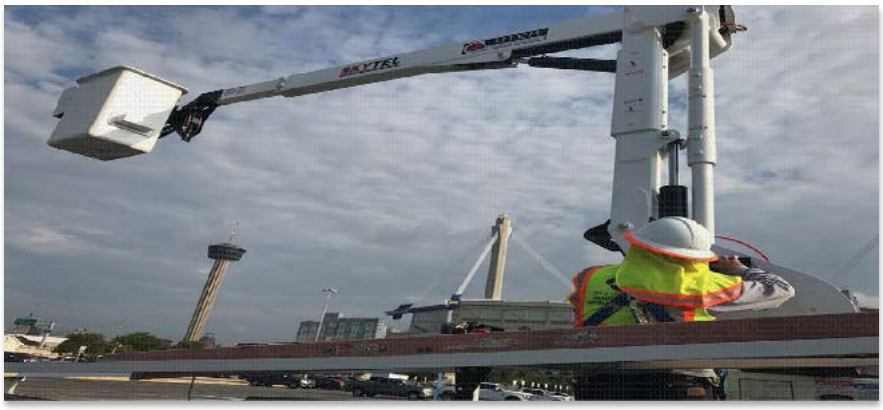
CITY OF SAN ANTONIO

Working Safer, Together



CITY SAFETY MANUAL

OFFICE OF RISK MANAGEMENT

October 1, 2024

CITY OF SAN ANTONIO EST. 1718

COREValues
Teamwork · Integrity · Innovation · Professionalism

The revised manual supersedes all previous published manuals and is no longer available in hardcopy or on flash drives.

TABLE OF CONTENTS

INTRODUCTION

PURPOSE

The purpose of this manual is to provide the City of San Antonio (COSA) departments witha uniform set of safety guidelines to assist in the administration of our safety program and provide the means and methods to aid in performing all routine and non-routine tasks in a safe and efficient manner.

This manual is intended to complement existing Administrative Directives, establish and clarify general procedures, and best management practices into one document for easy reference.

Although this manual provides the overall general guidelines for all COSA departments, itis the responsibility of each department and each employee to become familiar with, and follow procedures of this manual where applicable, and conduct all tasks in a safe and efficient manner. Risk Management is available to assist departments in interpreting relevant safety guidelines applicable to their department needs.

Although safety requirements may differ throughout each department, it is the responsibility of the department to establish and oversee implementation of policies, procedures, and associated forms to address all safety hazards specific to their departmental activities.

SCOPE

COSA Executive Leadership shall provide the necessary support to managers and supervisors responsible for administration, implementation and adherence to the guidelines outlined in this manual. Department management is expected to set the example for employees to follow. Failure of department management to implement safe work practices into departmental activities can result in injury to employees.

IMPLEMENTATION

To effectively implement the guidelines of this safety manual, the following key elements must be followed:

- Executive Leadership to work with managers and supervisors in establishing occupational safety, health, and environmental policies and performance goals;
- Ensure all employees are informed and accountable for achieving goals;
- Develop standardized programs to serve as the basis in creating safe work processes;
- Encourage all employees to take personal ownership of their own safety and adhere tosafety program requirements;

- Perform hazard and risk assessments to identify existing and potential hazardous situations, and take action to eliminate such hazards;

- Train employees on how to perform work in a safe manner and manage hazards associated with their job duties;

- Establish and track safety performance to document safety program effectiveness and identify areas requiring improvement;

- Ensure all work-related accidents, injuries, illnesses, and near misses are reported and investigated for root-cause; and corrective measures are implemented to prevent recurrence;

- Conduct periodic reviews of department policies and procedures to ensure information is current and remains relevant; and

- Empower employees to be aware of their work environment, follow all safety requirements, and STOP all work activities that appear to be unsafe.

SECTION 1 – MANAGER'S, SUPERVISOR'S AND EMPLOYEE'S SAFETY GUIDELINES

1) GENERAL

A) This section contains general safety guidelines for managers, supervisors and employees.

B) Managers and supervisors are in unique positions of trust and have direct oversight of employees, their activities and to provide for the safety of those supervised. They are in key positions in the organizational structure to carry out the department's safety policies and procedures and to prevent injuries to their employees while accomplishing program objectives. Managers and supervisors have the responsibility to:

i) Safeguard the well-being of employees in their section.

ii) Ensure employees are protected against unsafe working conditions where possible.

iii) Ensure that unsafe hazards are reported and corrected.

iv) Ensure employees receive adequate safety training.

v) Investigate accidents and injuries in a timely manner.

vi) Release employees back to regular work if an employee issues a STOP-WORK order once the unsafe event has been addressed and is determined to be safe/normal working operations.

C) Employees is an all-encompassing term used to indicate all City of San Antonio employees. Employees have the responsibility to:

i) Comply with all approved instructions, guidance, manuals, guides, and operating procedures.

ii) Identify and report hazardous conditions that place personnel and property at risk to their supervisor.

iii) Promptly report personal injury, vehicle accidents, near misses and property damage utilizing the appropriate form.

iv) Use the appropriate PPE for the job task to include inspecting and maintaining it.

v) Comply with required medical surveillance examinations.

vi) Assess personal safety and the safety of surrounding employees, issuing a STOP-WORK order if they feel as though themselves or surrounding employees are in immediate danger.

vii) The following conditions constitute a STOP-WORK order:

a) Alarms,

b) Change in conditions,

c) Emergency situation,

d) Equipment used improperly,

e) Lack of knowledge, understanding or information,

f) Near-miss incident, or

g) Unsafe condition

D) On the job accidents adversely affect the physical well-being of employees and decrease productivity. Accident prevention requires constant attention and managers and supervisors shall:

i) Ensure a safe work environment is provided and employee safety remains a top priority.

ii) Become familiar with the COSA Safety Manual and understand which guidelines apply to department employees and specific operations.

iii) Anticipate the risks that may arise from changes in equipment or procedures. Review routine and non-routine operations to guard against new hazards.

iv) Take necessary actions to eliminate hazards and unsafe practices within your control. Prohibit employees from engaging in activities they have not been properly trained to perform.

v) Encourage employees to provide ideas that can improve work practices and procedures. Employees performing day-to-day job tasks are a source of knowledge that can help prevent injury.

vi) Ensure employees receive continuous training in accident prevention and performing job tasks safely.

vii) Monitor employee's work performance and proper use of personal protective equipment. Ensure employees are accountable for performing all tasks in a safe manner.

viii) Set a good example by adhering to established safety guidelines and performing work in a professional manner.

ix) Investigate and report all accidents and injuries no matter how minor. Ignoring minor injuries may develop into a serious injury if proper treatment is delayed.

x) Cooperate fully with those in the organization or contracted by COSA who are actively involved in employee safety.

xi) Conduct regular safety meetings to update employees on safety matters, training opportunities, and discuss safety ideas.

xii) Promote safety consciousness by ensuring employees receive safety communication timely and that employees attend safety meetings and training on a regular basis.

xiii) Monitor work areas, equipment, and tools to ensure a safe workplace is maintained.

E) The Safety and Health Program Assessment Checklist is used to assist managers and supervisors in evaluating the safety program within their department and is located on the Risk Management's website at http://www.sanantonio.gov/RiskManagement/Safety.

SECTION 2 – SAFETY TRAINING

Occupational safety and health training needs will be identified by Risk Management based on work tasks, supervisor and/or employee input, accident and injury data, and regulatory requirements. Risk Management will develop and offer training topics periodically throughout the year to assist administrative and field employees in maintaining safety awareness to help mitigate workplace exposures. Training may be presented using web-based or instructor led methods. Departments will be responsible for initial safety orientation and may develop job specific training.

1) SAFETY TRAINING PROGRAM GUIDELINES

A) **Safety Orientation:** Occupational safety and health orientation training begins on thefirst day of initial employment or job transfer.

i) Supervisors shall ensure each employee has access to COSA Safety Manual to reviewsafety rules, policies, and procedures pertaining to their job via COSA Intranet.

ii) Supervisors shall ask questions of employees and answer employees' questions toensure safety rules, policies, and procedures are understood.

B) **Job Specific Training: Job specific training shall be conducted by qualified personnel, experienced and competent in the subject matter. Supervisor shall:**

i) Carefully review applicable safety rules, policies, and procedures specific to the department with each employee.

ii) Ensure employees are trained in performing all work tasks before being permitted to do the work without supervision.

iii) Provide employees with clear instructions and directions on how to perform all assigned work tasks safely.

iv) Observe employees performing work tasks and demonstrate using safe work practices or providing remedial instruction to correct training deficiencies.

v) Be responsible for documenting employee training and maintaining training records.

2) RESPONSIBILITIES

A) Departments are responsible for distributing information relative to employee trainingand arranging training site and work schedule for attending.

B) Departments shall ensure all developed departmental safety training material be reviewed and approved by Risk Management prior to training.

C) Departments shall ensure employees attended training as scheduled.

SECTION 3 – ALCOHOL AND CONTROLLED SUBSTANCES

1) GENERAL

A) In accordance with Administrative Directive 4.3 Alcohol and Controlled Substances Testing, COSA has a zero-tolerance policy for which termination of employment will result for positive test results. A refusal, as defined in AD 4.3, results in the same consequence (termination) as positive alcohol and drug test results. Positive alcohol .04 and above and drug screening results will be reported to DOT for existing COSA CDL employees and CDL Pre-hires. Additionally, positive alcohol and drug screening results for all pre-hires will result in a withdrawal of employment offer.

B) Commercial Driver's License (CDL) and primary drivers shall be tested for alcohol, controlled substances, and illegal drugs. CDL drivers will be tested in accordance with the Department of Transportation (DOT) regulations and requirements. A non-DOT DrugTest will be administered to CDL drivers when circumstances for testing do not meet DOT regulations and requirements; and for all other employees when appropriate.

C) This section applies to all City employees and candidates seeking employment with COSA, excluding uniform employees under Collective Bargaining Agreements.Candidates seeking employment will be expected to participate in pre-employment testing; current employees will be subject to random, post-accident, and reasonable suspicion testing.

D) DOT testing guidelines require all positive results for CDL drivers be reported to DOT.

E) CDL drivers with a Blood Alcohol Concentration (BAC) level of .02 but less than .04 is not considered to be a positive test under DOT regulations.

F) At no time will non-CDL employees be added to or included in any CDL random testing database or testing event. The CDL random testing process will remain separate in all aspects from any other random testing pool.

G) Non-DOT alcohol and drug testing will always be utilized for all employees not possessing a commercial driver's license.

H) Employees may be escorted by a supervisor/manager to the COSA Occupational Health Clinic. Transportation to their home will be secured for any employee testing positive for alcohol or shows any signs of impairment.

I) Employees will remain in a non-driving status (except when selected for random testing) and placed on administrative leave until negative lab results are received by Risk Management/Human Resources.

J) No employee shall be on duty, operate COSA equipment or personal vehicle on COSA business while in the possession of alcohol, controlled substance or illegal drugs.

K) Employees are prohibited from performing any job functions while under the influence ofalcohol, illegal drugs or a controlled substance, except when the use is pursuant to the instructions of a physician, who has advised the employee that the effects of the substance will not adversely affect their ability to safely perform their job duties.

L) COSA Occupational Health Clinic shall be utilized for testing. Information and instructions can be found on Risk Management's website at http://www.sanantonio.gov/RiskManagement/Safety.

2) PRE-EMPLOYMENT AND TRANSFER EMPLOYEES

A) All potential new hires and current employees being considered for a position must first pass a drug test. Candidates being considered for a position requiring a CDL will be given a DOT drug test, whereas non-CDL required positions will be given a non-DOT drug test.

B) Human Resources will ensure candidates are notified of the drug testing requirements and have candidates report immediately to the designated Occupational Health Clinic for testing upon notification.

C) CDL drivers with positive results or refused to test result will be reported to DOT and processed by Human Resources in accordance with DOT regulations and Administrative Directive 4.3 Alcohol and Controlled Substances Testing.

D) Candidates and current employees being considered for a transfer into a position but testing positive will be terminated. Employees refusing to test when applying for a transfer or promotion position will have the refusal deemed a positive test result.

3) RANDOM ALCOHOL AND DRUG TESTING

A) All CDL and primary drivers are subject to random drug and alcohol testing.

B) Monthly during the fiscal year, Risk Management will electronically generate a random list of CDL and primary drivers for testing. The CDL list will be in compliance with DOT requirements. The frequency and number of primary drivers will be determined in accordance with City budgetary allowance each year. The CDL and primary driver's random pools shall not be comingled.

C) Risk Management will provide the random testing list to departments for employees selected to be tested.

D) Risk Management will post testing packets in SharePoint for departments. Confidentialityof notification for testing is essential and testing packets will not be provided to departments prior to the week of testing. The department point of contact will provide thetesting roster to supervisors of selected employees.

E) Employees may be escorted by their supervisor or manager to the Occupational Health clinic with a valid license for identification for purposes of conducting the test.

F) Supervisor is to ensure employees are given minimum possible advance notice that he/she must go to the collection site; therefore, employees must report for random testing within 2 hours of notification.

G) A refusal to test will be considered a positive test and will result in termination.

H) COSA departments are responsible for ensuring the list of CDL and primary drivers are kept current. Each department will provide current listings and report any changes to theirdesignated Human Resources representative immediately to facilitate immediate updates to SAP.

4) REASONABLE SUSPICION ALCOHOL AND DRUG TESTING

A) Reasonable Suspicion testing shall comply with the following requirements below.

i) All COSA employees are subject to reasonable suspicion testing; testing for CDL drivers will meet DOT requirements.

ii) Only managers and supervisors trained in Reasonable Suspicion may request that an employee be tested under reasonable suspicion. Therefore, all COSA managers and supervisory employees shall receive one (1) hour of alcohol and one (1) hour of drug awareness training at a minimum; and

iii) Alcohol and drugs awareness training must be approved by Risk Management andpresented by qualified individuals; training will contain at a minimum:

a) The identity of the person(s) in COSA organization designated to answer questions and provide information regarding reasonable suspicion testing;

b) Specific information working hours of compliance, physical, behavioral, andperformance indicators of probable alcohol and drug use;

c) Communicating the types of prohibited conduct;

d) The circumstances under which an employee may be tested;

e) Protecting employee privacy, and the integrity of the testing process;

f) The signs and symptoms associated with drug use;

g) The signs and symptoms associated with alcohol misuse;

h) Information on the Employee Assistance Programs (EAP) and SubstanceAbuse Professional (SAP);

i) Properly documenting and completing the reasonable suspicion process.

B) Once a trained manager or supervisor has identified an employee meeting the reasonable suspicion criteria, and upon verification by a second trained manager or supervisor, Human Resources (Risk Management for CDL drivers) shall be notified. The employee will be escorted to the appropriate testing facility. Refusal to test will be treated as a positive test result.

C) CDL drivers shall be tested for reasonable suspicion under DOT requirements when the observation is confirmed just before, during, or after the employee performed CDL functions.

D) Reasonable Suspicion observation of CDL drivers not meeting DOT criteria and non- DOT employees will be subject to a non-DOT test.

E) The manager or supervisor having identified the employee for reasonable suspicion testing will immediately complete the COSA Reasonable Suspicion/Belief Form and forward the form to Human Resources (Risk Management for CDL drivers). The form can be found on Risk Management website at http://www.sanantonio.gov/RiskManagement/Safety.

F) The manager or supervisor escorting the employee for testing will inform the testing facility when a DOT or non-DOT alcohol and drug test is required.

G) An employee having been drug tested under reasonable suspicion will not be allowed to return to work and shall be placed on administrative leave until a negative lab result is received by Human Resources (Risk Management for CDL drivers). Transportation home shall be secured for the employee.

H) In the event of a positive result, the testing facility Medical Review Officer (MRO) will contact the employee for justification of the positive result. If the positiveresult is not justifiable, the MRO will notify Human Resources (Risk Management for CDL drivers).

I) Human Resources will immediately remove employees who test positive for alcohol and drugs from all duties and will begin the employment termination process. While alcohol results are known immediately, drug results may take up to three (3) days but can vary depending on the circumstances. Positive CDL driver results will be reported to DOT.

5) POST ACCIDENT DRUG AND ALCOHOL TESTING

A) Any COSA employee who is involved in an equipment or vehicle accident in a COSA-owned or personal vehicle while conducting COSA business, shall notify their supervisor immediately. The employee shall remain at the scene of the accident until a supervisor arrives or provides other instructions.

B) COSA employees shall be tested for alcohol and drugs when there is reasonable suspicion or when any of the following apply:

i) The vehicle accident results in bodily injury to person(s) involved receiving immediate medical treatment away from the scene;

ii) Disabling damage to any vehicle involved requiring tow-away from the scene asa result of the accident;

iii) Accident involved the striking of a pedestrian;

iv) Accident involving the loss of human life;

v) A citation is issued to the COSA employee

C) CDL drivers involved in an accident while performing CDL functions on a public road must receive a citation or be involved in a loss of human life before being tested under DOT requirements. CDL drivers involved in accidents not meeting DOTrequirements for testing shall be subject to COSA non-CDL testing requirements in accordance with Administrative Directive 4.3 Alcohol and Controlled Substances Testing.

D) Managers and supervisors shall report all testing event to Human Resources immediately (Risk Management for CDL drivers).

E) Employees involved in an accident meeting the criteria described above shall be escorted the COSA Occupational Health Clinic by a supervisor or designee for alcohol and drug testing immediately or as soon as possible of the accident being reported. If a test is not administered within two (2) hours, the supervisor shall prepare a statement as to why the test was not promptly administered. The supervisor or designee will advise the testing facility of the need for a DOT or non- DOT alcohol and drug test.

F) When accidents occur after business hours and on a COSA-approved holiday, theemployee(s) may be transported to a hospital or follow after-hour protocol. Information can be found on Risk Management's website at http://www.sanantonio.gov/RiskManagment/Safety.

G) Employees leaving the scene of an accident before being escorted for testing willbe considered to have refused to submit to testing and will be considered as having positive results. Positive results will result in termination.

SECTION 4 – DRIVER SAFETY

1) GENERAL

A) COSA employees operating vehicles on COSA business are covered by Administrative Directive 4.8, Driver Safety Program, and shall adhere to all rules, regulations and standards of COSA's driver safety program. COSA employees shall also adhere to any departmental, division and section rules and regulations related to driver safety.

B) Defensive driving practices are those that are legally correct and consistent with safety to all users of the streets and highways. Departments shall ensure drivers, with the exception of non-primary drivers, take defensive driving prior to operating COSA owned vehicles or personal vehicles on COSA business, and every three (3) years thereafter. Non-primary drivers will attend a driver safety course as deemed necessary by their department. Drivers shall operate COSA vehicles in a safe and prudent manner. Employees shall drive defensively at all times and take reasonable action to avoid accidents and mishaps.

C) Vehicles are defined as any motor-driven or self-propelled vehicle with two or more wheels used on streets, highways, or COSA property, whether or not required to be registered under the laws of Texas; A Privately-Owned Vehicle driven in the course and scope of conducting COSA business.

D) Shared Micro-mobility is defined as the shared use of a bicycle, scooter, or other low- speed mode to include station-based bike sharing (a bicycle picked-up from and returned to any station or kiosk) and dock-less bike sharing and scooter sharing (a bicycle or scooter picked up and returned to any location).

E) Employees who drive COSA vehicles shall have a valid Texas driver's license, or commercial driver's license (CDL) as required in their possession while driving. COSA does not recognize an Occupational License or any other restrictive license to be a valid driver's license. Individuals with these types of licenses shall not be authorized to drive for COSA. The driver must be aware of his/her driver's license status at all times. Military dependents are exempt from having a Texas driver's license; however, they must maintain a current valid state issued driver's license.

F) Employees are required to obey all traffic regulations. Violations of traffic laws, COSA administrative directives, COSA Safety Manual guidelines, or departmental procedures may lead to disciplinary action. Fines and penalties for violations of traffic laws and parking restrictions are the responsibility of the employee.

G) Improper use of a COSA vehicle shall be subject to disciplinary action up to and including termination.

H) Employees are NOT permitted to:

i) Exit or enter a moving vehicle;

ii) Ride with arms or legs outside any vehicle. Exceptions are firefighters and refuse collectors who ride only in areas specifically designed for that use. Theseemployees shall also use provided handrails and other safety equipment;

iii) Ride in any manner other than seated in the vehicle's seat with the exception of firefighters and refuse collectors;

iv) Ride in a trailer or in the bed of pickup trucks;

v) Operate any vehicle that they have not been trained and authorized to use;

vi) Modify vehicles or perform repairs unless such duties are within the realm of the job description and duties for which they are qualified;

vii) Operate any vehicle that does not pass an inspection of any type, i.e. pre-trip, post-trip, daily, and annual, etc. A vehicle failing an inspection is to be taken out of service for repairs by the applicable fleet or repair service; or

viii) For vehicle with dual steering positions, drive from the left-side position of a vehicle unless actively performing tasks requiring operating from the right side, or as outlined in departmental policies or procedures.

I) Employees must not exceed the listed vehicles carrying capacity. Under no circumstances shall more than three persons be seated in the front any vehicle, or any seat used for more persons than designed.

J) Warning flashers, strobe lights, safety cones, warning signs, etc., shall be used as necessary when stopped along roadways.

K) Loads that extend to the rear four (4) feet beyond the bed or body of the vehicle shall display on the extreme end of the load red flags by day and reflectors and red lights by night or conform to any current City ordinance regarding extended loads carried by vehicles

L) All trailers shall be coupled with safety chains, and an appropriate hitch.

M) Employees shall wear seat belts when driving or riding in any COSA owned vehicle or personal vehicle being utilized for COSA business if equipped with such.

N) Tobacco use is not permitted in or on any COSA vehicle.

O) Never use a vehicle for any purpose other than the purpose for which it was intended and designed.

P) The use of GPS units is permitted, provided the unit is only programmed while the vehicle is legally parked, and the unit is configured to prevent adjusting while the vehicle is moving.

Q) Only COSA vehicles that are properly licensed may be driven on public roads.

R) Employees shall not permit unauthorized persons to drive, operate or ride in or on COSA vehicles (See Administrative Directive 1.8, Vehicle Use). COSA does not allow individuals other than authorized employees to operate COSA vehicles, with exception ofthe following:

i) Employees from other municipalities being trained by COSA employees provided a qualified and authorized COSA operator is present at all times during operational training;

ii) Non-COSA personnel training COSA employees to operate new or specific types of equipment provided non-COSA personnel provide indemnification to COSA and its employees during the training;

iii) Non-COSA personnel contracted by COSA to provide repair, installation andmaintenance services on COSA-owned equipment and vehicles; and

iv) Reserve Police Officers provided all the driver eligibility requirements of COSA aremet.

S) Directors must notify Risk Management of services involving the transport of non-COSA employees and coordinate with the City Attorney for appropriate indemnification or approval.

T) Departments will ensure Emergency Service Agreements are in place as necessary.

U) All accidents and collisions will be reported to supervisors immediately. Do not leavethe scene of an accident or make any statements of liability to anyone. Refer to Section 5, Accident and Injury Procedures, for accident reporting procedures.

2) DRIVER'S EVALUATION

A) In accordance with AD 4.8, Driver Safety Program, all COSA employees and new applicants must pass the driver evaluation criteria prior to operating COSA vehicles or personal vehicles on COSA business. COSA drivers having a change in driving status will not be eligible to drive until written proof acceptable to Risk Management is provided that the adverse information has been cleared.

i) Departments shall ensure that a drivers' evaluation is completed prior to hiring, annually, upon notification of a moving citation/convection/arrest, a change in driving status, or at any interval deemed necessary to ensure driver eligibility.

ii) All departments will maintain a list of employees' eligible to drive and submit thelist annually or as requested to Risk Management. Risk Management will providea Driver's Evaluation spreadsheet for all drivers required to drive on City business to the department representative. Spreadsheet will include driver names, SAP numbers and driver license numbers.

iii) Departments are responsible for ensuring each driver has a valid Texas Driver's License and endorsements appropriate for the type of vehicle to be operated. Military dependents are exempt from having a Texas driver's license; however, they must maintain a current valid state issued driver's license [Section 4, 1) e)]

iv) Departments are responsible for ensuring employees are appropriately trained in the assigned driving positions and obtains the proper driver's license, i.e., from Class "C"to "B" or "A" or Class "B" to "A". Drivers in training must be accompanied by a driver licensed in the vehicle class the trainee is being trained.

B) A COSA employee, new applicant, or other affected individual will be eligible to driveunless a condition listed below exists:

i) Has operated or driven, or is found operating or driving a COSA-owned vehicle while intoxicated or under the influence of any alcohol or any illegal substance;

ii) License is suspended or revoked or has a state-issued occupational or temporary driver's license prohibiting an employee from performing essential job functions;

iii) Is the subject of a traffic-related arrest warrant;

iv) Is under court-mandated restrictions such as a vehicle breathalyzer lock SafetyResponsibility (SR) 22, logbook, etc.;

v) Receives citations that equal three (3) or more moving violations, including seatbelts, over a one (1) year period regardless of disposition, including dismissal pursuant to completion of probation or a plea bargain, except when adjudicated 'not guilty';

vi) Has a driving under the influence/driving while intoxicated (DUI/DWI) or controlled substance act offense conviction within the past three (3) years;

vii) Has three (3) or more "at fault" accidents in the past two (2) years;

viii) Has any combination of moving violations or "at fault" accidents that equalsseven (7) or more in the previous three (3) years;

ix) A physical or mental limitation which may interfere with the ability to safelyoperate COSA vehicles; or

x) Has a failed or refused an alcohol or drug test.

3) DRIVER ELIGIBILITY AND AUTHORIZATION

A) A driver will only be eligible and authorized to drive after completion of COSA's Defensive Driving course within 30 days of hire or transfer date and every three years thereafter, and satisfactory completion of any and all training deemed necessary by COSA Departments.

B) At a minimum, driver eligibility and authorization is determined prior to hiring and annually thereafter. Eligibility and authorization may change due to an accident, arrest, change in license status, habitual un-safe behavior, or as outlined in the policy guidelines of AD 4.8, Driver Safety Program.

4) WARRANTS AND ARRESTS

A) Risk Management receives periodic reports from Municipal Courts and Police Department identifying employees with outstanding warrants and arrests. Any current or prospective COSA driver having an outstanding traffic-related arrest warrant will not be eligible to drive for COSA. Upon notification by Risk Management, the department shall immediately remove identified employee from all driving duties. Upon signed receipt by the employee, the employee must respond to the court as ordered. Risk Management must receive documented proof that the warrant has been cleared or is in the process of being cleared through arrangements with the court having jurisdiction. Negotiations with attorneys, personal letters, or similar documentation do not constitute clearance. Risk Management will issue a letter of clearance depending on arrangements with the court and a completion of a satisfactory driver's evaluation.

B) Prospective COSA driver listed as having been arrested for a drug or alcohol related offense within 3 (three) years after the effective date of the revised AD 4.8 Driver Safety Program, will not be eligible to drive for COSA. Upon notification by Risk Management, the department shall immediately remove identified employee from all driving duties. The employee may request driver eligibility and authorization only after he/she produces verifiable evidence that his/her driver's license, and all associated driving privileges have been reinstated; and Risk Management conducts a driver's evaluation with satisfactory results.

5) TRAFFIC REGULATIONS

All persons operating any COSA vehicle shall obey all federal, state, and local traffic control laws, regulations and ordinances. Employees' failing to obey these regulations may result in disciplinary action.

6) TRAFFIC SAFETY CONES

A) Traffic safety cones are used to guide vehicular traffic around temporary work areas and to establish a “circle of safety” around parked vehicles.

B) Placement of safety cones for temporary traffic control is described in the Texas Manual on Uniformed Traffic Control Devices (TMUCD) by the Texas Department of Transportation (TxDOT).

C) The following types of safety cones are approved for use by COSA employees:

i) 18-inch fluorescent cone (*for passenger cars, station wagons, pickup trucks passenger vans and similar vehicles only);*

ii) 28-inch fluorescent cone.

7) FOLLOWING VEHICLE AHEAD

Always remain at a safe distance behind the vehicle in front. Employee shall maintain at a minimum, four (4) second following distance from the vehicle immediately in front of you.

8) SIGNALING

The proper turn signal shall be given in accordance with state law. A good rule of thumb is togive the proper signal at least 150 feet in advance of the turn.

9) PEDESTRIANS, BICYCLES AND ANIMALS

Employee should pay particular attention when approaching pedestrians, small children, persons stranded in the middle of the roadway, persons riding bicycles, or animals in or near the road. In this situation, adjust speed, steer as far away from them as possible and be ready to come to a stop if necessary.

10) INTERSECTIONS

Employees approaching intersections and side streets should always scan left-right-left for oncoming vehicles. Be prepared for a sudden stop by a driver ahead approaching a green light. Many drivers apply the brakes abruptly if the amber light flashes just as they reach the signal. Also, many drivers brake on the green light because of a last-minute decision toturn at the corner.

11) SIDE STREETS

Be aware of "unmarked" or "uncontrolled" intersections; street corners having no traffic control signals on either roadway. This is the most dangerous of all intersections in terms of accidents in relation to traffic volume. Many drivers never slow down unless they see a stop sign or a red traffic light. One-third of all accidents happen at intersections.

12) VEHICLE BACKING

A) Park the vehicle in a position to allow for driving forward rather than backing out of aspace or other areas.

B) If a vehicle cannot be positioned so it can drive forward into and out of a parked spaceor area, the driver must designate a spotter to assist in backing out safely.

C) The driver shall maintain eye contact with the spotter at all times. If visual contact with the spotter is lost, then the driver must stop the vehicle immediately and reestablish visual sight and communications before continuing to back.

D) If no spotter is available to assist in backing out of a parked space or area, the drivershall use “Get Out and Look (G-O-A-L)” to gauge the movement needed and ensurethe vehicle rear, sides, and overhead are clear from obstruction and hazards.

E) Visibility must not be restricted by cargo, dirty windows, or dirty mirrors.

F) Prior to backing, the driver must honk the horn twice to alert nearby pedestrians.

G) Check both sides as you reverse, using both rear view mirrors and turning your head tolook through the rear window.

H) Never back a vehicle into traffic, around corners, into an intersection, or over a crosswalk except when guided by a spotter.

I) Never open the vehicle doors while the vehicle is in motion.

J) Never back up over long distances, unless absolutely necessary.

K) Never rely solely on back-up cameras or sensors when backing (if equipped). If theequipped items are not working, then the vehicle must be placed out of service untilrepaired.

L) Use perimeter cones (if available) to mark nearby obstacles.

M) Use pre-positioned wheel chocks (if available) between the vehicle and obstacles toprevent collision.

N) Back up slowly and only when it is safe to do so (not exceeding 5 mph).

O) Once backing is completed, ensure the vehicle is properly shut off and secured.

13) SAFEGUARDS FOR PARKING

A) Whenever possible, park in a manner that will eliminate having to back.

B) Street Parking - When a service vehicle has been parked, two safety cones shall be placed around the vehicle; one placed near the left front bumper, the other nearthe left rear bumper.

C) Parking in Driveways - Due to the dangers involved in backing, every effort is tobe made to avoid parking in a driveway. If parking in a driveway cannot be avoided, at a minimum, two safety cones shall be used. One shall be placed near the center of the front bumper, the other near the center of the rear bumper. Additional cones shall be used as necessary to improve safety.

D) Before a COSA vehicle is moved from any location, the "circle of safety" shall be made beginning at the passenger's door and proceeding all the way around the vehicle in a counterclockwise manner. Check for any obvious safety hazards. When the "circle of safety" is completed, the safety cones shall be placed in the vehicle and the operator shall conduct one final scan of the area for any other obstacles and hazards, including on- coming traffic, which may be present.

14) ELECTRONIC DEVICES

A) COSA drivers shall not text while operating any COSA vehicle nor engage in any distracted driving activity that take their physical, visual or cognitive focus awayfrom operating the vehicle in a safe manner. This includes, but is not limited to, City Cell Phone Ordinance, Chapter 19, Section 19-255, pagers, computers, or any other electronic communication device. COSA Police, Fire and EMS will comply with departmental policies, procedures and collective bargaining agreements.

15) SPOTTER SAFETY

A) A spotter is a person designated to assist drivers in the safe backing of a vehicle when parking or maneuvering in reverse.

B) The spotter must communicate face to face with the driver on the use of hand signals/verbal cues, observed obstacles/ hazards, or safety concerns to the driver before allowing backing to proceed.

C) Use "Get Out and Look (G-O-A-L)" to ensure the vehicle rear, sides, and overheadare clear from obstruction and hazards before proceeding to back the vehicle.

D) The spotter shall be in a position to maintain visual and verbal contact with the driver at all times. Avoid the blind spots of the vehicle.

E) The spotter shall avoid walking backwards while guiding a vehicle to prevent a slip, trip, or fall.

F) The spotter must keep a reasonable and safe distance between themselves, the vehicle,and surrounding objects. Never stand directly behind the vehicle.

G) Use hand signals (reference appendix for diagram) to indicate it is safe for movementin a certain direction. Verbal commands alone are not adequate.

H) Stop the driver immediately if any hazards are observed or if you are uncertain of thedirection that the driver is maneuvering.

I) Direct the driver safely away from obstacles until the vehicle has finished reversing.

J) Pre-position wheel chocks (if available) between the vehicle and any obstacles toprevent collision.

16) SHARED MICRO-MOBILITY SAFETY

A) Recommended to wear a helmet and closed-toe shoes.

B) Only one person should ride at a time.

C) Be aware of the traffic around you, and make sure it's aware of you.

D) Riding fast puts you at greater risk of losing control. Always go slowly enough thatyou can stop, turn, or otherwise maneuver as needed.

E) Keep both hands on the handlebars when riding and avoid distractions.

F) Look out for potholes and other roadway hazards and obstructions and give yourselfenough reaction time to avoid them safely.

SECTION 5 – VEHICLE ACCIDENT, PROPERTY DAMAGE AND WORKPLACE INJURYPROCEDURES

1) GENERAL

A) The purpose of this section is to ensure data is collected for the analyzing of vehicle accidents, property damage and workplace injuries, developing accident and injury prevention policies and programs, and for supporting the safety efforts of COSA departments.

2) DEFINITIONS

A) **Vehicle Accident**: An incident where a motor vehicle collides with another object while a COSA employee is operating it from the driver's seat. Examples include, driver hitting a bollard, backing into another vehicle, hitting a fixed object.

B) **Property Damage**: Damage to facilities, equipment, property, or material, while not operating a vehicle. Examples include loading equipment into a truck damaging the bed, dropping a piece of equipment breaking it, or utilizing a backhoe bucket and contacting private property, while the vehicle is not being driven.

C) **Injury**: physical harm or damage to someone's body caused by an accident or incident. Examples include member tripping on a curb, causing a contusion, member being hit with an object, causing a laceration, or a member being involved in a vehicle accident, resulting in whiplash or other injury.

D) **Accident and Injury Review Board (ARB):** A board comprised of management and non-management employees assigned to reviewing selected City vehicle accidents and workplace injuries to determine preventability. ARBs are either dedicated within a single department or City-wide.

E) **Driver safety refresher training**: Training that focuses on changing driving behavior, improving driving skills or defensive driving techniques.

F) **Incident:** An unplanned event that occurred within the course and scope of work that could have resulted in an accident and did result in minor damage. A work task in which City equipment is being operated but was not being driven as a transit vehicle during thetime of contact. Examples include the operation of backhoes, booms, etc., when the equipment is not being driven and is stationary.

G) **Near Miss**: Incidents which did not result in injury, illness, property damage or environmental damage, and indicates the existence of, though may not define, a hazard orhazardous condition; and are reported for document purposes.

H) **Non-Preventable**: Accidents which occur despite the employee or equipment operator having taken reasonable action to avoid or prevent the occurrence, or which do not meet any part of the definition of preventable.

I) Preventable: An accident or injury is preventable if the employee:

i) Failed to take reasonable action which would have avoided or prevented the vehicle accident or workplace injury;

ii) Violated a COSA or departmental rules, policies, or procedures, which contributed to the preventability of the accident or injury; or

iii) Committed a moving traffic violation(s), whether cited or not.

J) **On-duty**: All hours within the regularly scheduled or assigned work day, week or shift of the employee.

K) **Basic First Aid**: Medical treatment administered outside of medical facility also not completed by a health care professional. An example of basic first aid is self-treatment.

3) POST VEHICLE COLLISION PROCEDURES

A) If an employee is involved in a vehicle collision, the employee will:

i) Call 911 and identify themselves as a COSA employee on COSA business forthe following:

a) Any accident involving a collision with non-COSA owned property;

b) Any accident involving injuries;

c) Any accident involving a fatality; or

d) Any accident involving a personal vehicle on COSA business.

ii) Immediately notify his/her Supervisor; *(Any COSA employee who is involved in a vehicle accident in a COSA-owned or personal vehicle conducting COSA business must notify their supervisor of the accident and remain at the scene of the accident until the supervisor arrives or provides other instructions.)*

a) Failure to report a vehicle collision promptly upon its occurrence may result in disciplinary action up to and including termination.

iii) Refrain from making any statements of liability to any party involved in the accident or their representative;

iv) Refrain from signing any statements for anyone except the Law Enforcement Officer and their Supervisor;

v) Be courteous;

vi) Provide the officer with the Texas Liability Insurance Card, which should be kept in all COSA vehicles. The liability cards can be obtained from Risk Management;

The City of San Antonio is self-insured for automobile liability. This is in accordance with the State of Texas Insurance requirements for motor vehicles. The City of San Antonio is exempt from provisions of the Texas Motor Vehicle Responsibility Act in accordance with the Texas Transportation Code, Section 601.007.

- Name of Insured: **City of San Antonio**
- Address of Insured: **P.O. Box 839966, San Antonio, TX 78283**

Claims for Injury or Property Damage are filed with:
City of San Antonio – Office of Risk Management
https://www.sanantonio.gov/RiskManagement/Claims-Administration
Phone: (210) 207-7204

This card does not hold the City of San Antonio liable to damages or injuries.

vii) Be tested for alcohol and drugs when there is reasonable suspicion or when any of thefollowing apply:

a) The vehicle accident results in bodily injury to person(s) involved receivingimmediate medical treatment away from the scene; or

b) Disabling damage to any vehicle involved requiring tow-away from the scene as a result of the accident; or

c) Accident involves the striking a pedestrian; or

d) Accident involves the loss of human life; or

e) A citation is issued to the COSA employee

viii) CDL drivers involved in an accident while performing CDL functions on a public road must receive a citation or be involved in a loss of human life before being tested under DOT requirements. CDL drivers involved in accidents not meeting DOT requirements for testing shall be subject to COSA non-CDL testing requirements in accordance with Administrative Directive 4.3 Alcohol and Controlled Substances Testing.

ix) Remain in non-driving status until negative lab results of the alcohol and drug screenings are received by Human Resources (Risk Management for CDL drivers).

x) Employees leaving the scene of an accident before being escorted for testing will be considered to have refused to submit to testing and result in the same consequence (termination) as a positive test.

xi) Participate in and provide information necessary for a proper investigation;

B) Supervisors will:

i) Provide direction to employees on how to proceed with the testing process immediately after the accident being reported. If a test is not administered within two hours, the supervisor or designee must prepare a statement and forward to Human Resources (Risk Management for CDL drivers) as to why the test was not promptly administered.

a) Procedures during normal working hours when employee is not transported to ahospital:

- Transport employee to the City Occupational Health Vendor location;
- Remain with the employee; and
- Secure transportation of the employee to their home if employee is impaired;

b) After hours testing:

- Contact vendor listed on Risk Management website and request alcohol and drug testing for DOT or non-DOT employee;
- For employees not hospitalized, remain with the employee until testing is completed and secure transportation to their home if impaired; and
- For hospitalized employees, remain with the employee until the testing is completed and ensure their emergency contact has been notified; notify all appropriate personnel, e.g. Risk Management, Human Resources, Manager, etc.

