Safety Manual

2023 Edition
(Updated February 7, 2023)

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Message from the City Manager

The safety and well-being of all personnel working at every City location is one of my top priorities. A healthy environment and safe workplace are important to me and are critical to providing exceptional service to the residents and businesses in our community.

This manual outlines the basic health, safety and environmental (HSE) requirements I ask everyone to follow and integrate throughout our business. A publication of this size cannot encompass all requirements for every situation, but it does provide a set of rules that, if applied properly, will protect people, the environment and our assets.

Please follow these rules and, where necessary, take extra time and precautions to be safe. If situations arise that are not covered by this manual, please discuss them with your supervisor or safety representative and seek clarification on what is expected.

Our challenge is to continually improve our health and safety performance. I urge you to identify areas where we can do this and offer your ideas to your supervisor or your local safety representative. I assure you that we will listen and where appropriate, we will improve the current process.

Remember, there is no job too important not to take the time to do it safely.

Sara Hensley

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Purpose and Scope

This Safety Manual is one means of communicating the City of Denton's (City) expectations to employees in an easily accessible format. This Safety Manual serves as a tool to help protect employees and to help minimize health and safety risks during day-to-day work. This Safety Manual is not intended to replace the programs, procedures and guidelines that are in place to support site and department specific work practices but will serve as a reference source for maintaining uniform, safe work practices. In the event of a conflict, the applicable federal, state, or local law or regulation or applicable City policy or procedure shall control and apply. Employees shall use good judgment in dealing with conditions not covered in this manual.

This Safety Manual applies to all employees and volunteers, except for fire and police operations during non-routine or emergency operations.

Although the Occupational Safety and Health Administration (OSHA) does not apply to the Texas state government, any of its agencies, or political subdivisions of Texas, such as a city or county government, the City of Denton uses OSHA's safety and health standards as a guideline for the City's Health and Safety Program. References to OSHA's safety and health standards are included in the Safety Manual as guidelines.

Employees shall carefully review and apply the safety rules and standards applicable to their assigned duties. Any employee seeking an exception or accommodation from the below standards should work with their management to develop alternate means to reduce risk. Safety or Human Resources should be contacted for assistance if needed.

1.0 General Information

1.1 Manager and Supervisor Responsibilities

Each manager and supervisor (collectively "supervisor" hereinafter) is responsible for implementing and maintaining an efficient, safety-oriented workplace and must recognize that safety is integral to each operation. The supervisor is best positioned to promote a safety-conscious work environment. Supervisor responsibilities include:

- Understanding and supporting the City and department health and safety policies, programs, and procedures.
- Communicating safe work programs and procedures to each employee
- Observing employee work practices.
- Ensuring that employees are properly trained in their job duties.
- Initiating, attending, and documentation of regularly scheduled safety meetings with employees.
- Performing periodic safety inspections to ensure safe work practices and verify that emergency safety equipment is in good working order.
- Ensuring accidents are reported and appropriately investigated in a timely manner.
- Ensuring corrective measures forms, inspections, and investigations are completed timely.
- Staying current on the operation of new equipment and assuring that procedures are updated as necessary.
- Requiring employees to comply with established City and department health and safety rules.
- Coaching employees who are not in compliance with health and safety procedures.
- Ensuring that unsafe acts or conditions are reported immediately and addressed.

1.2 Employee Responsibilities

Each employee has a personal and joint responsibility with their supervisor to contribute to safe work performance by:

- Complying with City and department health and safety policies, programs, and procedures.
- Seeking supervisory guidance when unsure of correct work procedures.
- Performing job duties safely. This includes properly using safety equipment and devices, utilizing Personal Protective Equipment (PPE) as appropriate, using safe work practices, and keeping equipment and tools in good working order.
- Understanding and following the work practices provided in this Safety Manual and applicable department and City policies and procedures.
- Taking an active part in safety programs, including participating in safety meetings and activities, incident investigations, and completing required safety training.
- Expeditiously reporting incidents (e.g., injury, motor vehicle accident (MVA), property damage) and unsafe work conditions or practices to the supervisor.
- Accepting the responsibility to make and keep the workplace safe and free of recognized hazards.
- Learning the hazards of each job, taking the necessary precautions, and suggesting corrective measures or improvements.
- Helping all personnel and co-workers to work safely and understand the City's and department health and safety expectations.

