drivers out of your work zone.
    - e. Tapers shall conform to dimensions specified in Penn DOT Pub. 213.
    - f. All employees working near vehicle traffic shall wear Class 2 high visibility traffic safety vests.
    - g. Flaggers shall wear Class 2 high visibility traffic safety apparel, hard hat and utilize a retro reflective stop/slow paddle. Orange flags may only be used in the event of an emergency or when flagging in an intersection where opposing traffic may become confused by the stop/slow paddles.
    - h. Flagging teams shall be alert to driver inattention, especially in moving work zones. Flagging teams shall maintain active communication and close coordination between team members. Flaggers shall have a means of alerting the work crew to vehicles entering the work zone such as an air horn.

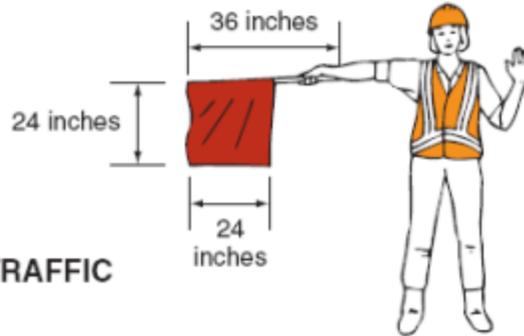
- i. Employees shall assume that the public does not see them and is not paying attention to work zone activities. As a result, employees shall exercise extra care when working near traffic, particularly during low-light and adverse weather conditions.
- j. Law enforcement shall be involved for critical work zone projects involving complex job functions, large numbers of personnel and special work activities. Law enforcement assigned to such traffic details shall also wear Class 2 traffic safety apparel.
- k. At the completion of job activities, employees shall be alert while shutting down operations or when removing work zone equipment (e.g., barriers, cones, flashers and warning signs). This is recognized as a vulnerable period.

### Resources

- A. Diagram of proper flagging technique from MUTCD 2009
- B. Diagrams of typical work zones used by municipalities from Penn DOT Publication 213 (April 2010 Edition)

**PREFERRED METHOD  
STOP/SLOW Paddle**

**EMERGENCY SITUATIONS ONLY  
Red Flag**



**TO STOP TRAFFIC**



**TO LET  
TRAFFIC PROCEED**



**TO ALERT AND  
SLOW TRAFFIC**

Source: MUTCD 2009

PUBLICATION 213  
GENERAL NOTES, TABLES AND LEGEND

**TABLE 1.**  
FORMULAS FOR DETERMINING  
TAPER LENGTHS

S	L
40 MPH or less	$L = \frac{WS^2}{60}$
45 MPH or more	$L = WS$

W = width of offset in feet

**TABLE 2.**  
MERGING TAPER LENGTH

S	W	L
MPH	(ft)	(ft)
25	10	100
	11	110
	12	130
30	10	150
	11	170
	12	180
35	10	200
	11	220
	12	250
40	10	270
	11	290
	12	320
45	10	450
	11	500
	12	540
50	10	500
	11	550
	12	600
55	10	550
	11	610
	12	660
60	10	600
	11	660
	12	720
65	10	650
	11	720
	12	780

W = width of offset in feet

**TABLE 3.**  
OTHER TAPER LENGTHS

Type of Taper	L
Merging Taper	L Min.
Shifting Taper	0.5L Min.
Shoulder Taper	0.33L Min.
One-Lane, Two-Way Traffic Taper	100' Max.
Downstream Taper	100' Max./Lane

**TABLE 4.**  
ADVISORY SPEED FOR FREEWAYS AND EXPRESSWAYS

S	Work Area Speed Limit	Advisory Speed *** In Advance of the Work Area Signs from Beginning of Work Area			
		4th	3rd	2nd	1st
MPH	MPH				
65	55		55	55	55
65	50*	55	55	50	50
65	45*	55	50	45	45
55	45	50	50	45	45
55	40*	50	45	40	40
55	35*	50	45	40	35
50	40	45	45	40	40
50	35*	45	40	35	35
50	30*	45	40	35	30
45	35	-	40	35	35
45	30*	-	40	35	30
45	25*	-	35	30	25
40	30	-	35	30	30
40	25*	-	35	30	25

\*\*\* The use of advisory speed plaques are optional.