C) Supervisor, in coordination with Risk Management, will:

i) Using the Supervisor Report of Vehicle Accident and if injuries have occurred, the Supervisor Report of Injury or Illness, conduct a thorough investigation correctly identifying the root cause and corrective action(s).

ii) Make the determination of whether or not alcohol and drug testing is required for the employee(s); see above Section 3, A, vii,

iii) Obtain all necessary information and facts, including names of witnesses, if any, statements, photos, and sketches;

iv) Submit the Supervisors Report of Vehicle Accident and all other related documents tothe Risk Management by shift's end. If it is not possible to complete the report by shift's end, the report must be submitted within two (2) hours of shift start up the nextday. The reporting process for injuries remains the same, refer to the Workers' Compensation Manual. If the collision involves an injury, a copy of the Supervisor Report of Injury or Illness (SRI) is to be included with the accident package; and

D) Supervisor will ensure the involved COSA vehicle, regardless the type or amount of apparent damage, is evaluated by Fleet prior to being placed back into service.

4) INJURY REPORTING

A) Employees are required to report his/her injury to their Supervisor immediately andno later than the end of the work shift.

B) The affected Supervisor completes Supervisor Report of Injury or Illness (SRII) form and forwards the document to the appropriate Human Resources Specialist (HRS) by shift's end. If it is not possible to complete the report by shift's end, the report must be submitted within two (2) hours of shift start up the next day. HR shall forward the report to Risk Management.

C) Risk Management will utilize the SRII form to create a First Report of Injury (FROI)in the Third-Party Administrator's (TPA) system upon receipt of SRII.

D) The TPA system generates a FROI and the TPA supervisor assigns the claim to aTPA claims adjuster.

5) PROPERTY DAMAGE REPORTING

A) Employees involved with a property damage incident will:

i) Immediately notify his/her Supervisor.

ii) Refrain from making any statements of liability to any party involved in the property damage or their representative

iii) Be courteous

B) Supervisor, in coordination with Risk Management, will:

i) Using the Supervisor Report of Property Damage and if injuries have occurred, the Supervisor Report of Injury or Illness, conduct a thorough investigation correctly identifying the root cause and corrective action(s).

ii) Obtain all necessary information and facts, including names of witnesses, if any, statements, photos, and sketches (if applicable).

iii) Submit the Supervisors Report of Property Damage and all other related documents tothe Risk Management by shift's end. If it is not possible to complete the report by shift's end, the report must be submitted within two (2) hours of shift start up the nextday. The reporting process for injuries remains the same, refer to the Workers' Compensation Manual.

6) POST ACCIDENT INVESTIGATIONS

A) It is the policy of COSA that fact-finding investigations of all work-related accidentsand injuries are to be conducted in a professional manner. Investigations identify probable causes and are used to develop specific management actions for the prevention of future vehicle accidents, harm, or property damage. Accident, property damage and injury prevention is the result of a well-designed and executed safety program. One of the keys to a successful program includes unbiased, prompt, and accurate accident and injury fact-finding. The basic purpose of these investigations is to determine measures that can be taken to prevent similar events in the future.

B) Responsibilities

i) Department:

a) Ensure a liability card is in every vehicle;

b) Report and ensure all accidents, injuries and property damage are properly investigated;

c) Ensure immediate and long-term corrective actions are taken to preventreoccurrence;

d) Maintain accident, injury and property damage reports on file; and

e) Ensure proper entries are made on all accident-related documentation.

f) Forward the file and supporting documentation to Risk Management;

g) Collect and preserve all evidence that may be useful in an investigation;

h) If necessary, conduct secondary interviews of witnesses;

ii) Risk Management:

a) Ensure a complete file is received from the supervisor;

b) Review all accident and injury files for accuracy;

c) Timely completes, documents and issues the findings of the ARB to all necessary personnel;

d) Prior to the ARB, check with General Liability to see if any affected citizen has filed a claim in connection with the accident and determine, if possible, include the total cost to repair damages to all vehicles, objects or property;

e) Prepare an agenda and all accident files for review by the departmental Accident and Injury Review Board. *(For those departments meeting the criteria for not having a dedicated ARB, the Risk Management Representative for that department will forward the accident file to the City-wide ARB Chair to be included on the next scheduled agenda);*

iii) Employees:

a) Assist as requested in all vehicle accident or injury investigations

7) ACCIDENT AND INJURY REVIEW BOARDS

A) ACS, Aviation, BESD, CSF, DSD, Parks and Recreation, Pre-K4SA, SWMD and PW will have their own dedicated Accident and Injury Review Boards to review all vehicle accidents and workplace injuries, where medical treatment beyond basic first aid was sought along with being accepted as a claim by the third-party administrator, and determine preventability. Property damage cases will not be reviewed. The ARB will assign points based on the severity of vehicle accidents using the vehicle collision point summary sheet.

All other departments shall have their respective vehicle accidents and workplace injuries reviewed at the City-wide ARB, lead and facilitated by the Risk Management Representative. Departments, at their discretion, can elect to review "Incidents" (asdefined above) during their ARB deliberations; however, incidents will not be reported aspreventable.

B) Findings from the ARB will be submitted to the department director or designee for review, approval and administering.

C) At a minimum, ARBs are to meet monthly to review all cases having occurred since the last review.

D) The ARB shall be comprised of five members; all members except for Risk Management personnel shall rotate annually.

i) The ARBs for ACS, Aviation, BESD, CSF, DSD, Parks and Recreation, Pre-K4SA, SWMD and PW shall be comprised of an assistant director (optional; non-voting member), one manager, one supervisor, two non-management employees and Risk Management representative. The Risk Management representative will serve as the board chair.

ii) The City-wide ARB will be comprised of a Risk Management representative (the board chair) and two non-management employees. When an accident occurs in a department governed by the City-wide ARB, the director will assign one assistant director (optional; non-voting member) and one manager to sit on the board. The Risk Management representative assigned to the employee's home department will also sit on the review board.

iii) Members serving on the ARB may not have had a preventable accident in the past 24 months and must have a satisfactory driver's evaluation as defined in AD 4.8 Driver Safety.

iv) All ARB members will be provided training by Risk Management on the ARB process, and member duties and responsibilities.

E) Human Resources Representatives are highly encouraged to attend and will be invited to each ARB. However, their attendance is not mandatory, and they will have onlyan observer and support role for future departmental disciplinary decisions, if required. The Human Resources Representative will not have a vote.

F) A quorum consists of at least three (3) voting members.

G) Each member has one (1) vote.

H) Members are excused from voting on any case in which they have involvement, e.g. employee is a direct report.

I) Attendance of all non-members other than association representatives, legal advisors, witnesses, Risk Management and Human Resources, must be cleared by the ARB Chair prior to attendance.

J) Supervisors are to submit all related reports, photos, findings and recommendations to theARB Chair for review within (7) seven working days of the accident or injury.

K) Affected employees will receive notice of the scheduled ARB from their respective supervisor within seven (7) working days of scheduled ARB. Supervisors are required to inform their affected employees of the date, time and location of the ARB in a timely manner. Employee's attendance at the ARB is not mandatory but is highly recommended to appear to answer questions and present additional information for consideration. The employee may not be present during the ARB's review and the deliberation process.

L) The ARB may schedule a time for the affected employee to appear.

M) For all ARB participants (members, involved employee, and others), attendance at the board meeting during regular work time is paid, off time is not considered paid time.

8) ACCIDENT AND INJURY REVIEW BOARD FINDINGS

A) A vote shall be taken to determine a finding in the case. This finding is to be either preventable or non-preventable. For vehicle accidents only, findings and points are to be documented utilizing the "Vehicle Collision Point Summary Sheet" form.

i) Preventable means the employee:

a) Failed to take reasonable action which would have avoided or prevented thevehicle accident or workplace injury;

b) Violated a COSA or departmental rules, policies, or procedures, whichcontributed to the preventability of the accident or injury; or

c) Committed moving traffic violation(s), whether cited or not.

ii) Non-Preventable means despite the employee or equipment operator having takenreasonable action to avoid or prevent the occurrence, or which do not meet any part ofthe definition of preventable.

B) A majority vote must determine any finding. If a majority vote cannot be obtained after subsequent discussion and votes, the Chair (Risk Management Representative) shall make the final tie breaking decision.

C) For vehicle accidents only, point assessments following a preventability finding are as follows:

i) Non-preventable (0 points); or

ii) Preventable (1 point)

D) Additional points are added to all Preventable events based on the severity of the event asfollows:

i) The accident is a result of unsafe backing (**1 point**);

ii) Violation of City Cell Phone Ordinance, Chapter 19, Section 255 (**1 point**);

iii) The employee receives a citation (**1 point**);

iv) If unsafe operation is determined to be a contributing factor (**1 point**)**;**

v) Total damage to all property over $1,500 but less than $5,000 (**1 point**);

vi) The event resulted in bodily injury beyond First-Aid to any person (**1 point**);

vii) Damage to all property is in excess of $5000, or COSA vehicle is a total loss **(2 points)**

viii) The department director may, at his or her discretion, adjust points based onthe particular facts of an accident (e.g. aircraft damaged by ground equipment)

E) Following the point assessment:

i) The ARB shall calculate the points, adding any existing point(s) to the total;

ii) ARB Chair will ensure points are entered into drivers SAP record;

iii) Points remain on an employee's record for twenty-four (24) months. Each subsequent preventable event adds to the cumulative point total for vehicle accidents; and

iv) Calculations are based on the accident date, not the Board's ruling.

v) Complete and provide the employee's current point summary for review by the appropriate Accident and Injury Review Board.

F) The Chair shall record the employee's point totals on the ARB Vehicle Collision Point Summary Sheet and submits summary sheet and the Employee Notice of Findings and Appeal Form to the employee, employee's supervisor and Human Resources Representative within (3) three working days after the Board convenes.

G) Based on the employee's cumulative points total for the past 24 months, the department director will develop disciplinary action based on the driver's point total as follows:

Non-Exempt Employees	Exempt Employees
• 1-2 pts: Driver Safety Refresher Training and Employee Discussion Worksheet	• 1-2 pts: Driver Safety Refresher Training and Employee Discussion Worksheet
• 3-4 pts: Written Reprimand	• 3-4 pts: Written Reprimand
• 5-7 pts: 2-day Suspension	• 5-7 pts: 2nd Written Reprimand
• 8-9 pts: One Week Suspension	• 8-9 pts: One Week Suspension
• 10+ pts: Termination	• 10+ pts: Termination

Accidents resulting in loss of life, gross negligence or property damage exceeding $10,000 may also be subject to termination.

H) The ARB will review workplace injury cases and rule on the preventability of the injury; findings of preventability are to be documented on the Employee Notice of Findings and Appeal Form Memo. The director will follow progressive discipline for injuries based on an employee (non-exempt or exempt) violating the department's and/or City's safety procedures.

I) Should the employee have another vehicle accident or workplace injury before a ruling is made on an existing case, the latter accident or injury will be considered as separate events. For vehicle accidents, any points assessed for the existing case will be a consideration in the latter collision's ruling and discipline.

J) Upon being notified by the ARB chair that their accident or injury has been classified preventable, the employee may request an appeal of the preventability ruling only. The request shall be made to the employee's Department Director and the ARB Chair within three (3) working days using the document listed in F) (if required) and H) above. Failureby the employee to file a written notice of appeal within three (3) working days will result in the board's ruling to stand as preventable and will communicate to the Board Chair to finalize the ARB reporting process.

K) Upon being notified of an appeal, the Department Director shall review the accident or injury report and other related documents to determine the validity of the employee's request for appeal and provide a response no later than five (5) working days from day of notification of appeal. Should the Director determine the employee's appeal has merit; the Director shall review the facts of the accident or injury and the employee's appeal request with the involved supervisor and ARB chair. Should the Director determine the vehicle accident or injury's preventability classification is in error, the Director will notify the ARB chair, supervisor and Human Resources Representative that the preventability ruling has been overruled using Section II of the Employee Notice of Findings and Appeal Form. Upon being notified by the Director that the ARB preventable ruling has been overruled, the ARB chair shall finalize the ARB reporting process.

L) For vehicle accident appeals, the department director may, at his or her discretion, adjust points based on the particular facts of the accident (e.g. aircraft damaged by ground equipment) and the driver's appeal request. The director shall document point adjustments in Section II of the Employee Notice of Findings and Appeal Form with written justification in the space provided.

M) In the event the director upholds the ARB's preventability ruling, the Director will proceed to section 8 below and administer the appropriate discipline.

N) The department Director's final determination and discipline, as appropriate, shall be communicated to the employee within five (5) working days of the Director's finalized decision.

9) DISCIPLINARY IMPLEMENTATION

A) HR will initiate disciplinary action and advise director on appropriate level of discipline. The employee's manager or supervisor is responsible for preparing the necessary discipline and having it reviewed by Human Resources.

B) The department director, Risk Management, or a member of the Executive Leadership Team may recommend an employee be restricted from driving, equipment operations or high-risk tasks due to safety or liability exposure concerns. It is the department's responsibility to coordinate with HR in such instances.

C) Department Directors may administer discipline up to and including termination for repeated preventable accidents in multiple reporting periods.

D) A record of any type of disciplinary action taken against the employee will be placed in the employee's personnel file.

E) Risk Management Representative will enter into SAP the accumulated point total within (5) five days of receipt of the director's decision.

10) CONFIDENTIALITY

All ARB proceedings must be kept confidential. Accident and Injury Review Board members are prohibited from speaking outside of the deliberation process about the details, review, and disposition of any and all cases.

SECTION 6 – GUARDING WORK AREAS

1) GENERAL

A) This practice covers the use of warning devices for guarding work areas. Warning devices shall be used for the purpose of providing maximum protection for employees, equipment, and the public, as well as providing the minimum interference with vehicular and pedestrian traffic.

B) All warning devices shall be placed at the beginning of a construction or maintenance operation and shall remain in place until the work operation has been completed.

C) Employees shall comply with the latest revision of the Texas Manual on Uniformed Traffic Control Devices and any applicable COSA Addendums pertaining to traffic control. For work involving minor or major traffic dislocation, the Police Department shall be notified. In addition, when major traffic dislocation such as blocking a trafficlane or highway, or a main traffic artery occurs, the Police Department shall also be specifically notified before the work begins.

D) It will be impossible to include a group of illustrations to cover every situation which willrequire work area protection. COSA departments shall follow the latest revision of the Texas Manual on Uniformed Traffic Control Devices (TMUCD) published by the Texas Department of Transportation.

E) Weeds, shrubbery, construction materials or equipment, etc., shall not be allowed to obscure any traffic control device.

F) Signs shall be placed in positions where they shall convey their messages most effectively, and placement shall, therefore, be according to highway design and alignment. Signs shall be placed so that drivers have adequate time for response.

2) LOCATION OF MOTOR VEHICLES TO GUARD WORK AREAS

A) A motor vehicle equipped with a strobe light and flashers is an effective barrier for vehicular traffic. These lights shall be used day and night while the vehicle is used as a barrier.

B) The vehicle shall be placed between the work area and the oncoming traffic and shallhave the parking brake set and the transmission engaged in gear on manual transmissions and in park on automatic transmissions.

C) When using a motor vehicle to guard a work area, it shall be considered supplemental to all other warning devices.

D) The following factors shall be considered in determining which direction the vehicle shallface:

i) Requirements of local laws and regulations;

ii) Location of the work area to be protected with respect to traffic flow;

iii) When the work requires materials, which must be unloaded from the bed andside boxes of the truck;

iv) Safety considerations and difficulty in turning the truck around to face oncoming traffic; and

v) Trailers shall be placed where they will not interfere with traffic and shall providea safe place to work.

E) Be alert to changing traffic flow;

i) Inbound traffic during morning hours; and

ii) Outbound traffic during evening hours.

3) LOCATION OF SIGNS, CONES, AND BARRICADES

A) The following table gives recommended distances for placing initial warning signs ahead of work operations for various speed limits (Size and color of cones are specified in the TMUTCD manual).

Normal Traffic Speed (Mph)	Initial Speed Speed (feet)	Distance Cone Spacing (feet)
15 or below	50 – 90	10
25	90 – 150	20 – 25
35	150 – 240	30 – 40
45	240 – 360	40 – 50
55	360 – 550	50 – 60

4) SIGNS AND SIGNALS

A) The shape, size, and coloring of signs shall conform to the specifications set forth in the TMUTCD Manual.

B) Signs and painted displays intended for night use shall be of the reflecting type and be illuminated.

C) Signs shall be removed or covered during lunch periods and at the end of the work day only if the work site is free from hazards at that time. All signs shall be removed as soon as the work is finished, and no hazards remain.

D) On extended one-way traffic blocks, there shall be one employee with a sign paddle in front of the work area. On extended two-way traffic blocks, there shall be one employee with a sign paddle at each end of the working area.

E) Employees using sign paddles should be trained in safe traffic control practices and publiccontact techniques and certified through Texas DOT Flagger Training.

F) For daytime and nighttime activity, flaggers shall wear high-visibility safety apparel that meets the performance Class 2 or 3 requirements of the ANSI/ISEA 107–2004 publication.

G) Sign paddles shall have a minimum width of 24 inches and be mounted on a rigid handle.On one side the word STOP shall be painted in white letters on a red background with a white border. The reverse side shall have the word SLOW painted in black on a yellow background with a black border. Letters shall be Series C, (six inch).

H) Employees directing traffic flow are responsible for human safety. They also make a great number of public contacts. It is important that only conscientious qualified personnel be selected for this task.

I) Traffic control employees are provided at work sites to protect both work crew members and the public. To perform these functions, they must be visible to approaching traffic sufficiently in advance of the work site to permit the proper response to be made. In positioning such employees, consideration shall be given to maintaining color contrasts between the protective garments and the background of the worker. The correct position to be taken is on the shoulder or in the barricaded lanes adjacent to the lane being controlled and facing the traffic. The employees shall never stand in the traffic lane.

J) During night operations, employees controlling traffic shall be equipped with red lanternsor flashlights, they shall wear orange, yellow, or light-colored clothing with reflectorized surfaces and white or orange Sam Brown type belts with red reflector buttons.

K) With a lantern or flashlight, only one signal is used and that may mean either stop or slow. It is given by waving the red lantern or flashlight across the lane of traffic. "Proceed" signals are to be given only by hand, never with the lantern or flashlight.

L) Traffic control workers and operators of construction machinery shall understand that every reasonable effort shall be made to allow the driving public the right-of way and prevent excessive delays.

5) PRECAUTIONS

A) To ensure maximum safety, continued alertness is required.

B) Carefully observe all moving traffic and exercise extreme caution when placing warning devices.

C) Place warning devices before positioning the work vehicle or starting work. Warning devices are employed to direct the motorist around the work area.

D) Make every effort to minimize the exposure time of the employees to traffic hazards and other possible danger. All discussions and planning shall take place off the street or highway not in traffic lanes.

E) Inspect all displayed warning devices at frequent intervals to be sure they remain clearly visible.

6) JOB PRE-SURVEY

A) A suitable plan for guarding the work area shall be developed before work in the area is begun. The supervisor shall pre-survey the work location and then discuss the protection plan with the employees before the work starts.

B) After planning for the setup of warning devices for a particular location, analyze the planfrom the point of view of the motorist.

C) The following checklist can be used for guarding work areas before starting work:

i) Speed of traffic

ii) Width of lane

iii) Light or heavy traffic

iv) Nature of the traffic change while work is being done

v) Are barricades required?

vi) Will a traffic control employee be required when setting up and removing warning devices? During the work operation?

vii) Will the established plan comply with state and local laws or regulations?

viii) Is a permit required?

ix) Have the police or any COSA personnel/department deemed necessary been contacted?

x) On routes to or near special events such as ball games, etc., can the job be scheduledon days or hours with the least traffic? and

xi) Where will the location of tools, materials, and equipment be during work operations?After working hours?

7) LOCAL ROAD OR STREET PLANS

A) On a two-lane road or street where the work is located near the edge of the pavement, thefollowing items shall be considered:

i) Speed;

ii) Do not park equipment in the way of signs and cones where it may obstruct vision;

iii) Does the sign terminology agree with the work being performed? For example: "FLAGMAN AHEAD" when one is used or "UTILITY WORK 2000 FEET"

iv) Does flashing strobe(s) on truck used as part of the protection work properly?

v) If several vehicles are involved and some are not currently being used, arethey parked away from the work area?

vi) If a lane is partially or completely blocked, is traffic control provided? If so, isthe proper protective gear and sign(s) used? and

vii) Are signs mounted in such a manner to prevent being blown over?

8) SIGN TERMINOLOGY

A) Sign or barricade terminology shall comply with state or local regulations.

B) All signs shall conform to the standards established by the TMUTCD Manual.

SECTION 7 – BUILDING AND OFFICE SAFETY

1) GENERAL

A) This section covers safety precautions for all buildings. In order to provide employees a safer and healthier working environment, supervisors shall ensure the following safety items identified in this section are in place. Risk Management is available to assist departments with identifying hazardous conditions and recommend appropriate safeguards where hazards exist.

2) EXITS, AISLES, STAIRS, CEILINGS, AND FLOORS

A) All building doors shall open outward.

B) All exit doors shall be marked and exit signs should be illuminated.

C) Glass doors shall have some conspicuous painting, decaled design or other clearly visible indicator approximately 4-1/2 feet above the floor and centered on the door.

D) Doorways and exits shall not be obstructed within a 48-inch radius. If any doorway must be obstructed for maintenance, blocked doors shall be marked on the opposite side with a sign indicating, “Door Blocked,” and with an alternate exit noted.

E) Offices located in basements shall have at least two exits.

F) Exit doors and aisles shall be continually unobstructed and unlocked in the directionof exit.

G) Aisle ways shall be a minimum of 36” in width for light traffic areas and 48” inwidth for moderate traffic areas.

H) Stairs and aisles shall be kept clean and free of obstacles or slippery surfaces and shall be well lighted.

I) Posters, bulletin boards and other distracting objects are prohibited on stairways, landings and stairwells.

J) Slippery or worn treads on stairs shall be repaired or made safe by coating them with nonskid surfacing material.

K) Handrails shall be installed on stairs having more than four risers.

L) Handrails and stair rails shall have smooth surfaces and must be located 34 inchesabove the stairway treads.

M) Employees shall not congregate on stairs, landings, at the end of outside doors or foot of stairways.

N) Stairs and risers shall be uniform in size.

O) Tripping hazards such as defective floors, rugs, floor mats, etc., shall be repaired orreplaced immediately.

P) Water-stained ceiling tiles shall be replaced and should be inspected for water leaks andpossible mildew.

Q) All ceiling tiles in a drop ceiling installation should be in place. Broken, cracked, andmissing tiles should be replaced.

R) Mildew growth of any kind located on surfaces such as ceilings, walls, or floors shall be addressed by a competent person and remediation shall take place to properly remove thegrowth.

S) Enclosed workplace shall be constructed and maintained to prevent the entrance and harborage of rodents, insects, and other vermin.

3) ELECTRICAL SYSTEMS

A) Electrical equipment not used at least monthly shall be disconnected from power sources.

B) All circuit breaker and fuse panel circuits shall be labeled.

C) Breaker and fuse panels, motor controls and electrical enclosures shall have a minimum forward clear working space of three feet. The minimum width of a work area shall be 2- ½ feet.

D) Fuse boxes and circuit breaker boxes shall be equipped with lockout/tag-out capabilities. (See Section 26, Lockout/Tagout)

E) Flexible cords and cables shall only be used for:

i) Pendants;

ii) Wiring of fixtures;

iii) Connection of portable lamps or appliances;

iv) Elevator;

v) Wiring cranes and hoists; and/or

vi) Connection of equipment to facilitate frequent interchange.

F) Flexible cords and cables shall not be:

i) Used as substitute for fixed wiring;
ii) Run through holes in walls, ceilings and floors;

iii) Run through doorways, window, etc.;

iv) Attached to building surface; or

v) Concealed behind building walls, ceilings or floors.

G) Unused openings of electrical enclosures shall be effectively closed.

H) All light switches and receptacles shall have a protective cover.

I) All electrical receptacles shall be the three-wire grounding type.

J) Electrical receptacles near sinks or other sources of water shall have a ground faultcircuit interrupter (GFCI) depending upon applicability of the NEC GFCI requirements at the time of building construction.

K) Drinking fountains, vending machines and other equipment shall be properly grounded.

L) Extension cords shall be used in accordance with Section 27, Extension Cords, ofthis manual.

M) Emergency lights shall be operational and tested regularly.

4) FIRE SAFETY

A) Fire evacuation plans shall be posted throughout all buildings in common areas.

B) Fire extinguishers shall be placed in buildings and checked as specified in Section12, Fire Extinguishers, of this manual.

C) All employees authorized to use fire extinguishers shall be trained in the safe andproper use of extinguishers.

D) Installed fire alarm systems and smoke detectors should be maintained and in good working order.

E) All buildings shall have a sufficient number of trash cans.

F) All trash containers shall be made of nonflammable materials and emptied daily.

G) Smoking is prohibited in all COSA buildings and parks; and within 25 feet of

entrances or operable windows.

H) Mechanical rooms shall not be used as storage areas and shall be locked with only authorized personnel having the means to unlock the room. Mechanical rooms are tobe free of any and all flammable and combustible material.

I) Storing anything above or within 18 inches of a sprinkler head is forbidden

J) Do not store combustible material near ignition sources.

K) Hot work Permits shall be utilized anytime hot work is being performed. This shall include but not limited to welding, brazing, soldering, metal cutting and grinding, torchuse, and plasma cutter use. Refer to Section 41, Hot Work Permits, for hot work permitguidelines.

L) Heat dissipating areas of equipment shall be free of all obstructions.

M) Candles are prohibited from use in office areas.

N) All chemicals shall be stored in accordance with their compatibility and hazardousnature.

O) Batteries shall never be stored with steel wool.

P) Personal space heaters are not to be used unless they meet the following criteria:

i) UL certified;

ii) Plugged directly into the wall outlet, never into a power strip or extension cord;

iii) Equipped with a thermostat or overheat protection;

iv) Equipped with a tip over safety switch;

v) Free of anything that can burn within 36 inches in all directions

Q) Hot plates and electric warmers are not to be used in personal cubicles or offices.Use of hot plates and electric warmers may only be used in areas for designated oneday dining events, i.e. conference room or break room.

R) Range hoods (exhaust hoods) shall remain free and clear of grease and other debris.

S) Alarm pull boxes shall not be obstructed or obscured from view.

5) FALLS

A) Falls are the most common accident and account for the most disabling injuries.

B) Common causes of falls are:

i) Leaning back or tilting a chair;

ii) Tripping over or catching a heel on stairs or a doorsill;

iii) Defective floor surfaces;

iv) Tripping over loose telephone wire or electric cord;

v) Tripping over open drawers; and

vi) Slippery surfaces.

C) Some tips for avoiding falls are:

i) Never lean or tilt chairs back;

ii) Never stand on chairs or furniture;

iii) Always use a ladder or step stool to reach high places, see Section 34, Ladders, in this manual;

iv) Wipe up spilled liquids immediately; place "Wet Floor" signage if needed ormark wet area when warranted.

v) Pick up paper, paper clips, rubber bands, pencils and other loose objects;

vi) Always use handrail when ascending or descending stairs;

vii) Never carry objects in a position that impedes vision;

viii) Close drawers when not in use;

ix) Keep aisles clear of obstructions; and

x) Wear appropriate footwear for the task or walking surface.

6) DESKS, STORAGE AND FILING CABINETS

A) Filing cabinets are the cause of many injuries in the office.

B) The following precautions will prevent injuries from improper use of desks, storageand filing cabinet:

i) Never bump file drawers closed with any part of the body;

ii) Close drawers immediately after use and do not leave them open;

iii) Open only one drawer at a time to prevent the cabinet from tipping over;

iv) Bolt or secure file cabinets whenever possible;

v) Climbing on drawers, desktops or cabinets is prohibited;

vi) Stacking materials on top of the file cabinets is strongly discouraged;

vii) Step stools used in filing areas are tripping hazards.Store them in a safe location;

viii) Razor blades, thumb tacks and other sharp objects shall not be thrown loosely into drawers;

ix) Card index files, dictionaries and other heavy objects shall be kept off the topof office cabinets and other high furniture; and

x) Do not leave breakable objects on the edge of desks, file cabinets, storage cabinets or tables where they can easily be pushed off.

xi) Sharp furniture corners should be protected, in areas that people frequent.

7) MISCELLANEOUS

A) Illumination levels shall be adequate for the job being performed.

B) Building first aid kits supplies shall be adequate, reflect the kinds of injuries thatoccur and stored in an area readily accessible. See Section 9, First Aid Kits.

C) All buildings designated as primary work areas must have restrooms or washrooms. (A primary work area is a building where one or more employees spend eight or more hours per day.)

D) Each restroom or washroom shall be equipped with the following as aminimum requirement:

i) Sink with hot and cold water;

ii) Soap or similar cleansing agent;

iii) Paper towels or hot air hand dryers; and

iv) Toilet facility.

E) Running in buildings is prohibited.

F) Horseplay is prohibited.

G) Fans shall not be handled until the power is turned off and the blades stop turning.

H) Fans must have all guards in place.

I) Never hand knives or scissors to someone with the point (blade) toward them.

J) Paper cutters shall be stored with the blade secured and shall be equipped witha guard that affords maximum protection.

SECTION 8 – WORKPLACE VIOLENCE

1) GENERAL

A) It is the policy of COSA to provide all employees a work environment that is safe and free from violence (see Administrative Directive 4.80 Violence in the Workplace). Violent outbursts, intimidation, threats, harassment, bullying, or other forms of abusive, aggressive or disruptive behavior will not be tolerated or excused. To ensure a policy of zero-tolerance of workplace violence within the COSA organization, COSA, including its employees, supervisors, managers, and executives, must firmly and unequivocally commit to providing a safe workplace and preventing any incident of work-related violence.

B) Refer to Administrative Directive 4.80 Violence in the Workplace for more information.

SECTION 9 – FIRST AID KITS

1) GENERAL

A) It is advisable that departments assign supervisors the responsibility for choosing the typeand amount of first aid supplies that should be maintained at COSA facilities and vehicles. Supplies shall be adequate, reflect the kinds of injuries that occur and stored in an area readily accessible for emergency access. This section describes first aid kits and the recommended assortment of supplies.

B) Description of Unit Type First Aid Kits

i) Unit first aid material is packaged primarily in single disposable packages. This type of packaging eliminates the problem of bottled antiseptic liquids or large tubes of cream which can break, leak, or evaporate, promote cross contamination, and cause damage to other items in the kit.

ii) Typical unit type first aid kits contain adequate emergency first aid instruction and a more functional assortment of individually sealed packages than those usually found in other type kits.

iii) Unit first aid kit manufacturers seal individual units in see-through protective wrapping keeping the contents free from dust and other contamination during transportation and storage. The unit wrapping also facilitates kit inspection since unwrapped or damaged units are easy to locate and replace.

C) Acceptable unit type first aid kits shall be required as standard equipment in all vehicles or equipment operated by COSA employees.

D) Unit first aid kits are made in five standard sizes: 6, 10, 16, 24, and 36 unit. No kit smaller than 16 units shall be approved for use by COSA employees.

E) The contents of the first aid kits shall be inspected each month and expended items replaced by supervisors. Personal medication shall not be kept in first aid kits.

F) First aid kits shall be conspicuously located where they will be readily accessible, and all staff should be made aware of kit locations.

G) First aid kits shall not be obstructed or obscured from view. An exception is allowedonly for large rooms and certain locations where visible obstructions cannot be completely avoided, if some means is provided to indicate the location. If the first aid kit is mounted or stored in a vehicle or bin, it must be readily accessible and have a “First Aid Kit Inside” sign mounted on the outside bin door.

H) First aid kits shall be properly and adequately filled for the size and location each worksite. First aid kits, supplies and replacement kits shall be the responsibility of each individual department.

Supervisors are responsible for ensuring first aid kits are inspected on a regular basis; to ensure that they are properly and completely filled, do not contain expired materials, and to detect any damage to the kit or its contents. The inspection will normally be performed by the supervisor or a designated representative.

2) FIRST AID KIT SIZE REQUIREMENTS

A) Recommended First Aid metal kit sizes for vehicles and equipment as follows:

i) Passenger car – 16 Unit;

ii) Trucks and vans – 16 Unit;

iii) Crew cab trucks – 24 Unit; and

iv) Trenching Equipment – 16 Unit

B) Recommended First Aid kit sizes for buildings should either be a 16 unit or 24 unit.

SECTION 10 – AUTOMATED EXTERNAL DEFIBRILLATOR (AED)

1) GENERAL

A) It is advisable that departments assign supervisors the responsibility for choosing the type and amount of AED kits that should be maintained at COSA facilities and work sites. AED kits shall be adequate and stored in an area readily accessible for emergency access. This section describes AEDs which are approved for use at COSA facilities and work sites.

B) An AED is used to treat individuals who experience sudden cardiac arrest. It is only to be applied to persons, who are unconscious, not breathing normally and showing no signs of circulation such as normal breathing, coughing or movement. The AED will analyze the heart rhythm and advise the operator if a shockable rhythm is detected. If a shockable rhythm is detected, the AED will charge to the appropriate energy level and deliver a shock.

2) GENERAL REQUIREMENTS

A) Departments who acquire an AED for their facilities are responsible for maintaining and testing the device to the standards of its manufacturer and notifying Risk Management of its location.

B) AEDs should be placed in areas readily accessible to persons occupying the space in which the AED is located including employees and others visiting the site.

C) AEDs shall be conspicuously identified or marked so that others will recognize the AED's presence.

D) AEDs shall be equipped with adult electrodes, which must be replaced prior to expiration. If a significant number of young children regularly utilize a facility, pediatric pads should be considered.

E) AEDs shall be installed mounted in cabinets that minimize the AED's exposure to extreme heat, cold, or other environmental factors or activities that could easily damage the AED or its supplies.

3) AED INSPECTION LOG

A) AEDs are inspected and maintained in accordance with the manufacturers' recommendations. Anytime an AED fails to meet any of the visual inspection items noted below, the AED will be immediately removed from service until it is ready for use.

B) Depending on the type of AED purchased, the AED may perform automatic tests daily, weekly, and monthly. If the AED detects a problem during the automatic test that requires immediate service, such as low battery, it activates an intermittent audible alarm. Anytime an AED fails to meet any of the visual inspection items noted below, the AED will be immediately removed from service until it is ready for use.

C) Departments shall perform monthly inspections of AEDs in their work areas/sites and record the information in a departmental database or on a card affixed to AED cabinet to ensure:

i) AED is in a ready status

ii) AED pads are present, unopened, not expired and in the required quantities

iii) AED battery is not indicating a need for replacement and is not expired

iv) No obvious AED damage is noted

4) TRAINING

A) All appropriate COSA employees with an AED within their working area must be advised through training of the presence of both the AED and general awareness level and will consist of common public knowledge on the use of automated external defibrillators (AED).

B) General awareness level training was developed in coordination with the SAFD Medical Director and is available by contacting the departmental Safety Coordinator.

C) Training will also cover the Texas Civil Practice and Remedies Code, § 74.151 - Liability for Emergency Care

i) A person who in good faith administers emergency care is not liable in civil damages for an act performed during the emergency unless the act is willfully or wantonly negligent.

D) General awareness level training does not preclude departments from contracting a vendor to provide more in-depth training and maintenance oversight.

SECTION 11 – BLOODBORNE PATHOGENS PROGRAM

1) GENERAL

A) An infection control plan must be prepared for all persons who handle, store, use, process, or disposes of infectious medical wastes. This infection control plan complies with OSHA requirement, 29 CFR 1910.1030, Bloodborne Pathogens (BBP). The plan includes requirements for personal protective equipment, housekeeping, training, and a procedure for reporting exposures.

2) RESPONSIBILITIES

A) Risk Management shall assist departments in identifying employees whose work may expose them to bloodborne pathogens and ensure a Bloodborne Pathogen (BBP) Protection and Training Program is established.

B) Departments shall maintain employee's BBP program records to include occupational exposure and vaccination status.

3) DEFINITIONS

A) Biological Hazard: The term biological hazard or biohazard is taken to mean any viable infectious agent that presents a risk, or a potential risk, to the well-being of humans.

B) Medical Wastes/Infectious Wastes: All waste emanating from human or animal tissues, blood or blood products or fluids. This includes used first aid bandages, syringes, needles, sharps, material used in spill cleanup and contaminated PPE or clothing.

C) Universal Precautions: Refers to a system of infectious disease control that assumes that every direct contact with body fluids is infectious and requires every employee exposed to be protected as though such body fluids were infected with blood-borne pathogens. All infectious/medical material must be handled according to Universal Precautions.

D) Occupational Exposure: Blood or body fluid contact from an injured or ill employee to the affected employee or injury by a contaminated sharp object.

E) Hazards: Unprotected exposure to body fluids presents the possible risk of infection from a number of Bloodborne pathogens notably Hepatitis and HIV.

F) Hazard Controls: Engineering Controls - prevention of exposure to bloodborne pathogens engineering controls include proper storage facilities and containers, syringes designed to prevent accidental needle sticks, autoclaves and disinfectant equipment. Administrative Controls - prevention of exposure to bloodborne pathogen administrative controls include universal precautions, assignment of PPE, employee training, use of spill kits specifically designed for blood and body fluids, restricted access to waste collection points, and waste disposal procedures.

4) MEDICAL RECORD

A) Departments shall ensure all employee's BBP medical records (Notice of HBV vaccinations, exposure reports) are kept confidential and maintained for the duration of the employee's employment, plus 30 years.

5) TRAINING

A) It is recommended that all employees assigned to positions exposed to BBP shall receive training by a qualified trainer within 10 working days of initial assignment, and annually there after.

B) The content of the training program will include:

i) COSA Policy;

ii) Types and Transmission of bloodborne pathogens;

iii) General Safety Rules;

iv) Universal Precautions;

v) Use of Personal Protective Equipment;

vi) Medical Waste Disposal Procedures;

vii) Post Exposure Treatment and Procedures; and

viii) HBV Vaccinations (optional).

C) Departments may decide to provide employees not affected by this program an overview of the program requirements during scheduled department safety meetings.

6) HEPATITIS-B VIRUS (HBV) VACCINATIONS

A) Occupational Health Professionals, (those required to provide first aid or emergency response duties or medical care, and laboratory duties), plumbers, mechanics having to repair solid waste handling vehicles, and solid waste collectors on a routine basis will be offered Hepatitis-B Virus (HBV) Vaccinations at COSA's expense. It is recommended that employees who transfer to a job which includes exposure to blood-borne pathogens will be offered HBV Vaccinations within 10 working days of the transfer or reclassification.

B) The HBV vaccination is not mandatory. If an affected employee chooses not to have the vaccination at the initial offering, they may choose to be vaccinated at a later date. COSA will document the offer, acceptance or declination, and vaccination dates. The request is not mandatory and if refused will not affect that

employee's future employment.