1.3 Person-In-Charge

The Person-in-Charge is the individual that is in control or has the overall responsibility for someone or something.

1.4 Contractors

Contractors are not City employees. The primary responsibility for the personal health and safety of a contractor's employees rests with the contractor. The contractor must conduct operations to prevent hazards to any person or property.

Contractors are expected to:

- Comply with all contractual requirements.
- Conduct its operations in a manner consistent with its approved safety program as well as in a manner consistent with the City and department programs, policies, and procedures.
- Comply with all applicable health, safety and environmental laws, rules and regulations. This includes governmental and local laws, rules, and regulations
- Provide and maintain all required personal protective equipment (PPE), safety equipment, and instrumentation necessary to perform their work effectively, efficiently, and safely.
- Ensure adequate training of employees in the proper use of equipment and safe performance of job activities.
- Report all injuries and incidents immediately to the appropriate City representative.

1.5 Visitors

A City employees hosting visitors (hosts) are expected to deliver an appropriate safety orientation.

B Visitors must be escorted throughout City facilities and work locations unless prior approval has been obtained from department management.

C Visitors must wear Personal Protection Equipment (PPE) such as a hard hat, safety glasses, hearing protection, proper footwear, etc., as required by the department representative.

D The host is responsible for ensuring that adequate PPE is provided to visitors.

1.6 Emergency Action Plans
(OSHA 29 CFR1910.38)

Employees shall be familiar with the building/facility's specific Emergency Action Plan (EAP) and procedures and attend EAP training.

1.7 Safety Meetings and Training

Safety meetings and training are key to preventing incidents. Employees shall be trained in and familiar with the safety-related work practices, safety procedures, and other safety requirements in this section that pertains to their respective job assignments.

Employees shall also be trained in and familiar with any other safety practices, including applicable emergency procedures that are not specifically addressed in this section but are related to their work and necessary for their safety.

A General

- Supervisors shall arrange for employees to attend safety training and regularly scheduled safety meetings. Information from this Safety Manual, applicable safety programs, procedures, and policies should be discussed at the meetings. Hazards from the work area and the status of corrective measures should be reviewed and discussed. Incidents and lessons learned may be discussed from a preventative perspective in this format. Other topics pertinent to field operations should also be presented as appropriate.
- Safety meetings shall be documented, and records of safety training shall be maintained in the City's Learning Management System.

B Competent Person

Competent person means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them

C Qualified Employee Training

A Qualified employee is one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated their ability to solve or resolve problems relating to the subject matter, the work, or the project. A qualified employee is able to design and supervise the implementation of a corrective action for an identified hazard.

- Qualified employees shall be trained and competent in the skills and techniques necessary to rescue fellow employees from vaults, manholes, lift stations, and high-water situations.
- Qualified employees shall be trained and competent in the skills and techniques necessary to determine when to attempt rescue efforts and, more importantly, when to call for additional help.
- Qualified employees shall be trained and competent in the skills and techniques necessary to determine the minimum approach distances corresponding to the dangers to which they are exposed.
- Qualified employees shall be trained and competent in the proper use of the special precautionary techniques, personal protective equipment, shoring and shielding materials, and insulated tools for working on or near exposed

energized parts of electrical equipment.
- Training may be conducted in the classroom or on-the-job.

1.8 Stop Work Authority
(*See* Stop Work Authority policy no. 410.02)

A All employees and contractors have the authority and obligation to stop any task or operation where concerns or questions regarding the control of health and safety risks exist.

B No work shall resume until all stop-work issues and concerns have been adequately addressed.