\* Work area speed limits less than 25 MPH or a reduction of more than 10 MPH below the normal speed limit should be used only when required by restrictive features in the work zone and require prior approval. See Publication 212 for further guidelines.

**TABLE 5.**  
FLASHING ARROW PANEL GUIDELINES

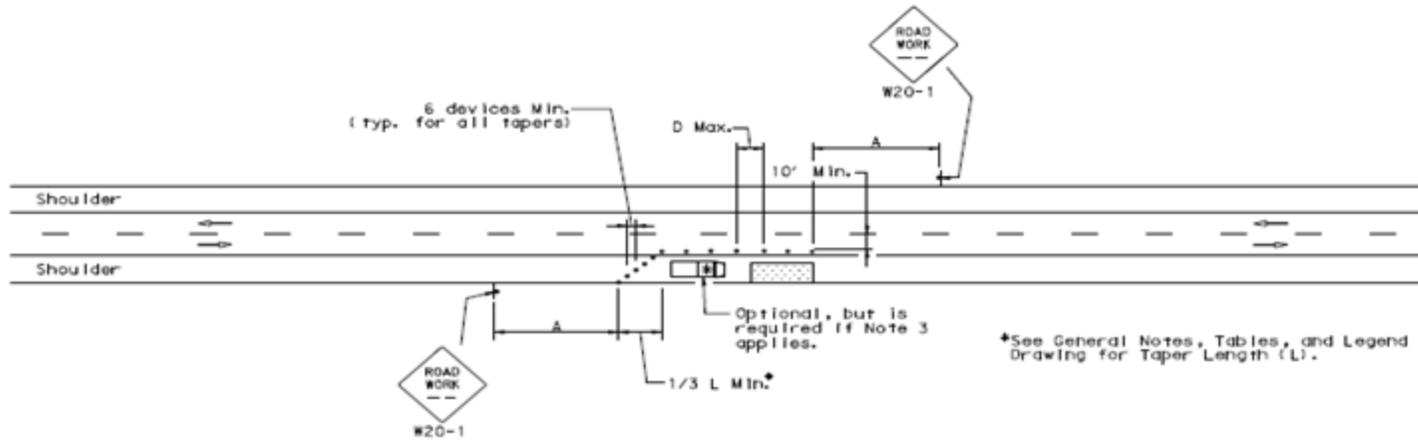
Panel Type	Size (Inches)	Application
A**	48x24	Low-speed urban Typically 25-30 MPH
B**	60x30	Intermediate-speed facility, typically 35-40 MPH and Mobile Operations
C**	96x48	Freeway and Expressway Other high-speed, high-volume roadways Typically 45 MPH or greater
D**	Length of Arrow=48 Width of Arrowhead=24	Low-speed urban, typically 25-30 MPH Short-term work not to exceed one daylight period For use on authorized vehicles only

\*\* Type A, B and C arrow panels shall have solid rectangular appearances. The Type D arrow panel shall conform to the shape of the arrow.

GENERAL

SHEET 4 OF 4

PUBLICATION 213  
 SHORT-TERM STATIONARY OPERATION  
 TWO-LANE, TWO-WAY ROADWAY - MINOR ENCROACHMENT



Distance plaques on Advance Warning signs shall be the same series type.  
 Example: either all XXX ft. or all "AHEAD"

CONDITION 1: All Highways (except Freeways and Expressways)  
 A = 500 ft., W20-1 sign distance plaque to read 500 ft. or "AHEAD"  
 D = 2 times the normal speed limit