7) POST EXPOSURE TREATMENT AND NOTIFICATION PROCEDURES

A) Should any employee be occupationally exposed to a BBP, the employee will report the exposure to their supervisor and subsequently to the workers' compensation section of Risk Management. COSA will provide for the employee to be tested for human immunodeficiency virus (HIV), hepatitis A virus (HAV) and hepatitis B virus (HBV) at COSA's expense.

B) During all phases of post exposure, the confidentiality of the affected employee will be maintained and communicated on a "need to know" basis.

8) GENERAL PROCEDURES

A) The following procedures must be followed by personnel when in medical rooms or laboratories.

B) All supervisors must ensure that their staff is trained in proper work practices, the concept of universal precautions, personal protective equipment, and in proper cleanup and disposal techniques.

C) Resuscitation equipment, pocket masks, resuscitation bags or other ventilation equipmentmust be provided to eliminate the need for direct mouth to mouth contact in groups whereresuscitation is a part of their responsibilities.

D) Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lensesare prohibited in work areas where there is a potential for exposure to any health hazard. Refrigerators that store biohazard waste should be labeled with a Biohazard symbol onthe door to ensure that personal food or drink are not stored together with contaminated items.

E) According to the level of risk, wearing laboratory or protective clothing may be required for persons entering infectious disease laboratories. Likewise, showers with a germicidal soap may be required before exit.

F) Gowns, aprons, or lab coats must be worn whenever there is a possibility that body fluids could splash on skin or clothing.

G) Gloves must be made of appropriate disposable material, usually intact latex or vinyl; however, nitrile gloves are recommended. They must be used in the following circumstances:

i) When the employee has cuts, abraded skin, chapped hands, dermatitis, or similarconditions;

ii) When examining abraded or non-intact skin of a patient with active bleeding; and

iii) While handling blood or blood products or other body secretions during

routinelaboratory procedures.

H) Employees must wash their hands immediately, or as soon as possible, after removal of gloves or other personal protective equipment and after hand contact with blood or other potentially infectious materials.

I) All personal protective equipment must be removed immediately upon leaving the work area, and if this equipment is overtly contaminated, it must be placed in an appropriate area or container for storage, washing, decontamination, or disposal.

J) Contaminated clothing must not be worn in clean areas or outside the building.

K) All procedures involving blood or other potentially infectious agents must be performedin a manner that will minimize splashing, spraying, and aerosolization.

9) MEDICAL WASTE

A) Medical/infectious waste must be segregated from other waste at the point of origin.

B) Medical/infectious waste, except for sharps (i.e., razor blades, broken glass, needles, etc.) capable of puncturing or cutting, must be contained in double disposable red bags conspicuously labeled with the words "INFECTIOUS WASTE" and "BIOHAZARD."

C) Used needles or other sharps (razor blades, broken glass, scalpels, etc.) must not be sheared, bent, broken, recapped, or re-sheathed.

D) Infectious sharps must be contained for disposal in leak-proof, rigid puncture-resistant containers. Infectious waste contained as described above must be placed in reusable or disposable leak-proof bins or barrels that are conspicuously labeled with the words "INFECTIOUS WASTE" and "BIOHAZARD." Departments shall arrange to have waste barrels picked up regularly by an outside vendor licensed to handle infectious wastes.

E) All infectious agents, equipment, or apparatus must be disinfected in an autoclave or otherwise disinfected before being washed or disposed of properly. Each individual working with infectious bio-hazardous agents is responsible for disinfection and disposal of these agents.

F) Biological wastes that do not contain radioactive or hazardous substances may be disinfected by steam sterilization (autoclave) then disposed of in the regular trash.

G) Liquid bio-hazardous waste may be disposed in the sewage system following chemical decontamination.

H) Reusable glassware must be decontaminated in sodium hypochlorite (household bleach) solution (1:10) prior to rinsing and acid washing. The glassware must

then be sterilized in an autoclave.

I) To minimize the hazard to firefighters or emergency response personnel, at the close of each work day and before the building is closed, all infectious or toxic material must be placed in a refrigerator, placed in an incubator, or autoclaved or otherwise disinfected.

J) Infectious agents must not be placed in an autoclave and left overnight in anticipation of autoclaving the next day.

K) Floors, laboratory benches, and other surfaces in buildings where infectious agents are handled must be disinfected with a suitable germicide, such as 1:10 sodium hypochlorite solution (household bleach) as often as necessary as determined by the supervisor.

L) The surroundings must be disinfected after completion of operations involving planting, pipetting, centrifuging, and similar procedures with infectious agents.

M) Infectious agents must not be dumped into the building drainage system without prior disinfection.

N) Cuts - If an employee has a needle stick, cut, or mucous membrane exposure to another person's body fluids he/she must report and document the incident immediately.

O) All infectious/medical material must be handled according to Universal Precautions. The following universal precautions must be taken:

i) Gloves must be made of appropriate disposable material, usually intact vinyl,however nitrile gloves are recommended:

a) When the employee has cuts, abraded skin, chapped hands, dermatitis, or the like;

b) When examining abraded or non-intact skin of a patient with active bleeding; and

c) While handling blood or blood products or other body secretions during routineprocedures.

ii) Mask and eye protection are required when contact of mucosal membranes (eyes,mouth or nose) with body fluids is likely to occur (e.g. splashes or aerosolization).

iii) Resuscitation equipment, pocket masks, resuscitation bags, or other ventilation equipment must be provided to eliminate the need for direct mouth to mouth contact.

P) Waste Disposal Plan

i) Medical/Infectious waste must be segregated from other waste at the point of origin.

ii) Medical/Infectious waste, except for sharps (e.g. razor blades, broken glass, needles, etc.) capable of puncturing or cutting must be contained in double disposable red bagsconspicuously labeled with the words, "INFECTIOUS WASTE -- BIOHAZARD."

iii) Infectious sharps must be contained for disposal in leak-proof, rigid puncture resistantcontainers.

iv) Infectious waste thus contained as described above must be placed in reusable or disposable leak-proof bins or barrels which must be conspicuously labeled with the words, "INFECTIOUS WASTE - BIOHAZARD." These waste barrels are be picked up regularly by an outside contractor licensed to handle infectious wastes.

v) Spills/Disinfectants: a solution of sodium hypochlorite (household bleach) diluted 1:10 with water must be used to disinfect, following initial cleanup of a spill with a chemical germicide approved as a hospital disinfectant. Spills must be cleaned up immediately.

vi) After removing gloves, and/or after contact with body fluids, hands and other skin surfaces must be washed thoroughly and immediately with soap or other disinfectant in hot water.

vii) Other biological wastes that do not contain radioactive or hazardous substances may be disinfected by steam sterilization (autoclave) and then disposed of in the regular trash.

viii) Liquid biohazard waste may be disposed of in the sewage system following chemical decontamination.

ix) Reusable glassware must be decontaminated in sodium hypochlorite (household bleach) solution (1:10) prior to rinsing and acid washing. Then the glassware must be sterilized in an autoclave.

x) A Personal Protective Equipment Form for Bloodborne Pathogens can be found on Risk Management's website at http://www.sanantonio.gov/RiskManagement/Safety.

SECTION 12 – FIRE EXTINGUISHERS

1) GENERAL

A) This section describes portable fire extinguishing equipment which is approved for use at COSA facilities and work sites. It also describes the class of fires and hazard classification requirements and use and maintenance of portable extinguishers.

B) Portable extinguishers are intended as a first line of defense to cope with fires of limited size. The Fire department shall be notified as soon as a fire is discovered. The alarm must not be delayed while attempting to extinguish the fire by use of portable fire extinguishers.

C) Fire extinguishers shall be selected for the specific class or classes of hazard:

i) "Class A" – Used for fires of ordinary combustible materials such as wood, cloth,paper, plastics, and rubber;

ii) "Class B" – Used for fires in flammable liquids, gases, and grease;

iii) "Class C" – Used for fires which involve energized electrical equipment;

iv) "Class D – Used for metal fires such as magnesium, titanium, sodium etc.;

v) "Class ABC" – May be used on combustibles, flammable liquids and electrical fires.

2) GENERAL REQUIREMENTS

A) Portable extinguishers shall be maintained in a fully charged and operable condition and kept in their designated places at all times when they are not being used.

B) Extinguishers shall be conspicuously located where they will be readily accessible and immediately available in the event of fire. They shall be located along normal paths of travel, including exits.

C) Extinguishers shall not be obstructed or obscured from view. In areas involving visual obstructions which cannot be completely avoided, alternate means shall be provided to indicate the location of extinguishers.

D) Extinguishers shall be installed on hangers or in brackets, mounted in cabinets or set on shelves with the carrying handle placed 3-1/2 to 5 feet above the floor. Larger extinguishers shall be mounted on wheeled carriers.

E) The operating instructions on the extinguisher name plate shall be legible and faceoutward.

F) Extinguishers shall be visually inspected monthly by supervisors to ensure that they are in their designated places, they have not been actuated or tampered with, and to detect any obvious physical damage. Inspections shall also check the pointer on the pressure gauge is in the charged area.

G) Extinguishers shall be inspected annually by a certified entity. Extinguishers whose actual gross weight does not fall within the guidelines listed on the extinguisher maintenance plate shall be removed from service until inspected and recertified by service entity.

H) Monthly and annual inspections will be recorded on appropriate extinguisher inspection tags. The inspection tag shall be attached to the extinguisher. Monthly inspected tags may be acquired through the Risk Management Safety office.

I) During inspections, dry chemical extinguishers shall be turned upside down for a short period of time to ensure that the chemical does not become packed.

J) Any extinguisher showing dents, cuts, or burns shall be removed from service until it has been hydrostatically tested.

K) Each department, agency or facility shall maintain spare extinguishers. Extinguishers out of service for maintenance or recharge shall be replaced by spare extinguishers having the same classification and at least equal rating.

L) All extinguishers 5 lbs. or larger in size shall be equipped with a discharge hose.

M) Extinguishers used by the COSA shall have Underwriters' Laboratory and Factory Mutual approval.

N) At no time shall ALL extinguishers be removed from any building leaving a facility with no fire protection. Extinguishers should be serviced at their location unless spare extinguishers are used to replace those being inspected.

3) USE OF EXTINGUISHERS

A) On discovery of a fire CALL THE FIRE DEPARTMENT (Dial 9-1-1) and evacuate all personnel from the area.

B) If the fire cannot be controlled by fire extinguishers; DO NOT ATTEMPT TO FIGHT THE FIRE.

C) To activate the extinguisher, remove the "pull pin" from the top lever of the valve assembly handle.

D) Plan a retreat in case the extinguisher does not succeed in putting out the fire.

E) The contents are discharged by pressure – DO NOT DISCHARGE AT A PERSON'S FACE.

F) Hold the extinguisher firmly in an upright position.

G) Stay low to avoid inhalation of smoke and aim discharge just under the flames using a side-to-side motion sweeping the entire width of the fire. For wall fires, start at the bottom, sweep from side to side and progress upward. For floor fires, sweep from side to side and move forward as fire diminishes to reach far edge of the fire.

H) The acronym P.A.S.S can be remembered when operating an extinguisher:

P – Pull pin to unlock handle
A – Aim to base of the fire
S – Squeeze handle to discharge chemical
S – Sweep in a side to side motion

I) NEVER USE EXTINGUISHERS AT DISTANCES OF LESS THAN 6 FEET.

J) Never move into an area where a fire was burning even though it appears to have been extinguished.

K) Use the appropriate class extinguisher for the type of fire. A multi-purpose "ABC" fire extinguisher will extinguish most types of fire.

4) EXTINGUISHER REQUIREMENTS FOR BUILDINGS

A) Extinguishers for use in a computer center shall be of an approved extinguishing agent.

B) Extinguishers for all other applications shall be multipurpose dry chemical A:B:C.

C) Extinguishers shall be mounted to ensure a maximum travel distance of 75 feet for class A, C and D extinguishers, and 50 feet for class B extinguishers.

D) It is advisable that extinguishers be mounted and maintained as outlined in paragraphs 2A through 2F of this section.

E) The location of fire extinguishers must be marked conspicuously.

5) EXTINGUISHER RECOMMENDED FOR VEHICLES

Vehicle Type	Quantity	Minimum Requirements
Passenger Car	1	5 lb. with A:B:C or B:C rating
Half of ¾ ton pickup trucks and vans (w/o hydraulic equipment)	1	5 lb. with A:B:C or B:C rating
1 ton or larger trucks (w/o hydraulic equipment)	1	10 lb. with A:B:C rating
Trucks or vans with hydraulic equipment	1	10 lb. with A:B:C rating

A) It is advisably that COSA vehicles used to transport flammable materials or explosives be equipped with two 10 lb. fire extinguishers with A: B: C rating.

B) Extinguishers shall be securely mounted and conspicuously located where they are readily accessible and immediately available in the event of fire.

C) Extinguishers that are mounted in a compartment or bin shall be readily accessible with a “Fire Extinguisher: sign mounted on the outside bin door.

6) FIRE EXTINGUISHER INSPECTION LOG

A) Extinguishers are to be inspected when initially placed into service and monthly thereafter. The monthly periodic inspections of fire extinguishers are to include a check of the following items (Not a complete inspection list of items):

i) Located in designated place

ii) No obstruction to access or visibility

iii) Operational instruction on name plate

iv) Pin with tamper seal in place

v) Pressure gauge indicator reading in the green charged area

vi) Obvious physical damage, corrosion, leakage, clogged nozzle, or missing parts

vii) Determining fullness by weight or “hefting”

B) Any extinguisher not in compliance with the above inspection criteria is to be taken out of service immediately and replaced with an extinguisher from the reserve supply that meets compliance.

C) Any extinguisher removed from service is to be sent to a fire extinguisher service company for applicable repairs and maintenance procedures. If the extinguisher cannot be repaired, it is to be removed from service and inventory.

D) If the defective extinguisher is a halogenated agent type, it is to be removed from service, not discharged, and returned either to the manufacturer or to fire equipment dealerpermitted to recovery of the halon.

7) RECORDKEEPING

A) Records are to be kept on those extinguishers requiring corrective action. This information will be noted on the Fire Extinguisher Inspection Log.

B) Personnel making monthly extinguisher inspections are to record the date of the inspection and put their initials on the tag attached to the extinguisher. If any extinguishers are found without a tag, this should be noted, and the extinguisher removed from service; inspected by the qualified personnel, and a new tag placed on the extinguisher designating the date of the inspection. Annual inspections shall be serviced by a qualified company.

SECTION 13 – FLAMMABLE AND COMBUSTIBLE LIQUIDS

1) GENERAL

A) This section covers the storage and transportation of flammable and combustible liquids.

B) Flammable and combustible liquids shall not be stored in:

i) Office areas;

ii) Utility rooms or mechanical rooms;

iii) Hallways or next to emergency exits;

iv) Rest rooms; or

v) Near heat or ignition sources.

C) Flammable and combustible liquids shall not be dispensed in portable containers unless the container is Factory Mutual or U.L. approval.

D) Flammable liquids shall never be dispensed into open containers.

E) Fire extinguishers shall be readily available during all fuel dispensing operations.

2) FUEL STORAGE TANKS (FIXED)

A) All permanent Class I, II, and III (gasoline/diesel or alternative fuels) storage tanks shallbe installed in accordance with governmental federal, state and local regulations.

i) Vent outlets shall be equipped with a device to minimize the possibility of blockage from weather, dirt, insect nests, etc.

ii) Piping valves and fittings shall be installed as directed by American National Standard Series B31 "American National Standard Code for Pressure Piping" and National Fire Protection Association Code 30 "Flammable and Combustible Liquids."

iii) A clearly marked emergency shutoff shall be easily accessible and at least 20 feet butnot more than 100 feet from the dispenser.

iv) A fire extinguisher shall be mounted within 30 feet of the dispenser.

v) All fuel product signs shall be color coded.

B) The following information shall be posted on or near the dispenser:

i) Dispenser operating instructions;

ii) Sign - "Shut Off Engine Before Fueling";

iii) Sign - "No Smoking within 50 Feet"; and

iv) Product label with correct material safety information.

3) PORTABLE FUEL TANKS

A) A portable fuel tank is a tank with a fuel capacity of not less than 60 U.S. gallons and notmore than 66 U.S. gallons. Portable tanks are designed to move from job site to job site.

B) Portable tanks shall meet all specifications outlined in National Fire Protection Association Code 30 "Flammable and Combustible Liquids Code."

C) The following information shall be posted on portable tanks:

i) Dispenser operation instructions;

ii) Sign - "Shut Off Engine Before Fueling";

iii) Sign - "No Smoking within 50 Feet"; and

iv) Product label with correct material safety information

D) Overhead portable tanks shall have a dispensing hose nozzle that is of the automaticclosing type without a latch open device.

E) A fire extinguisher shall be located within 30 feet of the portable tank.

4) CONTAINERS

A) Containers, drums, or safety cans shall be used to transport or store quantities of less than 60 gallons of flammable or combustible liquid.

B) Containers shall meet the following requirements:

i) Constructed of steel or other materials as outlined in the National Fire Protection Code 30 "Flammable and Combustible Liquids."

ii) Have a maximum capacity of 60 gallons;

iii) One or more venting devices to limit internal pressure under fire exposure conditions;

iv) Equipped with transfer pump approved by Factory Mutual or U.L.;

v) The tank shall have the following signs on all four sides: "NO SMOKING WITHIN 50 FEET," "SHUT OFF ENGINE BEFORE FUELING," TYPE FUEL ("GASOLINE" OR "DIESEL."); and

vi) Product label with correct material safety information;

C) All containers shall be secured to the vehicle during transportation.

D) Drums containing flammable or combustible liquids may be used in a vertical orhorizontal position. The following precautions shall be taken:

i) Drums used in the horizontal position shall be placed on a drum cradle. The drum shall be equipped with a Factory Mutual or U.L. approved self-closing faucet, drum vent, and antistatic (bonding) wire. A safety drip pan shall be placed on the floor under the faucet;

ii) Drums used in the vertical position shall have Factory Mutual or U.L. approved transfer pump, drum vent, and antistatic (bonding) wire; and

iii) The contents of the drum shall be clearly marked in a visible location on the drumand contain all hazardous warning statements.

E) Small quantities of flammable or combustible liquids shall be stored or transported usinga safety can. A safety can shall:

i) Not exceed five-gallon capacity;

ii) Have a spring closing lid and spout cover that acts as a safety relief vent; and

iii) Have product label with correct material safety information.

F) Only Type I and II safety cans are approved for use by the COSA.

i) Type 1 - A Type I can has only one opening. The opening is used for both filling of and dispensing from the container.

ii) Type II - A Type II can have two openings, one that is used for filling the container and the other for dispensing.

SECTION 14 – MATERIAL STORAGE

1) GENERAL

A) This section covers material storage.

B) Flammable liquids and combustibles are covered in Section 13, Flammable andCombustible Liquids.

2) MATERIAL STORAGE

A) Stored materials shall be neatly stacked and easily accessible.

B) Materials shall have a minimum of 18" air space between the top of the stack and theceiling.

C) Cardboard boxes, cartons, bags, etc., shall be stacked on pallets or platforms.

D) Stacked or stored materials shall not project into aisles.

E) Stacked materials shall be cross stacked by placing one layer of material at right angles tothe layer below.

F) When stacking bagged materials, the mouths of the bags shall be oriented toward theinside of the pile. Bags shall be cross stacked to a maximum height of 5 feet.

3) HAND TRUCKS, DOLLIES, AND WHEELBARROWS

A) Types of hand trucks, dollies, and wheelbarrows include: two wheeled, flat, platform,refrigerator and appliance.

B) To decrease hazards to toes and feet, wheels shall be as far under the load being moved aspractical.

C) Equipment shall be inspected before each use and kept in good repair. Axles shall bekept greased according to manufacturer's recommendations.

D) The type of truck most suitable for the work at hand shall be used and the weight of theload must not exceed the rated capacity of the equipment being used.

E) Two-wheel truck safety procedures that shall be followed:

i) Tip the load to be lifted forward slightly so that the tongue of the truck goes under theload;

ii) Push the truck all the way under the load to be moved;

iii) Keep the center of gravity of the load as low as possible. Place heavy objects below lighter objects. When loading trucks, loaders shall keep their feet clear of the wheels;

iv) Place the load so it will not slip, shift, or fall. Load only to a height that will allow a clear view ahead;

v) When a two-wheel truck or wheelbarrow is loaded in a horizontal position, raise it to traveling position by lifting with the leg muscles and keeping the back straight. Observe the same principle in setting a loaded truck or wheelbarrow down. (See Lifting Section);

vi) Walk upstairs by facing the load and walking up backwards – get assistance for heavy loads;

vii) Walk downstairs by facing the load and walking forward – get assistance for heavy loads;

viii) Other than climbing upstairs, never walk backwards with a hand truck;

ix) For extremely bulky items or pressurized items such as gas cylinders, strap or chain the item to the hand truck;

x) When going down an incline, keep truck ahead, when going up an incline keep hand truck behind. (This applies to four –wheeled trucks.); and

xi) Move trucks at a safe speed. Do not run. Keep hand truck constantly under control.

F) Four-wheel truck operations follow rules similar to those for a two-wheel truck. Extra emphasis must be placed on proper loading. Four-wheel trucks shall be evenly loaded to prevent tipping. Four-wheel trucks must be pushed rather than pulled except for a truck that has a fifth wheel and a handle for pulling.

G) Trucks shall never be loaded so high that operators cannot see where they are going. If there are high backs on the truck, two employees shall move the vehicle, one guiding the front end, the other guiding the back end. Handles shall be placed at protected places on the racks or truck body so that passing traffic, walls, and other objects will not crush or scrape the operator's hands.

H) Truck contents shall be arranged so that they will not fall if the truck or the load is bumped.

SECTION 15 – PERSONAL PROTECTIVE EQUIPMENT

1) GENERAL

A) All employees shall wear clothing suitable for their particular type of work. Loose clothing shall not be worn while working around or near moving machinery or equipment.

B) All departmental approved special protective clothing or protective devices shall be used by employees as directed by department management. Documentation of issued PPEshall be completed and signed by supervisor and employee.

C) Clothing that is soiled by oil or chemicals should be avoided to prevent skin irritations.

D) When work is performed in the vicinity of exposed energized parts of equipment, employees shall remove all exposed conductive articles, such as key or watch chains, ring, wrist watches or bands, if such articles increase the hazards associated with inadvertent contact with the energized parts.

E) Rings or jewelry shall not be worn while climbing on or off structures or vehicles while performing any task where the ring might get caught under or snagged by a projecting item. In addition, rings and wristwatches with metal case and watchbands shall not be worn while working on or near energized equipment or lines.

F) Department approved gloves shall be provided to and worn by all employees when work-site operations could cause injury to the hands.

G) Gloves and long sleeves shall be provided to and worn by all employees when work site operation could cause injury to the hands or arms.

H) Department approved head protection shall be provided to and worn by employees when working in areas where possible danger or head injury exists, such as, contact impact, falling or flying objects, or from electrical shock and burns.

I) Employees shall wear department approved eye and face protection where injury exists from flying objects, glare, liquid splashes, weed eaters, edger, chemicals, grinding, sandblasting, and welding. Eye protection shall be kept in a sanitary and usable condition and shall be replaced when it becomes warped, scratched, or pitted.

J) Department approved hearing conservation devices shall be provided to and worn by all employees working in areas where a danger of noise exposure exceeds acceptable levels.

K) Employees shall wear footwear suitable to the type of work being performed. Safety boots or shoes shall be worn when required. Wearing of sandals, thongs, tennis shoes, loafers or similar footwear shall not be acceptable during working hours for employees serving in labor, maintenance, construction, or inspection positions.

L) Department approved life jackets or buoyant work vest shall be worn by all employees when working over or near where the danger of drowning exists.

M) Department approved respiratory protection shall be worn in areas where dangerous air contamination, chlorine, gasses, vapors, fumes, dust, or other hazardous contaminants exist.

N) Employees required to work in or near the roadway shall wear high visibility clothing, garments, or reflective vests.

O) Department approved fall protection devices, such as harnesses, lanyards, etc., is requiredto protect employees that need to work or accomplish tasks in elevated locations. Fall protection is also required to guard floor and wall openings and open-sided floors or platforms.

i. General Industry: In general industry fall protection is required at 4 feet. The 4 - foot rule applies to walking and working surfaces and requires every open-sided floor or platform 4 feet or more above adjacent floor or ground level to be guarded. This requirement also applies to wall openings, window wall openings at a stairway landing, floor, platform, or balcony, from which there is a drop of morethan 4 feet, and where the bottom of the opening is less than 3 feet above the platform or landing. Every chute wall opening from which there is a drop of more than 4 feet shall also be guarded.

ii. Construction: In the construction industry fall protection is required at 6 feet. The 6-foot rule applies to any situation where an employee could fall or contact dangerous equipment. Walking and working surfaces with unprotected sides or edges(horizontal or vertical) where an employee is working 6 feet or more above lower levels will be guarded or the employee otherwise protected from falling. This also applies to employees constructing a leading edge; working in a hoist area; working near an open hole in a floor (including skylights); and when working at the edge of an excavation, well, pit, or shaft. Employees working less than 6 feet from dangerous equipment must also be protected.

iii. Reinforcing Steel. An employee which could fall into protruding reinforcing steel (rebar) shall be protected to eliminate the hazard of impalement.

P) Protective clothing and equipment shall be used and maintained in accordance with manufacturer’s recommendations.

SECTION 16 – WORK GLOVES AND SAFETY SHOES PROGRAM

1) GENERAL

A) Departments are responsible to ensure employees are provided the appropriate Personal Protective Equipment (PPE) to protect against arm and hand injuries associated with assigned work tasks.

B) Employees must wear protective arm and hand apparel whenever arms or hand can be irritated/injured due to rough surfaces, sharp edges, toxic or corrosive chemicals, heat, cold, oils, particulate matter, power tools, and electrical hazards.

C) Arm and hand apparel that is torn, ruptured, swelled, cracked, or worn through shall be deemed as unserviceable and not be used and must be replaced immediately.

D) Gloves are not a substitute for engineering controls such as machine guards, proximity detectors or other perimeter guards.

E) Gloves should not be worn when working near moving equipment and machinery parts due to the possibility that the glove could get caught in the equipment and drag an employee's hand and arm into the moving machinery.

F) Barrier Creams may be used to protect skin against many irritants when the use of arm or hand apparel is not practical. Barrier creams may also be utilized to supplement arm and hand protection.

G) Example of glove and arm protection by task and hazard to be potentially encounteredare:

i) Welders must wear protective flame resistant (leather) gloves for hand protection and leather sleeve guards, in order to protect hands, arms, and clothing from welding spatter, sparks, and hot metal contact;

ii) Employees performing abrasive blasting tasks shall wear heavy canvas or leather gloves; and

iii) Employees handling or using hazardous chemicals (toxic or corrosives) shall wear nitrile or neoprene rubber gloves that are impervious to the chemical being handled orused.

H) Arm protection (sleeve guards) apparel, if utilized, must be impervious to the chemical being handled or used.

I) Painters shall use rubber, nitrile, or disposable nitrile gloves.

J) Employees collecting samples of non-potable or potentially contaminated water shall wear disposable nitrile gloves.

K) Employees (electrical workers) that work on live electrical lines or equipment (Only when such lines or equipment can't be de-energized) shall:

i) Wear insulated rubber gloves conforming to ANSI Standard J6.6 and rubber insulating sleeve guards conforming to ANSI Standard J6.5; and

ii) Should wear (when practical) leather gloves over insulated rubber gloves in order to prevent the insulated gloves from being punctured or abraded when handling tools or rough objects.

L) Employees who do not handle hazardous chemical, shall wear leather gloves (may be of canvas and leather or cotton and leather) for handling sharp or rough objects.

M) When leather gloves are worn in performing tasks that will result in the gloves being saturated with fluids or sludge, then such employees shall wear disposable nitrile gloves (or their equivalent) inside the leather gloves.

N) Employees involved in the above-mentioned tasks, whose arms may be immersed in the above-named substances shall have arm protective apparel provided to them and these employees shall be required to wear the arm protection.

O) Employees who perform tasks such as mechanical, carpentry, custodial, warehousing,and plumbing will require gloves when fingers or hands have the potential to be cut, scratched, abraded, pinched, punctured, or burned. The type of glove selected shall afford protection from the potential hazards to be encountered.

P) Employees performing such tasks as auto mechanics shall be provided with, and shall usegloves, such as soft nitrile disposables or their equivalent, in order to protect their hands from used motor oil, greases, hydraulic fluids, solvents, Freon and antifreeze.

Q) Whenever hand or arm protection apparel is selected for or provided to employees; factors such as grip, dexterity, size and permeation must be considered.

R) Latex gloves should not be used due to potential allergic reactions.

2) SAFETY SHOES PROGRAM

A) This applies to all COSA employees who are engaged in such work that the wearing of safety shoes is required in the course of performing their job to prevent foot injuries.

B) Safety shoes are required for employees in certain classifications.

C) Each department shall be responsible for budgeting for and providing appropriate safety shoes for their employees. Employees must wear proper safety shoes to ensure adequate foot protection in the workplace as directed by department management.

D) Employees are responsible for the proper maintenance of their safety shoes.

E) Manager and supervisors are responsible for ensuring that employees are accountable foradhering to the safety shoe guidelines.

SECTION 17 – FALL PROTECTION AND PREVENTION

1) GENERAL

A) Personal protection equipment (PPE) shall be provided by COSA for employees performing elevated work assignments requiring the use of fall protection equipment.

B) Employees who are required to perform elevated work assignments may be required to wear appropriate fall protection/restraint equipment. When working at any level above ground level or when accessing work areas below ground, supervisors shall determine whether or not fall protection is required and the type. Specific requirements for the many types of fall protection systems are contained in 29 CFR 1926.500-503. Risk Management may be contacted for assistance in determining which jobs require fall protection and what type.

C) Passive fall protection consists of components and systems that do not require any action on the worker's part. Passive fall protection systems include:

i) General all-purpose nets;

ii) Personnel nets; and

iii) Debris nets.

D) These devices have a wide range of applications. Once properly installed, passive fall protection can protect the individual 100% of the time. Criteria for the design, construction, testing and certification of such systems are presented in 29 CFR 1926.502(c).

E) Active fall protection is made up of components and systems that require some manipulation by the worker to make the protection effective. These systems include:

i) Body belts (The use of a body belt for fall arrest is prohibited. However, a body beltin a positioning device system is acceptable.);

ii) Harnesses;

iii) 6-foot lanyards and their attachments;

iv) Component parts;

v) Lifelines; and

vi) Fall arresters and shock absorbers.

F) Many different kinds of passive and active fall protection systems are available. Choosing the one best suited to a particular task requires planning, forethought and an understanding of the systems available. A complete analysis is required to determine the fall protection system needed.

G) The first factor to consider in selecting a fall protection system is the height at which the worker will be performing the task. Ensure that the length of the lanyard does not exceed the height of the fall.

H) Analyze the job site and specific task to be done. If the job requires working vertically, a different configuration or even a different system will be needed than if the worker must move laterally.

I) Other factors, including rescue methods, back-up systems, length of time at workstations,dryness or wetness of conditions, number of workers needed on the job site, and environmental factors needed to be taken into account.

J) Requirements relating to fall protection for employees varies depending on the walking/working surface. Some general rules and practices are:

i) Anchor/anchorage points – the anchorage point is the position on an independent structure to which the lanyard is securely attached. Supervisors and workers must analyze all hazards below and to the side of the anchoring point to ensure that a falling worker does not strike or swing into any obstacles. The strength, location, and design must allow the worker enough mobility to perform the job. Anchorage points for positioning devices shall be capable of supporting at least twice the potential impact load of an employee's fall or 3000 lbs., whichever is greater. Anchorage points for lanyards and lifelines shall be capable of a sustained load of 5000 lbs. per person;

ii) Each employee who might be exposed to fall hazards shall be trained to recognize the hazards of falling and the procedures to be followed to minimize these hazards. The OSHA Construction Standard, 29 CFR 1926.503, is very specific about the training program elements and training certification for employees who might be exposed to fall hazards in construction activities; and

iii) Personal fall arrest systems (belts, harnesses, and lanyards) shall be inspected prior to each use. Look for wear, abrasions, cuts or frays, heat damage, stitching damage in sewn seams, soiled with petroleum-based liquid, deformed D-rings or hooks, etc. If any of these items are found, the fall arrest system should be deemed unserviceable and replaced.

iv) Personal fall arrest systems must be stored in a manner to prevent them from mildew, mold, wear, damage, and other deterioration.

K) "Roof" means the exterior surface on the top of a building. This does not include floorsor form work, which because a building has not been completed, temporarily becoming the top surface of a building. "Roofing work" means the hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheetmetal, and vapor barrier work, but not including the construction of the roof deck.

L) Specific design requirements for fall protection systems employed in roofing work are presented in 29 CFR 1926.500-503. These design requirements not only specify the materials to be used in building the fall protection systems, but also how the systems are to be erected and secured. Some of the general requirements are presented below.

i) Roofing work on low-slope roofs. "Low-slope roof" means a roof having a slope less than or equal to 4 in 12 (vertical to horizontal). Each employee engaged in roofing activities on low-slope roofs with unprotected sides and edges 6 feet or more above lower levels shall be protected from falling by one or more of the following:

(a) Guardrail systems;

(b) Safety net systems;

(c) Personal fall arrest systems;

(d) A combination of warning line system and guardrail system;

(e) Warning line system and safety net system;

(f) Warning line system and personal fall arrest system; and

(g) Warning line system and safety monitoring system.

M) On roofs 50 feet or less in width, the use of a safety monitoring system alone (i.e., without the warning line system) is permitted.

2) STEEP ROOF WORK

A) "Steep roof" means a roof having a slope greater than 4 in 12 (vertical to horizontal).Each employee on a steep roof with unprotected sides and edges 6 feet or more above lower levels shall be protected from falling by:

i) Guardrail systems with toe boards;

ii) Safety net systems; or

iii) Personal fall arrest systems.

B) Warning Line Systems shall be erected around all sides of the roof work area.

i) When mechanical equipment is not being used, the warning line shall be erected not less than 6 feet from the roof edge.

ii) When mechanical equipment is being used, the warning line shall be erected not less than 6 feet from the roof edge that is parallel to the direction of mechanical equipment operation, and not less than 10 feet from the roof edge, which is perpendicular to the direction of mechanical equipment operation.

C) Points of access, materials handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines.

D) When the path to a point of access is not in use, a rope, wire, chain, or other barricade, equivalent in strength and height to the warning line shall be placed across the path at the point where the path intersects the warning line erected around the work area, or the path shall be offset such that a person cannot walk directly into the work area.

E) No employee shall be allowed in the area between a roof edge and a warning line, unless the employee is performing roofing work in that area.

F) Warning lines shall consist of ropes, wires, or chains, and supporting stanchions erectedas follows:

i) The rope, wire, or chain shall be flagged at not more than 6-foot intervals with high visibility material;

ii) The rope, wire, or chain shall be rigged and supported in such a way that its lowest point (including sag) is no less than 34 inches from the walking/working surface and its highest point is more than 39 inches from the walking/working surface;

iii) After being erected, with the rope, wire or chain attached, stanchions shall be capable of resisting, without tipping over, a force of at least 16 pounds applied horizontally against the stanchion, 30 inches above the walking/working surface, perpendicular to the warning line, and in the direction of the floor, roof, or platform edge;

iv) The rope, wire or chain shall have a minimum tensile strength of 500 pounds, and, after being attached to the stanchions, shall be capable of supporting, without breaking, the loads applied to the stanchions as specified above; and

v) The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.

3) SAFETY MONITORING SYSTEMS

A) A competent person shall be designated to monitor the safety of other employees.

B) The safety monitor shall be competent to recognize fall hazards.

C) The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner.

D) The safety monitor shall be on the same walking/working surface and within visual sighting distance of the employee being monitored.

E) The safety monitor shall be close enough to communicate orally with the employee.

F) The safety monitor shall not have other responsibilities that could take the monitor's attention away from the monitoring function.

G) Mechanical equipment shall not be used or stored in areas where safety-monitoring systems are being used to monitor employees engaged in roofing operations on low-sloperoofs.

H) No employee, other than an employee engaged in roofing work (on low-sloped roofs) or an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.

4) MATERIAL AND EQUIPMENT

A) Material and equipment shall not be stored within 6 feet of a roof edge, unless guardrails are erected at the edge.

SECTION 18 – HEAD GEAR

1) GENERAL

A) Personal protective equipment (PPE) shall be provided by COSA for employees requiringthe use of head protective gear.

B) This section covers the description, use and care of safety headgear.

C) Headgear will be issued by supervision on an as needed basis.

D) Safety headgear is designed to act as both a shield and a shock absorber to protect againsthead injuries. Headgear is also designed to provide protection against electrically energized objects.

E) The use of safety headgear in no way reduces the need for good job planning or the requirements for observing the precautions outlined in other sections of this manual.

F) Never alter or modify the shell or suspension of safety headgear.

G) Safety headgear is designed to give dependable service, provided it is properly cared for. Regardless of how often it is used, the employee shall check for cuts, cracks, frayed straps, and other signs of deterioration. If wear is detected, it shall be reported to supervisor. The suspension or shell shall be replaced immediately, and the defective part removed from service.

2) DESCRIPTION

A) When working in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns, shall be protected by protective helmets as per ANSI/ISEA Z89.1-2014 (R2019) – American National Standard for Industrial Head Protection.

B) This headgear consists of a molded high impact plastic shell equipped with detachable suspensions which are adjustable to different head sizes.

C) The following decals are authorized for use on safety headgear:

i) COSA logo centered on the front of the cap;

ii) Name tag, employee name may be placed below the COSA logo; and

iii) Special purpose decals approved by COSA for special recognition or identificationpurposes.

D) The suspension for the safety headgear consists of a detachable sweat band and strap cradle assembly. The strap cradle assembly is a double strap arrangement that allows adjustment and ensures proper clearance between the top of the head and the inside of the cap crown

E) Winter liners for the safety headgear are available as an accessory item. The winter linershall be worn only with the suspension over or above the liner.

3) USE

A) Safety headgear shall be worn by all personnel engaged or observing construction, outside maintenance, or repair work where head injuries could result.

B) The following are common work operations and conditions under which safety headgearshall be worn:

i) Performing installation or repair work from aerial lifts or truck mounted ladders or buckets;

ii) Working in the vicinity of construction apparatus and equipment such as, earth boringmachines, tractors, and trenchers;

iii) When working in any area or enclosure where head room is insufficient such as crawlspace, cellars, and excavations;

iv) When standing below work that is being done aloft or when performing overheadwork from the ground such as pruning trees;

v) Entering, leaving, and working in manholes or catch basins;

vi) Working in trenches, pits, or other excavations of three foot or more in depth;

vii) When in or near buildings under construction or demolition;

viii) When on any premises where the wearing of head protection is mandatory;

ix) Working on glass crushing, balers, shredders, and tub grinders; and

x) Any other work situation deemed suitable by the supervisor.

C) Ensure to utilize a hardhat based on the operation.

i) Type I Hard Hats are intended to reduce the force of impact resulting from a blow only to the top of the head.

ii) Type II Hard Hats are intended to reduce the force of lateral impact resulting from a blow which may be received off-center, from the side, or to the top of the head.

D) Ensure to utilize a hardhat based on the electrical hazard as well.

i) Class E (Electrical) Hard Hats are designed to reduce exposure to high voltage conductors, and offer dielectric protection up to 20,000 volts (phase to ground).

ii) Class G (General) Hard Hats are designed to reduce exposure to low voltage conductors, and offer dielectric protection up to 2,200 volts (phase to ground).

iii) Class C (Conductive) Hard Hats differ from their counterparts in that they are not intended to provide protection against contact with electrical conductors.