C When a person identifies a perceived unsafe condition or act, error, omission, or lack of understanding that could result in an undesirable event, that person shall immediately notify the Person-in-Charge to initiate a Stop Work intervention with the person(s) potentially at risk.

D The City will not tolerate any form of retaliation or intimidation directed at any individual or company for exercising their authority as outlined in this program.

2.0 Incident Reporting

All injuries and accidents, no matter how minor, **must** be reported to the Risk Management division by submitting an Accident/Injury Report form and supporting documentation (e.g., photos, statements). The Accident/Injury Report form is accessible on the City's intranet (the Hub) or by the mobile application by the end of the shift on which the accident or incident occurred.

2.1 Employee Injuries

A If the injury is severe, Call 911.

B Employees injured on the job must notify their supervisor at the time of the incident unless the injury is of a nature

that prohibits such notification.

C For less severe injuries, employees can seek medical care from any provider that accepts workers' compensation.

D The supervisor must notify Risk Management of ALL injuries (no matter how minor) by submitting an Accident/Injury form along with any documentation by the end of the shift in which the accident or incident occurred.

2.2 Motor Vehicle Accidents
(See Comprehensive Driving and City Vehicle Use policy no. 409.05)
When involved in a vehicle collision, each City employee operating a City vehicle or equipment and each City employee operating a personal vehicle in the course of transacting City business shall do the following:

A If able, the employee shall contact the other party to check on their well-being and determine if any party needs medical assistance.

B Make no statements regarding fault, liability, or responsibility.

C Notify local law enforcement authorities for all vehicle collisions who will provide traffic control, as appropriate; notify emergency medical services, if needed.

D Notify their supervisor immediately.

E Remain at the scene of the accident in a safe location until released by a competent authority.

F The driver shall obtain all pertinent facts and information including:

- The other party's:
  - Name
  - Address
  - Phone number
  - Email address

- Photo of insurance card (front and back)
- If a witness(es) was present, obtain the witness'
  - Name
  - Address
  - Phone number
  - Email address
- Take photographs of the accident scene and all damage (no matter how minor) to all vehicles and property.

G In accordance with the Anti-substance Abuse and Rehabilitation policy no. 108.12, upon arrival at the accident scene, the supervisor, safety representative, or other authorized City staff must perform a post-accident oral fluid drug test.

H By the end of the current shift, the supervisor must notify Risk Management of ALL motor vehicle accidents (no matter how minor) by submitting an Accident/Injury report. All information and photos obtained at the scene must be attached to the Accident/Injury report form.

2.3 Chemical Spills (see Section 9 Chemical Safety)

A Immediately alert your supervisor.

B If there is a fire or medical attention needed, contact emergency services (911).

C Attend to any people who may have come into contact with the chemical that was spilled if you are trained and it is safe to do so. Refer to the chemical's safety data sheet.

D If a flammable material is spilled, immediately warn everyone, control sources of ignition, and ventilate the area. Contact 911.

E Do not attempt to clean up the hazardous chemical if not trained to do so or the proper PPE is not available.

F Any chemical spill that enters a storm drain or waterway

(e.g., creek, river, lake) must be reported to the Environmental Services department at watershed@cityofdenton.com when it is safe to do so. The notification must include the time, date, and location of the spill, the specific chemical spilled, and the estimated quantity.

3.0 Office Safety

3.1 General

An office environment can pose potential hazards. General safety guidelines for employees who work in an office environment include:

- Walk, do not run.
- Be familiar with fire escape routes in your building. Do not use elevators in case of a fire.
- Smoking and the use of all smokeless tobacco products, including electronic cigarettes, is prohibited within any City building, on any City property or City worksite, or in any City vehicle or equipment at all times, including during breaks and lunches, if said break or lunch is conducted on City property or on a City worksite. (*See* Use of Tobacco Products policy no. 108.03).
- Broken glass and other sharp objects shall not be placed directly into waste containers. Place broken glass or sharp materials (with the exception of needles) in a cardboard box, tape the box closed, and label the box with the contents before placing it in the waste container.
- All emergency exits and emergency equipment, such as fire extinguishers and fire hose racks, shall be kept clear of all obstructions.
- Electrical cords must be placed so they do not present a tripping hazard. Electrical cords must not be placed across an aisle or passageway without

proper protection such as a floor cord cover. Extension cords are only to be used as temporary wiring (same day use).