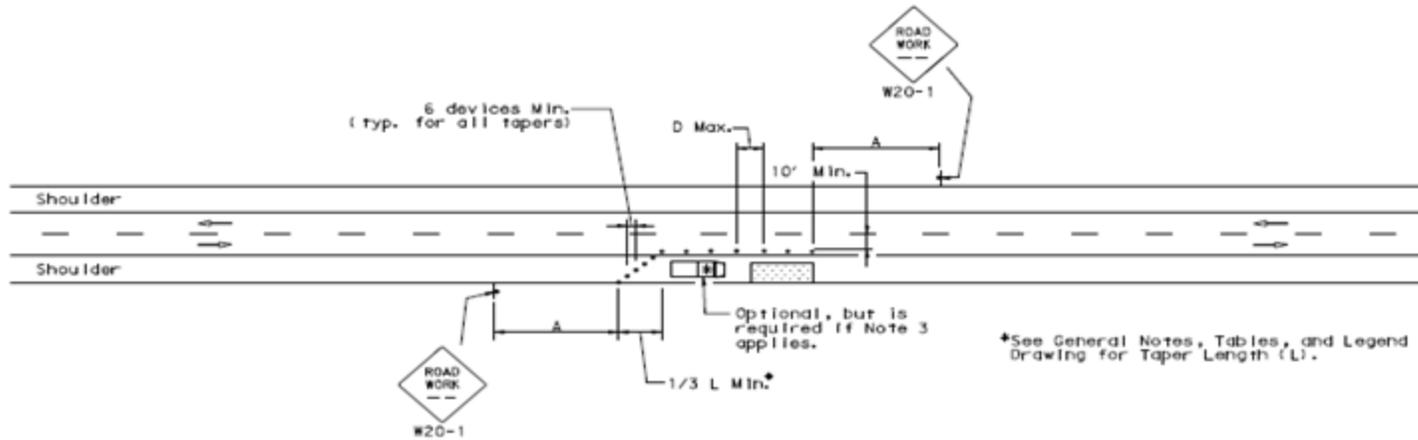
CONDITION 2: For Urban Streets  
 A = 200 ft. and sign distance plaque to read "AHEAD"  
 D = 2 times the normal speed limit

NOTES

1. If the work area is completely within a parking lane and parking is present, the taper or the vehicle with an activated or revolving yellow light is not required.
2. When paved shoulders having a width of 8' or more are closed, channelizing devices should be used to close the shoulder.
3. For operations of 15 minutes or less:
  - a. The W20-1 Sign is not required.
  - b. All channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is present in advance of the work space.
4. Additional signs may be appropriate (Road Narrows sign, No Guide Rail sign, and so forth).

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PUBLICATION 213  
 SHORT-TERM STATIONARY OPERATION  
 TWO-LANE, TWO-WAY ROADWAY - MINOR ENCROACHMENT



Distance plaques on Advance Warning signs shall be the same series type.  
 Example: either all XXX ft. or all "AHEAD"

CONDITION 1: All Highways (except Freeways and Expressways)  
 A = 500 ft., W20-1 sign distance plaque to read 500 ft. or "AHEAD"  
 D = 2 times the normal speed limit