4) CARE

A) Safety headgear shall be stored where it will not be damaged by other tools.

B) Do not store headgear or anything else on the rear shelf of a vehicle in case of a collisionor a sudden stop. The headgear could cause serious injuries to the driver or passengers.

C) Place the hard hat out of service if an inspection shows that it is no longer in proper working order, or the expiry date is about to be reached (5 years after the manufactured date stamped on the hard-hat body). (Note: Do not wait until the expiry date is reached to place it out of service. The recommended best practice is two to five years after the manufactured date based on usage).

D) Safety headgear shall be cleaned by washing with soap or mild detergent and water. To clean, remove the suspension and dip the crown in clear warm water and wipe dry. The suspension shall be washed with regular soap and water.

E) Safety headgear shall be replaced when:

i) Cap receives a severe blow;

ii) Becomes cracked (to include hairline cracks), punctured, or otherwise damaged; or

iii) When deemed unsuitable to use by the supervisor.

F) Do not use paints, solvents, chemicals, adhesives, gasoline, or similar substances on safety headgear. If such substances are applied or come in contact with the helmet, the impact resistance and other safety properties of the helmet may be destroyed. Report any such use to the supervisor.

G) No holes or accessories shall be added to the headgear.

H) When chin straps or liners are used, the straps shall not be drawn over the brim or peaks as this will reduce the electrical protection provided by the headgear.

SECTION 19 – EYE PROTECTION

1) GENERAL

A) This section covers the description of nonprescription industrial eye protection used inthe performance of any work operation involving hazards to the eyes.

B) All eye protective devices must be certified as meeting requirements of the American National Standards Institute (ANSI) Z87.1-1968.

C) Protective eyeglasses shall be provided by COSA for employee requiring eye protection.

D) Each employee will be responsible for the care of the safety eye protection assigned to him/her. The glasses will be stored in a suitable manner when not in use.

2) EYE PROTECTION – DEFINED

A) "General" protection consists of frontal eye protection against flying or moving objects.

B) "Special" protection consists of side as well as frontal eye protection against flying or moving objects. This classification does not include protection against irritating solutions.

C) "Splash proof" protection consists of indirect ventilated goggles or a face shield providing frontal and side protection against flying objects and irritating solutions.

D) "Protection from injurious light radiation" consists of tinted lenses such as required by welders.

E) "Chemical goggles" protect from dry chemicals and chemicals dusts from entering the eyes.

3) USE OF EYE PROTECTION

A) Eye protection must be worn by all personnel when they are performing, observing, or supervising a work operation, and there is any possibility of injury to the eyes that could be prevented by such protection.

B) Eye protection is required when performing or observing at close range the following work operations:

i) Drilling or chipping stone, brick, or masonry, breaking concrete or pavement, etc., by heavy hand tools (sledgehammer, etc.) or power tools such as pneumatic drills or hammers;

ii) Working on or around grinding wheels;

iii) Cutting or chipping ducts, tiles, or galvanized bolts;

iv) Working on or under motor vehicles;

v) Cleaning operations using compressed air, steam, or sandblast;

vi) Welding or similar operations where harmful radiation is emitted, or sparks arethrown off;

vii) Using powder activated stud drivers;

viii) Any operation involving cutting or handling wires and cables, or cutting bolts or othersmall metal objects;

ix) Tree pruning or working among tree branches or underbrush, including hauling andburning of tree limbs or brush;

x) Using circular saws, chain saws, lawnmowers, and weed eaters;

xi) Using glass crushers, balers, shredders, and tub grinders;

xii) When drilling in stone, brick, concrete, etc., with hand or power tools;

xiii) Working or observing near workmen who are driving nails, lags screws, or otherhardware;

xiv) Inspecting or repairing faulty electrical circuits;

xv) Chipping metal with small tools;

xvi) When handling scrap wire or materials;

xvii) During the use of compressed gases;

xviii) In any circumstance where there is a potential for objects or debris to be propelled or ejected from a tool or work area;

xix) In environments where there is potential exposure to injurious light radiation;

xx) In environments where there is potential exposure to liquid chemicals, acid and/orcaustic liquids, chemical gases or vapors;

xxi) Employees, who wear prescription lenses while engaged in tasks that involve eye hazards, shall be provided eye protection that can be worn over their prescription lenses without disturbing the proper position of the prescription lenses; and

xxii) When performing any operation deemed to require eye protection by supervisor.

C) Splash proof eye protection: a face shield is required when performing or observing thefollowing work operations:

i) Handling batteries containing acid;

ii) Handling battery cell liquid solutions;

iii) Handling any liquid caustic chemical; or

iv) Handling hazardous liquids.

4) CARE AND REPLACEMENT

A) Safety eye protection shall be stored in the appropriate manner protecting the glassesfrom damage.

B) Dirty lenses shall be cleaned by washing with soap and water.

C) Replacement glasses shall be obtained from supervisors.

SECTION 20 – EYE WASH AND EMERGENCY SHOWERS

1) GENERAL

A) This section describes COSA policy for eye wash stations and emergency showers foruse in areas where the eye or body may be exposed to injurious materials.

B) Placement of eye wash stations and emergency showers is critical. They must be easily accessible and near the area where exposure is likely.

C) Do not delay irrigation of the eyes, chemical burns to the eye must be treated promptly. Repeated flooding of the eye with water within seconds after contact with a chemical is the most effective way of preventing permanent damage. If the victim can reach an eye wash station within 10 seconds, chances of recovery with no permanent damage to the eyes are excellent. If victim is using another source of water to rinse eye, such as a water bottle, ensure the eye affected is facing down when water is poured over it to avoid contaminating the other eye.

D) It is impossible to use too much water. Generally, the recommended MINIMUM irrigation time for the eyes is 15 to 30 minutes. If the presence of a chemical is uncertain, it is better to irrigate longer than might be necessary rather than irrigate inadequately and risk permanent damage.

E) Seek medical attention.

2) EYE WASH FOUNTAINS

A) Eye wash fountains and emergency showers shall be installed and functional in all facilities where caustic, corrosive or hazardous materials are stored or used.

B) Eye wash fountains and emergency showers shall be installed and functional in all areas used for battery charging or storage.

C) Eye wash fountains shall:

i) Have nozzles located 33 to 45 inches above the floor;

ii) Have a manual “stay open” push bar or foot operated control;

iii) Have incoming water line that is at least ¾ inch IPS and carry at least 30 psi but nomore than 90 psi during operation;

iv) Be connected to a drain by code approved method to facilitate easy testing;

v) Be easily accessible within 10 seconds from the potential hazard area;

vi) Provide equivalent water pressure and water volume from each nozzle;

vii) Be identified with a highly visible sign; and

viii) Have a dust cover to protect the nozzles from contamination.

D) Eye wash fountains shall be inspected by a supervisor, competent personnel, or designated representative weekly or at more frequent intervals when circumstances require to ensure that they are working properly and to detect any physical damage corrosion or other impairments. Check to see that:

i) There are no defective or leaking valves or clogged orifices or other defects;

ii) The flushing streams rise to approximately equal heights and that the water will washthe eyes and face at a velocity low enough not to be injurious to the user;

iii) Control valve shall easily open and remain open without requiring the operator tohold it open;

iv) The drain works properly;

v) The eye wash is clean; and

vi) Date and results of inspections shall be recorded and attached to eye wash.

3) EMERGENCY SHOWERS

A) Overhead deluge or multiple emergency showers may be installed in conjunction with permanent eye wash fountains.

B) The installation of emergency showers does not eliminate the need for eye wash fountains.

C) Emergency showers shall:

i) Have the highest head located 82 to 92 inches above the floor;

ii) Have a manual stay open valve with easily locatable pull rod triangular handle;

iii) Have incoming water line that is at least 1 – ¼ inch IPS and carry at least 30 gallonsper minute at 30 psi during operation;

iv) Be connected to a drain by code approved method;

v) Be easily accessible within 10 seconds from the potential hazard area; and

vi) Be identified with a highly visible sign.

D) Emergency showers shall be inspected by a supervisor, competent personnel, or designated representative weekly or at more frequent intervals when circumstances require to ensure they are working properly and to detect any obvious physical damage, corrosion or other impairment. Check to see that:

i) There are no defective or leaking valves or clogged orifices or other defects;

ii) The shower steam shall form a 20-inch diameter pattern 60 inches above the floor;

iii) The control valve shall easily open and remain open without requiring the operator tohold it open;

iv) The drain works properly;

v) The emergency shower is clean; and

vi) Date and results of inspection shall be recorded and attached to eye wash.

4) EYE WASH BOTTLE

A) When a normal potable water source is not available, portable eye wash bottles containing one of the following agents may be used:

i) Sealed unexpired water rinse;

ii) Sealed unexpired neutralizing rinse; and

iii) Sealed distilled water.

B) Eye wash bottles shall be easily accessible within 10 seconds from the potential hazardarea.

C) Eye wash bottles shall be inspected by a supervisor or designated representative monthly,to ensure:

i) The bottle is full;

ii) The bottle and contents are free of defects and contaminants;

iii) The bottle is not due for refill or replacement; and

iv) The solution is not expired.

v) Inspection tag shall be attached to eye wash

D) Sealed eye wash bottles shall be replaced in accordance with manufacturer's recommendations.

5) PORTABLE EYE WASH FOUNTAINS

A) Portable eye wash fountains are approved only for use in facilities that do not have normal potable water sources.

B) The approved portable eye wash fountain is a 16-gallon polyethylene gravity fed type.

C) Portable eye wash fountains shall:

i) Have nozzles located 33 to 45 inches above the floor;

ii) Be connected to a drain by code approved method or connected to a noncorrosivecontainer having a capacity of least 16 gallons;

iii) Be easily accessible from the potential hazard area;

iv) Provide equivalent water pressure and water volume from each nozzle;

v) Be identified by a highly visible sign;

vi) Have a dust cover to protect the nozzle heads from contamination; and

vii) Shall be filled with water mixed with nontoxic methylparaben additive to prevent theformation of bacteria in the water.

D) Portable eye wash fountains shall be empty, cleaned, and refilled annually.

E) Portable eye wash fountains shall be inspected by a supervisor, competent personnel, or designated representative monthly for obvious defects or damage and to ensure the unit isfull check to see that:

i) There are no defective or leaking valves or clogged orifices or other defects;

ii) The unit is clean;

iii) The retainer strap easily removes to activate the unit; and

iv) The drain works properly;

F) Date, initials of inspector, and results of inspection shall be recorded and attached toeye wash.

SECTION 21 – HEARING CONSERVATION

1) GENERAL

A) The City of San Antonio is committed to providing a safe and healthful work environment for our entire staff. In pursuit of this endeavor, the following hearing conservation program is provided to identify employees who may be exposed to noise which exceed the permissible noise exposure limit established by the Occupational Safety and Health Administration.

B) Employees who are exposed to an 8-hour time-weighted average (TWA) of 85 decibels (dBA) or greater shall wear hearing protection provided by COSA and be enrolled in the hearing conservation program. This program is in place to protect the hearing of all workers. Elements of the hearing conservation program include:

i) Monitoring

ii) Audiometric testing program

iii) Hearing Protection

iv) Training and Information

v) Recordkeeping.

2) MONITIORING

A) The monitoring program is in place to provide an ongoing means of determining employee exposure to noise and protect employees based on excessive exposure.

B) Risk Management shall assist departments in evaluating work areas to determine if employees are exposed to loud noise levels. The determination shall be based on information and observations associated with the work area and surrounding area.

C) When information indicates that employee's exposure to noise may equal the recommended levels, supervisors shall take the following noise abatement measures:

i) Evaluate noise exposures and classification of operations as to level of exposure and degree of hazard;

ii) Control hazardous noise exposures by engineering measures where feasible; i.e., physical changes that reduce the noise that is generated.

iii) Consider administrative controls such as rotating shifts to decrease the duration of exposures for an individual or group of employees;

D) Use of personal hearing protective devices such as earplugs or muffs wherever the noise cannot be adequately controlled by administrative or engineering measures.

3) AUDIOMETRIC TESTING PROGRAM

A) Employees subject to the Hearing Conservation Program who have time-weighted average (TWA) noise exposures of 85 dBA or greater for an eight (8) hour work shift will be required to have both a baseline and annual audiogram.

B) The testing shall be provided at no cost to employees.

C) Audiometric tests shall be performed by the City's contracted medical provider.

D) The baseline audiogram will be given to an employee within six months of employment for previously identified positions or within six months of employee's first exposure at or above the action level to establish a valid baseline audiogram against which subsequent audiograms can be compared.

E) Annual audiograms will be conducted at least annually after obtaining the baseline audiogram for each employee exposed at or above an 8-hour time weighted average of 85 dBA.

F) Each employee's annual audiogram will be compared to his/her baseline audiogram by the City's medical provider to determine if a Standard Threshold Shift (STS) has occurred.

G) Standard Threshold Shift is defined by OSHA as a change in hearing threshold relative to the baseline of an average of 10dB or more at 2000, 3000, and 4000 Hz.

H) If an annual audiogram shows that an employee has suffered a standard threshold shift, the employee will be retested within thirty (30) days of the annual audiogram.

i) If the retest confirms the occurrence of a standard threshold shift, the employee will be notified by contracted medical provider within twenty-one (21) business days of the confirmation;

ii) Employees not using hearing protection will be trained, fitted, and required to use hearing protection if they are exposed to an 8-hour TWA average sound level of 85 dBA or greater.

iii) Employees who are already using hearing protection shall be retrained, refitted, and required to use hearing protection and provided with hearing protectors offering greater attenuation if necessary

4) HEARING PROTECTION

A) The City of San Antonio makes hearing protectors available to all employees exposed to an 8-hour time-weighted average of 85 dBA or greater at no cost to the employee. Hearing protection is selected based on the employee's exposure and the noise reduction rate required to attenuate the noise exposure.

i) Employees will be allowed to choose from an assortment of protective equipment.

ii) Signage is required in areas that necessitate hearing protection. It is the responsibility of the department to provide signage to appropriate areas;

iii) Preformed earplugs and earmuffs should be washed periodically and stored in a clean area. Foam inserts should be discarded after each use. Hands should be washed before handling preformed earplugs and foam inserts to prevent contaminants from being placed in the ear.

5) TRAINING

A) Hearing Conservation Training shall be provided to all employees in the Hearing Conservation Program on an annual basis, which will include:

i) The effects of noise on hearing;

ii) The purpose of protective equipment, advantages, disadvantages, and attenuation of various types

iii) Instructions on selection, fitting, use, and care;

iv) The purpose of audiometric testing, and an explanation of test procedures;

v) Any additional information pertaining to OSHA Noise Exposure Regulations.

6) RECORDKEEPING

A) The Office of Risk Management will maintain records on positions included in the program and the testing schedule.

SECTION 22 – RESPIRATORY PROTECTION

1) GENERAL

A) This section covers the use of respirators utilized in the performance of any work operation whose duties require the use of respiratory protection to prevent unnecessaryexposure from potential hazards caused by breathing contaminated air.

B) In the Respiratory Protection program, hazard assessment and selection of proper respiratory PPE are conducted in the same manner as for other types of PPE and will be provided by the department. In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering control measures (for example,enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while theyare being instituted, appropriate respirators shall be used.

C) The Office of Risk Management will oversee the Respiratory Protection program, conduct evaluations of the program effectiveness, and update the program as necessary. They shall also retain information regarding fit testing to facilitate employee involvementin the program and provide compliance determinations

D) Department heads will ensure the provisions of the Respiratory Protection program are carried out within their respective department ensuring supervisors monitor complianceof the program as described.

E) The wearing of approved respirators is recommended while operating in certain areas which may expose COSA employees to potential hazards caused by breathing contaminated air and mandatory in areas considered as Immediately Dangerous to Life and Health (IDLH) atmosphere environments. The departmental supervisor and Risk Management staff may assist in identifying those areas and ensuring that the proper respiratory protection is provided.

F) Prior to assignment of current COSA employees or new employees to a job function whose duties require the use of respiratory protection, departmental supervisors will notify Risk Management to have that employee placed into the Respiratory Protectionprogram for training, medical evaluation, and fit testing.

G) COSA employees performing duties involving respirator use will notify their supervisor of any changes of conditions affecting the program. These employees will become familiar and comply with the requirements of the Respiratory Protection program and are to immediately report unsafe conditions to their supervisor.

H) COSA employees performing duties involving respirator use will also notify their supervisor of any changes to their medical condition that may affect their wearing anduse of a respirator.

2) EQUIPMENT SELECTION

A) Respirators will be selected on the basis of the hazard to which the employee is potentially exposed, the workplace in which the respirator will be used, and user factors that may affect respirator performance and reliability. Specific requirements for the protection factors provided by various types of respirators are contained in 29 CFR 1910.134. Risk Management may be contacted for assistance in determining which jobsrequire respiratory protection and what type.

B) Respirators will be selected from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits the user. Only those respirators supplied by the city may be used on the job.

C) Any manufacturer's equipment is acceptable if it is certified by the National Institute for Occupational Safety and Health (NIOSH) and offers adequate margin of safety from the type and concentration of the contaminant(s) that may be present.

i) Air-purifying respirators are respirators which use filters, cartridges, or canisters toremove contaminants from the air you breathe;

ii) Air-supplying respirators are respirators which provide clean air from an uncontaminated source.

D) Respirators for Immediately Dangerous to Life and Health (IDLH) atmosphere willconform to one of the following criteria

i) A full facepiece pressure demand SCBA certified by NIOSH for a minimum servicelife of thirty minutes, or;

ii) A combination full facepiece pressure demand supplied-air respirator (SAR) withauxiliary self-contained air supply.

E) Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certifiedfor escape from the atmosphere in which they will be used.

3) VOLUNTARY RESPIRATORY USE

A) Departments may authorize voluntary use of respiratory protective equipment for employees whose job function does not require respiratory protection and does not pose apotential hazard.

i) Voluntary use of NIOSH approved filtering facepieces (resemble dust masks) will notrequire medical evaluations;

ii) The Departmental Safety Coordinator will provide all employees who voluntarily choose to wear the above respirators with a copy of Appendix D of the OSHA Respiratory Protection Standard; A copy of the form can be found on Risk Management's website at http: //www.sanantonio.gov/RiskManagement/Safety.

iii) Employees who choose to wear any respirator beyond the NIOSH approved filtering facepiece must comply with the procedures for Medical Evaluation, Fit-test, EquipmentUse, Equipment Maintenance and Cleaning portions of this program.

4) MEDICAL EVALUATION

A) Prior to assignment to tasks requiring the use of respirators, employees shall be medicallyevaluated for their physical ability to wear a respirator.

i) The medical evaluation will be conducted using the Respirator Medical Evaluation Questionnaire. A copy of the form can be found on Risk Management's website at http://www.sanantonio.gov/RiskManagement/Safety.

ii) The evaluation shall be conducted by a licensed health care provider at COSAauthorized Occupational Health clinic;

iii) COSA authorized Occupational Health clinic performing the evaluation shall providedocumentation to the city whether or not the employee is medically fit to wear a respirator.

iv) The medical evaluation shall be repeated yearly for those employees who continue to be assigned to jobs that require the use of respirators. Risk Management will review monthly Respirator Compliance reports and email Department's Representative for identified respiratory users whose medical evaluation will expire within 30 days from their medical evaluation anniversary date.

5) FIT-TESTING

A) Before an employee is required to use any respirator with a negative or positive pressure tight-fitting facepiece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used. Departments shall ensure that an employee using a tight-fitting facepiece respirator is fit tested prior to the initial use of the respirator, whenever a different respirator face piece (size, style, model, or make) is used, and at leastannually thereafter.

B) The fit test shall be conducted by COSA authorized Occupational Health clinic and fundedby Risk Management. Departments shall ensure that an employee using a tight-fitting facepiece respirator has completed the Authorization for Examination or Treatment form prior to the fit test. A copy of the form can be found on Risk Management's website at http://www.sanantonio.gov/RiskManagement/Safety. Employees are responsible for bringing their departmental provided mask to the fit testing.

C) The fit test shall be administered using an OSHA-accepted QLFT or QNFT protocol

Qualitative fit testing (QLFT) is a pass/fail test method that uses your sense of taste orsmell, or your reaction to an irritant in order to detect leakage into the respirator facepiece. Qualitative fit testing shall be accomplished by temporarily converting the respirator user's actual face piece into a negative pressure respirator with appropriatefilters, or by using an identical negative pressure air-purifying respirator facepiece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator face piece.

i) Quantitative fit testing (QNFT) uses a machine to precisely measure the actual amount of leakage into the facepiece and does not rely upon your sense of taste, smell, or irritation in order to detect leakage. Quantitative fit testing shall be accomplished by modifying the facepiece to allow sampling inside the facepiece inthe breathing zone of the user, midway between the nose and mouth.

D) Fit testing shall be repeated yearly for those employees who continue to be assigned to jobs that require the use of respirators. Risk Management will review monthly RespiratorCompliance report and email Department's Representative for identified respirator users whose fit-testing will expire within 30 days from their fit-testing anniversary date.

E) When an employee's facial shape has changed significantly, the employee shall also be re-fit tested. Facial shape may change due to significant weight loss or gain (25 pounds ormore), injury, orthodontics, or cosmetic to other type of facial surgery.

6) EQUIPMENT USE

A) Personnel shall be familiar with their assigned respirators and the procedures for use.

B) Respirators shall not be worn by employees with conditions that prevent a proper faceseal. These conditions may include, but are not limited to:

i) Temple pieces on eyeglasses;

ii) Missing dentures;

iii) Facial deformities;

iv) Facial hair, such as long sideburns and beards. Male employees must be reasonablyclean shaven as excessive beard stubble can prevent a proper facial seal.

C) The respirator wearer shall conduct a face piece fit test according to the respirator manufacturer's instructions each time the respirator is donned. Typically, this includespositive and negative pressure checks.

i) Positive Pressure Test is performed by covering the exhalation valve with your hand and exhaling gently into the facepiece. The face fit is satisfactory if some pressure canbe built up inside the mask without any air leaking out between the mask and the faceof the wearer.

ii) Negative Pressure Test is performed by closing of the inlet openings of the cartridge with the palm of your hand. Some masks may 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 ten (10) seconds. If the vacuum remains, and no inward leakage is detected, the respirator is fit properly.

7) EQUIPMENT MAINTENANCE AND CLEANING

A) When not in use, respirators shall be stored to protect them from dust, sunlight, temperature extremes, chemical contamination, excessive moisture, or crushing.

i) Employees are responsible for the storage of respirators assigned to them;

ii) Respirators shall be stored in containers so that the respirator and its parts do notbecome deformed from crushing;

iii) Respirators shall not be stored in tool boxes or lockers unless they are stored in carryingcases or their boxes;

iv) Routinely used respirators may be stored in clean plastic bags;

v) Respirators used for emergency purposes shall be quickly accessible at all times and shall be stored in clearly marked containers designed for the intended purpose.

B) Respirators shall be cleaned and disinfected as frequently as necessary to ensure that proper protection and sanitation is maintained for the wearer. The manufacturer's recommendations for cleaning and sanitizing respirators shall be followed.

i) Employees are responsible for cleaning and disinfecting respirators assigned to them;

ii) Respirators that are shared by multiple users shall be cleaned and disinfected by the lastuser after each use;

iii) Respirators that are used for emergency purposes shall be cleaned and disinfected aftereach use.

C) Before a respirator is worn, the employee is to inspect the respirator for cleanliness and forthe presence and condition of all parts. The employee self-inspection should include the condition, tightness, and connections of the respirator.

D) The employee will make this inspection prior to every use.

E) Respirators that are defective or have defective parts shall be taken out of service immediately by the supervisor. If, during an inspection, an employee discovers a defectin a respirator, he/she is to bring the defect to the attention of his/her supervisor.

F) When a respirator is taken out of service for an extended period of time, the respiratorwill be tagged out of service by the supervisor, and the employee will be given a replacement of a similar make, model, and size. All tagged out respirators will be properly disposed.

8) TRAINING

A) Departments shall ensure that employees who are required to wear respiratory protectionand their supervisors will be properly trained in the need, use, sanitary care, and limitations of respirators.

B) The training shall include, at a minimum, the following topics:

i) COSA's Respiratory Protection program and Department's Respiratory SOP;

ii) Respiratory hazards encountered and their health effects;

iii) Limitations of respirators;

iv) Respirator donning and user seal (fit) checks;

v) Fit testing;

vi) Emergency use procedures;

vii) Maintenance and storage;

viii) Medical signs and symptoms limiting the effective use of respirators

C) Employees will be retrained annually or as needed.

9) PROGRAM EVALUATION

A) The Office of Risk Management may conduct periodic worksite observations to ensurethat the provisions of this program are being implemented.

10) DOCUMENTATION AND RECORDKEEPING

A) The Office of Risk Management will keep records on employee's respirator information.

SECTION 23 – EXTREME CLIMATE EXPOSURES

1) GENERAL – COLD ENVIRONMENTS

A) This section describes hazards of working in cold environments, measures to preventover exposure and first aid for frostbite and hypothermia.

B) Under certain conditions, frostbite and hypothermia can occur at any time. Both of these injuries are a result of over exposure to cold. The effects and symptoms are not obvious until a danger point has been reached.

C) Hypothermia develops outdoors in air temperatures between 30 degrees and 55 degrees Fahrenheit, but Hypothermia also can occur in room temperatures up to 65 degrees Fahrenheit.

2) PREVENTING HYPOTHERMIA

A) Avoid prolonged exposure to cold without suitable protective clothes.

B) Wear adequate clothing protecting critical body areas such as the head, neck, sides of the chest, and groin. Several layers of clothing give an insulating effect. Clothing made of wool, sheepskin or fluffy wool down increases insulation.

C) Get the victim to medical help immediately. If medical help is not available, first get the victim out of the cold area which may include wind, snow, or rain; keep energy use to a minimum, keep the person awake.

D) Remove all wet clothing. Warm the victim enough to cause them to adjust to the warmer environment. Put the person into dry clothes and a blanket. If possible, increase the room temperature.

E) It is important for all victims of hypothermia to be checked by a physician as soon as possible, the effects of the cold may cause other injuries.

F) Give the victim a warm, non-alcoholic drink. Alcohol dilates the blood vessels near the skin surface which increases heat loss and lowers body temperature.

3) PREVENTING FROSTBITE

A) Wear several layers of loose-fitting clothing. Layers of clothing allow air in between layers to warm keeping the body warmer longer. Do not wear tight clothing which may cause sweating. Sweating will begin to cool and make the body colder lowering body temperature.

B) If the outdoor temperature is freezing, protect the feet with two pairs of wool stockings orone pair of wool and one pair of cotton.

C) Wear lined gloves.

D) Replace wet garments immediately.

E) Do not use alcohol as internal antifreeze. Alcohol hastens the loss of body heat.

F) Cigarette smoking constricts the blood vessels and limits the blood supply to arms and legs, increasing susceptibility to frostbite.

4) TREATING FROSTBITE

A) Protect the affected area from further injury, warm it quickly, and maintain respiration.

B) Bring the victim indoors as soon as possible and cover with blankets or extra clothing.

C) Give the victim a warm nonalcoholic drink. Alcohol dilates the blood vessels near the skin surface which increases heat loss and lowers body temperature.

D) Place the frostbitten area in lukewarm (never hot) water. Water shall be slightly above normal body temperature (100 degrees to 105 degrees F). If warm water is not available or practical to use, warm the affected area gently in a sheet or warm blanket. Never apply a heat lamp or hot water bottle.

E) Never rub the affected areas, rubbing further damages the injured tissues.

F) Once the affected area is warm again, stop the warming process and have the victim exercise the area. If the feet are involved, do not allow the victim to walk after the affected part thaws.

G) If fingers or toes are involved, place dry sterile gauze between them to keep them apart.

H) Give fluids. Add one level teaspoon of salt and one-half teaspoon of baking soda to each quart of lukewarm water or mix two pinches of salt and one pinch of baking soda in glassof water.

I) Obtain medical assistance as soon as possible.

5) GENERAL - HOT ENVIRONMENTS

A) This section describes the hazards faced when working in hot environments, measures to take to prevent over exposure and first aid for heat related problems.

B) Heat loss from increased skin blood circulation is the usual method of maintaining a constant body temperature. As environmental temperatures approach normal skin temperature, the job of cooling the body becomes more difficult. However, if this is not adequate, the brain continues to sense overheating and signals the sweat glands in the skin to shift large quantities of fluid in the form of perspiration.

C) An employee’s ability to perform is affected by working in hot environments. Strength declines and the onset of fatigue sooner than it would otherwise. Employees who must perform delicate or detailed work may find their accuracy suffering. Those who must gather, and process information may experience a decrease in their comprehension and retention skills.

6) HEAT STROKE

A) Heat stroke is the most serious health problem caused by working in hot environments. It occurs when the human heat regulation system simply breaks down under the stress and sweating stops. There may be little warning to the victim that a crisis stage has been reached.

B) A heat stroke victim's skin is hot, dry, and usually red or spotted. Body temperature is 105 degrees F. or higher and rising. The victim is mentally confused, sometimes delirious, and may experience convulsions, or become unconscious. Unless the victim receives quick and adequate treatment, death can occur.

C) An ambulance and medical assistance shall be summoned IMMEDIATELY. Remove the victim to a cool area, thoroughly soak clothes with water, and fan the body vigorously to increase cooling. Early recognition and treatment of heatstroke is the only means of preventing permanent brain damage or death.

7) HEAT EXHAUSTION

A) Heat exhaustion includes several clinical disorders all of which have similar symptoms. The worker with heat exhaustion still sweats but experiences extreme weakness or fatigue, giddiness, nausea, or headache. In most serious cases, the victim may vomit or lose consciousness. The skin is clammy and moist, complexion is pale or flushed, and body temperature is normal or slightly higher than normal.

B) In most cases, treatment is simple. Have the victim rest in a cool place and give plenty of lightly salted liquids. Mild cases may result in spontaneous recovery with this treatment. Severe cases may require care for several days. There are no known permanent effects. CAUTION – PERSONS WITH HEART PROBLEMS OR THOSE ON A "LOW SODIUM DIET" – CONSULT A PHYSICIAN ON TREATMENT UNDER THESE CONDITIONS.

8) HEAT CRAMPS

A) Heat cramps are painful spasms of working muscles. Loss of fluids and salts may produce these painful muscle cramps. The affected muscles could be part of the arm, leg,or abdomen; but tired muscles are usually the ones most susceptible to cramps. This condition can be prevented by adequate intake of fluids and salts in the diet. CAUTION – PERSONS WITH HEART PROBLEMS OR THOSE ON A "LOW SODIUM DIET" SHOULD CONSULT A PHYSICAIAN ON WHAT TO DO UNDER THESES CONDITIONS.

9) HEAT RASH

A) Heat rash, also known as prickly heat, is likely to occur in hot and humid environments where sweat is not easily removed from the surface of the skin by evaporation. Thesweat ducts become plugged, the sweat glands become inflamed, and a rash appears. This condition can be prevented by occasionally resting in a cool place.

10) PREPARING FOR THE HEAT

A) Generally, humans are capable of adjusting to the heat. This adjustment to heat under normal circumstances will take about a week. During this time, the body will undergo a series of changes that make further heat exposure more endurable.

B) Gradual exposure gives the body time to adjust to higher environmental temperatures.On the first day of work in a hot environment, body temperature, pulse rate, and general discomfort and stress will be higher. With each succeeding daily exposure, these will gradually decrease to normal levels.

C) Employees shall take care and be aware of the causes, symptoms, and treatment for heat related disorders. The effects of heat exposure depend on how well the individual is conditioned for hot environments.

11) HYDRATING

A) In the course of a day's work in the heat, a worker may sweat away as much as three gallons of fluid. Because heat disorders are caused mainly by dehydration, it is essential that water intake during the workday be about equal to the amount of sweat produced.

B) Most workers drink less fluid than they should because thirst is an inadequate drive to stimulate the proper intake. Employees shall not depend on thirst to signal when and howmuch to drink, instead the employees shall drink fluids every 15 to 20 minutes (more often if necessary to satisfy thirst).

C) There is no ideal temperature for drinking water, but most people tend not to drink warm fluids as readily as they will cool ones. Whatever the temperature of the water, it must be palatable and convenient to the work area.

D) Though many people think that dehydration only occurs during hot months, this is a myth. Dehydration also occurs during cold months and hydration should be practiced during these months as well.

E) When practicing hydration, water is the best liquid to replace fluids your body has lost. Though there are other liquids that may help you replace electrolytes like Gatorade and other sports drinks, they are still no substitute for water. Gatorade and sports drinks are good as long as you drink them in moderation. However, if all you drink is sports drinks, it becomes counter-productive due to the fact that it becomes a diuretic. Sodas and other drinks with caffeine should be avoided as they only make you thirstier and have no hydration value. Water is the best fluid to drink for hydration.

F) All employees lose salt in their sweat. In extreme cases, loss of salt can cause additional health problems for employees exposed to hot environments for long periods of time.

12) SPECIAL CONSIDERATIONS DURING PROLONGED HEAT SPELLS

A) As with any safety or health hazard, the key to preventing excessive heat stress is the employer's and the employee's awareness that the hazard exists and that the implementation of proper safety measures can serve to prevent injuries and illnesses on the job. COSA departments shall give employees the opportunity to allow their bodies to adjust to the heat and to drink sufficient water to cope with the stress.

B) The most stressful tasks shall be performed during the cooler parts of the day (early morning or at night). Rest periods should be extended in accordance with the increase of heat. If a stressful task must be performed during the heat of the day, it should be shared with co-workers in a rotating fashion (shifts) to allow rest and hydration every 10 to 15 minutes. Co-workers should keep an eye on each other to ensure that sweating is occurring during these periods.

SECTION 24 – ERGONOMICS

1) GENERAL

A) Ergonomics is the science of fitting workplace conditions and job demands to the capabilities of the working population. Ergonomic considerations include improper arrangement of office furniture and equipment, repetitive activities, poor work postures, lighting, ventilation, fatigue and stress. These factors unaddressed can lead to short- and long-term health problems such as lower back strain, carpal tunnel syndrome, neckache/strain, and eyestrain.

B) A number of elements can be included in an effective ergonomics program:

i) An ergonomics team consisting of employees and management to provide feedbackon problem areas and to work on ergonomic projects;

ii) A Job Safety Analysis (JSA) or Job Hazard Analysis (JHA), a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment.Ideally, after you identify uncontrolled hazards, you will take steps to eliminate or reduce them to an acceptable risk level;

iii) Redesign of the job;

iv) Periodic workplace surveys;

v) Training affected personnel to recognize and report symptoms;

vi) Monitoring/feedback and revisions;

vii) On-site exercise programs; and

viii) Budget necessary to complete team recommendations and redesigns.

2) WORKSTATIONS

A) Chairs should be easily adjustable and provide good lumbar support. If feet cannot rest firmly on the ground, a footrest may be provided. Chairs with a five-point base are recommended due to the stability that is provided.

B) Sufficient leg room must be allowed for seated operators.

C) Position the monitor directly in front of the operator. The operator's eyes should be level with the top of the screen. The viewing distance between the user's eyes and the screen should be approximately 16 to 22 inches. The operators' shoulders should always be square to the keyboard and monitor.

D) The equipment or sources of light should be positioned so that glare or bright reflections on the display screen are minimized or a glare screen may be used

E) Adjust the height of the chair and /or keyboard so that the shoulder-elbow-arm angle is approximately 70-90 degrees.

F) Keyboard heights and placement should be adjustable. Operators' wrist should be level with no deviation when typing and no part of the wrist or arm should be making contact with any surface.

G) Work surface heights should range from 23 to 28 inches for seated workstation. In addition, your work area should be well organized with routine operations within easy reach and easily accessible. When reaching for any item on desktop the arm should never be fully extended. It should have a bend at the elbow reducing strain to the shoulder.

H) Document holders should be placed adjacent to and at the same height as the display screen.

I) Operators should adjust positions frequently and get up and move around to help avoid fatigue. Micro-breaks should be taken at least once every 30 minutes to maintain proper circulation to extremities.

J) Display on screen should use a foreground and background that has a good contrast. This will help reduce eyestrain and make screen easier to read.

K) When answering the phone, you should never cradle the phone between your shoulder and chin.

3) LIGHTING, NOISE AND HEAT

A) Adequate but not excessive heat should be provided. It should be noted that space heatersshould not be utilized under a desk. A three-foot clearance should be surrounding space heaters when used.

B) Windows should be equipped with adjustable blinds.

C) Use task lighting where extra illumination is required.

D) Noise above 85 to 90 decibels (dB) for a prolonged period of time may be harmful to workers. When exposed to high noise levels, employees shall utilize hearing protection.

E) Whenever possible, isolate noisy machines and equipment in a remote location.

F) Tailor work practices to prevent heat/cold-related disorders. Employees exposed to extreme environments must know the appropriate medical steps to counteract potentially life-threatening situations such as hypothermia, heat stroke, heat exhaustion, and heat cramps.

4) SITTING / STANDING

A) Sitting can be twice as hard on your back as standing. Good sitting requires good support to your lumbar region as well as good posture

B) You should never sit on your legs as it decreases blood circulation.

C) When sitting do not lean your forearms or elbows on armrest or any hard surface.

D) If standing for long periods of time on a hard surface such as cement, a (bubbled) rubber mat or some type of cushion should be placed on floor to stand on to decrease pressure to feet and legs.

5) TWISTING

A) The biggest danger to your back is twisting. Instead of twisting, use your feet to pivot. This will turn your whole body and not twist your back.

B) When lifting or carrying a heavy item, be sure to turn your feet and face direction you will be traveling before walking in that direction.

SECTION 25 – BACK SAFETY AND PROPER LIFTING

1) GENERAL

A) Many back injuries are extremely painful and can result in long-term disability or lossof work. Medical bills incurred by back injuries can be very expensive. Fortunately, many spinal injuries are avoidable.

B) This section will help you prevent back injury by showing you:

i) How your back works;

ii) How to lift and carry materials safely;

iii) Lifting incorrectly is a major cause of both office and industrial injuries. This sectioncovers how to lift objects without injury; and

iv) Physical differences that make it impractical to set up safe lifting limits for allemployees.

2) HOW YOUR BACK WORKS

A) Parts of the spine are as follows:

i) Spinal Cord;

ii) Vertebrae, which support the body and protect the spinal cord;

iii) Discs act as shock absorbers between each pair of vertebrae; and

iv) Muscles, ligaments and tendons help strengthen the body's core.

3) LIFTING – THE "NINE RULES"

A) Planning your lift should include the following:

i) Don't lift until you ask yourself: "Can I lift this load safely by myself?" Check for aclear path and test the load to determine about how heavy it is;

ii) Ask for Help, if deemed necessary;

iii) If the load it too heavy, bulky or awkward for you to lift alone, ask for help. Dividethe load and make several trips if required;

iv) Get a Firm Footing;

v) Place your feet apart (approximately shoulder width) with one foot slightly ahead ofthe other to create a firm base. Point your toes slightly outward;

vi) Bend Your Knees; while keeping your back in an upright position;

vii) Keep leverage in mind. Don't bend at your waist;

viii) Tighten Your Stomach Muscles; and

ix) Allow Intra-abdominal pressure to help support the spine when you lift and lower theload.

B) Allow your leg muscles to do most of the work of the lift. Use your legs, not your back. The lifting motion should be smooth and steady.