- Leave the paper cutter blade down, and the safety latch hooked when not in use.
- Electric fans, heaters, and similar appliances can cause serious injury if improperly used. Ventilation fans shall not be used unless they are guarded or securely placed at least 7 feet above the floor. A portable heater can overload electric circuits and cause a fire. Therefore, facilities must be notified if an electric heater will be used. Electric heaters must:
    - Be kept a safe distance from flammable or combustible materials.
    - Have an auto shut-off tipping safety switch.
    - Be unplugged after each use and cannot be left unattended.
- Defective light fixtures, loose outlet plates, bad insulation on electrical cords, and other potential electrical safety hazards must be reported to facilities without delay.
- All liquid spills must be cleaned up as soon as possible; area must also be marked with warning signs to alert co-workers of the potential for slippery floors.
- All file cabinets should be loaded with heavy materials placed in the bottom drawers. Do not open more than one file cabinet drawer at a time.
- Filing cabinets and desk drawers should be closed immediately after use to avoid a bumping or tripping hazard.
- Furniture that is not designed to be stacked (e.g., bookcases, file cabinets) should not be placed one upon the other.
- Get help when lifting something heavy or bulky.

- When ascending or descending stairways, always have one hand free to hold the handrail. Take one step at a time. Do not attempt to carry bulky or heavy packages that interfere with good vision of the staircase.
- Always stand on an approved ladder or step stool when reaching for articles in high places. Never use a swivel chair or a chair on casters as a step stool.
- Do not sit on the edge of a chair. Do not tilt back when sitting in a straight chair.
- Approach closed doors with caution, as someone may be ready to open it from the other side or be passing by.
- Caution shall be exercised when walking around blind corners.
- Employees shall not attempt to clean, oil, or adjust any machine while it is running. If the machine is not equipped with a starting switch that can be locked in the "off" position, it shall be disconnected from its power source. Unsafe electrical cords, faulty electrical or other equipment, or any other hazardous condition shall be reported to facilities.

Office personnel going to a field location should be aware of the training and PPE that will be required for their field visit. Visiting office personnel should bring the appropriate PPE with them or make arrangements for it to be furnished at the field location.

3.2 Ergonomics

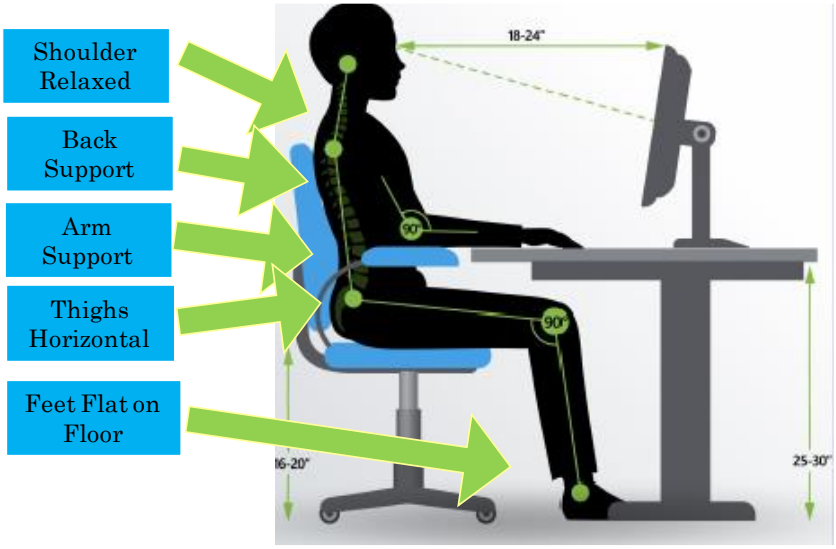
Ergonomics is the applied science concerned with designing and arranging things people use so that the people and things interact most efficiently and safely.