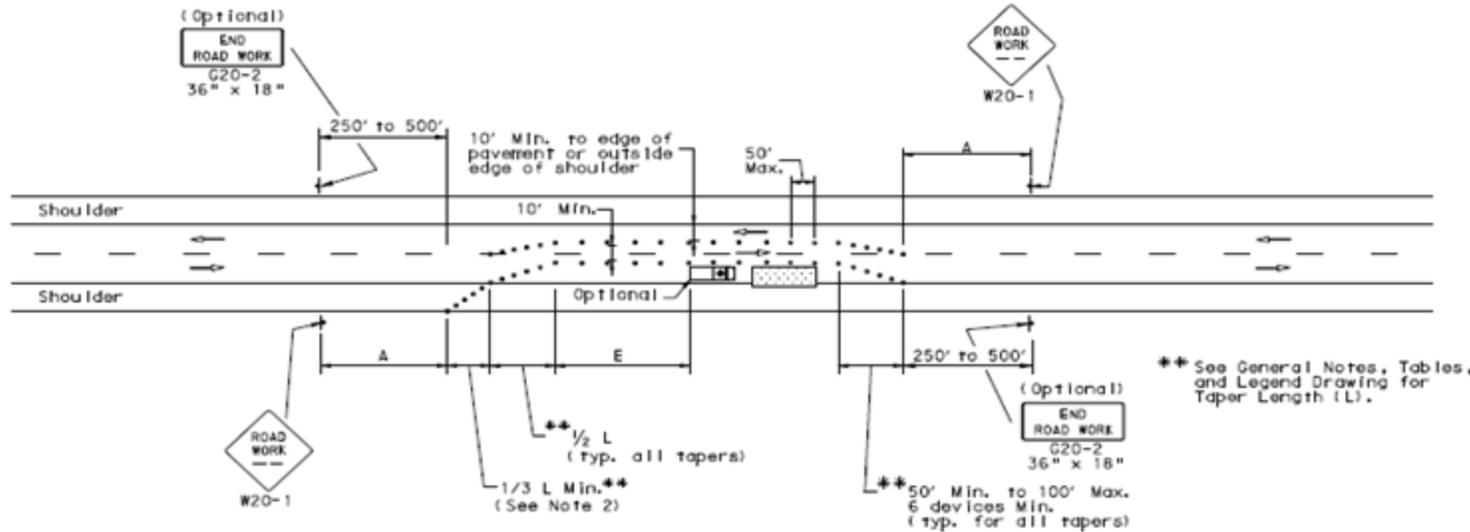
CONDITION 2: For Urban Streets  
 A = 200 ft. and sign distance plaque to read "AHEAD"  
 D = 2 times the normal speed limit

NOTES

1. If the work area is completely within a parking lane and parking is present, the taper or the vehicle with an activated or revolving yellow light is not required.
2. When paved shoulders having a width of 8' or more are closed, channelizing devices should be used to close the shoulder.
3. For operations of 15 minutes or less:
  - a. The W20-1 Sign is not required.
  - b. All channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is present in advance of the work space.
4. Additional signs may be appropriate (Road Narrows sign, No Guide Rail sign, and so forth).

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PUBLICATION 213  
 SHORT-TERM STATIONARY OPERATION  
 TWO-LANE, TWO-WAY ROADWAY - MAJOR ENCROACHMENT



\*\* See General Notes, Tables, and Legend Drawing for Taper Length (L).

Distance plaques on Advance Warning signs shall be the same series type.  
 Example: either all XXX ft. or all "AHEAD"  
 CONDITION 1: All Highways (except Freeways and Expressways)  
 A = 500 ft., W20-1 sign distance plaque to read 500 ft. or "AHEAD"  
 CONDITION 2: For Urban Streets  
 A = 200 ft. and sign distance plaque to read "AHEAD"

All Highways (except freeway and expressway)		
MPH	D	E*
	ft	ft
25	50	155
30	60	200
35	70	250
40	80	305
45	90	360
50	100	425
55	110	495