C) Hold the load close to your body. The closer the load is to your spine, the less force it exerts on your back. If the load feels too heavy, it probably is.

D) Don't twist your body. If you must change directions while lifting, carrying or lowering, do not twist at the waist. Turn your body by changing foot position and face the direction in which you are wanting to go before you begin to walk in that direction.

E) Keep your back upright. This position helps whether lifting or lowering the load. Lifting with your legs, not your back will help keep excess strain off your back.

F) Feet shall be comfortably spread (giving greater stability) with one foot alongside the object being lifted and one foot behind the object being lifted. The foot alongside the object shall be pointing in the direction of travel. The foot positioned behind the object assists with both balance and thrust.

G) A straight back is not necessarily a vertical back. When lifting weights from the ground, the inclination of the back shall be from the hips so that the normal curvatures are maintained. With "straight back lifting," the spine is straight and the pressure on the lumbar inter-vertical discs is evenly distributed. When lifting with the back bent, thespine forms an arc with the result that the lower muscles are subject to strain and there is uneven pressure on the discs.

H) When lifting and carrying weights, the arms shall be close to the body and remain straightwhenever possible. Carrying involves a static posture of the arms, and particularly in the case of long distances, and assistance given to the body in supporting the weight will lessen tension in the muscles. Carrying with the arms straight enables the weight to rest against the thighs.

I) The palm grip is one of the most important elements of correct lifting. The fingers and the hand are extended around the object to be lifted. An insecure grip may be due to taking the load on the fingertips, thus creating undue pressure at the ends of fingers and strain to muscles and tendons of the arm. Greasy surfaces often prevent a secure hold. Whenever possible, such surfaces shall be wiped clean before lifting.

J) Raising the head up and tucking the chin in straightens the whole spine not merely the neck. This automatically raises the chest and conditions the shoulders for more efficient action.

K) Position the body so that its weight is centered over the feet. This provides a more powerful line of thrust and ensures better balance. Start the lift with a thrust of the rear foot combined with the extension of the knee joints. This will move the body forward and upward and for a brief period it will be off balance. This is immediately countered by bringing the back leg forward as in walking.

4) TEAM LIFTING AND CARRYING

A) When two or more persons carry a single object, they shall adjust the load so that it rides level and so that each carries an equal part of the load. Test lifts should be made before proceeding.

B) When two persons carry long sections of pipe or lumber, they shall carry them on the same shoulder and walk in step.

C) When a crew of several people carries a heavy object, the supervisor shall direct the workand special tools such as tongs shall be used when necessary.

D) When two persons are carrying a load, always make sure that you do not cross each other in different directions causing twisting of the body trunk and putting additional stress to apersons' back. Both people should be facing square to each other to avoid twisting.

SECTION 26 – LOCKOUT/TAGOUT (LOTO)

1) GENERAL - HAZARDOUS ENERGY LOTO PROCEDURES

A) Lockout/Tagout procedures are designed to prevent accidents and injuries caused by the accidental release of energy. The use of these procedures prevents employees fromaccidentally being exposed to injuries and even life-threatening situations involving electrical, mechanical, pneumatic, fluid, gas, hydraulic, thermal, water under pressure and gravity flow, or energized systems or equipment.

B) Lockout/Tagout procedures shall only be performed by authorized employees.

C) This Lockout/Tagout procedure covers the following:

i) How to perform a shutdown utilizing normal stopping and shutdown procedures;

ii) How to isolate equipment;

iii) How to apply the lockout devices, additional procedures may be needed for group LOTO;

iv) How to safety release stored energy in order to assure that a zero-energy stateexists;

v) How to install isolating devices;

2) PERFORMING A SHUTDOWN AND ISOLATING EQUIPMENT

A) Notify all affected employees that you are about to start a Lockout procedure.

B) Locate all the energy sources that power the piece of equipment you will be servicing.

C) Always look for hidden energy sources. Some equipment or machines may have more than one source of power, so you must make sure you are familiar with the equipment and all the power sources involved.

3) APPLYING AND REMOVING LOCKOUT DEVICES

A) Every power source has its own procedure for lockout. Lockout may be accomplished by pulling a plug, opening a disconnect switch, removing a fuse, closing a valve, bleeding a line, or placing a block/lock on the equipment.

B) Generally, follow this sequence of events when applying and removing lockout devices:

i) Shutdown the equipment or machine by following the normal method for shutdown;

ii) Turn off the energy at the main power source;

iii) Turn the equipment or machine back on to confirm that the power source has been deactivated;

iv) Attempt to restart the equipment or machine to guarantee that the power is shut off, then return the switch or control to the "Off" position;

v) Using your own issued and separately keyed lock, lockout all of the energy sources involved;

vi) With your lock in place, test the switch or control to make sure the equipment or machine cannot be turned on. Make absolutely sure that the power or energy source cannot be supplied unless you know about it;

vii) If several employees are required to perform services on the same equipment or machinery, then each employee must apply their own separately keyed lock. This willhelp prevent any accidental start up that could endanger other employees; using different colored locks or tags will help determine how many lockouts there are.

viii) Never use another employee's lock and never lend yours to someone else; and

ix) Any person who may be affected by the de-energizing or re-energizing of equipment or machinery must be notified prior to taking the above actions.

C) Tag-out will only be used to supplement lockouts or if the energy isolating device is not capable of being locked out or when used in conjunction with isolating devices on piping.

D) Additional procedures may be needed for group LOTO.

E) LOTO devices shall remain in place until work on the machinery/equipment is complete.

F) Remove lockouts/tag-out only when all affected employees are notified prior to doing so.Make sure that all affected employees are clear of the equipment or machinery.

4) SAFE RELEASE OF STORED ENERGY

A) Equipment must be at a zero-energy state before servicing or maintenance can begin.To attain this zero-energy state, you must do the following:

i) Drain all required valves;

ii) Bleed off air from a system;

iii) Eliminate stored hydraulic, thermal or chemical pressure;

iv) Utilize any approved method of safely releasing stored energy; and

v) Block stored mechanical energy.

5) INSTALLING ISOLATING DEVICES

A) Equipment and/or piping isolating devices shall be used in conjunction with tag-out. Isolating devices shall only be installed by authorized employees. Isolating devices, such as skillet blinds, shall be of a material that is compatible with the liquid, vapor, gas, chemical, or pressure they will have to suppress or come in contact with. The material used shall also have sufficient strength to withstand the maximum operating pressure, including surges, which can build up in the piping system.

B) The piping between the isolating device/valve and the point at which the piping or flange is to be disassembled may contain hazardous pressure or chemicals.

C) As a result, the appropriate supervisor must insure that the hazardous pressure is safely bled off and that the piping involved is purged of any hazardous chemical or substance prior to disassembly.

D) Isolating devices that are used to control energy, gas, or chemical flow, through piping, shall be tagged. Whenever possible, isolating devices or valves can further be locked and tagged out.

E) Both ends of piping shall be blanked out or capped (whenever possible) during the maintenance procedure.

F) The procedure for notifying affected persons prior to installing/removing isolating devices shall be the same as previously stated in the Hazardous Energy Lockout/Tagout Procedures.

6) NON-ROUTINE ENERGY PROCEDURES

A) The lockout, tag-out, blocking and installing equipment and/or piping isolating devices procedures previously stated do not apply in the following situations:

i) While servicing or maintaining cord and plug connected electrical equipment, the energy hazards must be controlled by unplugging the equipment from the energy source. The plug must be under the exclusive control of the employee performing the servicing and/or maintenance; and

ii) Hot tap operations on transmission and distribution systems for gas, steam, water, or petroleum products, can be performed when continuity of service is essential or shut down of the system is impractical, provided that an equally effective means of employee protection is utilized.

B) The procedures contained herein provide only general guidelines that must be adhered to by all employees.

7) VERIFICATION

A) Periodically Managers and Safety staff must utilize the LOTO Program Assessment Checklist to determine program/procedure effectiveness.

SECTION 27 – EXTENSION CORDS

1) GENERAL

A) This section covers the selection, care, and use of low voltage electric extension cords.

B) An extension cord is an electrical cord equipped with an attachment plug at one end and cord connector body at the other end. The cord connector may have one or multiple outlets.

C) Extension cords may be used to provide a temporary power source for power tools, machines, equipment, etc.

D) Permanent receptacle outlets shall be installed at convenient locations to eliminate the necessity of using extension cords for other than limited periods of time.

E) The permanent use of extension cords utilizing a surge protector for office type machines is not acceptable.

F) Where different voltages, frequencies, or types of current (A.C. or D.C.) are to be supplied by portable cords, receptacles shall be of such design that attachment plugs usedon circuits are not interchangeable.

G) Extension cords used with portable electric tools and appliances shall be three-wire type.

2) CARE AND USE

A) Extension cords shall be used only in continuous lengths. Spliced cords shall not be used.

B) Extension cords should be intact with no cuts or other breaks in the outer sheathing. The sheathing should not be pulling away from the plug. Worn, frayed, or damaged extension cords shall be removed from service and replaced.

C) Extension cords shall be protected against accidental damage. Damage may be caused by traffic, sharp corners, pulling or dragging over sharp objects and pinching in doors.

D) Extension cords shall not be permanently attached to building surfaces; they shall not be run through holes in walls, ceilings, on walls, through doorways or windows, or concealed behind building walls, ceilings, or floors. If cords must be in a path of travel, they should be covered with a cord channel.

E) Extension cords, plugs, and connectors shall be inspected frequently. Inspection shall include visual wear check, ground continuity, and object polarity.

F) Extension cords shall be disconnected before making inspection, adjustment, or repair. Repair of extension cord or fittings shall be done only by qualified personnel.

G) To disconnect an extension cord, grasp the plug and pull. Do not pull the cord.

H) Always disconnect an extension cord prior to cleaning. Clean extension cord with a dry cloth. If this method does not clean satisfactorily, use a mild detergent and water. Do not use solvents to clean extension cords.

I) Extension cords used outdoors or in wet areas shall have the attachment plug and cord connector molded to the cord.

J) Never use multiple cords, power strips, or surge protectors joined together to extend the distance from an electrical connection. Piggy backing of extension cords is consideredto be unsafe and should not be used in this manner.

K) Never use surge protectors as extension cord for space heaters, refrigerators, and microwave ovens.

3) SELECTION

A) The wire size required varies depending on cord length and ampere load.

B) For most applications, the following sizes of extension cords are recommended:

i)	LENGTH:	25 Feet	50 Feet	100 Feet
	WIRE SIZE	16 Gauge	14 Gauge	12 Gauge

The lower the gauge number the more current load it can carry.

MINIMUM GAUGE (WIRE SIZE FOR EXTENSION CORD)

AMP RATING RANGE AT 120 VOLTS	25 FEET Gauge SizeMin	50 FEET Gauge Size Min	100 FEET Gauge Size Min	150 FEET Gauge Size Min
0-2	18	18	18	16
2-3	18	18	16	14
3-4	18	18	16	14
4-5	18	18	14	12
5-6	18	16	14	12
6-8	18	16	12	10
8-10	18	14	12	10
10-12	16	14	10	8
12-14	16	12	10	8
14-16	16	12	10	8
16-18	14	12	8	8
18-20	14	12	8	6

SECTION 28 – RISK ASSESSMENT

1) GENERAL

A) COSA operating environments comprise a wide variety of health and safety risks that can totally be eliminated. However, through the application of effect risk management principles and risk assessments, associated risks can be reduced to acceptable levels.

2) DEFINITIONS

A) ALARP (As Low As Reasonably Practicable) – A point at which further preventative or protective measures are not reasonably practicable. It can be shown that there would be a gross disproportion between their cost (in money, time, or effort) and the further risk reduction that that might achieve.

B) Hazard – Source or situation with a potential to cause injury or ill health.

C) Hazard Effect – The most severe 'credible' outcome of a hazard being realized; can be considered the consequence

D) Likelihood – The credible probability, based on historic evidence and experience, that the hazard effect might be realized.

E) Risk – The effect of uncertainty; an effect is a deviation from the expected – positive or negative

F) Risk Reducing Measures – Measures that are taken to reduce an initial identified risk to a residual level that is both tolerable and ALARP

G) Tolerable – Level of risk that can be tolerated to secure benefits.

3) RISK ASSESSMENT OVERVIEW

A) A Risk assessment introduces an additional layer of safety management by establishing a formal written document in identifying potential safety risks and providing a framework to analyze them to identify measures necessary to reduce the residual risks to a level that is both tolerable and ALARP (As Low As Reasonably Practicable).

B) Risk assessments may be conducted as a routine course of business or in response to new or modified activities, facilities, equipment, chemicals, and processes. The risk assessment process considers the following:

i) Routine and non-routine activities and situations;

ii) Potential emergency situations;

iii) People (employees and workers);

iv) Changes in the organization;

v) Changes in knowledge of and information about hazards;

vi) Previous incidents;

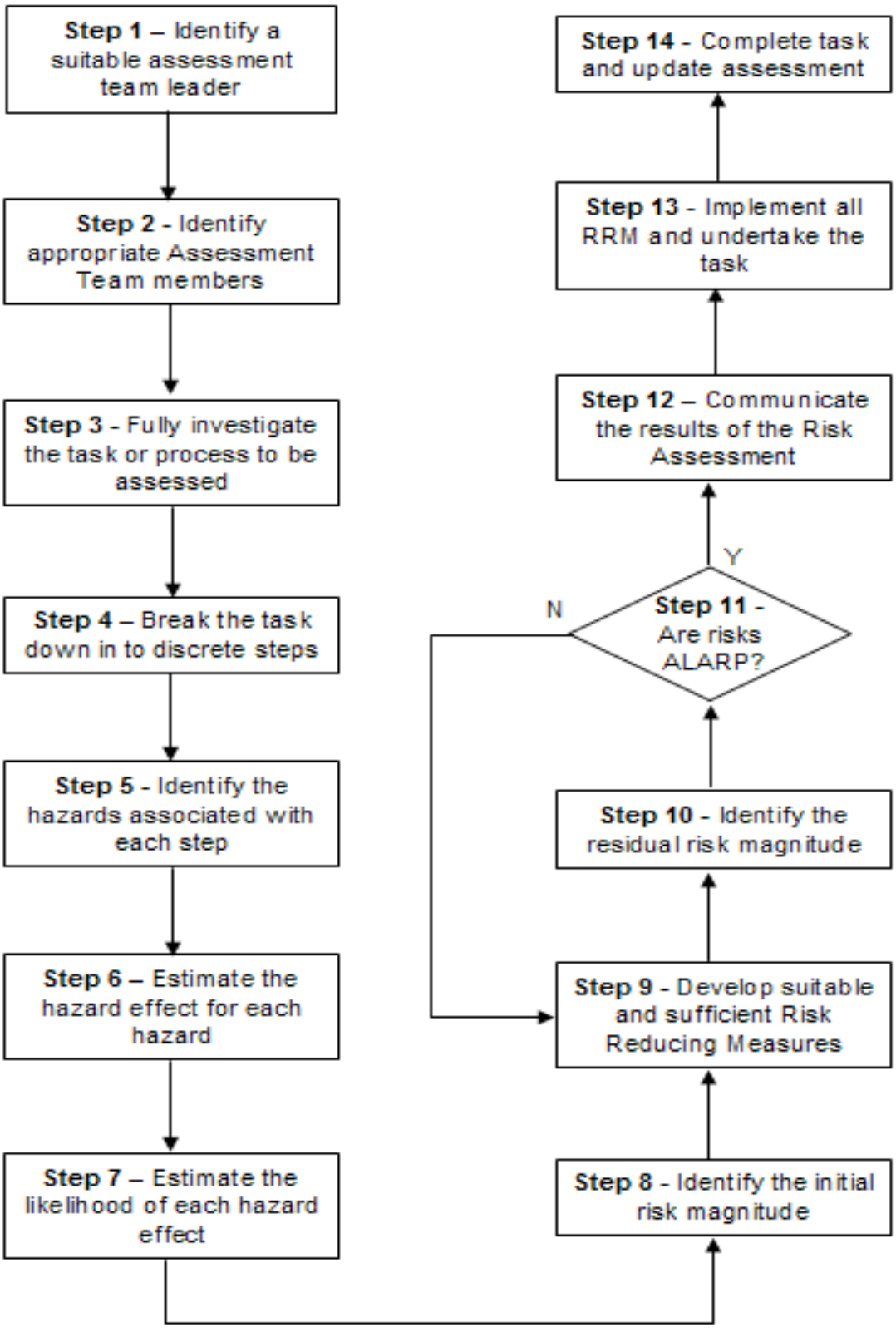
vii) How work is organized or social factors

4) RISK ASSESSMENT MATRIX

Hazard Effect						Likelihood				
Severity Rating		People	Assets	Environment	Reputation	1	2	3	4	5
						Unlikely	Rare	Possible	Likely	Probable
1	Minor	Slight Health Effect/Injury	Slight Damage	Slight Effect	Slight Impact	1	2	3	4	5
2	Moderate	Minor Health Effect/Injury	Minor Damage	Minor Effect	Limited Impact	2	4	6	8	10
3	Serious	Major Health Effect/Injury	Localized Damage	Localized Effect	Considerable Impact	3	6	9	12	15
6	Major	Fatality	Major Damage	Major Effect	National Impact	6	12	18	24	30

Risk	Risk Acceptance Criteria
Low 1 - 4	Risks are already negligible and no further formal controls may be required in order to reduce risks to ALARP
Medium 5 - 10	Ideally further Risk Reduction Measures should be developed for the step but does not automatically mean the step may not be progressed
High >10	Risks are unacceptable and that the particular aspect of the work cannot be progressed until further Risk Reduction Measures are identified and implemented

5) RISK ASSESSMENT MATRIX



SECTION 29 – PORTABLE HAND TOOLS

1) GENERAL

A) Hand tools shall be inspected before use.

B) The most commonly used manual tools can be divided into categories: striking and strucktools such as hammers and chisels; torsion tools such as wrenches and locking pliers; sharp tools such as knives, picks, awls, saws, and screwdrivers. Incorrectly used, hand tools can do serious damage.

C) Some general guidelines for avoiding injury while using hand tools (manual or power driven) are:

i) Use the right tool for the job;

ii) Only use tools in good condition – worn, dirty, or broken tools shall be repaired,cleaned, or discarded;

iii) Use tools properly – cut away from the body when using knives or other sharp cuttinginstruments;

iv) Wear the proper personal protective equipment;

v) Store and carry tools safely – falling tools or tools carried in pockets or toolboxes with sharp edges exposed, can cause serious injury;

vi) Employees report hazards to supervisor; if not satisfied with response report to Safetyor Risk Management;

vii) Remove defective equipment from service; and

viii) Safety staff may make recommendations to remove defective tools from service.

D) Unsafe use of manual hand tools includes using tools that are worn or broken.

E) Supervisors shall not issue or permit the use of unsafe hand tools.

F) Wrenches including adjustable, pipe end or socket wrenches shall not be used when jawsare sprung to the point that slippage occurs.

G) Impacts such as drift pins, wedges, and chisels shall be kept free of splayed ends.

H) Wooden handles of tools shall be kept free of splinters or cracks and shall be kept tighton the tool.

2) STRIKING TOOLS

A) Commonly used striking tools are hammers, sledges, mauls, axes, and hatchets.

B) Supervisors are responsible to ensure employees are aware of the right tools to use for each job.

C) General rules for hammers of all types are as follows:

i) Never strike one hammer with another hammer;

ii) Never use a hammer for a purpose for which it was not designed;

iii) Never use a hammer that has a loose or damaged handle, cracks, chips, or excessivewear;

iv) Always wear safety goggles when hammering, striking, or chipping;

v) Always check in the rear before swinging a striking tool;

vi) Keep eyes on the tool or surface to be struck; and

vii) Strike blow squarely – glancing blows increase the chance of striking a finger orshearing a chip off the hammerhead.

D) Nail hammers – These devices are used to drive unhardened, common and finishing nails,and nail sets using the hammer face. The claws are designed to pull unhardened nails and to rip woodwork. Neither heads nor claws shall be struck against hardened metal.

E) Ball peen hammers – These hammers are designed for riveting; shaping and straightening soft metal; striking chisels and punches of the proper size.

F) When striking chisels and punches with a Ballpeen hammer, the hammer face shall be a minimum 3/8" greater than the head of the struck tool to minimize the chance of a glancing blow.

G) Riveting and setting hammers – Such hammers come in several varieties and are used by machinists, tinsmiths, and glaziers for riveting, shaping, and sheet metal work, andfor inserting glazier points.

H) Scaling and chipping hammers – These tools are designed for chipping welds and scales.

I) Bricklayer's hammer – Bricklayer's hammers are a specialized tool. They are designed forsetting and splitting bricks, masonry, tile, and concrete blocks. They may also be used to chip mortar from bricks. Bricklayer's hammers shall never be used to strike metal. Use Ballpeen hammers which have rounded striking faces for striking brick sets and chisels.

J) Soft face and non-ferrous hammers and mallets – Soft face hammers and mallets shall beused where a harder hammer would mar the struck surface.

K) Use wooden mallets for striking wood and plastic handled chisels, gouges, wood pins and small stakes, and to work with sheet metal. Use rubber and plastic hammers for setting stone. Use non-ferrous materials in hazardous atmospheres where sparks would be dangerous. Soft face tools shall never be used to strike nails, screws or sharp metal objects.

L) Magnetic hammers – These tools are for light duty and used only to drive common tacksand upholstery nails. One end of these hammers is magnetized. The magnetized end is used to start the tack or upholstery nail.

M) Body and fender hammers – These tools are used on sheet metal in the repair of automotive bodies and fenders. They shall not be used for any other purpose.

N) Blacksmith's/engineer's hammers and sledges – This type is a double faced, they are used to strike wood, metal, concrete, stone, spikes, cold chisels, rock drills, and hard nails and to drift heavy timbers.

O) Blacksmith's striking tools – Blacksmiths use a variety of hand hammers and sledges with straight or cross beams for shaping and bending unhardened metal.

P) Stone sledges/spalling hammers – Stone sledges are designed to break up stone and concrete and spalling hammers to cut and shape stone and concrete. Never use these sledges hammers to strike metal or other striking tools.

Q) Hand drilling or mash hammers – These heavy short, handled hammers shall be used for striking punches, star drills, and hardened nails. Never use these tools on stonework.

R) Woodchopper's mauls – These tools have a splitting edge and a striking face and are used to split wood. The splitting edge is used to cut a notch in a log, and then a wedge is placed in a notch and driven with the striking face of the maul. Never use these tools to strike concrete or another striking tool.

S) Axes and hatchets – Such tools are used in many industries and come in many configurations. The double bit ax is used to fell, trim, or prune trees and to split or cutwood. The single bit ax has a striking face on the opposite end which is used to drivestakes of wood, plastic, or soft material. Hatchets are used for cutting, splitting, trimming, and hewing wood. The striking face of a hatchet is designed for striking unhardened nails.

T) Never use the cutting edge of axes and hatchets to strike metal, stone, or concrete. The striking faces of hatchets shall never be used to strike chisels, punches, rock drills, orother struck tools of hardened metal.

U) Never use an ax as a wedge or a maul.

3) STRUCK TOOLS

A) Struck tools such as chisels, punches, etc., are designed to direct the force of the blow toward the center of the tool.

B) Off center blows are not directed toward the center of the tool but down the side. Instead of a cushioning action, a shearing force is achieved. This shearing effect is what causes small chips to fly – a hazardous condition. Cutting edges have precisely determined angles and thicknesses. The angle and thickness allow maximum cutting ability and durability. A dull cutting-edge result in less cutting ability and drastically reduces durability.

C) General guidelines for the safe use of struck tools include:

i) Wear safety goggles;

ii) Use a hammer or mallet with a striking face sufficiently larger than the struck tool.The hammer shall be a minimum 3/8" larger than the struck face;

iii) Use only struck tools that are in good condition - redress, repair, or discard damagedtools;

iv) Do not use struck tools that have loose or damaged handles;

v) Strike blows squarely;

vi) Strike away from yourself;

vii) Never strike steel chisels with a nail hammer;

viii) Do not use a grinder to redress heat treated tools; and

ix) Redress mushroomed heads with a whetstone or file.

D) Cold chisels –Cold chisels have a cutting edge at one end that is used for working with metals softer than the chisel such as cast iron, wrought iron, steel, bronze, copper, etc. The opposite end is usually a struck face. Some tools such as blacksmith's cold chisel have a handle. Never use a cold chisel to work with stone or concrete. Never use one that is damaged, has a dull cutting edge, a mushroomed striking face, or a broken or loose handle. Redress the edge or replace the handle. Discard any chisel that is bent or shows dents, cracks, chips, or excessive mushrooming or wear.

E) Hot chisels –These chisels are used for cutting hot steel. Safety precautions are the same as for cold chisels.

F) All steel wood chisels – These struck tools are wood cutting chisels designed for rough work. They are made of one piece of steel. For use on wood only, never on metal orstone.

G) Punches –Hand punches are made in various patterns and used to mark metal and other materials that are softer than the point end, to drive and remove pins and rivets and to align holes in different sections of materials. Use punches only for the purpose for which they are designed.

H) Blacksmith's punches – These punches are equipped with a handle and are made of a single piece of steel with a strike face and a point end. Blacksmith's round punches are used for drifting holes and aligning and driving pins. Blacksmith's backing out punches are used to back out bolts, rivets, and pins.

I) Drift pins – These tools are designed for aligning holes in metal and shall never be usedas a punch. Never strike a drift pin if either end is chipped or mushroomed.

J) Star drills – These drills resemble four chisels joined at the cutting edges to form a cross and are designed to drill holes in masonry.

K) Brick chisels, sets – These tools are formed from a single piece of steel and are used to score, cut, adjust, and strip bricks and blocks. Never strike brick chisels or sets with a bricklayer's hammer.

L) Wood splitting wedges – These wedges are made from a solid piece of steel and are designed to split logs, firewood, staves, and other wood products. They shall be struck only with sledges or woodchopper's mauls with a striking face larger than the struck face of the wedge.

M) Nail puller bars – This type of bar is used to extract deeply embedded nails. Never use a nail hammer to strike the bar. Discard any nail puller that is bent or has a chip or broken claw or rounded or dull bevel.

N) Nail sets – Nail sets are used to counter seat nails in wood. Do not use as punches or drift pins or to drive pins or rivets. Do not redress. Discard sets that are bent, dented, cracked, chipped, mushroomed, or excessively worn.

4) TORSION TOOLS

A) The most commonly used types of torsion tools are wrenches and pliers.

B) Wrenches shall be used to hold and turn bolts, nuts, cap screws, etc.

C) Guidelines for the safe use of wrenches include:

i) Always use the tool designed for the job at hand;

ii) Never strike a wrench with a hammer;

iii) Never use a hollow pipe or "cheater" to increase leverage;

iv) Use a wrench with an opening that fits the nut exactly. Use wrenches with inchdesignations for nuts with inch designations, and metric wrenches for metric nuts;

v) Pull on the wrench handle. DO NOT PUSH;

vi) Use box or socket end wrenches where possible;

vii) Use a wrench with a straight handle rather than offset handle whenever possible;

viii) To free a "frozen" nut, apply penetrating oil and use a box end or socket wrench;

ix) Never expose a wrench to excessive heat;

x) Inspect periodically, repair, or discard damaged wrenches;

xi) Do not change the shape of wrenches by grinding; and

xii) Discard any wrench with damaged or spread jaws.

D) Socket wrenches – Hand socket wrenches are available in a wide range of sizes.

E) They are used to loosen and tighten nuts and other fasteners with the aid of a ratchetapparatus. Safety guidelines for their use include:

i) Never use hand sockets on power or impact wrenches;

ii) Always stay within safe torque limits when using an adapter; and

iii) Sockets with cracked walls, breaks, or battered points shall be discarded.

F) Combination wrenches – These wrenches are available with a box opening at one end andan open end at the other. Use the box opening where possible.

G) Box end wrenches –This type tool has box openings at both ends each a difference size.

H) Open end wrenches – These tools are made with different size openings at either end.Safe use guidelines include:

i) Never use an extension or "cheater" on the handle; and

ii) Discard when jaws are nicked, spread or battered, or when the handle is bent.

I) Adjustable wrenches – Adjustable wrenches have a wide range of capabilities and are convenient for service repair and electrical line work. They shall not replace fixed opening wrenches in production or general service work. Safety guidelines include:

i) For electrical work use dielectric tools, plastic dipped handles are for comfort notinsulation;

ii) Adjust the jaws tightly to the nut;

iii) Work so that the force or torque is applied to the fixed jaw; and

iv) Do not use an adjustable wrench on a "frozen" nut.

J) Repair according to manufacturer's instructions.

K) Torque wrenches – These devices measure torque and allow the operator to apply the correct amount for the job. Safety guidelines include:

i) Make sure the proper torque is being applied;

ii) Check the torque calibration periodically to avoid dangerous slips; and

iii) Check manufacturer for repair or replacement standards.

L) Locking wrench/clamps – These wrenches are combination tools that function as pliers, wrenches, or clamps. Safe use rules include:

i) Do not expose to heat from welding torches or to contact with welding electrodes;

ii) Lubricate frequently; and

iii) Discard; do not repair a damaged tool.

M) Pliers – Pliers are another very common tool in many industries. There are many varieties.Care shall be taken to use the right pliers for the job. The following basic safety rules apply to all types of pliers:

i) Do not use pliers for cutting hardened wire unless they are specifically made for thatpurpose;

ii) Do not expose to excessive heat;

iii) Always cut wire at right angles, never rock tool from side to side or bend the wireback and forth against the blades;

iv) Don't bend stiff wire with light pliers, use a sturdier tool;

v) Never use pliers as a striking or struck tool;

vi) Wear safety eye wear when cutting wire; and

vii) When working with electricity, shut off the power and use dielectric pliers.

5) SCREWDRIVERS

A) Although there are many types, a screwdriver has one function - driving and withdrawingthreaded fasteners. Tips for the safe use of screwdrivers include:

i) Use the right screwdriver for the job – a bit that is the wrong size or shape for a screwslot can slip and cause injury;

ii) Check the tool before use for a broken handle, bent blade, or damaged tip and repair or replace as necessary. Do not use screwdrivers as pliers, punches, wedges, or pinch bars;

iii) Use cross slot fasteners and drivers when possible;

iv) Place the work piece on a flat surface or in a vise;

v) Disconnect power and use only insulated tools when doing electrical work;

vi) Do not expose blades to excessive heat;

vii) Do not use pliers or a wrench on the screwdriver for more leverage; and

viii) Keep handles free of grease.

6) SAWS

A) Guidelines for the safe use of saws include:

i) Hand saws and hacksaws shall be kept sharp;

ii) Always wear safety goggles;

iii) Install hacksaw blades with the teeth pointed away from the handle; and ensure thatthe blade is kept taut when installing a new blade to avoid binding.

iv) Hot saw blades can break – prevent heat buildup with light machine oil.

7) SHARP TOOLS

A) Knives, picks, and awls are a constant source of puncture and cut wounds. Safety guidelines for using pointed tools include:

i) Wear the proper protective equipment;

ii) Use tools with a shaft to prevent hands from slipping down onto the blade;

iii) Cutting strokes shall be made away from the body;

iv) The work material shall be in a vise or similar holder;

v) Knives shall be carried in a sheath;

vi) Store pointed tools safely so that the points or cutting edges are covered;

vii) Lay ice on a flat surface when chipping with an ice pick;

viii) Use the right tool for the job;

ix) Handles shall have at least one flat surface to prevent tools from rolling off the worksurface; and

x) Awls shall be held at right angles to work piece to prevent slipping.

SECTION 30 – ELECTRICAL TOOLS

1) GENERAL

A) Portable electric tools shall be inspected before use.

B) Report all defects immediately to the supervisor.

C) Besides cuts and bruises, there is a danger of electrical shock. Shock can come from a tool with faulty insulation or from an improperly grounded tool. Always disconnect tool before adjusting, servicing, or cleaning.

D) Flying debris from electric tools can cause injury. The magnitude of the power involved can make broken bits, teeth, blades, etc., lethal missiles.

E) Avoid using electric motors in areas with combustible fumes.

F) Power tools shall be properly stored.

G) General guidelines for using any electrically powered tools safely include:

i) Avoid dangerous environments, such as wet, damp, or gaseous workplaces;

ii) Know the tools so that its work action can be anticipated;

iii) Use the right tool for the job;

iv) Do not force the tool. The job shall be done safer at the rate for which the tool wasdesigned;

v) Wear personal protective equipment.Always use safety eye wear; dust masks,hearing protection, and other protective equipment when appropriate;

vi) Dress safely. Do not wear loose clothing or jewelry. Long hair shall be tied back.Nonconductive clothing shall be worn in wet locations;

vii) Disconnect the tool before changing bits, blades, etc.;

viii) Protect the cord, disconnect by pulling the plug, not the wire. Never carry the tool bythe cord or otherwise abuse the cord;

ix) Remove chuck keys, wrenches, etc., before connecting the tool to the power source;

x) Use only outdoor extension cords when working outdoors;

xi) Make sure switch is in the off position when plugging in the tool. Keep the finger offthe ON switch when carrying the tool;

xii) Keep tools sharp, clean, and lubricated per instructions. Only trained personnel shalldo repairs;

xiii) When using unfamiliar tools, read the instructions. Talk to a supervisor familiar withit and practice before starting the job;

xiv) Use the guards on the tool. Do not try to bypass or circumvent them;

xv) All electrical tools shall be grounded;

xvi) Planning ahead includes getting all the necessary tools and materials, anticipatinghazards, and avoiding possible distractions;

xvii) The work piece shall be secured whenever possible;

xviii) The work area shall be clean, well-lighted, and have appropriate fire extinguishers;and

xix) Tools shall be stored in clean, safe, dry areas.

2) DRILLS

A) General guidelines for safe drilling include:

i) Use only bits that are sharp and true;

ii) Bits shall be the right size for the job;

iii) Keep the drill perpendicular to the drill hole to avoid kickback rotation of the drill;

iv) Clean the bit frequently;

v) Allow the bit to cool before changing or adjusting;

vi) Disconnect power before changing bit;

vii) Secure the work piece;

viii) Operators shall have sufficient space with balanced footing;

ix) Never use fingers to check the alignment of holes in the work material;

x) Prevent whip action by using a firm grip on the handles;

xi) Allow the drill to do the cutting, do not apply excessive force;

xii) Wear appropriate personal protective equipment;

xiii) Never touch any moving parts of the drill when in use;

xiv) As with all electrical tools, disconnect before cleaning, making changes oradjustments;

xv) Keep the cord clear of the bit; and

xvi) Tools shall be connected to properly rated power sources.

B) Cordless drills – These drills are used outdoors far from an electrical outlet and to reach overhead or other hard to reach drilling sites. They are battery powered. Such tools are always "plugged in." The trigger shall always be locked in the OFF position when not in use. In addition:

i) The tools shall never be charged where temperatures are less than 40 degrees F. ormore than 104 degrees F. or in damp locations;

ii) Never place batteries near flame or heat; and

iii) Discontinue use and report to supervisor any batteries leaking liquid. This liquid iscaustic and will cause burns.

3) SAWS

A) Safety guidelines specific to saws include:

i) Saws shall not be jammed or forced into the work piece;

ii) Supervisors ensure saws shall have "dead man's" trigger switch;

iii) Operators shall stay out of the line of cut;

iv) Start and stop saws outside of the work piece;

v) Never clean electric saws (or any electrically powered tool) with toxic or flammablesolvent;

vi) As with all electrical tools, saws shall be disconnected before cleaning or makingchanges or adjustments;

vii) Store saws that are not being used as recommended by the manufacturer;

viii) Saws shall never be laid directly on damp ground;

ix) Respirators shall be worn if the work area is enclosed;

x) Never stop saw in mid cut to allow momentum to finish the job; and

xi) The work piece shall be well secured to prevent movement caused by blade action.

B) Circular saws – This type of saw has a circular blade that rotates and is used extensively forheavy ripping jobs, etc. Some specific safety guidelines include:

i) As with all electrical tools, disconnect from power source before making adjustments;

ii) Disconnect the power source, if the lower guard must be retracted manually;

iii) Move the lower guard with the retracting handle or safety guard lift lever only;

iv) Never clamp or tie the lower guard in the open position;

v) Check the lower guard to make sure it is not bent or touching the blade – do not operate the saw if the guard is not working properly;

vi) Keep the finger off the operating button and do not run the saw while carrying it;

vii) When guiding the saw with two hands, place the second hand on the housing auxiliary handle. Keep one hand on the handle;

viii) Tighten depth and bevel and adjusting nuts before sawing;

ix) Make sure the cord is not in the line of cut both above and below the work piece;

x) If it is necessary to stop the saw in the middle of a long rip, the operator shall have a firm grip on the handle – and shall not resume the cut until the blade is rotating at normal speed; and

xi) Do not invert a circular saw for cutoffs or ripping.

C) Reciprocating saws – reciprocating saws have a long blade that moves rapidly back and forth. It is used to shape and strip many materials particularly in close places. Specific safety rules include:

i) Never operate the saw unless the insulating boot is in its proper place; and

ii) As with all saws, keep hands away from the blade when operating this tool and wear safety goggles.

D) Jigsaws - these saws are used for fine and intricate cuts on various types of materials.Safety guidelines include:

i) Secure bevel adjusting screw before operating the saw;

ii) The blade shall be moving at full speed before it touches the work piece; and

iii) Be particularly careful to secure the work piece, keep hands away from the blade, andwear safety goggles.

4) MAINTENANCE

A) Proper and regular maintenance of electrically powered hand tools is vital to the ToolSafety Program. Guidelines include:

i) Examine cords for damage;

ii) Check plugs for damage and missing ground terminals. If the terminal is missingfrom a three-prong plug, replace the plug;

iii) Check switches with the tool unplugged. Switches shall be free of excessive drag,binding, loose mounting, and obvious defects;

iv) Check chucks, collets, etc., for proper operating condition and see that the right keysand wrenches are available;

v) Visually check housing for defects and damage;

vi) Guards shall be installed properly, function smoothly, and always be used;

vii) Replace missing hardware and tighten all loose bolts;

viii) Make adjustments according to the manufacturer’s recommendation; and

ix) Re-sharpen blades, bits, etc., and reinstall according to manufacturer’s instructions.

B) Supervisors are responsible for instructing employees on how recognizing defects intools.

SECTION 31 – AIR POWERED AND HYDRAULICALLY OPERATED TOOLS

1) GENERAL

A) Air, powered, and gasoline are used to power a variety of industrial tools. Many of themdo the same jobs as similar electrical or hand powered tools.

2) AIR POWERED

A) Air powered tools can be classified as fasteners, abrasives, percussion, wrenches, twists,saws, routers, and shearers.

B) Although hazards may vary with functions of the tool, there are general safety guidelinesfor use with air powered tools.

i) Use the right tool for the job and within designated capacity;

ii) Supervisor ensure operators shall be thoroughly trained in power operation,inspection, and maintenance of the tool;

iii) Safety requirements of the particular tools shall be followed;

iv) Hands and clothing shall be kept from the operating end of the tool;

v) Operators shall be familiar with the job to be done and the action of the tool on thematerial being worked;

vi) Employees shall be required to inspect and test the tool, air hose, and coupling before use and be trained to readily detect defects and malfunctions;

vii) Defective tools shall not be used until repaired by qualified personnel;

viii) Guards and safety devices shall be in place and used according to the manufacturer'srecommendations;

ix) Air hoses and lines must be bled of compressed air before being separated;

x) Warning signs shall be used when chips, dust, or excessive noise would affect otherpersons;

xi) When work is to be done in a combustible atmosphere, purging or ventilation shall beprovided and spark resistant bits shall be used;

xii) Personal protective equipment including safety goggles, hearing protection, andrespirators shall be used; and

xiii) Safety clips shall be used for all connections involving compressed air hoses.