Typically, the ergonomic concern in a field or facility environment is manual lifting and carrying, which is covered in

Section 7.2.

The ergonomic concern in an office environment is normally associated with a computer, associated furniture, and body posture. The goal is to achieve a “neutral body position" where the worker’s fingers, hands, arms, shoulders, legs, etc. are in natural, comfortable positions as tasks are done, as illustrated in the figure below.

- Use a chair that supports your spinal curves.
- The chair should be adjusted where the knees and hips are level with each other.
- Computer monitor placed directly in front of you, with the top no higher than eye level and at least an arm’s length away and positioned to avoid screen glare.
- If your feet don’t comfortably reach the floor or there is pressure on the backs of your legs, use a footrest or lower the keyboard and chair.
- Take frequent breaks; for example, 5-10 minutes after every 30-60 minutes is better than a 20-minute break after 3-4 hours.



If you have any questions about ergonomics, contact your safety representative.

4.0 Personal Protective Equipment

(OSHA 29 CFR 1910.132 Subpart I)
If an employee is called upon to perform work that could be considered hazardous, proper personal protection equipment and training must be provided or the hazard mitigated before the work begins.

Department management and safety may require an assessment to determine risk levels and the acceptable risk mitigation efforts to be put in place before work begins.

4.1 General

A The Person-in-Charge must ensure a workplace hazard assessment has been performed to properly characterize hazards associated with a work area, job, or task and the PPE required for protection from those hazards.

B Selection of PPE for operations involving chemicals shall coincide with instructions and warnings provided on the chemical container and Safety Data Sheets.

C PPE shall be provided, used, and maintained when it has been determined that its use is required and that such use will lessen the likelihood of occupational injury or illness.

D Where required, the City of Denton shall provide an employee with one pair of prescription safety eyewear. Employees requesting prescription safety protective eyewear must:

1. Be required to wear protective eyewear to safely perform their job duties.
2. Have not received prescription safety glasses in the past 12 months.

3. Have a valid prescription for eye-glasses.
4. Complete the Prescription Safety Eyewear Request Form located on the Safety Home Page, sign the form, and have their supervisor sign the form confirming the requirement to wear safety eyewear for job duties.
5. Forward the signed form to the Safety Department.

4.1 Proper Job Attire

Proper work clothing will vary according to job and location, but general guidelines include:

- Loose clothing, rings, neckties, loose jewelry, lanyard for City identification cards, etc. shall not be worn when working around moving machinery. Safety shall be considered in what employees wear on the job.
- Where required by the Department, specific hazards, or regulations, clothing shall be made of 100% cotton. No synthetic clothing shall be worn in field locations.
- Personnel should be fully clothed at all times (i.e., shorts and sleeveless tops are unacceptable unless specifically allowed for by the department or supervisor).
- Long hair or beards may constitute a hazard and must be secured when working around moving machinery or rotating tools and equipment.

4.2 Fall Protection

(OSHA 29 CFR 1926.104 and 29 CFR 1910.29)

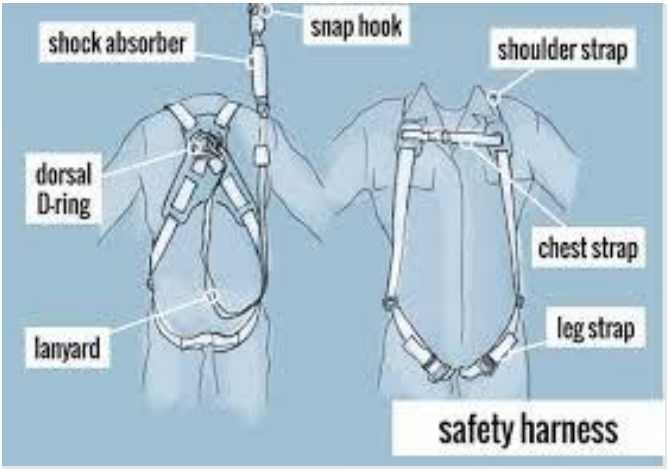
- When an employee is exposed to a fall in excess of 4 feet and protective measures such as catch platforms, safety nets, and guard rails are not practical, the employee shall be protected by the use of fall-arrest equipment or positioning devices such as body harnesses, lanyards, lifelines, and ropes. When choosing fall-arrest equipment or positioning

devices, consideration should be given to the type of work to be performed and limiting the shock load on the body of the wearer in the event of a free fall.