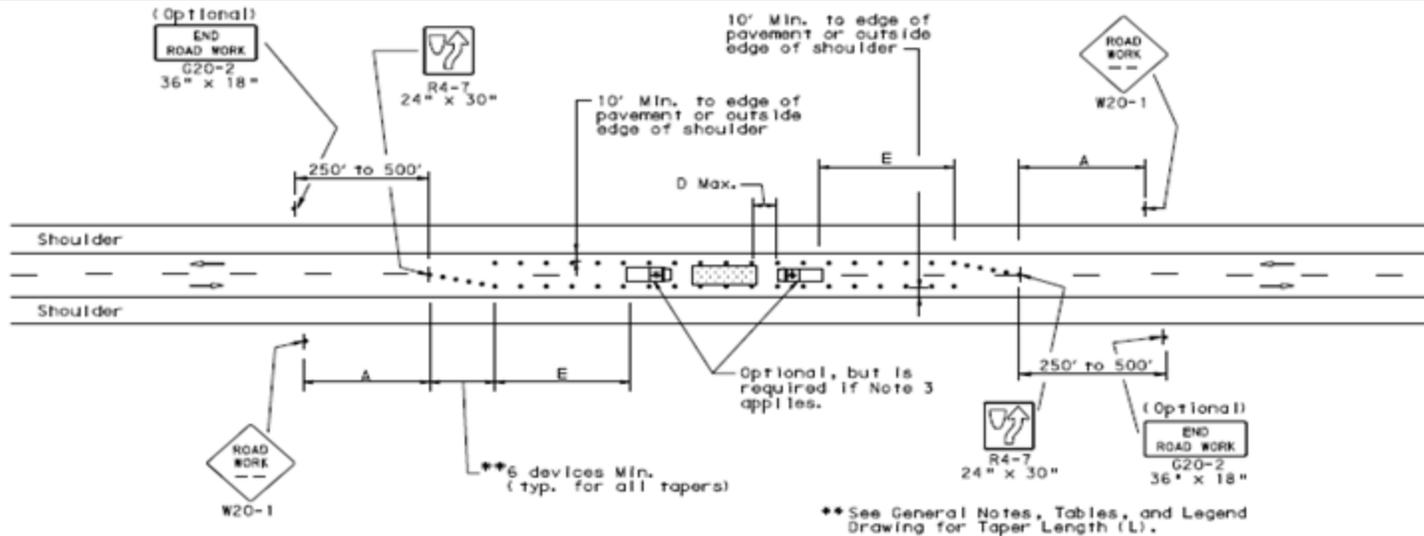
\* Distances may be increased for downgrades or other conditions that affect stopping sight distance.

NOTES

1. Where traffic is required to use a shoulder, it must be a paved shoulder that is in good condition both during the period it is being used by traffic and also after the work is completed.
2. When paved shoulders having a width of 8 ft or more are closed, channelizing devices should be used to close the shoulder in advance of the shifting taper.
3. Parking shall be prohibited where required. Coordinate with local authorities.

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PUBLICATION 213  
 SHORT-TERM STATIONARY OPERATION  
 TWO-LANE, TWO-WAY ROADWAY - WORK AREA IN THE CENTER OF THE ROADWAY



All Highways (except freeway and expressway)		
MPH	D	E*
25	50	155
30	60	200
35	70	250
40	80	305
45	90	360
50	100	425
55	110	495

\*Distances may be increased for downgrades or other conditions that affect stopping sight distance.

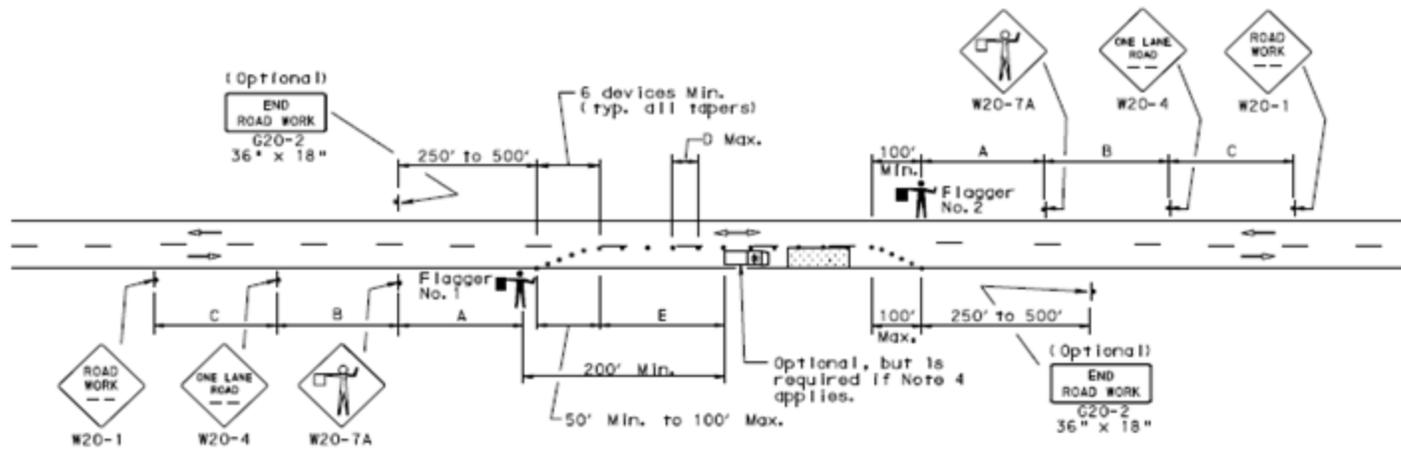
Distance plaques on Advance Warning signs shall be the same series type.  
 Example: either all XXX ft. or all "AHEAD"  
 CONDITION 1: All Highways (except Freeways and Expressways)  
 A = 500 ft., W20-1 sign distance plaque to read 500 ft. or "AHEAD"  
 CONDITION 2: For Urban Streets  
 A = 200 ft. and sign distance plaque to read "AHEAD"