3) PERCUSSION TOOLS

A) Air driven and hydraulic percussion tools include jackhammers and tampers.

B) General safety rules for such tools include:

i) The tool shall not be operated unless bit, chisel, rivet set, scaling, or other accessoryis in position on the tool and in contact with the work piece; and

ii) Bits and other accessories shall be removed when not in use.

C) A handheld self-rotating hammer drill is also known as a sinker or block hole drill.

D) Guidelines for its safe use include:

i) Handles shall be gripped firmly;

ii) Manufacturer's instructions for tempering steel shall be closely followed;

iii) Holes shall be collared at low speed to prevent drills jumping;

iv) The operator shall spread legs for a firm stance and keep clear of the hole;

v) Do not guide the drill with feet or throw a leg over the handle;

vi) Use special adaptations (drifter, stopper, jack leg drill) for drilling horizontal oroverhead holes to avoid fatigue; and

vii) A wet drilling dust collecting system shall be used when silica dust is present.

E) Tampers -- These tools are used to compact earth or paving materials. Single butttampers are used for average work. Double or triple butt tampers combine two or three single tampers for heavy work. Enough people shall be on hand to lift and lower the heavier double or triple butt tampers. Operators of single butt tampers shall keep a firm but light grip and maintain a widespread but firm stance.

4) TWIST TOOLS AND SAWS

A) Twist tools include air driven drills, screwdrivers, nut setters, etc.

B) General safety rules for twist tools include:

i) Use variable speed tools whenever practical so that it is possible to start on a workpiece with controlled speed and power;

ii) Use attachments that are sharp to prevent breakage;

iii) When holes are drilled beyond the flutes of the drill, the bits shall be removed fromthe hole, the drill stopped, and the flutes cleared to prevent

jamming or breaking;

iv) Select the right tool or attachment for the job; and

v) Personal protective equipment shall be used including safety goggles in all cases andhearing protectors and respirators as appropriate.

C) Air powered saws include circular saws and reciprocating saws.

D) Safety precautions for air powered saws are the same as for electrically powered saws. When changing blades or making adjustments, the saw must be disconnected from the airline or the airline must be shut off and drained.

5) POWERED ACTUATED TOOLS

A) Powered actuated tools are used to fasten hard materials together (such as wood to steel, steel to concrete, etc.).

B) The tool uses an explosive charge to drive a fastener through the materials involved.

C) Some basic rules for operators of powder actuated tools are:

i) Read and follow the manufacturer's instruction manual;

ii) Use the tool for its intended purpose only;

iii) Know the material being fastened and the base material being fastened to;

iv) Operators and coworkers shall always wear safety goggles and hearing protection;

v) Bystanders or spectators shall never be allowed to gather around powder actuatedtools while in use;

vi) Maintain good balance, and brace yourself properly at all times;

vii) Never load a tool until ready to make a fastening;

viii) Always keep the tool pointed in a safe direction;

ix) Never carry a loaded tool from job site to job site;

x) All tools shall be cleaned and maintained in accordance with the tool manufacturer'sspecific instruction;

xi) Always check the tools at the beginning of the shift to see that they are in the properworking condition;

xii) Remove defective tools from service until they are repaired or replaced; and

xiii) Have tools inspected and serviced at regular intervals by the

manufacturer'sauthorized service personnel.

D) Additional operating precautions for powder actuated tools are:

i) Only qualified licensed operators shall use these tools;

ii) Tools shall be unloaded and stored in a locked container when not in use;

iii) Always use a standard or special shield or fixture for the job at hand;

iv) Use only the off-center positions of adjustable shields when fastening nearobstructions such as walls when the obstruction is being used as a shield;

v) Always operate a tool perpendicular to the work surface;

vi) Always check the carriage chamber and barrel for foreign objects before loading;

vii) Never use a tool in an explosive or flammable atmosphere;

viii) Always check the color of each charge before inserting it into the tool chamber;

ix) Never attempt to force a powder load into a chamber;

x) In the event of misfire, follow the manufacturer's instructions;

xi) Unfired powder loads shall not be thrown into trash containers.Return unfired powder loads to the supervisor;

xii) Never carry metal objects in the same container with powder loads. Powder loadsshall not be carried in the pockets of the worker;

xiii) Before fastening into any unidentified material, check it by using the center punchtest;

xiv) Always follow the manufacturer's rules for edge distance, fastener spacing andmaterial thickness;

xv) Do not attempt to install a fastener through an existing hole in steel or any othermaterial unless a positive guide is used to assure accurate location;

xvi) Never attempt to fasten in a small or cracked area in masonry;

xvii) Do not attempt to fasten to any area where a previous fastener has failed;

xviii) Never override the fastener;

xix) Do not use the fastener to draw down a steel member;

xx) Never over tighten a nut on a threaded stud; this could cause the fastener to back out;

xxi) Do not attempt to install fasteners in very brittle or hard substances such as tool steel,spring steel, glazed tile, hollow tile, or glass block;

xxii) Never fasten into wood fiberboard or other soft material unless it has base materialthat will prevent the fastener from passing completely through;

xxiii) Always know the material to be fastened into especially where the base material maybe concealed; and

xxiv) Check continually to avoid fastening into unsuitable materials by using the centerpunch test.

6) HYDRAULIC TOOLS

A) Hydraulic tools utilize oil under pressure. Hoses and connections shall be inspected before each use to determine that the equipment is safe to use. All defective equipment shall be removed from service. Defective hydraulic fuel lines shall be replaced, never patched.

B) Items to be checked for are:

i) Cracked, cut or frayed surfaces on hoses;

ii) Evidence of oil seeping through hose or at couplings;

iii) Dirty oil in the system (dirt particles can abrade the hose and cause failure); and

iv) Hydraulic systems which utilize filters shall incorporate a routine system forchanging filters as required following manufacturer's recommendations.

SECTION 32 – CHAIN SAWS

1) GENERAL

A) All chain saws shall be equipped with a working chain break.

B) When transporting a chain saw, set the saw level with the gas cap up. Never carry a sawin the passenger compartment or cab of a vehicle. Secure the saw so it cannot tip over andspill gas during the transportation.

C) Chain saws shall be kept out of reach of all unauthorized personnel.

D) Care and maintenance of chain saws is very important. Supervisors shall ensure that:

i) Chain saws are in good condition and easy to start;

ii) Chain saws are clean and free of oil, gasoline, and sawdust (operators shall not use engine fuel as a cleaning solvent);

iii) Operators shall inspect a saw before use to assure that all handles and guards are in place and tight, that all controls function properly, and that the muffler is operative;

iv) The chain is sharp and tight; and

v) Chain saws are maintained, operated, and adjusted as outlined in the owner's manual.

E) The main hazards of using a chain saw are:

i) Cuts from the chain (while in motion or not in motion, either on or off the saw);

ii) Kick back - an upward jump or jerk of the saw. Kick back commonly is caused by striking a limb with the tip of the moving chain, running engine too slowly at start and during cut, dull or loose chain, cutting above shoulder height, inattention, loose grip, and/or hitting a knot;

iii) Felling trees, rolling logs, and falling limbs;

iv) Strains and sprains and falls while carrying the saw or "escaping" a felled tree;

v) Burns from a hot muffler or cylinder head;

vi) Sawdust in the eyes; and

vii) With an electric saw, shock from defective wiring or improper grounding or from cutting through the power cord.

F) Chain saw operators shall hold the saw with both hands during operation.

G) Chain saw operators shall not use the saw to cut directly overhead or at a distance that would require the operator to relinquish a safe grip on the saw. Always maintain center ofbalance when cutting.

H) Never use a chain saw while standing on a ladder or in a tree.

I) Chain saw operators shall have two feet firmly on the ground at all times while the saw isin operation.

J) Chain bumpers shall be against tree or limb before starting to cut.

K) Fire is a hazard when fueling a chain saw. Items to remember are:

i) Fire extinguishers shall be readily available;

ii) Use the oil and gasoline mixture recommended by the manufacturer;

iii) Saw shall be kept clean and free of gasoline, oil, and sawdust;

iv) Carry fuel only in safety cans (with a spout or funnel);

v) Let the saw cool before refueling;

vi) Fill the fuel tank in an area of bare ground with engine shut off;

vii) Wipe the spilled fuel off the saw and keep the muffler clean; and

viii) Start the motor at least ten feet away from the area where the saw was fueled.

2) PREPARATION

A) Avoid loose clothing, jewelry, or dangling items that might catch in the saw. No loose sleeves cuffs or scarves, tie long hair back.

B) Wear safety equipment: eye protection (safety goggles), hard hats, ear protection, safety shoes, safety gloves, thigh pads, chaps, as required.

C) When carrying a chain saw, the motor shall be turned off. The chain saw blade shall pointto the rear and the muffler shall be away from the body. Chain saw operators shall be instructed to shut off the saw when carrying it for any distance or in hazardous conditionssuch as slippery surfaces or heavy underbrush. The saw shall be at idle speed when not being used to cut. Always check behind you when turning to ensure no one is behind you.

D) When preparing to cut down a tree:

i) Check the tree and surrounding area for possible danger;

ii) Check the size and shape of the tree;

iii) Check the direction of the wind;

iv) Determine which way the tree is leaning;

v) Prepare a bed for the tree to fall in; and

vi) Establish an escape route

E) Clear the work area of brush, check escape route. Check for tripping obstacles. Warning: Do Not Cut Brush with A Chain Saw – Brush Will Whip Causing Injuries.

3) PROCEDURES FOR FELLING A TREE AND CLEARING LIMBS WHILE USING CHAIN SAW

A) Start the saw by:

i) Placing the saw on level ground;

ii) Never drop, start, or brace a saw against any part of the body to start;

iii) Get on good footing;

iv) Make sure the chain is not touching anything during starting procedures; and

v) Hold the saw firmly with one hand; pull the starting cord away from the body (Neverwrap the cord around hand.) Use manufacturer's instructions.

B) Make the undercut first by:

i) Lining up the first undercut carefully facing the direction the tree will fall;

ii) Undercutting one-third of the diameter of the tree. That assures full control of the treewhen it falls; and

iii) The height or opening of the undercut shall be 45 degrees in relation to the first cut.

C) Clear the danger area twice the height of the tree being felled before starting the back cut.Be certain no one is in the danger zone. Make the back cut (or felled cut) 2" above the level of the undercut notch so the tree will not kick back when falling. The cut shall be straight and horizontal. Wedge the cut if the tree is likely to settle on the saw. Use plastic,hardwood or soft metal wedges.

D) Use two cuts if the saw bar is too short or if the tree has a heavy lean in the direction it is to be felled. This prevents splitting up from the stump.

E) Keep the saw in the cut, until the cut opens. Then quickly remove the saw and stop the motor. Do not set a hot saw in dry leaves or grass.

F) Retreat at least 25 feet at a 45- degree angle from the line of fall following theescape route previously checked for tripping hazards or other obstacles. Watch for flying or falling limbs.

G) Removing limbs from a felled tree: For small logs stand on the opposite side of the trunk from the limb being cut. On a hillside, work on the uphill side.

H) When cutting the trunk of a felled tree into sections, the following safety points shall be followed:

i) Clear the work area of brush;

ii) Block the tree so it will not roll;

iii) On a hillside, work on the upgrade side;

iv) Slant the cut so the log will open the cut and prevent the saw from binding; and

v) Slow the motor and hold it away from the body just before the cut is completed.

I) Do not remove supporting limbs flush with the trunk until the log is cut to desired length. Use stubs to keep the log off the ground.

J) If the log rests on the ground, cut from the top. Make sure the chain does not strike the ground.

K) With a log supported at one end, undercut one-third diameter. Complete the cut by cutting from top to prevent binding the saw.

L) With the log supported at both ends, cut about one-third of the log's diameter. Finish withan undercut to meet the first cut.

M) When pruning limbs from trees, under cut about one-third the diameter of the limb.Finish with an over cut to meet the first cut.

SECTION 33 – WELDING, CUTTING AND COMPRESSEDGAS SAFETY

1) GENERAL

A) A gas welding process unites metals by heating them with the flame from the combustionof a fuel gas and includes the use of filler metal.

B) An oxygen cutting process severs or removes metal by the chemical reaction of the metal with oxygen at an elevated temperature maintained with heat from the combustion of fuelgases.

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

2) USE OF FUEL

A) Before connecting a regulator to a cylinder valve, the valve shall be opened slightly and closed immediately. (This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might otherwise enter the regulator.) The person cracking thevalve shall stand to one side of the outlet not in front of it. The valve of a fuel gas cylinder shall not be cracked where the gas would reach welding work, sparks, flame, or other possible sources of ignition.

B) The cylinder valve shall always be opened slowly to prevent damage to the regulator. Forquick closing, valves on fuel gas cylinders shall not be opened more than 1-1/2 turns. When a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel gas flow may be shut off quickly in case of an emergency. Never place items on top of a fuel gas cylinder.

C) Fuel gas shall not be used from cylinders through torches or other devices which are equipped with shutoff valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.

D) Before a regulator is removed from a cylinder valve, the cylinder valve shall be closed, and the gas released from the regulator.

E) If, when the valve on the fuel gas cylinder is open, there is found to be a leak around the valve stem, the valve shall be closed, and the gland nut tightened. If this action doesnot stop the leak, the use of the cylinder shall be discontinued. The cylinder shall be tagged and removed from the work area.

F) If a leak develops at a fuel plug or other safety device, the cylinder shall be tagged and removed from the work area. Note: Cylinder cap should be screwed on prior to storage.

3) REGULATORS, GAUGES, AND HOSES

A) Regulators shall be used on both oxygen and fuel gas cylinders to maintain a uniform gas supply to the torches at the correct pressure. The oxygen regulator shall be equipped with a safety relief valve.

B) Employees shall stand to one side and away from regulator gauge faces when opening cylinder valves.

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

D) Oxygen regulators shall be equipped with right hand threads and acetylene regulators shall be equipped with left hand threads. Only regulators listed by Factory Mutual or Underwriters' Laboratories shall be used.

E) Fuel gas hose and oxygen hose shall be easily distinguishable from each other. Oxygen and fuel gas hoses shall not be interchangeable. A single hose having more than one gas passage shall not be used.

F) Flashback arrestors (check valves) shall be connected between the regulators and the gas hose and oxygen hose.

G) All connections shall be tested for leaks before beginning any welding or cutting operation.

H) When parallel sections of oxygen and fuel gas hoses are taped together not more than four inches out of any 12-inch section shall be covered.

I) Inspect all hoses carrying combustible gases before use. Defective hoses shall be tagged and removed from service.

J) Hose couplings shall be of the type which cannot be unlocked or disconnected by means of straight pull without rotary motion.

K) Boxes for the storage of gas hoses shall be ventilated. Store hoses in a cool place.

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

M) Hoses shall be protected from flying sparks, hot slag, and other hot objects as well as grease and oil.

4) TORCHES

A) Torches are constructed of metal castings, forgings, and tubing. Usually, they are made of brass or bronze. Use only those torches listed or approved by Underwriters Laboratory or Factory Mutual.

B) Gases enter the torch by separate inlets, through valves to the mixing chamber and to the outlet orifice located in the torch tip. Several interchangeable tips are provided with each torch having orifices of various sizes according to the work to be done.

C) The cutting torch unlike the welding torch uses a separate jet of oxygen in addition to the jets of mixed oxygen and fuel gas. The jets of mixed gas are for preheating the metal and the pure oxygen jet is for cutting. The flow of oxygen to the cutting jet is controlled by a separate valve.

D) Observe the following precaution in the use of torches:

i) Select a proper welding head or mixer tip or cutting nozzle (according to charts supplied by the manufacturer) and screw it firmly into the torch;

ii) Before changing torches, shut off the gas at the pressure reducing regulators; and

iii) Never reduce pressure by crimping the hose;

iv) Do not use matches or cigarette lighters to light torches. Use only a friction lighter or stationary pilot flame. When lighting, point the torch tip away from all persons or combustibles;

v) Never put down a torch until the gases have been completely shut off. Do not hang torches from a regulator or other equipment; and

vi) When extinguishing the flame, close the acetylene and oxygen valve in the order recommended by the torch manufacturer.

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

F) Torches shall be inspected before use for leaking shutoff valves, hose couplings, and tip connections. Defective torches shall be tagged and removed from service.

5) COMPRESSED GAS SAFETY

A) All compressed gas cylinders shall be handled with care.

B) Cylinders shall be stored in an upright position in racks or chained firmly against thewall, or other solid object.

C) Cylinders containing different kinds of gases shall be separated (flammable or combustible gas cylinders must be separated from oxygen cylinders by a minimum of 20 feet or a 5-foot-high non-combustible barrier).

D) Cylinders shall not be stored near highly flammable materials or sources of heat. Cylinders are not designed to withstand temperatures in excess of 125^0 F (CGA P-1 1965).

E) Never use cylinders as rollers.

F) When moving a cylinder, use a two-wheel hand truck or a gas cylinder sling.

G) When transporting a cylinder on a vehicle, the cylinder shall be secured to the vehicle. All compressed gas cylinders should be secured in an upright position with caps securely tightened. Regulators shall be removed or guarded before a cylinder is transported.

H) Acetylene and liquefied fuel gas shall be stored and transported in the upright position (valve end up).

I) When gauges are not attached, the protective cylinder cap shall be kept securely in place.

6) ARC WELDING AND CUTTING

A) Arc welding is a process for joining metals by heating with an electric arc or arcs with or without the application of pressure and with or without the use of a filler metal. Arc welding is used to fabricate nearly all types of carbon or alloy steels, common, nonferrous metals, and is indispensable in the repair and reclamation of metallic machine parts.

B) Arc cutting is used only for rough cuts or for scrapping because of the unevenness of the cut obtained.

C) For arc welding or cutting, one lead is connected to the work and the other to an electrode holder. The work lead (cable) is the most satisfactory means of providing the return (ground) circuit to the welding machine. Operating conditions may require the use of a grounded steel structure.

7) WELDING CABLES, CONNECTORS, GROUND RETURNS, AND MACHINEGROUNDING

A) All arc welding and cutting cables shall be of the completely insulated and flexible type.

B) Only cable free from repair or from need of repair shall be used. Repaired cables, or cables in need of repair, shall be reported to the supervisor for replacement.

C) If connections are affected by means of cable lugs, they shall be securely fastened together to give good electrical contact and exposed metal parts of the lugs shall be completely insulated.

D) Frames of all arc welding and cutting machines shall be grounded either through a third wire in the cable containing the circuit conductor or through a separate wire which is grounded at the source of the current. Grounding circuits shall be checked to ensure that the circuit between the ground and the grounded power conductor has resistance low enough to permit sufficient current to flow to cause the fuse or circuit breaker to interruptthe circuit.

E) All ground connections shall be inspected to ensure that they are mechanically strong andelectrically adequate for the required current.

8) ELECTRODES AND HOLDERS

A) Arc welding is done with either a metallic or carbon electrode. The carbon electrode is usually a solid carbon or a graphite pencil 1/4 inch in diameter or larger depending on theamount of current used.

B) Electrode holders used for shielded metal arc welding are used to connect the electrode to the welding cable supplying secondary current. Fully insulated holders shall be used.

C) Always use an electrode holder of the correct size for the electrode used. Dipping hot electrode holders in water shall be prohibited.

9) PROTECTION AGAINST ELECTRIC SHOCK

A) The voltage between the electrode holder and the ground during the "off' arc or "no load" period is the open circuit voltage. The operator shall be properly instructed and shall use the equipment provided for personal protection.

B) The employee shall keep his body insulated from both the work and the metal electrode and holder. Never permit the bare metal part of an electrode, the electrode insulation or any metal part of the electrode holder touch the body.

C) Some specific precautions for prevention of electric shock are:

i) In confined spaces, cover or arrange cables to prevent contact with falling sparks;

ii) Never change electrodes with bare hands or wet gloves or when standing on wet flooror grounded surfaces;

Ground the frame of welding units (portable or stationary) in accordance with the National Electrical Code. With a small unit, a primary cable containing an extra conductor one end of which is attached to the frame of the welding unit shall be used. By means of the proper polarized plug, the ground connection shall be carried back to the permanently grounded connection in the receptacle of the power supply;

iii) If a cable (either work lead or electrode lead) becomes worn exposing bareconductors, it shall be removed from service;

iv) Keep welding cables dry and free of grease and oil to prevent premature breakdownof insulation;

v) Protect cables that must be laid on the floor or ground so that they will not interferewith safe passage or become damaged or entangled; and

vi) Welding cables shall be kept away from power supply cables or high-tension wires.

10) ITEMS COMMON TO GAS AND ARC WELDING AND CUTTING

A) Welding, cutting, and heating operations shall have suitable mechanical ventilation or respiratory protective equipment.

B) Ventilation is required when welding, cutting, or heating in or on the following:

i) Confined spaces;

ii) Zinc bearing base or filler metals, or metal coated with zinc bearing materials;

iii) Lead base metals; and

iv) Chromium bearing metals or metals coated with chromium bearing materials.

C) Ventilation and air line respirators are required when welding, cutting, or heating of the following metals:

i) Metals containing lead other than as an impurity or metals with lead bearing materials;

ii) Cadmium bearing, or cadmium coated base materials;

iii) Metals coated with mercury bearing metals; and

iv) Beryllium containing base or filler metals.

D) Objects to be welded, cut, or heated shall be moved to a designated safe location or if the objects to be welded, cut, or heated cannot be readily moved, all moveable fire hazards inthe vicinity shall be taken to a safe place.

E) If the object to be welded, cut, or heated cannot be moved and if all the fire hazards cannot be removed, positive means shall be taken to confine heat sparks and slag and to protect the immovable fire hazards from them.

F) No welding, cutting, or heating shall be done near the application of flammable paints, or the presence of other compounds or heavy dust concentrations.

G) Suitable fire extinguishing equipment shall be immediately available in the work area andshall be maintained in a state of readiness for instant use.

H) When welding, cutting, or heating is performed on walls, floors, or ceilings direct penetration of sparks or heat transfer may introduce a fire hazard to an adjacent area, precautions shall be taken on the opposite side as are taken on the side on which the welding is being performed.

I) Empty containers that have contained flammable equipment shall be removed to a safe area apart from hot work operations or open flames.

J) Drums, containers, or hollow structures which have contained toxic or flammable substances shall be filled with water or thoroughly cleaned of such substances, ventilated and tested, prior to welding, cutting, or heating.

K) Before heat is applied to a drum, container, or hollow structure, a vent or opening shall beprovided for the release of any built-up pressure during the application of heat.

11) PROTECTIVE EQUIPMENT

A) The following is a list of protective equipment that shall be used:

i) Goggles, helmets, and shields that give maximum eye protection for each welding and cutting process shall be worn by the operators, welders, and their helpers. (These items shall conform to ANSI Z87.1 Practice for Occupational and Educational Eye Protection and Z89.1 Safety Requirements for Industrial Head Protection.) The following table is a guide for selecting the correct filter lenses for various weldingand cutting operations;

FILTER LENSES SHADE NUMBERS FOR VARIOUS WELDING AND CUTTINGOPERATIONS (WELDERS AND HELPERS)

WELDING OPERATION	SHADE NO.
Torch Soldering	2
Torch Brazing	3 or 4
Light Cutting Up to 1"	3 or 4
Medium Cutting 1" to 6"	4 or 5
Heavy Cutting 1" to 6"	5 or 6
Gas Welding (Light) Up to 1/8"	4 or 5
Gas Welding (Medium) 1/8" to 1/2"	5 or 6
Gas Welding (Heavy) Over 1/2"	6 or 8
Shielded or Metal Arc Welding Up to 5/32" Electrodes	10
Shielded Metal Arc Welding 3/15" to 1/4" Electrodes	12
Shielded Metal Arc Welding Over 1/4" Electrodes	14
Gas Metal Arc Welding (Nonferrous)	11
Gas Metal Arc Welding (Ferrous)	12
Gas Tungsten Arc Welding	12
Atomic Hydrogen Welding	12
Carbon Arc Welding	14

(Note: In gas welding or oxygen cutting where the torch produces a high yellow light, a filter lenses that absorbs the yellow or sodium line in the visible light shall be used.)

i) Flame resistant gauntlet gloves except on very light work;

ii) Apron of leather or other flame- resistant material to withstand radiated heat and sparks;

iii) For heavy work, fire resistant leggings, high boots or similar protection;

iv) Safety shoes where heavy objects are handled;

v) High top boots are required during welding operations. Low cut shoes with unprotected tops shall not be worn;

vi) For overhead work, capes or shoulder covers of leather or other suitable material, skull caps of leather or flame-resistant fabric shall be worn under helmets to prevent head burns. For overhead welding ear protection (wool or rubber plugs or wire screen protectors) shall be used; and

vii) Safety head gear as specified in Section 18 of this manual shall also be required.

SECTION 34 – LADDERS

1) GENERAL

A) This section covers the precautionary measures necessary for the safe usage of track supported and portable rolling ladders, stepladders, and ladder seats.

B) This section includes the description of the ladder block and its use as a safety measure with track supported rolling ladders.

2) LADDER PRECAUTIONS - GENERAL

A) Do not use defective ladders or ladders supported by defective track.

B) Before moving a ladder, make certain that no employee or equipment is on or below the ladder.

C) Do not leave tools, materials, or apparatus on unattended ladders. When these items are no longer required, they shall be cleared from the work site.

D) Do not throw tools and materials from the floor to an employee on the ladder or drop them from the ladder to an employee on the floor.

E) Do not at any time use nearby equipment, frames, racks, or other structures to assist in ascending, descending, or changing positions on ladders.

F) Do not climb frames or stand on motors, equipment, or other objects that are not designedfor that purpose. Use a ladder, bench, or stool, whichever is appropriate. Employee shall not use a chair as a ladder.

G) Do not stand with one foot on the ladder and the other foot resting on equipment, frames,racks, or other structures.

H) Do not step from one ladder to another.

I) Do not use wax on ladder steps or handrails.

J) Painted ladders shall not be used. Paint may hide possible defects. (Ladders may be covered with a clear sealer.)

K) Do not overreach or lean to the side so far that loss of footing or balance may occur.

L) Place ladders so as to gain safe and easy access to the work at hand.

M) Always face the ladder when ascending or descending. Use the handrail or side rail to ascend or descend one step at a time.

N) Rubber soled shoes shall be worn in preference to shoes with leather soles.

O) Never lift the weight of your body from the ladder by grasping any overhead structure.

P) Do not jump or swing on or off a ladder.

Q) When descending, make certain that the last step has been reached before stepping to the floor.

R) Anytime the ladder is used when applying lubricants or other materials of similar nature, inspect the ladder during and after use to make certain that no substance has been spilled on the steps.

S) Perform periodic tests and inspections per manufacturer's instructions.

3) PORTABLE AND STEP LADDERS

A) Do not use any type of portable rolling ladder or stepladder as a straight ladder.

B) Before mounting portable rolling ladder (folding type) or stepladders, check that the spreaders are fully extended and locked.

C) Do not mount or climb from the rear on any portable rolling ladder (non-folding) or any stepladder that is designed to be mounted from one side only.

D) The third step from the top of the ladder is the highest ascent that can be safely maintained (with the exception of the platform type stepladder).

E) Do not place boxes or similar objects on a ladder or ladders on boxes or similar objects inorder to gain additional height.

F) Do not attempt to shift the position of a ladder while on it.

G) When folding the ladder, care shall be exercised to avoid pinching the fingers in spreaderbraces.

H) When it is necessary to place a ladder in a doorway, the door shall be fastened in an openposition, barricaded or guarded by another person.

I) When carrying a ladder from one place to another, guard against striking it against the ceiling, light fixtures, equipment, or other objects. When passing through doorways, make certain that no one is coming from the opposite direction. When necessary, have other person open doors and assist in going around corners.

J) When ladders are not in use, return them to the correct storage area.

K) On portable rolling ladders, which are equipped with ropes to assist in folding the ladder, face the ladder, grasp the rope just above the spreader and pull toward the

body.

L) Use a ladder of proper length to reach the working height you need. Use a ladder according to use and working load-the combined weight of the climber and the load beingcarried.

TYPE	DUTY RATING	WORKING LOAD
IA	Industrial	Extra heavy 300 lbs. maximum
I	Industrial	Heavy 250 lbs. maximum
II	Commercial	Medium 225 lbs. maximum
III	Household	Light 200 lbs. maximum

M) Inspect the ladder

i) Always inspect the ladder before you use it. Never use the ladder if it is damaged, broken or bent.

ii) Don't make a temporary repair of broken or missing parts and then use the ladder. The temporary repair could fail while you're high off the ground. A ladder should be free from grease, oil, mud, snow and other slippery materials before using.

N) Moving the ladder

i) You should carry a single or extension ladder parallel to the ground. Hold the side railin the middle of the ladder so you can balance the load. You should get help moving avery long ladder.

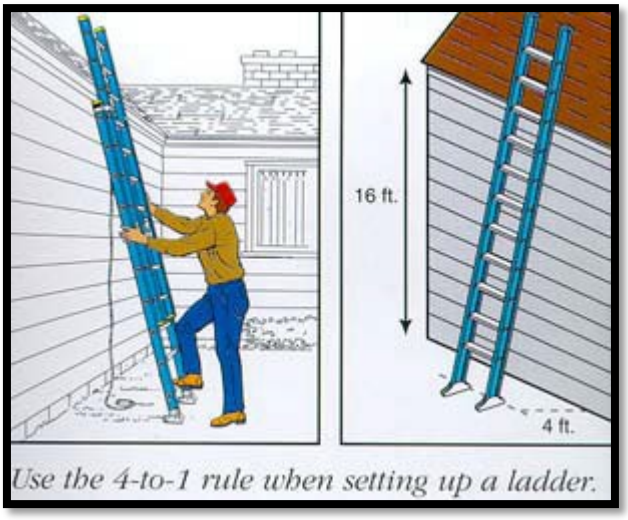
ii) You should always carry a stepladder in the closed position.

O) Setting up the ladder

i) Before you use a single, extension or stepladder outside the house, make sure it will not hit electrical wires, tree limbs or any other obstructions when it is extended.

ii) To ensure that the ladder is stable, place the feet of the ladder on firm, even ground.

iii) The bottom of the ladder should be 1 foot away from the wall for every 4 feet that the ladder rises. For example, if the ladder touches the wall 16 feet above the ground, the feet of the ladder should be 4 feet from the wall. If you are going to climb onto a roof, the ladder should extend 3 feet higher than the roof. The upper and lower sections of an extension ladder should overlap to provide stability.



Use the 4-to-1 rule when setting up a ladder.

4) TRACK SUPPORTED LADDERS

A) When moving a ladder, make certain that no employee is on or below the ladder.

B) Move ladder slowly and evenly to avoid ramming the ladder stops on the track.

C) Do not ascend or descend a moving ladder.

D) When ascending a ladder, guard against striking head against ladder track or otheroverhead metal framework.

E) Do not use the brake rope to ensure stability except when it is necessary to hold the brakerope while moving the ladder.

F) Do not mount a platform type rolling ladder from the rear.

G) A track supported ladder may be moved by the employee while aloft unless:

i) It is necessary to move it across the aisle;

ii) The path is obstructed in any way;

iii) It must be moved a distance of more than five feet;

iv) For any other reason that the ladder cannot be moved safely;

v) Portable rolling ladders shall not be moved by the employee while aloft; and

vi) To move a track supported ladder (not equipped with a brake) while aloft, grasp the handrail with one hand and using the other hand on the superstructure push or pull theladder slowly and evenly in the desired direction. If the ladder is equipped with a brake, grasp the brake rope instead of the handrail, pull down on the brake rope, hold it so that the brake is released, and then move the ladder as outlined above. While holding the brake rope, the arm shall be braced against the side rail or step of the ladder to ensure stability.

H) When working on a rolling ladder not equipped with a seat, the employee shall work in a well-balanced position with both feet securely placed on the same step. If a temporary condition exists which makes it necessary to work in a position other than the one described above, one leg shall be placed over a ladder step to ensure stability.

I) Do not leave unattended ladders in cross aisles.

J) Do not climb from a rolling ladder to the superstructure or other elevated points unlessthe ladder is held securely by another employee.

K) When working on a ladder which extends partly into an aisle, suitable measures such as blocking off the area shall be used to warn passersby that there is someone aloft.

L) Before descending a rolling ladder, make certain that there is no other person or object onthe steps below.

M) When stepping from a ladder to the floor, proper footing with both feet on the floor shall be assured before letting go of the handrail. Do not push the ladder while stepping to the floor.

N) When it is necessary to move a ladder across an aisle intersection, exercise extreme care to prevent striking any passersby.

O) To prevent bending or breaking hanger rods, do not mount or climb a ladder which has been sideways from its normal position more than 12 inches at the wheel.

P) Always use the wood ladder block for track supported rolling ladders not equipped with abrake.

5) LADDER BLOCK

A) The ladder block is a wood block approximately 10 inches long, 3-1/4 inches wide and 1-5/8 inches high. A "V" shaped depression in the top accepts the wheel of a track supported rolling ladder.

B) The block is equipped with a screw eye so that it may be hung from a hook attached tothe bottom center rear of the second step of a rolling ladder whenever the block is not in use.

C) This ladder block shall be used when using ladder seats working in one location forextended periods of time or performing heavy work.

D) When operations are performed from a track supported ladder not equipped with brakes,a ladder block shall be placed under one wheel.

E) Maximum braking effect is secured by placing it under the wheel nearest the equipmenton which the work is being done.

6) LADDER SEATS

A) Use ladder seats only on track supported ladders.

B) Do not use a defective ladder seat. Inspect wooden seats frequently for loose nuts andscrews, cracks and splits.

C) Avoid contact with wiring or equipment while transporting and placing ladder seats.

D) When ascending or descending a ladder and carrying a ladder seat in one hand, place theother hand on the handrail and ascend or descend the ladder one step at a time.

E) Do not stand on ladder seats.

F) Tools, equipment, and materials shall not be left on unattended ladder seats.

G) Remove all tools and equipment from ladder seats and ladder before removing seat.

H) When ladder seats are not in use, they shall be placed in their assigned locations.

I) When placing or removing a wooden ladder seat on the ladder, follow manufacturer'sinstructions.

7) EXTENSION LADDERS

A) This section describes laminated wood and fiberglass extension ladders to be used byCOSA employees and specifies methods of using the ladder safely.

B) Aluminum extension ladders shall NOT be used by COSA employees.

C) Wooden Ladders

i) Rails: shall be laminated for structural strength and reliability and made of laddergrade wood materials.

ii) Rungs: Full 1-5/32" diameter (minimum).

iii) Rope: 5/16” safety yellow polypropylene with 1-1/4” aluminum pulley; rope clamp attaches rope to bottom rung permanently.

iv) Lock: Automatic spring type with 1/4" flat steel hook.

v) Ladder Stop: Steel 3/16" size double riveted to side rail.

vi) Rung Braces: Heavy-duty 16-gauge steel plated to prevent rust.

vii) Anti-Split Rivets: inserted at tops and bottoms of side rails to minimize side rail end damage.

viii) Wood Preservative Treatment: Wood preservative and water repellent especiallyformulated for treatment of wood intended for outdoor use.

ix) Swivel Safety Shoes: The safety shoe in the #1 position provides additional protectionagainst slippage. In the #2 position, the shoe becomes a self-sharpening spike. (*Note: All Extension Ladders Must Be Equipped with Swivel Shoes*.)

x) All sizes given are minimum requirements.

D) Fiberglass Ladders

i) Top Caps and Bottom Plug: Durable aluminum castings that protect the top and bottom of both the base and fly sections. The bottom plug on the base of the fly section shall be serrated to reduce slippage of the sections when used separately.

ii) Outside Slide Guides: Four heavy-duty plated steel outside slide guides that allow sections to be easily taken apart.

iii) Rope and Pulley: 1-1/4" laminated steel pulley shall be installed on the top rung ofthe base with the clevis brackets. All weather polypropylene rope shall be standard onall fiberglass ladders.

iv) Rung to Rail Connection: The rung plate and rung assembly shall be riveted in four places to handrail for maximum strength and durability.

v) Wear Sleeve: Stainless steel wear sleeves shall be placed intermittently on the rungsof the base section near the side rail to reduce friction as the fiberglass side rails ofthe fly section pass over them when the ladder is raised and lowered.

vi) Rung Locks: Case aluminum spring loaded gravity type shall be attached to side rails with plated steel brackets installed so the ladder has full complement of rungs.

vii) Rung Braces: Plated steel run brackets shall be used at stress points to furnishadditional strength and help minimize side sway.

viii) Swivel Safety Shoes: Large case aluminum swivel shoes with thick corded rubber bottom and spiked ends. (Note: All Extension Ladders Must Be Equipped with Swivel Shoes.)

ix) Dimensions given are minimum requirements.

8) SAFETY PRECAUTIONS

A) When working in areas exposed to vehicle traffic, place ladders on the side of the work away from the traffic whenever possible. The ladder shall be placed against the work in the position which provides the most stable footing.

B) If the ladder must be placed in a work location where it may be struck by vehicles or pedestrians, arrangements shall be made for an employee to guard the ladder. In addition, display warning flags, cones or signs to direct traffic around the work site.

C) Defective, unsafe, or damaged ladders shall be removed from service and tagged as UNSAFE. The ladder shall be repaired or replaced before being used. Ladders thatcannot be repaired shall be destroyed.

D) Do not place ladders on boxes, barrels, or other objects to obtain additional height; use a ladder of sufficient length for the job at hand.

E) Keep hands and feet off the rungs when raising or lowering the upper section of an extension ladder. Stand clear when the top section is being lowered.

F) Avoid spilling or splattering paraffin, paint, or other materials on a ladder.

G) Make certain that ladder locks are engaged properly, and the ladder rope is tied securely to one of the rungs on the bottom section before climbing an extension ladder.

H) Ladders shall be placed so that at least three (3) rungs extend above the top support when the employee is in position on the ladder.

I) Only one employee at a time shall be on a ladder.

J) When a ladder is securely placed, held by an employee, lashed or otherwise secured so it cannot fall, the employee on it may improve their security by passing one leg between therungs.

K) When on ladders do not allow wire, hand lines, or ladder ropes to dangle to the ground. The hand line when not in use will be tied to the lower portion of the ladder or pulled aloft.

L) Employee shall not slide down an extension ladder

M) Never carry an extension ladder from one location to another while it is extended. First lower the ladder and secure the ladder rope, then extend it again at the new location.

N) Point the ladder feet forward and downward when carrying a ladder on the shoulder.

O) Avoid swinging the ladder into the path of passing vehicles or pedestrians when carryinga ladder or removing it from a motor vehicle.

P) Do not place ladders where they may come in contact with power lines.

Q) Do not use a ladder in a horizontal position as a platform, runway, or scaffold.

9) SELECTING FOOTING

A) Use care in positioning ladders before climbing them. Place the foot of the ladder on the ground or other firm support so that the distance from the ladder to the base of the surfaceagainst which the ladder is leaned is approximately 1/4 of the length of the ladder from top support to bottom support. The ladder shall be braced, fastened, or securely held.

B) Set a ladder only on secure footing. Set both feet of the ladder at the same level. If a ladder leans to either the right or left, it is not properly placed. Always place an extensionladder to be climbed with the top section to the front.