NOTES

1. Where traffic is required to use a shoulder, it must be a paved shoulder that is in good condition both during the period it is being used by traffic and also after the work is completed.
2. The lanes on either side of the center work space should have a minimum width of 10 ft as measured from the near edge of the channelizing devices to the edge of pavement or the outside edge of paved shoulder.
3. For operations 15 minutes or less, channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is present in advance of the work area and two, 10 ft minimum width lanes can be maintained past the work area.
4. Parking shall be prohibited where required. Coordinate with local authorities.

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PUBLICATION 213  
SHORT-TERM STATIONARY OPERATION  
TWO-LANE, TWO-WAY ROADWAY - FLAGGING



Distance plaques on Advance Warning signs shall be the same series type.  
Example: either all XXX ft. or all "AHEAD"

CONDITION 1: All Highways (except Freeways and Expressways)  
A = 500 ft.  
B = 500 ft., W20-4 sign distance plaque to read 1000 ft. or "AHEAD"  
C = 500 ft., W20-1 sign distance plaque to read 1500 ft. or "AHEAD"

CONDITION 2: For Urban Streets  
A, B and C = 200 ft. and sign distance plaque to read "AHEAD"

All Highways (except freeway and expressway)		
MPH	D	E*
25	50	155
30	60	200
35	70	250
40	80	305
45	90	360
50	100	425
55	110	495

\*Distances may be increased for downgrades or other conditions that affect stopping sight distance.

NOTES

- All flaggers must be in communication with each other.
- Each flagger should be clearly visible to traffic for a minimum distance of E.
- At night, flagger stations shall be illuminated, except in emergencies.
- For operations of 15 minutes or less:
  - The W20-1 and W20-4 Signs are not required.
  - All channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is present in advance of the work space.
  - The W20-7A Sign may be eliminated if the flagger is clearly visible to traffic for a minimum distance of E.
- The buffer space should be extended so that the two-way traffic taper is placed before a horizontal (or crest vertical) curve to provide adequate sight distance for the flagger and a queue of stopped vehicles.
- When a highway-rail grade crossing exists within the work zone, or it is anticipated that queues resulting from the lane closure might extend through a highway-rail grade crossing, provisions shall be made to eliminate conflicts, which may require placing a flagger at the crossing. Coordination with the railroad is essential.

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## **Section 41: Storm Safety and Guidelines**

- A. High winds can cause worker injury by:
  - 1. Blowing you off elevated surfaces.
  - 2. Causing elevated equipment to fail and collapse.
  - 3. Causing trees and tree limbs to fall on you.
  - 4. Causing heavy objects to blow into you.
  - 5. Causing weak structures to collapse on top of you.
  
- B. For bucket truck/elevated platforms/ladder workers, suspend elevated operations when:
  - 1. Lightning is in the area
  - 2. Wind speeds exceed 30 mph or less based on the recommendations of the equipment manufacturer
  
- C. For general outdoor workers, consider suspending “non-essential” outdoor operations and seeking substantial shelter when wind speeds reach “tropical storm force” (39 to 73 mph).
  
- D. For general outdoor workers, suspend “essential” outdoor operations and seek immediate substantial shelter when:
  - 1. Lightning is in the area
  - 2. Wind speeds reach “hurricane force” (74 mph and above)

### **Applicable Standards and Guidelines**

- A. High Winds
  - 1. Tropical storm-force winds are strong enough to be dangerous to those caught in them. For this reason, emergency managers plan on having their evacuations complete and their personnel sheltered *before* the onset of tropical storm-force winds, not hurricane-force winds.
  - 2. Hurricane & dash force winds, 74 mph or more, can destroy buildings and mobile homes. Debris, such as signs, roofing material, siding and small items left outside become flying missiles during hurricanes. Winds can stay above hurricane strength well inland. In 2004, Hurricane Charley made landfall at Punta Gorda on the southwest Florida coast and produced major damage well inland across central Florida with gusts of more than 100 mph.

Ref:

<http://www.nhc.noaa.gov/prepare/hazards.php#wind>

<http://www.nhc.noaa.gov/aboutsshws.php>

- B. Tropical Storm: A tropical cyclone in which the maximum sustained surface wind speed (using the U.S. 1-minute average) ranges from 34 kt (39 mph or 63 km/hr) to 63 kt (73 mph or 118 km/hr).

1. Tropical Storm Warning: An announcement that tropical storm conditions (sustained winds of 39 to 73 mph) are *expected* somewhere within the specified area within 36 hours.

Ref:

<http://www.nhc.noaa.gov/aboutgloss.shtml>

2. Do not operate the boom if wind gusts exceed 30 mph or there is a threat of an electrical storm.

Ref:

<http://buckettrucks.org/safety.htm>

3. Do not operate the articulating aerial boom if...
  - a. wind gusts exceed 30 mph
  - b. there is or could be an electrical storm

Ref:

[https://www.amherst.edu/offices/enviro\\_health\\_safety/polpro/buckettruck\\_safety](https://www.amherst.edu/offices/enviro_health_safety/polpro/buckettruck_safety)

#### C. Beaufort Scale 6- *Wind Speed 25 – 31 mph*

1. At scale 6 on the Beaufort scale large branches will begin to sway, umbrellas will also be very difficult to use in these windy conditions. If you start to notice that telephone and electricity wires start to whistle not only should you stop work and get down from the tower, you should also dismantle it ASAP.

Ref:

<http://aluminium-scaffoldtower.com/when-you-shouldnt-be-working-on-an-aluminium-scaffold-tower/>

#### D. Beaufort Scale

Ref:

<http://www.spc.noaa.gov/faq/tornado/beaufort.html>

## **REFERENCE MATERIAL**

American National Standard Institute  
American Welding Society  
National Fire Protection Association  
Underwriters Laboratories  
Occupational Safety and Health Administration  
Mine Safety and Health Administration  
ICC International Fire Code  
ICC International Building Code  
Factory Mutual Insurance Company

## **ACRONYMS AND ABBREVIATIONS**

ANSI	American National Standards Institute
AWS	American Welding Society
CFR	Code of Federal Regulations
DOT	Department of Transportation
FM	Office of the Fire Marshal
LP-GAS	Liquefied Petroleum Gas
MSHA	Mine Safety and Health Administration
NEC	National Electrical Code
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
UL	Underwriters Laboratories, Inc.
SDS	Material Safety Data Sheets
PPE	Personal Protective Equipment

## **SAFETY EQUIPMENT ISSUED**

<u><b>ITEM</b></u>	<u><b>QUANTITY</b></u>	<u><b>ISSUED</b></u>	<u><b>EXPIRES</b></u>	<u><b>INITIAL RECEIVED</b></u>
HARD HAT	1	_____	_____	_____
SAFETY GLASSES	1	_____	_____	_____
DISPOSABLE EAR PLUGS	1	_____	_____	_____
SAFETY VEST	1	_____	_____	_____
FLASHLIGHT	1	_____	_____	_____
GLOVES	1	_____	_____	_____
N95 DUST RESPIRATOR	1	_____	_____	_____
GFI TESTER	1	_____	_____	_____

I confirm that I have received the above listed safety equipment for use during employment at Doylestown Township. I will immediately request equipment replacement from my Supervisor upon, loss, breakage, use of disposable items or expiration of item.