10) REFINISHING WOOD AND FIBERGLASS LADDERS

A) After using wood or fiberglass extension ladders for several years, the ladder finish will wear off.

B) When this occurs in fiberglass, the small fibers protrude from the ladder surface. Refinisha fiberglass ladder as follows:

i) Wash the ladder thoroughly with a mild detergent (such as a dishwashing liquid). Make sure all dirt, grease, etc., is removed from the ladder. The ladder surface shall be completely clean;

ii) Any small fibers protruding from the ladder surface must be removed by sanding withsandpaper or steel wool. When the surface is smooth, wash the powder or dust traces from the ladder surface and allow time for the ladder to dry; and

iii) Inspect the ladder surface making sure the surface is dry, smooth, and clean. Cover the fiberglass surface with clear acrylic lacquer. (DO NOT COVER THE RUNGS). The lacquer shall be applied by brush or spaying. Lacquer shall not be used in a closed area. If the refinishing is done indoors, the room shall be well ventilated.

C) Refinish a wood ladder as follows:

i) Wash the ladder thoroughly with a mild detergent (dishwashing liquid). Make sure alldirt, grease, etc., is removed from the ladder. The ladder surface shall be completely clean;

ii) Any splinters protruding from the ladder surface must be removed by sanding the surface with sandpaper; and

iii) Inspect the ladder surface making sure the surface is dry, smooth, and clean. Cover all ladder surfaces (including rungs) with approved wood preservative.

SECTION 35 – POWERED INDUSTRIAL LIFT TRUCKS

1) GENERAL

A) Lift trucks require safeguarding for the operator's protection and for the safety of other trucks.

B) Safe operation of lift trucks reduces injuries, property damage and excessive maintenance.

C) Forklift trucks are compact and highly maneuverable and are designed for handling packaged, boxed, or bagged material or palletized parts that can be stacked. Many specific designs are developed for particular jobs to be done.

D) Rated truck load capacity shall be enough to exceed any expected load to be handled and displayed at all times on the vehicle in such a manner that is readily visible to the operator Attempting to lift more than the forklift is designed to handle may damage the truck, and cause tipping of the unit.

E) Forklift trucks for use on uneven surfaces and on dirt or gravel surfaces shall be equippedwith pneumatic tires.

F) Overhead protection is required to protect the operator from falling objects.

G) Lift trucks shall have a means to prevent over travel of hoists and tilt motions. If lifting systems are hydraulically driven, an overload valve shall be installed in the system and suitable stops provided to prevent over travel.

H) Check the vehicle is in safe operating condition. Check oil and water. Look for any leaks or puddles under the vehicle. Check tires, brakes, hoses, connections and the general condition of the vehicle before starting the engine. Never start the engine or operate the vehicle in any position other than from the operator's seat.

I) After starting the engine, check steering, recheck brakes, make sure the transmission and gear box operate properly and check the lights and horn. Make sure all other controls operate smoothly and properly before driving.

J) Seat belt shall be worn by the operator prior to moving vehicle.

K) No Riders are allowed.

L) Face the direction of travel at all times. Do not exceed the speed limits. Sound the horn atblind corners and when backing. Travel with the forks carried as low as possible.

M) All vehicles which operate in an area that is not well illuminated (less than two lumensper square foot) shall be equipped with lights.

N) All forklift trucks shall be equipped with horns or other audible warning.

O) Forklift trucks shall not be altered or modified in any way without written approval from the manufacturer of the equipment.

P) Keep arms, legs, and other body parts within the dimensions of the operator's compartment. Do not reach between mast arms to turn off the key or to move the forks.

Q) Never stand or pass or permit anyone else to stand or pass under elevated forks.

R) Park the vehicle with forks as close to the ground as possible facing in a downward fashion to make them flush with the ground. Before leaving the vehicle, shut off the power, set the parking brake, and put controls in neutral and remove the key. When parking on an incline chock the wheels.

S) Never leave the vehicle unattended when the engine is running.

2) HAZARDS

A) There are two primary hazards inherent in the operation of lift trucks:

i) Collision or overturning of the truck; and

ii) Movement or collapse of bridge plates, dock boards, or truck beds into which thevehicle has been driven.

B) Additional danger exists during the handling of materials, including bags, cartons, boxes, or other articles that may fall during material handling.

C) Lift trucks shall be equipped with overhead protection.

D) Do not operate gasoline, diesel, or liquefied petroleum gas powered trucks in confined areas due to exhaust and carbon monoxide being expelled.

3) ELECTRIC TRUCKS

A) Handling and charging storage batteries for electric lift trucks involve several hazards. Employees shall wear chemical goggles, rubber gloves, aprons, and rubber boots during filling and handling operations.

B) Battery changing and charging operations shall be performed by trained, authorized personnel.

C) Battery changing and charging operations shall be located in areas designated for that purpose. Facilities shall be provided for flushing and neutralizing spilled electrolyte, for fire protection, for protecting the changing apparatus against damage by trucks, and for adequate ventilation to disperse gases and fumes from the batteries.

D) When racks are used to support batteries, they shall be made of nonconductive material or be coated or covered by insulating material.

E) When filling batteries with electrolyte, acid shall be poured into water. NEVER pour water into acid. Wash spilled electrolyte off skin or clothing immediately. Clean up all spills.

F) Trucks shall be properly positioned, and the brake applied before attempting to change or charge batteries. Reinstalled batteries shall be properly positioned and secured in the truck.

G) When charging batteries, the vent caps shall be kept in place to avoid electrolyte spray. Care shall be taken to assure that vent caps are functioning; the battery cover shall be open to dissipate heat.

H) Smoking shall be prohibited in the charging area. Sulfuric acid used for refilling shall be containerized and disposed of according to current regulations.

I) Precaution shall be taken to prevent open flames, spark, or electric arcs in battery charging areas.

J) Battery terminals shall be clean, connections tight, and the battery securely locked in placed in the truck. Tools or metal parts shall never be laid on a battery.

4) GASOLINE OPERATED TRUCKS

A) Gasoline for trucks shall be handled and stored in accordance with provisions of NFPA 30 Flammable and Combustible Liquids Codes.

B) Fuel tanks on gasoline operated trucks and tractors shall be filled at designated locations with filling hose and equipment properly grounded and bonded.

C) Safety cans used for fuel handling shall be tested and approved by Factory Mutual or Underwriters' Laboratory.

D) Engines shall be stopped, and operators shall be off trucks before trucks are refueled. Smoking is not permitted during refueling.

E) Employees shall avoid spilling gasoline or overflowing the gasoline tank during refueling.

F) Gasoline tanks shall be drained into bonded, self-closing cans.

5) LIQUIFIED PETROLEUM GAS OPERATED TRUCKS

A) Only listed fuel containers designed in accordance with "NFPA Standards" shall be used. Permanently mounted fuel containers shall be charged outdoors and storage facilities and charging equipment shall meet the requirements of NFPA 58.

B) For fuel containers used on industrial trucks, a device, such as an excess flow check valve shall be provided in the fuel system to reduce the escape of fuel in the event that a pressure fuel line or fitting breaks. Exchange of removable fuel containers shall be in accordance with NFPA standards.

C) A special building or outside storage area is required for the storage of fuel containers.

D) The person filling the containers shall be trained in the safe handling of LP-gas.

E) The filling area must conform to NFPA 59 and applicable state or local regulations. Trucks themselves must comply with NFPA 505.

F) LP-gas fuel trucks shall be stored in a well-ventilated building or fire-resistant enclosure. Ventilation shall be provided at floor level. A lift truck shall not be garaged in the same room with stored gas cylinders.

G) A thorough inspection and maintenance procedure for LP-gas fuel trucks shall be followed. No repair work on LP-gas fueled industrial trucks shall be permitted indoors without first removing the fuel container.

H) If the fuel container is permanently mounted, major repairs shall be made outdoors. NFPA standards prevent no more than two LP-gas containers on each industrial truck.

I) When converting a gasoline fuel truck to an LP-gas fuel truck, use only the Underwriters Laboratory or Factory Mutual approved fittings. These fittings and units shall include all safety features that are incorporated in LP-gas fuel truck requirements by the testing agency.

J) The units and fittings shall be installed in strict conformity with the requirements specified in NFPA 58 "Storage and Handling of Liquefied Petroleum Gases" and UL 558.

K) The conversion shall be attempted only by qualified mechanics that are familiar with handling LP-gas equipment.

6) LIFT TRUCK OPERATION

A) Inspect hydraulic cylinders, masts, forks, hoses and lifting chains for any cracks, damage, leaks, or other hazardous conditions.

B) Determine the job to be done and any special instructions concerning possible hazardsincluding the handling of any hazardous or toxic substances.

C) Never exceed five miles per hour when operating a lift truck.

D) Loading the truck:

i) Know the capacity of the vehicle and keep the load within those limits;

ii) Do not move a questionable or unsafe load; inspect for overload, loose materials orpoor balance;

iii) Avoid lifting loads with one fork of a forklift truck;

iv) Do not push heavy loads with one corner of the truck;

v) Avoid striking any object with the fork tips;

vi) Position loads evenly on forks for proper balance; and

vii) When lifting, lowering, or carrying loads, keep the mast of the vehicle slightly tiltedback, never forward. Lift loads slowly; avoid sudden jerks, stops or turns.

E) Traveling with the load:

i) Start and stop trucks gradually and slowly;

ii) Carry the load as close to the floor as possible;

iii) For better vision, drive backwards with a bulky load; always look in the direction oftravel;

iv) Drive in reverse when carrying loads down a ramp or incline and look in the directionof travel;

v) Keep clear of the edge of loading docks and platforms;

vi) Keep the load on a lift against the carriage with the mast of the truck tilted backwardto cradle the load; and

vii) Do not raise or lower a load when traveling.

F) Depositing the load or stacking:

i) Tilt an elevated load forward only when it is directly over the unloading place and keep the load as low as possible; and

ii) Use special care and check overhead room when stacking materials near heaters, electrical wiring, pipes, or other fragile or dangerous equipment.

7) AERIAL

A) Each aerial lift operator shall be thoroughly trained in the use of the equipment before itis operated at a job site. The operator shall not only know the particular equipment involved but also the type of work it will do in the field.

B) In addition to precautions necessary in driving a standard truck, the driver shall be constantly aware that the vehicle has exposed equipment above the elevation of the truck cab and must check clearances before driving under overhead obstructions. An automatic warning device such as flag or lights shall be provided to notify the driver when the boomis up.

C) The operator shall be certain that conditions are clear before moving the vehicle. Movement of an aerial basket truck with personnel in the basket except for certain operations under conditions specified in this section is prohibited.

D) Employees shall know the road limits and design capabilities of the equipment.

E) Prior to movement of the basket, the operator shall note the location of all obstructions and hazards and plan movements to avoid them. The operator shall always face the direction in which the aerial lift is to move.

F) Maintaining clearance from energized equipment is equally important when working from a basket. When working 42 feet and above, basket shall be insulated and certified to69KV. - Per ANSI A92.2 requirements.

G) Power shall be stopped when a leak is detected in the air or hydraulic lines.

H) Never operate a lift in winds in excess of 25 miles per hour. All lifts operated in areas exposed to wind will have an anemometer to verify current wind velocities for the area.

8) TYPES OF EQUIPMENT

A) Aerial baskets are designed to move personnel and equipment aloft and to provide a platform, so work can be done on elevated structures. Present machines provide working heights of 30 feet or more.

B) There are two types of booms:

i) Articulated arms or "elbows" which operate in a manner similar to a person's arm. If the upper arm is capable of moving more than 180" with respect to the lower arm, itis considered fully articulated. If the capability is less than 180°, it is considered semi-articulated; and

ii) Telescoping booms are those in which upper sections telescope into and out of lower sections.

C) Booms are operated by hydraulic pistons, cables, and pulleys or a combination of both. The basket can be controlled from either of two control stations, one located on the basket and the other at ground level on the vehicle. Controls shall be the "dead man"type, which automatically stop the equipment when released. The lower controls will override the upper controls.

D) The manufacturer's recommendations on loading shall be adhered to at all times.

E) Light duty equipment refers to units which have the ability to lift one employee and a small amount of material and equipment in an insulated basket to a maximum working height of approximately 42 feet. The maximum capacity of a single basket limited by the basket design is usually 300 pounds.

F) Heavy-duty equipment includes units designed to lift two employees to working heights of more than 42 feet. Rated base capacity is usually 500 to 600 pounds. However, capacities of up to 2,000 pounds are available on some equipment. Check manufacturer's rating of equipment to be used prior to loading.

9) HAZARDS

A) Most frequent causes of accidents while using mobile aerial baskets are:

i) Failure to observe proper precautions against electrical hazards to personnel bothaloft and on the ground;

ii) Improper positioning of vehicle or outriggers;

iii) Lack of sufficient blocking under outriggers or overloading the boom;

iv) Overreaching from basket or other improper working procedures;

v) Failure to use proper personal protective equipment;

vi) Improper moving of the truck while the boom is raised or moving it where there isinadequate clearance for the boom;

vii) Failures of structural or mechanical parts, or jamming of controls;

viii) Swinging the boom or basket against overhead obstructions or energized equipment;and

ix) Moving the boom into positions that interfere with traffic.

10) INSPECTIONS

A) Equipment shall be inspected prior to start of each shift. An effective daily inspection shall cover the following:

i) Visual inspection of all attachment welds between actuating cylinders and booms orpedestals;

ii) Visual inspection of all pivot pins for security of their locking devices;

iii) Visual inspection of all exposed cables, sheaths, and leveling devices for both wearand security of attachment;

iv) Visual inspection of hydraulic system for leaks and wear;

v) Check of lubrication and fuel levels;

vi) Visual inspection of boom and basket for cracks or abrasions;

vii) Operation of booms from ground controls through one complete cycle noting anyunusual noises and deviations from normal operations; and

viii) Defects found shall be reported to a supervisor and corrected before use ofequipment.

B) Before leaving the yard or garage, the driver shall check the operating condition of the brakes, lights, and other automotive operating accessories such as the horn and windshield wipers. Before maneuvering the basket into any space that contains obstructions, the operator shall test basket controls to be sure they are in proper working order. Equipment shall not be used if tests indicate controls are not working properly.

11) BASKET SAFEGUARDS

A) Aerial baskets shall be equipped with a safety belt and lanyard to be worn by all personnel working from the baskets. The lanyard shall be attached to the equipment. Lanyards shall only be long enough to allow movement within the basket and prevent climbing onto the rim.

B) Employees shall only enter or leave the basket when it is resting on the ground or cradle in the traveling position. When the basket is being lowered, personnel on the ground shallstand clear of the path of the basket and boom.

C) When employees are in the basket, ground personnel shall stay away from the area directly below the basket. Tools and materials shall not be thrown to or from the elevated basket. Personnel working aloft shall secure all tools that are not in use.

D) No one shall operate the lowering controls to move the boom unless requested by the person in the basket or in case of emergency.

E) Neither truck boom nor basket shall be considered electrically insulated.

12) SETTING UP

A) Barricades as outlined in this manual shall be set up as required. When establishing work areas, be sure to consider location of overhead conductors and other surrounding conditions and how extended boom movements may interfere with traffic. Movement of vehicles during the job shall be avoided by careful planning and selecting the original position so that all or the majority of work areas can be reached from one setting.

B) Use strobe warning lights on vehicles to alert oncoming traffic.

C) When the vehicle is set up, the brake locks shall be engaged, and wheels shall bechocked in both directions front and rear.

D) When the vehicle is situated on a grade, at least two wheels shall be chocked on the downgrade side.

SECTION 36 – CONFINED SPACE ENTRY

1) GENERAL

A) Confined spaces pose special dangers because their internal configurations may hamper efforts to protect entrants from serious hazards such as toxic, explosive and/or asphyxiating atmospheres. Safety Coordinators will evaluate spaces to determine if they meet the definition of a Confined Space and if they are Permit Required utilizing the Confined Space Evaluation Form.

B) A Confined Space is any space that:

i) Is large enough and so configured that an employee can bodily enter and perform assigned work;

ii) Has limited or restricted means for entry or exit (example: tanks, hoppers, storage bins, vaults, pits.); and

iii) Is not designed for continuous human occupancy.

C) A Permit Required Confined Space (or Permit Space) is a space that meets the criteria above and any of the criteria below:

i) The space currently contains or has the potential to contain a hazardous atmosphere;

ii) Contains a material that has the potential for engulfing an entrant;

iii) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or

iv) Contains any other recognized serious health hazard.

D) A trained supervisor designated by the department, shall ensure no new hazards have been introduced into the confined space. Prior to entering a permit required confined space, the supervisor must complete a Confined Space Entry Permit.

i) This permit shall be completed, numbered, and posted at the job site prior to entry of the confined space by any employees, and shall remain posted until the work is complete. Copies of the confined space entry permit shall be forwarded for record filing as per department policy.

2) EMPLOYEE NOTIFICATION AND POSTING

A) All appropriate COSA employees must be advised through training of the presence of both confined spaces and permit spaces on-site.

B) Confined space should be marked and identified.

3) HAZARD DETERMINATION

A permit required confined space requires specific procedures in order to proceed with an entry. These procedures are in the form of a checklist and are located on the entry permit. Prior toentry into a permit space, a confined space permit must be completed and signed off on by all appropriate personnel. This permit shall be posted at the entrance to the permit space.

4) CONTRACTORS

Contractors may enter permit spaces on-site provided that a pre-entry meeting takes place. The discussion should identify any hazards and experiences that make the space in question for a permit. The contractor shall also be informed of any precautions or procedures that COSA has implemented for the protection of employees in or near permit spaces where contractor personnelwill be working. Contractors shall also be offered a chance to meet at the conclusion of the entry operations regarding the permit space program followed and any hazards confronted or created in permit spaces during entry operations.

5) ENTRY EQUIPMENT

A) To help ensure the safety of employees who will be entering permit spaces, the followingequipment will be used:

i) Atmospheric testing and monitoring equipment;

ii) Ventilating equipment;

iii) Communication equipment, when necessary;

iv) Personal protective equipment for use when feasible engineering and work practicecontrols do not adequately protect employees;

v) Lighting equipment as needed in order for employees to see well enough to performwork safely and exit the space quickly in an emergency;

vi) Barriers and shields, as needed, to protect permit space entrants from hazards fromoutside the permit space;

vii) Equipment, such as ladders, needed for safe entry and exit from permit spaces byauthorized entrants; and

viii) Lifelines, harnesses and/or approved mechanical lifting systems for use in verticalentries greater than 5 feet.

Employees who enter confined spaces must have the means available to be in continual contact with attendants. This will allow for timely exit of the space in case of emergency.

6) TRAINING

A) Prior to any entrance into a permit space, all parties involved shall be trained on the proper procedures for working in permit spaces. Trained employees, supervisors, managers, and directors shall acquire the understanding, knowledge, and skills necessary for the safe performance of the duties that they will perform.

B) Training shall be provided to all employees involved in permit space entry:

i) Before the employee is first assigned permit space duties;

ii) Before there is a change in permit space assigned duties that will require the employee to perform permit space work;

iii) Whenever there is a change in permit space operations that presents a hazard about which employee has not been previously trained; and

iv) Whenever management, or Risk Management has a reason to believe that proper permit space entry procedures are not being followed or if there are inadequacies in the employee's knowledge or use of permit spaces systems and/or procedures.

C) The training includes objective measures of the employee's knowledge by way of a written course content examination and a practical (hands on) test of skills. Record of attendees and content materials shall be kept on file. Documentation includes the names and signatures of all trained employees, along with the date of the training and the name and signatures of the trainers.

D) Employees who are required to be trained in the proper procedures for working in and around permit spaces include:

i) Authorized Entrants - An individual who is authorized to enter a permit space;

ii) Attendant - An individual who is stationed outside one or more permit spaces and who monitors the authorized entrant(s);

iii) Entry Supervisor – An individual responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required.

7) AUTHORIZED ENTRANT TRAINING

A) Training provided to an authorized entrant must ensure that the employee:

i) Knows the hazards that may be faced during entry, including information on the mode, sign or symptoms, and consequences of the exposure;

ii) Properly uses equipment necessary for atmospheric testing and safe entry into permit spaces;

iii) Communicates with the attendant as necessary to enable the attendant to monitor entrant's status and to enable the attendant to alert entrants of the need to evacuate thespace;

iv) Alerts the attendant whenever any warning sign or symptom of exposure to a dangerous condition presents itself; and

v) Exits from the permit space as quickly as possible whenever:

(a) An order to evacuate is given by the attendant or the entry supervisor;

(b) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation;

(c) The entrant detects a prohibited condition such as a toxic atmosphere, engineeringcontrol malfunction, etc.; or

(d) An evacuation signal or alarm is activated.

8) ATTENDANT TRAINING

A) Training provided to attendants must ensure that the employee:

i) Knows the hazards that may be faced during entry, including information on the signsand symptoms and consequences of chemical overexposure;

ii) Is aware of the possible behavioral effects of hazardous chemical overexposure in entrants;

iii) Continuously maintains an accurate account of authorized entrants;

iv) Remains outside the permit space during entry operations until relieved by another authorized attendant;

v) Communicates with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space; and

vi) Monitors the activities both inside and outside the space to determine if it is safe for entrants to remain in the space and orders the entrants to evacuate the permit space immediately under any of the following conditions:

(a) If the attendant detects a prohibited condition;

(b) If the attendant detects behavioral effects of hazardous chemical exposure in an entrant;

(c) If the attendant detects a situation outside the permit space that could endanger the entrants; and

(d) If the attendant cannot effectively and safely perform all attendant duties, summon rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape form permit space hazards.

vii) Takes the following actions when unauthorized persons approach or attempt to enter apermit space while entry is underway:

(a) Warn the unauthorized persons that they must stay away from the space;

(b) Advise the unauthorized persons that they must exit immediately if they have entered the permit space;

(c) Inform the authorized entrants and the entry supervisor of unauthorized persons who have entered the permit space;

(d) Performs non-entry rescues as specified by rescue procedures; and

(e) Performs no duties that might interfere with the attendant's primary duty to monitor and protect the entrants.

9) ENTRY SUPERVISOR TRAINING

A) An entry supervisor may also serve as an attendant or as an authorized entrant provided that that person is trained and equipped as required by the standard for each role that he/she fills. The duties of the entry supervisor may be passed from one trained individual to another during the course of an entry operation.

B) Training provided to entry supervisors must ensure the supervisor :

i) Knows the hazards that may be faced during entry, including information on the signsand symptoms and consequences of chemical overexposure;

ii) Verifies, by checking that the appropriate entries have been made on the permit, that all test specified by the permit have been conducted, and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing for entry to begin;

iii) Terminates the entry and cancels the permit when the entry operations are completed or when a condition that is not allowed under the permit arises in or near the permit space;

iv) Verifies that rescue services are available and that the means for summoning them areoperable;

v) Determines whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space that entry operations remain consistent with the terms of the entry permit and that acceptable entry conditions are maintained.

10) FIRST POINT OF EMERGENCY CONTACT AND RESCUE SERVICES

A) San Antonio Fire Department is the first point of contact for all permit space emergencies.

B) In the event of an emergency, the attendant shall contact 911, evacuate the job site, close off the area and keep the area free of all non-essential personnel.

C) Remove victims with harness and other rescue equipment and utilize CPR and first aid techniques ONLY if trained to do so.

11) PRECAUTIONS

A) *Never Enter A Confined Space Even Momentarily Until It Has Been Tested for Combustible Gas and Then Power Ventilated (Purged) With the Blower Operating at The Maximum Rated Speed*.

B) The blower shall remain in operation during the entire time anyone is in the Confined Space. Do not operate the blower in any type of enclosure such as a tent, vehicle, trailer, tool cart, etc. Locate the blower in an unconfined space with the blower intake awayfrom traffic and the blower exhaust away from the manhole opening. The blower shall be located a minimum of five feet from the opening to avoid returning purged air into the manhole.

C) Care shall be taken when setting up the blower hose to prevent unnecessary vents or restrictions. Vents or restrictions shall be kept to a minimum to prevent reducing the air output at the end of the blower hose to below the certified rate. During purging (hose in dropped position), the hosing shall extend into the confined space a minimum of one foot below the ceiling and shall be at least two feet above the floor level.

D) *Under No Circumstances Shall A Cigarette Lighter, Match, Or Other Item That ProducesA Hot Spark Be Operated or Ignited in A Confined Space*.

E) Any tool producing an open flame or sparks shall be kept away from the blower air intake.

F) Only approved explosion proof lighting and heating equipment shall be used. Connections and disconnections of electric lighting, equipment, etc., shall be made outside the confined space.

G) Storage batteries shall not be brought into a confined space.

12) BLOWER CAPACITIES

A) Confined Space ventilation with forced air is necessary to expel hazardous gases that may be present and to maintain an adequate supply of oxygen, which is 19.5% to 22%.

B) The effective blower capacity is defined as the actual blower output in cubic feet per minute (CFM) delivered at the end of the standard blower hose. The tests are made with one 90- degree bend (continuous ventilation position) in the blower hose and the results are certified by the testing laboratory.

13) BLOWER MAINTENANCE

A) All blower units shall be cleaned and checked periodically to be sure they are operating at rated capacity. Improper blower operation can cause a reduction in blower motor speed and a reduction in air delivery.

B) Air delivery of electrically powered blowers generally shall not vary from the norm ifline voltage and frequency are held at the value for which the motor is designed and there is no damage to the blower components. Air delivery of blowers powered by internal combustion engines will vary appreciably if the engine is not properly maintained and adjusted to operate at the governed engine speed for the manufacturer's specifications.

C) Blowers shall be in good condition. Hoses with leaks, tears, or other damage shall be repaired or replaced as required.

14) SETUPS FOR TESTING AND PURGING MANHOLES

A) Initially test for combustible gas with the end of the sampling tube at head height in the manhole. If this cannot be accomplished by lowering the tube directly into the manhole, a permanent installation of gas sampling tubing shall be provided. The tubing shall be installed with one end at or near the middle of one side wall and at head height away from the direct output of the blower. The other end shall terminate in the manhole entrance and be accessible from a position outside. The entrance shall be equipped with a capped end fitting for attaching the gas indicator and valve for connecting an air chuck to clear the tubing of any residual gas, dirt, or water.

B) Conventional manholes are rectangular in shape and accessed through the manhole roof and have the collar height short enough so that the standard blower hose is adequate in length for purging and for continuous ventilation. Manholes that are smaller than 1,000 cubic feet are purged by opening the manhole cover and dropping the end of the blower hose into the manhole (one 90-degree bend in the blower hose). Conventional manholes larger than 1,000 cubic feet are purged with two manhole covers removed at opposite ends of the manhole.

C) Irregular shaped manholes often result from enlarging an existing manhole. If the manhole has two floor levels or if it is configured so that air flow is restricted, purge time shall be based on the affected blower capacity with two 90-degree bends in the hose.

D) Deep neck manholes are defined as those manholes with entry through the roof and witha long collar height so that one 15-foot blower hose is not adequate in length for purging and continuous ventilation. Deep neck manholes shall be purged and ventilated by coupling two standard blower hoses or by utilizing a permanent ventilation duct installed either in the collar or adjacent to the manhole.

E) If the collar height is greater than five feet, the volume of the collar shall be added to the volume of the manhole for determining purge times, per manufacturer's instructions.

F) When purging with a coupled hose, purge time shall be based on the effective blower capacity with two 90-degree bends in the standard blower hose to compensate for pressure drop in the longer hose.

G) Where permanent ventilating duct is installed, the effective blower capacity with one 90-degree bend in the blower hose shall be used to determine purge time. Ventilating ducts shall be placed to avoid interference with lines or suction hoses, and to direct the air flow either diagonally across the manhole or along a long dimension of the manhole. A cap or cover shall be provided for the upper end of the ventilating duct when it isnot in use. Ventilate by inserting blower hose into the ventilation duct.

15) DETERMINING PURGE TIME

A) For large manhole, purge times may be reduced by using two blowers if the manholehas two access openings. When using two blowers, the sum of the blower capacities is used as the effective blower capacity on the manufacturer’s alignment chart. Only one blower hose may be placed in any manhole access opening if the opening is to be usedfor entering and exiting.

B) Each manhole shall have its volume in cubic feet recorded on a permanent plastic ormetal tag that is secured in the manhole collar surrounded by a patch of high visibility paint. The tag shall be clearly visible without having to enter the manhole.

C) If a different size cutoff is adopted or blower capacity differs, purge times must be established from the alignment charts.

D) To determine purge times for a manhole that has not been tagged, nor has the tag missing,obtain the manhole volume from blueprints or other records.

E) Continuous ventilation is required after purging to assure a safe working atmosphere.

16) TESTING FOR COMBUSTIBLE GASES AND VENTILATION OF MANHOLES

A) The person making the gas test shall test in a position that will cause a minimum interference with traffic. Plan the work so a minimum amount of time is spent in the traffic area. Complete the confined space pre-entry checklist.

B) Every manhole opened after having been closed for any period of time shall be tested for the presence of combustible gas and purged. The initial test shall be made immediately after the manhole cover is removed and before the manhole is purged.

C) An approved gas test kit shall be used to test the gas indicator. The gas indicator shall be tested for proper operation each day before the first manhole test is made, at each change of work shift, if dropped or if exposed to a high concentration of gas. Never test the operation of a gas indicator by sampling the fumes from a tank or can containing gasoline because the high concentration of gas could damage the meter.

D) The initial test for combustible gas using a gas or gas/oxygen detector shall be made as directed in the operation manual for the detector.

E) After completing the initial test, purge the manhole for the appropriate time specified inthe alignment charts. NOTE: Removal of water from a manhole may permit gas to flow from the ducts into the manhole; therefore, after purging and before entering the manhole,an additional test shall be made after the manhole has been pumped or a minimum water level reached with continuous pumping.

i) IF THE INITIAL TEST INDICATES AN UNSATISFACTORY ATMOSPHERE in the manhole, make a second test after the blower has operated for the specified purge time. Make the test with the sampling hose away from the direct input of the blower. If this test indicates an unsatisfactory atmosphere, operate the blower for an additional ten minutes and repeat the test.

ii) IF ANY GAS IS DETECTED AT THIS TIME, DO NOT ENTER THE MANHOLE.NOTE: BEFORE ENTERING A DEEP NECK MANHOLE OR AN OFFSET MANHOLE EQUIPPED WITH GAS SAMPLING TUBING, TEST THE ATMOSPHERE IN THE COLLAR AREA JUST BELOW THE MANHOLE COVER LOCATION. MAKE THIS TEST WITH THE BLOWER OPERATING. THIS IS REQUIRED IN ADDITION TO THE TEST OF THE MANHOLE ATMOSPHERE AND EVEN THOUGH THE MANHOLE ATMOSPHERE TESTS CLEAR. THE BLOWER MUST BE IN CONTINUOUS OPERATION WHILE ANYONE IS IN THE MANHOLE.

F) Enter the manhole with the gas indicator and where possible, place the blower hose in a horizontal position along the side wall approximately mid-way between the floor (or platform) and manhole roof. Direct the blower hose outlet toward an end wall preferably away from the work area.

i) Next, make tests for gas by probing in the area of all duct entrances in corners, crevices, etc., and then generally throughout the manhole. To purge the gas indicator while in the manhole, detach the sampling hose and hold the gas indicator in the fresh air near the end of the blower hose or ventilating duct.

G) For offset access manholes upon entry into the entrance hole, test for gas in the passageway and finally test for gas at the duct entrances and in the corners.

H) If gas is detected, leave the manhole at once. Purge the manhole for an additional ten minutes. Retest the manhole atmosphere from street level. If gas is detected, do not enter. Notify the attendant. If the atmosphere is clear, reenter the manhole and repeat the test in the manhole. If gas is detected after reentering, leave the manhole at once and notify the attendant. If the atmosphere is clear, complete pre-entry testing and permit requirements.

I) After work in any manhole is begun, additional tests must be made as follows:

i) If duct plugs are removed, immediately test for combustible gas at the ducts that are opened. If gas is detected, leave the manhole at once. Purge at least ten minutes and retest the manhole from street level. If gas is detected, notify attendant. If the atmosphere is clear, reenter the manhole and repeat test. If the gas is detected, leave manhole at once and notify attendant. If the atmosphere is clear, continue the work operation; and

ii) When each crew begins work, repeat test at ducts and throughout the manhole. If gas is detected, leave the manhole at once. Report the condition. At intervals of not more than two hours (every hour if gas was detected initially), repeat the test at ducts and through the manhole. Reduce these intervals by 50% if a tent or other cover is in operation over the manhole. If gas is detected, leave manhole at once and report the condition to the attendant.

J) Continuous gas monitors utilize a dual filament gas detector designed to continuously test theworking atmosphere. This type of gas detector eliminates the need to make periodic tests when the manhole is occupied. It can provide an extra measure of security in a manhole that has a history of combustible gas occurrences. The monitor is factory set to trigger an audible and a visual alarm when the gas concentration exceeds 10% LEL. After work in the manhole has begun and the monitor is in use, leave the manhole at once if the alarm shall sound.

K) If the blower should stop, leave the manhole at once. Remove the blower hose from the manhole. The blower hose shall be kept out of the manhole while the blower is not operating. When the blower is again operating, purge the hose. While purging hose, test the manhole atmosphere. If satisfactory, replace the blower hose and reenter the manhole. If the test is not satisfactory, purge the manhole for at least ten minutes and retest the manhole atmosphere from street level. If the atmosphere tests clear, reenter the manhole and repeat the test in the manhole. If the gas is detected, leave the manhole at once and notify the attendant. If the atmosphere tests clear, continue the work operation.

17) ENTRY INTO OTHER CONFINED SPACES

A) The same testing and atmosphere purging requirements shall apply for entry into other confined space situations such as storage tanks.

B) For entry into confined spaces involving hazardous chemicals, each department shall establish procedures for notifying the appropriate supervisory and management personnel and obtaining permission from management before entering the confined space. The supervisor directing an activity involving entry into a confined space where hazardous chemicals may be located shall ensure that proper personal protective equipment is provided to all persons who will enter the confined space and for backup personnel located outside the confined space.

C) That supervisor shall also take steps to ensure that hazardous chemicals are not released into the atmosphere in concentrations greater than those allowed by federal regulations.

SECTION 37 – EXCAVATION AND TRENCHING OPERATIONS

1) GENERAL

A) Proper sheeting and basing (shoring) shall be used to prevent both cave-in and possible soil movement.

B) Excavations and trenches shall be guarded, barricaded, and/or covered.

C) Guarding, barricading, and covering shall be performed in accordance with Section 6 – Guarding Work areas.

D) Attended emergency rescue equipment such as breathing apparatus, safety harness and line and basket stretcher shall be readily available where adverse atmospheric conditions may exist or develop.

E) Utility companies shall be contacted and advised of proposed work prior to the opening of any excavation. Determination must be made as to whether underground utilities will be encountered, and if so, the estimated location of each installation. When the excavation approaches the estimated location, the exact location shall bedetermined, and the utility uncovered. Proper support shall be provided for each utility installation.

F) When employees are required to be in trenches deeper than four feet, an adequatemeans of exit, such as ladder or steps, shall be provided.

G) All ladders used on excavation operations shall conform to the requirements of Section 34. Ladder tops will be extended at least three feet above ground level and be placed to require no more than 25 feet of travel between ladders.

H) Banks more than five feet high shall be shored, braced, laid back to a stable slope, or equivalent means of protection for employees exposed to the potential of moving ground or cave-ins.

I) Trenches less than five feet shall be effectively protected.

J) Excavated or other materials shall not be stored nearer than two feet from the edge ofthe excavation site.

K) Excavation or other materials shall be stored and retained to prevent them from falling or sliding into the excavation site.

L) Materials used for shoring, bracing or underpinning, shall be in good serviceable condition, free from large or loose knots, and shall be designed and installed to be effective to the bottom of the excavation.

M) Additional precautions by way of shoring shall be taken to prevent slides or cave-ins when excavations or trenches are made in locations subjected to vibrations from railroad or highway traffic, the operation of machinery, or any other source.

N) Cross braces or trench jacks shall be placed in true horizontal position, be spaced vertically and be secured to prevent sliding, falling or kick out.

O) In locations where oxygen deficiency or gaseous conditions are possible, air in the excavation shall be tested and ventilated.

P) When flammable gases are present, adequate ventilation shall be provided and all sources of ignition shall be eliminated.

Q) Portable trench boxes or sliding trench shields may be used for the protection of personnel in lieu of a shoring system or sloping. When such trench boxes or shields are used, they shall be designed, constructed and maintained in a manner which will afford protection equal to, or greater than, the shoring required for the trench.

R) Backfilling and removal of trench supports shall progress together from the bottom of the trench, jacks or braces shall be released slowly. In unstable soil, ropes shall be used to pull out the jacks or braces from above AFTER all employees have cleared the trench.

SECTION 38 – CHEMICAL SAFETY AND REPORTING

1) GENERAL

A) COSA adheres to a policy of providing a safe environment for all employees. This includes providing appropriate training in proper maintenance and operation of equipment; providing accurate information to enable employees to avoid potential health and safety hazard; and maintaining up-to-date lists and information regarding hazardous chemicals to which employees may be exposed.

B) The Texas Hazard Communication Act (THCA), codified as Chapter 502 of the Texas Health and safety Code (HSC), requires all public employers in Texas to provide their employees with information regarding hazardous chemicals to which employees may be exposed to in their workplace. In order to comply with Section 502.009(b) of the THCA and Section 295.7(a) of the THCA Rules (Title 25 of the Texas Administrative Code (TAC), Section 295.1-295.12), the following written Hazard Communication Programhas been established for the COSA of San Antonio.

C) Departments are responsible for ensuring a written Hazard Communication Program is established and maintained. The written program shall be revised as needed for each separate workplace where hazardous chemicals are used or stored and a copy maintained at each workplace. The written program shall be available to all interested employees upon request.

D) To facilitate administration of and compliance with this Program, the following levels of responsibility have been established:

i) The Department Directors will have overall responsibility for administering and maintaining this program and ensuring that it meets all requirements of the THCA foreach department;

ii) Supervisors will be responsible for ensuring that all employees are utilizing and administering their daily activities within the guidelines of the COSA's written hazard communication program;

iii) Individual employees will be responsible for utilizing and making positive use of COSA's written hazard communication program. Employees are to adhere to all rules and regulations within the scope of their duties, in order to ensure safe and secure handing of all chemicals in the workplace; and

iv) Department Directors will ensure that a designated representative submits draft Tier Two Reports to Risk Management prior to February 1st of each year. A Tier Two Report is a list of any hazardous chemical on site at any one given time at or over 10,000 pounds or any chemical on the Extremely Hazardous Substance list in quantities greater than their listed reportable quantity.

2) EXEMPTIONS

A) The following chemicals are exempt from the requirements of the THCA and are outside the scope of this written program:

i) Hazardous waste that is subject to regulation by the Texas Natural Resource Conservation Commission and/or the U.S. Environmental Protection Agency;

ii) A chemical in a laboratory under the direct supervision or guidance of a "technically qualified individual" if:

(a) labels on incoming containers of chemicals are not removed or defaced;

(b) The employer complies with Sections 502.006 and 502. 009 of the THCA withrespect to laboratory employees; and

(c) The laboratory is not used primarily to produce hazardous chemicals in bulk forcommercial purposes.

iii) Tobacco or tobacco products.

iv) Wood or wood products.

v) Articles formed to a specific shape or design during manufacture and that does not release or otherwise result in exposure to a hazardous chemical under normal conditions of use.

vi) Food, drugs, cosmetics or alcoholic beverages.

vii) Consumer products or hazardous substances used in the workplace in the same manner as normal consumer use and if the use results in a duration and frequency of exposure that is not greater than exposures experienced by a consumer.

viii) Radioactive waste.