These items remain the property of Doylestown Township.

PRINT NAME \_\_\_\_\_ SIGN \_\_\_\_\_  
 DEPT. \_\_\_\_\_ SUPERVISOR \_\_\_\_\_  
 DATE \_\_\_\_\_



425 Wells Road  
Doylestown, Pennsylvania 18901  
(215) 348-9915 · FAX (215) 348-8729  
[www.doylestownpa.org](http://www.doylestownpa.org)

**ACKNOWLEDGEMENT OF RECEIPT OF SAFETY MANUAL**

I hereby acknowledge that I have received, I have reviewed and I have had an opportunity to ask questions regarding the contents of this safety and health manual. Furthermore, I understand that by signing the below, I agree to comply with the contents of this safety and health manual.

Name of employee (print): \_\_\_\_\_

Signature of employee: \_\_\_\_\_

Date: \_\_\_\_\_

Witnessed by (print): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## GLOSSARY OF TERMS AND DEFINITIONS

**APPROVED** – A method, equipment, procedure, practice, tool, etc., which is sanctioned, consented to, confirmed, or accepted as good or satisfactory for a particular use or purpose by a person or organization authorized to render such approval or judgment.

**AUTHORIZED PERSON** – A person approved or assigned by the employer to perform a specific type of duty or to assume a specific responsibility.

**CERTIFIED OR LICENSED** – One who possesses a license or certificate issued by a recognized authority, attesting that he/she has been trained and/or tested and is competent and qualified in a specific field of endeavor.

**COMPETENT PERSON** – A person who by training and or experience is capable of performing specifically assigned duties and responsibility. Further, he/she is capable of recognizing existing and predictable hazards or conditions which are unsanitary hazardous, or dangerous and is authorized to initiate prompt corrective action.

**CONFINED SPACE** – Any space having a limited means of egress, which may be subject to the accumulation of toxic or flammable contaminants or an oxygen deficient atmosphere. Confined spaces include, but are not limited to, tunnels, shafts, storage tanks, silos, bins, vaults, pipelines and conduits.

**CONTAMINANT** – Any material which, by nature of its composition or reaction with other materials is potentially capable of causing injury or illness to a person or persons.

**DANGER** – A term denoting liability or potential to cause injury, death, illness, damage, loss or pain.

**DESIGNATED PERSON** – Synonymous with an authorized person.

**HAZARD** – A dangerous condition, potential or inherent, which can bring about an interruption or interference with the expected orderly progress of an activity.

**ONSITE CONSTRUCTION OPERATION** – All construction activity performed within the confines of the project or construction site as specified in contract documents. It also includes all activities on property used by the contractor or his subcontractors, for the purpose of implementing work under the contract.

**QUALIFIED** – Refers to one who, by possession of recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated ability to solve or resolve problems relating to the subject matter, the work, or the project.

**SAFE** – Means relatively free from damage or hazard which could cause result in injury, illness or damage.

**SCAFFOLD GRADE** – Lumber designated as suitable for scaffold planking by approved grading rules for the species of wood used. It shall be at least 2 inches thick, knot free, with a minimum allowable horizontal shearing stress of 100 lb./in.

**SUPERVISOR** – A person held responsible for behavior and production of a group of employees, usually refers to a manager, foreman or superintendent.

**TOXIC** – Pertaining to, or caused by poison, poisonous, harmful.

**UNSAFE CONDITION** – Any physical state which deviates from that which is acceptable or correct in terms of its past production future productions of personal injury, illness and/or damage to property. Also, any physical state which contributes to a reduction in the degree of safety.