3) WORKPLACE CHEMICAL LIST

A) COSA departments will develop and maintain a list of hazardous chemicals normally present in the workplace. This Workplace Chemical List will be developed for each workplace where such quantities of hazardous chemicals are used or stored, and this chemical list will be available for review by employees and their designated representatives.

B) Department Directors will be responsible for reviewing and updating the Workplace Chemical List(s) for their Department as necessary, but at least by December 31 of each year. This will also require all Department Directors to issue a copy of each workplace's chemical list to the Risk Management, Safety Team at least annually, or as chemicals are updated.

C) Risk Management will maintain the Workplace Chemical List for at least 30 years.

D) Further information on each noted chemical can be obtained by reviewing Safety Data Sheets (SDSs) located in each workplace where these hazardous chemicals are used or stored.

4) SAFETY DATA SHEETS

A) Departments will maintain a current and appropriate Safety Data Sheet (SDS) for each Hazardous chemical purchased.

B) Each department will be responsible for managing their SDS program and will ensure that:

i) Incoming SDSs are reviewed for new and significant health/safety information and that any new information is passed on to the affected employees;

ii) Hazardous chemicals received without an SDS are withheld from use until a current SDS is obtained;

iii) Missing SDSs are requested from an appropriate source (e.g., chemical manufacturer, distributor, or electronic database) within 30 days from receipt of the hazardouschemical;

iv) Affected employees are provided a description of any alternative system (such as electronic databases) that is being used in lieu of actual SDSs;

v) Emergency responders are provided SDSs as soon as practical upon request; and

vi) Providing Risk Management Safety with an updated SDS master list annually.

vii) SDSs will be readily available for review by employees or their designatedrepresentatives upon request.

5) CHEMICAL CONTAINER LABELS

A) All primary containers of hazardous chemicals are clearly labeled to include:

i) The identity of the chemical as it appears on the SDS;

ii) The appropriate hazard warnings; and

iii) The name and address of the manufacturer;

B) All secondary containers of hazardous chemicals are clearly labeled to include:

i) The identity of the chemical as it appears on the SDS; and

ii) The appropriate hazard warnings.

C) COSA labeling systems will be in accordance with the Globally Harmonized System for Hazard Communication.

D) Every effort will be made to label pipes that carry materials that could be hazardous. Labeling can be specific markings identifying the contents of the pipes. If hazardous chemicals run through the pipes, the potential hazards and necessary safety precautions relative to the chemicals must be obtained and given to the employees working in thearea.

E) Empty containers must NOT be considered for re-use and must be disposed of properly.

F) COSA will rely on the chemical manufacturers or distributors to provide labels which meet the above requirements for primary containers of all hazardous chemicals purchased and will re-label containers only when the label is illegible or otherwise does not meet the above requirements.

6) EMPLOYEE TRAINING PROGRAM

A) Departments are responsible for ensuring an education and training program is available to all employees who routinely use or handle hazardous chemicals in their workplace.

B) Appropriate training is provided to all covered employees and includes:

i) The use of information provided on SDSs and chemical container labels;

ii) The location of hazardous chemicals present in the employees' work areas;

iii) The physical and health effects of exposure;

iv) Proper use of personal protective equipment;

v) Safe handling of hazardous chemicals;

vi) First aid treatment for exposure to hazardous chemicals; and

vii) Safety instruction on clean-up and disposal of hazardous chemicals.

C) Required training records will be maintained by each department and include:

i) The date and location of the training session;

ii) A legible list of all employees attending the training session;

iii) The subjects covered; and

iv) The name of the instructors.

D) New employees will be trained prior to their being required to use or handle a hazardous chemical.

E) Departments shall ensure training is conducted for new hires and annually thereafter for required employees. Training should be documented for each training session to verify training is being provided as required.

7) REPORTING EMPLOYEE DEATHS AND INJURIES

A) Departments shall notify Risk Management of any employee accident that involves a hazardous chemical exposure or asphyxiation resulting in a fatality.

B) Risk Management will be responsible for reporting all such accidents to the Texas Department of Health, Hazard Communication Branch, within 48 hours after their occurrence. Notifications will be made either verbally or in writing. If notification is done verbally, ensure documentation of conversation is transcribed to include date and time, person making the call, who answered call, and what was discussed.

C) Employees will be responsible for reporting all accidents involving a hazardous chemical to their supervisor.

D) Supervisors will be responsible for reporting all accidents involving a hazardous chemical to Risk Management.

8) PERSONAL PROTECTIVE EQUIPMENT

A) Each department will provide appropriate personal protective equipment (PPE) to all employees who use, handle, or are exposed to hazardous chemicals.

B) Departments are responsible for ensuring that appropriate equipment and training is provided to employee's Departmental safety representatives will assume overall responsibility for the PPE program and will ensure that appropriate equipment and training are provided.

C) Departments shall use the following guide when selecting the proper PPE:

i) Routes of entry;

ii) Permeability of PPE material;

iii) Duties being performed by the employee;

iv) Hazardous chemicals present; and

v) Proper fit and functionality of PPE as described by the manufacturer's specifications.

9) INFORMING CONTRACTORS

A) Before a contractor commences work in a COSA workplace, the department who controlsthe work area shall be responsible for:

i) Informing the contractor of the presence of hazardous chemicals;

ii) The location of the SDSs and the Workplace Chemical List; and

iii) Having the contractor provide SDSs for any hazardous chemicals they will bebringing into the workplace to which COSA employees may have an exposure.

SECTION 39 – EMERGENCY DISASTER PLANNING

1) GENERAL

A) The goal of emergency disaster planning is to:

i) Provide for the safety of employees and visitors;

ii) Minimize damage or loss of COSA property and assets; and

iii) Facilitate returning to normal operations as soon as possible after an emergency.

B) An emergency is defined as a sudden or unexpected occurrence or combination of occurrences which effect the daily operations of the City of San Antonio and demands prompt attention.

C) A disaster is defined as any great misfortune or calamity.

D) Following a disaster or emergency, the supervisor shall account for personnel. An assembly area shall be designated for this purpose.

E) The supervisor shall ensure that first aid is available and administered to injured personnel and that medical assistance is secured as soon as possible.

F) During emergency or disaster situations the highest-level supervisor shall coordinate action with fire, law enforcement, civil defense, or other emergency action agencies.

2) MEDICAL EMERGENCIES

A) The first line of defense when injuries or illnesses occur is to have employees trained in first aid.

B) First aid is defined as the immediate care given to a person who has been injured or has been suddenly taken ill.

C) It is advisory that the department train several employees in first aid to provide assistanceto other employees who may become injured or ill until professional medical help arrives.

D) Injured or ill employees requiring more than basic first aid shall be taken for emergency medical treatment as soon as possible.

E) In the event of a disaster, the response time for emergency medical personnel shall increase. In all cases, first aid trained employees will provide first aid care until professional medical personnel arrive to take charge.

3) FIRE

A) Any person discovering or suspecting a fire shall immediately transmit an alarm by tripping the nearest fire alarm box on the interior fire alarm system and call the Fire Department.

B) Only one thing may come ahead of reporting a fire, if lives are endangered by being inthe area of the fire, evacuate to a place of safety. Then report the fire by dialing 911. Evacuation is extremely important and must be done immediately by the person discovering the fire or who has reason to think there is a fire developing due to smoke, fumes, overheating, or unusual odor.

C) Personnel are required to know how to operate the fire alarm system, the location and operation of fire extinguishers and procedures for handling an incident in their area.

D) Fire exit plans shall be posted on bulletin boards throughout the building.

E) On discovery of a fire which is minor in nature (confined to a wastebasket or trash receptacle) and where no lives are endangered, extinguish the fire with the equipment at hand; keep in mind all fires are a threat and are dangerous and shall be reported immediately. Never, open doors or windows as oxygen fuels the fire and creates a draft that spreads and intensifies the fire.

F) All fires regardless of size or scope shall be reported.

G) In case of fire or explosion, the supervisor shall meet the first fire unit arriving on the scene giving information on the location of the fire, type of fire, and scope of the fire.

H) When a fire alarm is sounded, all personnel shall immediately evacuate the building by closest stairwell or fire tower. Never in any fire situation shall anyone use an elevator as a means of evacuation. All personnel will proceed to a designated area or parking lot. An accurate count of employees in each department shall be made by the supervisor. If any person is not accounted for, the Fire Department shall be notified immediately.

I) All areas shall be checked when evacuating the buildings (closets, clothes rooms, rest rooms) to insure no one has been left in the building. No one shall be allowed to re-enter the building until a Fire Department official gives permission to re-enter.

4) NATURAL DISASTER/WEATHER WARNINGS

A) It is critically important that COSA employees respond to natural disaster warnings and take appropriate precautions.

B) The National Weather Service is responsible for issuing weather watches and warnings to the public. Weather watches and warnings are issued using the following terms:

i) Severe thunderstorm watch – Indicates the possibilities of thunderstorms, frequent lightning, hail and high wind gust in a defined area;

ii) Severe thunderstorm warning – Indicates storms in the area that have frequent lighting, damaging winds of greater than 58 mph, hail 3/4 inch or more in diameter, and heavy rain;

iii) Flash flood watch – Issued to indicate current or developing weather conditions that are favorable for flash flooding in and close to the watch area, but the occurrence is neither certain or imminent.

iv) Flash flood warning – Issued to inform the public, emergency management, and othercooperating agencies that flash flooding is in progress, imminent, or highly likely due to heavy rains falling within less than a six-hour period.

v) Tornado watch – Means that storms in the area are expected to develop and have the potential for tornadic activity (tornadoes and/or funnel clouds);

vi) Tornado warning – Issued when there is likelihood of a tornado within the given area based on radar or actual sighting. It is usually accompanied by conditions indicated for Severe Thunderstorm Warning.

C) Supervisors are responsible for being aware of weather conditions which may produce hazardous situations. When weather or other disaster warnings are issued, supervisors shall notify personnel of the hazardous situation and steps to be taken to protect employees.

5) TORNADOES

A) Upon receiving notification, a tornado warning has been issued covering the location, the supervisor in charge shall:

i) Secure loose materials outside and in work areas;

ii) Direct employees performing duties outside to proceed to designated indoor work stations;

iii) Move all employees to designated shelter areas when circumstances dictate; and

B) Monitor the situation until danger has passed. Direct employees back to normal duties when the hazard is removed.

C) Tornadoes are violent local storms with whirling winds of tremendous speed that can reach wind speeds well over 100 mph. The individual tornado appears as a rotating funnel shaped cloud which extends toward the ground from the base of a thundercloud. It varies from gray to black in color. The tornado spins like a top and may sound like the roaring of an airplane or locomotive. These storms are the most violent of all atmospheric phenomena and over a small area are the most destructive.

D) The width of a tornado path ranges from 100 yards to one mile wide or greater. They travel 5 to 200 miles along the ground at speeds of 30 to 75 mph. Tornadoes sometimes double back or move in circles; some may remain motionless before moving on. They have struck in every state, but the principal areas of frequency are in the middle plains and southeastern states. Locally the remnants of dissipating hurricanes have been known to spawn tornadoes when moving through the area.

E) When a tornado strike is imminent, take the following action:

i) In open country – Seek inside shelter if it is close by and time permits. If there is not time to escape, lie flat in the nearest depression such as a ditch or ravine. A parked car is unsafe as a shelter during a tornado or severe windstorm. However, as a last resort if no ravine or ditch is nearby, a car may provide some shelter from flying debris by crawling under it. Do not remain inside the car as the tornado approaches;

ii) In office buildings – The basement or an interior hallway on a lower floor of an officebuilding is the safest. Upper stories are unsafe. If there is not time to descend, a closet or small room with stout walls (such as bathrooms) or an inside hallway will give some protection against flying debris. Otherwise, getting under a heavy object must suffice. Select and mark shelter areas in office buildings, train building employees to direct the occupants to them. For offices facing outward with windows, close all doors to help contain flying glass and debris;

iii) In factories, auditoriums, and other large buildings with wide free span roofs –Buildings of this type are particularly vulnerable to tornado wind damage due to the large roof expanse upon which the wind force may act and also the relatively large area between roof supporting walls. Basements of these buildings offer reasonably good protection as do smaller interior rooms at ground level or nearby sturdy buildings;

iv) In homes without basements – Take cover in the smallest room with stout walls or under heavy furniture or a tipped over upholstered couch or chair in the center part of the house; closets and bathrooms in center of home also serve as good protection. When choosing the bathroom, lay in bathtub with a mattress as a cover to protect you from falling or flying debris.

v) STAY AWAY FROM WINDOWS, DOORS, AND OUTSIDE WALLS! AND PROTECT YOUR HEAD!

6) EARTHQUAKES

A) Earthquakes are unpredictable and strike without warning. They may range in intensity from slight tremors to great shocks; and may last from a few seconds to as much as five minutes. Earthquakes can occur in a series over a period of several days. The actual movement of the ground in the earthquake is seldom the direct cause of injury or death. Most casualties result from falling debris. Quakes can disrupt power and telephone lines as well as gas, sewer, or water mains. They may also trigger landslides and generate tidal waves.

B) If an earthquake occurs:

i) During the tremor, employees shall be warned to stay indoors if already there; take cover under sturdy furniture such as worktables, desks or even a doorway; stay near the center of the building; stay away from glass windows and doors; do not run through or near buildings where there is a danger of falling debris. If employees are outside, they shall stay in the open away from buildings and utility wires; and

ii) After the tremor, employees shall stay out of damaged buildings; an aftershock can cause these to fall. The supervisors shall check utilities. If water pipes are damaged orelectrical wires are shorted, they shall be turned off at the primary control point. Ifgas leakage is detected, the main valve shall be shut off, windows opened, and the building cleared until officials say it is safe. Supervisors should ONLY do this if it is safe to stay in the building; otherwise evacuate building as soon as possible.

7) FLOODS

A) Except in the case of flash flooding, the onset of most floods is a relatively slow process with adequate warning. The buildup usually takes several days. Progressive situation reports are available from National Oceanic and Atmospheric Administration (NOAA) through its weather service river forecast centers and river district offices.

B) Flash flood warnings are the most urgent type of flood warning issued. These are transmitted over the public radio and television systems. They are also transmitted to law enforcement and civil defense personnel.

C) When possible, try to protect buildings by erecting temporary sandbag levees.

D) Flash flood safety rules are as follows:

i) Keep alert for signs of heavy rain both where you are and upstream;

ii) Be especially cautious at night. It is hard to recognize the danger then;

iii) Know where high ground is and how to get there quickly;

iv) Evacuate when flooding is imminent;

v) Don't try to outrun a flood on foot. If you see or hear it coming, move to higher ground as fast as you can; and

vi) Never try to drive or walk across flooded areas or where water is moving rapidly.

8) BOMB THREATS

A) Compared with other emergencies, the covert and criminal nature of bombing incidents makes bomb threats a highly complex problem for management and emergency service personnel.

B) Experience shows that over 95% of all written or telephone bomb threats are hoaxes. However, there is always a chance that a threat may be authentic. Appropriate action shall be taken in each case to provide for safety of employees, the public, and COSA property; and to locate the suspected explosive device so it can be neutralized.

C) If a bomb threat is received by phone, every effort shall be made to copy the exact words of the callers. Special attention shall be paid to background noises, any accent, or some clue as to the identity of the individual.

D) No argument is to be conducted on the telephone. The employee receiving the call shall take the exact message and give the information to the supervisor in charge. The supervisor shall follow procedures as outlined for decisions regarding the need for evacuation of any facility.

E) Police and Emergency Services personnel immediately shall be notified so that experienced personnel may be dispatched to search and determine the validity of the threat by dialing 911.

F) In-house personnel familiar with the building or office shall, upon request, assist the authorities with the investigation.

G) Law enforcement authorities shall arrange for disposal of objects located and found to be bombs or assumed to be bombs.

SECTION 40 – FIRE SYSTEM IMPAIRMENT

1) GENERAL

A) The purpose of this section is to manage fire system impairments in the event a system must be taken out of service. Departments shall follow COSA Fire Marshal procedures for impaired fire systems. Failure to restore an impaired fire system at a facility could result in the loss of lives and significant property damage.

2) DEFINITIONS

A) Customer – Building occupants and their management.

B) Impaired – To change or restrict a building Fire Protection System from its normal mode of operation (auto).

3) RESPONSIBILITIES

A) The department responsible for the facility shall coordinate all fire monitoring services and testing. In the event of system impairment, the department shall notify the Fire Marshal and Risk Management via phone, fax or email.

i) Information provided should include: Facility name, location, the section of fire system impaired, and duration of the impairment.

ii) Departments shall notify COSA Fire Marshal and Risk Management when the repairs/upgrades have been completed and system placed back into full operational service

iii) The Office of Risk Management shall notify the City's Insurance Carrier of the First System Impairment event

4) IMPAIRMENT PROCESS

A) Before initiating impairment, follow these steps:

i) When possible, plan to do the work during non-operational working hours;

ii) Schedule to shut down hazardous processes, if possible;

iii) Plan to use temporary protections during impairment such as a fire watch with appropriate fire extinguishers;

iv) Preparations should include having parts on hand and personnel available before attempting impairment;

v) The Facility Manager shall notify COSA Fire Marshal and Risk Management via phone, fax or email of the impairment work and estimated time repairs will be completed.

B) During impairment, the following should be accomplished:

i) The impairment tag should be hung in plain view, preferably at the fire system control area;

ii) The Facility Manager shall have the fire system contractor make repairs, and be available to restore the fire system in case of a fire;

iii) Upon completion of repairs, place fire protection system back into normal operating mode (auto);

iv) Contractor to immediately notify Facility Manager when the system is back in full operation; and

v) Facility Manager to notify the Fire Marshal and Risk Management that repairs/maintenance has been completed and the fire system is back up in full operational status.

C) If an emergency impairment occurs, the department should stabilize the situation andinitiate the following:

i) Shut down hazardous processes;

ii) Prohibit all hot work, including cutting and welding;

iii) Assign personnel to patrol where fire system is out of service;

iv) Contact fire system contractor for emergency impairment repairs; and

v) Inform the Fire Marshal and Risk Management of the impairment work and estimatedtime to repair the fire protection system. If hot work is essential to complete emergency impairment, the scope of work shall be discussed in advance with the Fire Marshal and Risk Management.

vi) As soon as impairment work is complete, ensure fire system is promptly restored to automatic service.

SECTION 41 – HOT WORK PERMIT

1) GENERAL

A) The purpose of the Hot Work Permit guidelines is to protect employees and property by managing hot work projects that occur during alterations or repairs of existing buildings or equipment.

2) HOT WORK PERMIT OVERVIEW

A) Fire hazards may occur in the use of both gas and electric welding, and in flame cutting. The majority of fires occur from the use of portable equipment.

i) Outside contractors, performing repair and alteration work are of particular concern since they may not be familiar with buildings or processes, and may not be supervised closely.

ii) Both cutting and welding operations produce dangerous sparks. Sparks from cutting are more hazardous as they are more numerous and are carried greater distances.

iii) Most fires start from drops, or globules of hot slag. Smoldering fires, not apparent when the work is completed, may later burst into flame when no one is present.

3) HOT WORK PERMIT

A) All welding, cutting and brazing in the facility should have a Hot Work Permit. Hot Work Permit shall be completed prior to the beginning of work.

i) Copies of permits should be available and retained.

ii) The employee or contractor performing the cutting, welding or brazing operation should carry a copy of the permit.

iii) The Department Supervisor/Manager should retain the original copy of the permit.

iv) Permits should be closed at the end of each shift and renewed if the operation extends into a succeeding shift.

4) PRE-WORK REQUIREMENTS

A) Welding, torch cutting, grinding, torch-applied roofing, soldering, and other forms of hot work create fire. A pre-work check should be performed to ensure:

i) Equipment to be used should be in good condition.

ii) Suitable fire extinguishing equipment should be maintained in a state of readiness for instant use. Such equipment may consist of water bottles, hose or portable extinguisher depending upon the nature and quantity of the combustible material exposed.

iii) Equipment should not be used within 35 feet of combustibles or if impracticable, combustibles should be protected with flame resistant covers or otherwise shielded with metal or flame-resistant guards or curtains.

iv) If combustible materials such as paper clippings, wood shavings or solvent soakedrags are on the floor, the floor should be swept clean for a radius of 35 feet.

v) Combustible materials should be kept wet or protected by fire resistant shields.

vi) If necessary, a Fire Watch should be provided to watch for sparks or slag that mayfall through cracks, doors or other openings.

vii) Openings shall be protected at all times during hot work operations.

viii) Firewatchers should have fire-extinguishing equipment readily available and be trained in its use.

ix) A Fire Watch should be maintained for at least a half-hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires.

x) When arc welding is to be suspended for any substantial period of time, such as during lunch or overnight, all electrodes should be removed from holders and the holders carefully located so that accidental contact cannot occur, and the machine should be disconnected from the power source.

xi) Compressed gas cylinders should be secured at all times.

xii) Protection from arc welding rays, worker or other persons adjacent to the welding areas shall be protected from the rays by noncombustible or flameproof screens or shields or shall be required to wear appropriate goggles.

5) ALTERNATIVES TO HOT WORK

A) If the area cannot be made safe, use an alternative to hot work. Do not perform hotwork when:

i) Any processes involving flammable liquids or gases cannot be isolated and made safe.

ii) Partitions, walls, ceilings or roofs have combustible coverings (e.g., wood and fabric).

iii) Piping or other metals can conduct enough heat to ignite nearby combustibles.

iv) Large amounts of combustibles are impractical to move or cover, such as rolls of paper.

6) OUTSIDE CONTRACTORS

A) Contractors may not be familiar with COSA facilities and fire hazards. Every contractor, before starting any hot work job, should be screened to ensure they have the experience to perform the work and adhere to the Hot Work Permit process.

7) ROLES & RESPONSIBILITIES

A) The Office of Risk Management will provide Hot Work Permits to departments upon request and review Hot Work Permits and worksite conditions when requested or noticed when conducting Facility Inspection or Worksite Observation.

B) Department managers/supervisors are responsible for ensuring the safe handling and usage of hot work equipment within their facilities and:

i) Request a Hot Work Permit from Risk Management at a minimum of 48 hours ofrequired hot work.

ii) Based on fire potentials of the facility, establish areas for cutting and welding, andestablish procedures for cutting and welding in other areas.

iii) Insist that cutters or welders and operators be suitably trained in the safe operationof equipment and required process.

iv) Advise all contractors about flammable materials or hazardous conditions ofwhich they may not be aware.

v) Prohibit cutting and welding operations in areas not specifically designated forsuch process.

vi) Determine the combustible materials and hazardous areas present or likely to bepresent in the work location.

vii) Protect combustibles from ignition by the following:

a) Have the work moved to a location free from dangerous combustibles.

b) If the work cannot be moved, have the combustibles moved to a safe distancefrom the work area or have the combustibles properly shielded from ignition.

c) Ensure hot work does not expose combustibles to ignition.

d) Require the cutter or welder to obtain approval that conditions are safe beforestarting any hot work.

e) Determine that fire protection and extinguishing equipment is in good condition and properly located at the site.

f) Ensure fire watches are trained and available at the site during hot workactivities and shall continue for not less than 30 minutes after the conclusion ofthe work.

g) The appropriate fire extinguisher shall be readily available / accessible within 30 feet of the location where hot work is performed.

h) Ensure that hazard signs such as "**CAUTION HOT WORK IN PROGRESS STAY CLEAR**," is visible where the hot work area is accessible to persons other than the operator.

8) RECORDKEEPING

A) COSA Departments where hot work has been permitted shall maintain the pre-work checklist and Hot Work Permit on the premise for a minimum of 48 hours after work is complete. Both the pre-work checklist and Hot Work Permit shall be maintained for 1 year after the permit has been closed.

SECTION 42 – CRYSTALLINE SILICA

1) GENERAL

The purpose of the section is to provide guidelines to protect employees from adverse health effects associated with exposure to silica.

Silica is the second most common mineral on earth, found in the common form as "sand" and "rock". Due to this when employees are performing tasks that cause an atmosphere with an increased amount of sand or rock particulates in the air, it can create a hazardous environment. This environment has long term effects on the lungs, which could lead to death.

2) SILICA CONTROL METHODS

COSA utilizes four methods of controlling hazardous atmosphere in regards to silica exposure, wet dust suppression, local exhaust ventilation, administrative and PPE.

Wet Dust Suppression: This method is utilized by either attaching a water source to equipment, already designed for use with the system or soaking/wetting the area with a mister or hose.

Local Exhaust Ventilation: This method is utilized by attaching a vacuum system that captures and controls dust at its source whenever possible.

Administrative Controls: Utilizing signs to prevent employees not utilizing PPE to enter the area. Rescheduling work to limit exposure to employees and lastly, relocating the work or employees to limit exposure.

PPE: An N-95 mask respirator with an Assigned Protection Factor (APF) of 10 is the most common PPE to minimize silica exposure. In atmospheres with a higher concentration of silica dust, a Powered, Air-Purifying Respirator (PAPR) with an APF of 25 is required. In this case, a PAPR would only be required if Wet Dust Suppression is not employed.

3) RESPONSIBILITIES

A) Management is responsible for:

i) Regularly evaluating new equipment and technologies that become available for Silica control and dust suppression and consider purchasing the "best available" equipment/technologies within budget availabilities.

ii) Ensure all employees who are or may be exposed to a silica hazard receive the necessary training.

B) Supervisors are responsible for:

i) Ensuring all tools, equipment, PPE, and materials, including water necessary for the work are available and in good working order prior to allotting work activities to commence.

ii) Ensuring all involved with the work project have received the necessary education and training.

iii) As appropriate, each supervisor must ensure what workers are available to 'demonstrate competency" for identified tasks.

iv) Coordinate work activities with a Contractor associated with the project as required, and/or otherwise implementing the controls as needed such as erecting barricades and signage to protect others who could be adversely affected by the City's acts or omissions.

C) Employees are responsible for:

i) Knowing the hazards of silica dust exposure.

ii) Using the assigned protective equipment in an effective and safe manner.

iii) Reporting to their supervisor immediately any hazards such as unsafe conditions, unsafe acts, improperly operating equipment, etc.

4) TASK SPECIFIC CONTROLS

Cutting/Drilling Asphalt or Concrete: Employees utilizing a handheld demo saw/drill must utilize water suppression or a respirator. Administrative controls should be employed when water suppression is not being utilized to alleviate the need for other employees to wear a respirator.

Walk-Behind Pavement Cutter: Employees directly involved with pavement cutting must utilize water suppression or a respirator. If water suppression is not being utilized, other administrative controls should be employed to prevent the need for additional employees in the area to utilize a respirator.

Jack Hammering: Employees operating a jack hammer must utilize water suppression or a respirator when working with asphalt and concrete. If water suppression is not being utilized, other administrative controls should be employed to prevent the need for additional employees in the area to utilize a respirator.

Asphalt Milling: Employees involved with asphalt milling operations should be protected against an atmosphere with increased amount of silica dust. If employees must work in the area where silica dust is present, supervisors must ensure employees utilize a respirator to limit exposure, along with administrative controls.

Rapid Ram on Backhoe: Employees operating a Ram from an enclosed cab of a backhoe are not required to have any additional protection. Employees working in close vicinity of the Ram must utilize water suppression or a respirator when an increased amount of dust is generated from the Ram.

Sand Blasting: Employees conducting sand blasting operations outside of a sand blasting cabinet must utilize an PAPR rated at 25 APF.

Miscellaneous operations: These operations not previously identified that create an environment exposing employees to an atmosphere with silica dust. When possible, utilize water suppression to reduce the amount of dust. When water suppression is not feasible, employees exposed to the atmosphere will utilize a respirator along with administrative controls to limit exposure.

Respiratory Protection Program: All employees tasked with wearing a respirator are required to comply with Section 22, Respiratory Protection, of this manual.

5) HOUSEKEEPING

The City of San Antonio has developed housekeeping procedures to limit employee, citizen, and others exposure to silica dust during and after specific jobs and tasks that may produce such hazards. Certain housekeeping activities such as dry sweeping, dry brushing, and using compressed air to clean work sites involving silica dust or remove waste materials are considered prohibited and shall be avoided whenever possible.

COSA employees are to utilize procedures that employ wet sweeping, filtered vacuuming, and other appropriate cleaning methods to minimize airborne silica. When these preferred methods are not feasible at the work site, then and only then will employees have the flexibility to use some otherwise prohibited dry methods of clean up.

If a work site does have some accumulated dust waste, the clean-up shall involve a light water spray on the waste material which will be swept up and collected in a container. This material will then be replaced in the cut or dig location after the operations have been completed if possible.

6) CONTROL OF WORK SITES

Construction work sites shall restrict access to the site, allowing only those COSA employees assigned to the project, any vendor contracted by COSA to provide construction services, any other COSA or other governmental official, or visitor involved with the operations accompanied by a COSA employee.

Vehicle and pedestrian traffic shall be re-routed away from the work site to eliminate potential silica exposure to third parties when necessary.

Work sites shall be clearly marked with orange traffic cones, yellow and black caution tape, concrete barriers, or any other means of demarcation that will restrict access to the work zone.

7) EDUCATION AND TRAINING

Prior to performing activities, or working on project sites where employees could be exposed to silica dust, COSA will ensure that affected employees receive suitable education and training to the level of "demonstrated competency". The education and training may include:

i) The hazards and risks associated with exposure to silica dust.

ii) The signs and symptoms of silica related diseases.

iii) General and specific silica exposure reduction methods/strategies as detailed in this document.

iv) The use of specific pieces of equipment and control systems.

v) The use and care or respiratory (and other) personal protective equipment.

SECTION 43 – OVERHEAD CRANES

1) GENERAL REQUIREMENTS

A) All overhead and gantry cranes installed after August 31, 1971, must meet the specifications of the American National Standard Institute (ANSI) / American Society of Mechanical Engineers (ASME) Safety Code for Overhead and Gantry Cranes, ANSI B30.2.

B) Cranes can be modified, and load capacity rerated as long as the modifications and associated structure is thoroughly certified for the new rated load by a qualified engineer or the equipment manufacturer.

C) The rated load of the crane must be plainly marked on each side of the crane. If more than one hoist is present, each hoist must have its rating shown.

D) Clearance must be maintained above and to the side of cranes. Walkways cannot be placed in a crane operating zone that would compromise employee safety when the crane is in operation. Parallel cranes must have adequate clearance between the two bridges if no walls or structures are between them.

E) Only designated personnel will be permitted to operate a crane.

F) All non-essential employees should move to a designated safety area when a load gets lifted, moved, or lowered. Any essential workers near the lift area or travel path should maintain a clear line of sight or radio contact with the lift team during the operation. Every lift plan should be reviewed by a Qualified Person (as deemed by the department or Office of Risk Management) before the lifting or moving process begins to ensure compliance with all safety measures and applicable regulations.

2) QUALIFICATIONS

A) Crane Operators

i) Overhead crane operators will be trained in handling and moving the load.

ii) One person will be deemed in charge when two or more cranes are used to lift a load.

B) Riggers

i) Qualification of Riggers is based on qualified person definition.

ii) Riggers need not be qualified for all loads, only the load they are actively rigging.

C) Signal Persons must:

i) Know and understand the types of signals used, including the Standard Method for hand signals.

ii) Be competent in the application of hand signals.

iii) Have a basic understanding of crane operations and limitations, including the dynamics of swinging and stopping loads and boom deflection from hoisting.

iv) Know and understand the requirements of radio, phone, other electronic and voice signals.

3) INSPECTIONS

A) Routine inspections are required to guarantee continued safe operation of overhead cranes because of the size and weight of the objects they regularly lift and transport overhead. Whether a crane is new or altered, an initial inspection is necessary before it can be used.

B) Once overhead cranes are placed into service, they require two unique types of inspections, Frequent and Periodic.

C) **Frequent inspections:** A frequent inspection is a visual and operational inspection performed monthly or as often as daily. Inspection frequency is based on service, environmental, and application factors, as designated by a qualified person.

D) **Periodic inspections:** A periodic inspection is a detailed visual and operational inspection where individual components are examined to determine their condition. Inspection frequency can be quarterly to annually, and is based on service, environmental, and application factors, as designated by a qualified person.

E) These types of inspection are intended to examine key components of the crane. This helps to determine the extent of malfunction, deterioration, or wear and tear on the crane's components. All inspections are to be documented in detail.

F) The following items require daily inspection (frequent):

i) Functional operating mechanisms: These systems must be checked for maladjustment.

ii) Hydraulic and air system components: Valves, lines, tanks, drain pumps, and other components must be checked for deterioration or deficiency.

iii) Crane hooks**:** These must be checked for cracks or deformation.

There are also several features that require monthly inspections or other actions:

i. **Rope and end connections:** These must be run to check for broken strands or wear every month.

ii. **Hoist chains and end connections:** These must be checked for distortion, twit, excessive wear, or anything else that may interfere with their proper function or cause them to stretch beyond their manufacturer's recommendations.

iii. **Written records:** All records must be carefully updated with each inspection that is performed.

iv. Other inspections are performed on an as needed basis. Test functional operating mechanisms for excessive wear regularly. This may be daily or monthly depending on the amount of use your overhead crane system gets. Rope reeving inspections should be completed as needed or recommended per the manufacturer's instructions.

G) Items to be inspected monthly or annually (periodic):

i. Deformed, cracked or corroded members

ii. Loose bolts or rivets

iii. Cracked or worn sheaves and drums

iv. Worn, cracked or distorted parts, such as pins, bearings, shafts, gears, rollers, locking and clamping devices

v. Excessive wear on brake-system parts, linings, pawls and ratchets

vi. Inaccuracies in load, wind and other indicators

vii. Electric or fossil fuel motors

viii. Excessive wear of chain drive sprockets and excessive chain stretch

ix. Deteriorated electrical components, such as push buttons, limit switches or contactors

In addition to the initial inspection, all new and altered cranes are to be tested. The operational testing includes the following:

x. Hoisting and lowering

xi. Trolley travel

xii. Bridge travel

xiii. Limit switches, locking and safety devices

xiv. Trip setting of hoist limit switches

xv. Load test of not more than 125% of rated load

H. Cranes not in regular use.

i. A crane which has been idle for a period of one (1) month or more, but less than six (6) months, shall be given an inspection conforming with requirements Frequent Inspection described above.

ii. A crane which has been idle for a period of over six (6) months shall be given a complete inspection conforming with requirements of Periodic Inspection described above.

4) MAINTENANCE

A) A preventive maintenance program based on the crane manufacturer's recommendations must be implemented. If any deteriorated components or unsafe conditions are detected during the required inspections, they must be completed before the crane is allowed to be used. Only designated personnel may perform the required maintenance and repairs. The requirements of the control of hazardous energy or lockout/tagout, (Section in this Manual) should be used to de-energize the crane.

5) RIGGING

A) General Rigging Safety Requirements: Only select rigging equipment that is in good condition. All rigging equipment shall be inspected annually; defective equipment is to be removed from service and destroyed to prevent inadvertent reuse. The load capacity limits shall be stamped or affixed to all rigging components. Damage to look for includes:

i) Nylon slings with:

a) Abnormal wear.

b) Torn stitching.

c) Broken or cut fibers.

d) Discoloration or deterioration.

ii) Wire-rope slings with:

a) Kinking, crushing, bird-caging, or other distortions.

b) Evidence of heat damage.

c) Cracks, deformation, or worn end attachments.

d) Six randomly broken wires in a single rope lay.

e) Three broken wires in one strand of rope.

f) Hooks opened more than 15% at the throat.

g) Hooks twisted sideways more than 10 deg. from the plane of the unbent hook.

iii) Alloy steel chain slings with

a) Cracked, bent, or elongated links or components.

b) Cracked hooks.

c) Shackles, eye bolts, turnbuckles, or other components that are damaged or deformed.

B) Rigging a Load

i. Do the following when rigging a load:

a) Determine the weight of the load. Do not guess.

b) Determine the proper size for slings and components.

c) Do not use manila rope for rigging.

d) Make sure that shackle pins and shouldered eye bolts are installed in accordance with the manufacturer's recommendations.

e) Make sure that ordinary (shoulder less) eye bolts are threaded in at least 1.5 times the bolt diameter.

f) Use safety hoist rings (swivel eyes) as a preferred substitute for eye bolts wherever possible.

g) Pad sharp edges to protect slings. Remember that machinery foundations or angle-iron edges may not feel sharp to the touch but could cut into rigging when under several tons of load. Wood, tire rubber, or other pliable materials may be suitable for padding.

h) Do not use slings, eye bolts, shackles, or hooks that have been cut, welded, or brazed.

i) Install wire-rope clips with the base only on the live end and the U-bolt only on the dead end. Follow the manufacturer's recommendations for the spacing for each specific wire size.

j) Determine the center of gravity and balance the load before moving it.

k) Initially lift the load only a few inches to test the rigging and balance.

6) TRAINING

A) Crane operator training shall be provided to promote proficient performance of a crane operator in conformance with the provisions of this document and department standards.

B) Training shall include those items that apply to the crane and the particular application of the crane. Training programs and their contents shall be based upon:

i) Physical characteristics of the workplace

ii) Performance characteristics and complexity of the crane

iii) Type of load to be handled, such as, but not limited to the following:

iv) Multiple piece loads

v) Raw materials

vi) Bulk materials

vii) Machine assemblies

viii) Hot molten materials

ix) Hot materials

x) Fragile or durable materials

xi) Responsibilities of the crane operator and other persons involved in the movement of the load.

C) Other persons, such as, but not limited to, maintenance personnel and crane inspectors, when it is necessary to operate a crane in the performance of their duties, shall be trained in accordance with the training requirements of this document. All training shall be documented and retained for at least three years.

APPENDIX A – Crane Inspection Checklist

APPENDIX A

COSA Gantry - Crane Frequent Inspection Checklist

(To be performed prior to each use or at least monthly only by designated operators)

Items to be inspected:	Acceptable	Repair Needed	Repair Reported
If gantry is electrical - with disconnect off – perform a visual inspection of all crane components for wear, distortion, cracking and any hydraulic or pneumatic leakages			
Energize the crane at the disconnect, note: always stand to the side when activating or de-energizing the disconnect			
Test operating mechanisms for proper operation, proper adjustment and unusual sounds			
Test upper and lower limit switches for proper operation			
Check hoist braking system for proper operation			
Check lifting hooks for cracks, deformation and proper operating latch			
Check rope for conditions that could result in appreciable loss of strength per manufacturer's recommendations			
Check hoist or load attachment chains for wear, distorted links or stretched links			
Check slings – if applicable - for wear, stretch, cuts, kinks or twists			
If gantry is portable - check trolley stops / wheel chocks to determine if functional.			
Check for wear on chain drive sprockets			
Check for worn, cracked or distorted parts such as pins, bearings, shafts, gears, drums, sheaves and clamping locking devices			
Check electrical devices, cords, push buttons, switches for proper operation, deterioration			
Check pendant control for automatic shut-off (if available) when up or down button is released, damaged controls, frayed wiring			
Check chain hoists and gears for wear and proper operation			
Tag the gantry with an "Out of Service" or "Out of Order" tag at the disconnect and controller pushbutton pendant if repairs are needed			

Print Inspector's Name: _____

Inspector's Signature: _____

Date: _____

NOTE: Retain this form as documentation of inspection