- Employees shall rig fall-arrest equipment, so they cannot free fall more than 6 feet or contact any lower object. When positioning devices are used, they shall be rigged to limit free fall to 2 feet. Anchorage points for fall-arrest equipment and positioning devices shall be capable of supporting a shock load and located in the center of the employee's back near shoulder level.
- Body belts shall be worn snugly just above the wearer's hips.
- Employees shall avoid the following lanyard snap-hook connections to help eliminate the possibility of accidental disengagement (roll-out):
    - Snap-hooks without locks.
    - Two (or more) snap-hooks connected to one D-ring.
    - Two snap-hooks connected to each other.
    - A snap-hook connected back on its integral lanyard.
    - Improper dimensions of the D-ring, rebar, or other connection to the snap-hook dimension.
    - Snap hooks may not be connected to loops made in webbing-type lanyards.
- When vertical lifelines are used, a separate lifeline shall protect each employee. The lifeline shall be properly weighted at the bottom and terminated to preclude a device such as a rope grab from falling off the line.
- Horizontal lifelines should be limited to two persons at one time between supports.
- Prior to each use, the employee shall visually inspect all fall-arrest equipment and positioning

devices for cuts, cracks, tears or abrasions, undue stretching, overall deterioration, mildew operational defects, heat damage, or acid or other corrosion. Equipment showing any defect shall be withdrawn from service.

- All fall-arrest equipment and positioning devices subjected to impacts caused by a free fall or by testing shall be removed from service.
- Employees should store all fall-arrest equipment and positioning devices in a cool dry place, which is not subjected to direct sunlight.
- Employees shall not use fall-arrest equipment or positioning devices until they have been properly trained in their use.
- Qualified employees shall use fall arrest equipment in manholes when conditions such as ice, high winds, design of structure (e.g., no hand holds), or the presence of contaminants exist that could cause the employee to lose their grip or footing.



Refer to Appendix F for calculating fall clearance distance.

4.3 Respiratory Protection

(29 CFR 1910.134 Subpart I
For detailed information, refer to the Respiratory Protection Program policy no. 410.06.)

- Respiratory protection will be provided to City employees based on hazard exposure.
- Employee medical clearance and fit testing must be evaluated prior to using respiratory protective equipment.
- Employees who are required to use respiratory protection equipment must receive training in the care, use, and limitations of the equipment and be familiar with site-specific respiratory protection procedures.
- Respirators must be routinely inspected, cleaned after use, and stored in a sanitary manner. Emergency equipment must be inspected monthly and records maintained.
- Only approved (NIOSH) standard respirators are to be used. Full face positive pressure self-contained breathing apparatus (SCBA) shall be used when employees are exposed to oxygen deficient or contaminated atmospheres.
- The wearing of contact lenses with a respirator is permitted.
- The wearing of eyeglasses with a full-face piece respirator will prevent a good face seal. Specially designed eyeglass adapters should be obtained and used if the employee must wear prescription glasses when using a full-face piece respirator.
- Facial hair between the respirator face piece and the face is prohibited (i.e., beards, long sideburns).

4.4 Hearing Protection
(29 CFR 1910.95 Subpart G
For detailed information, refer to the City Policy No. 410.05 Hearing Conservation Program)

Exposure to excessive noise can cause a gradual decay in hearing ability. Advancements are being made in the reduction of noise, but in the meantime, employees shall wear proper ear protection when exposed to excessive noise.

- Ear protection must be worn when there is a possibility of hearing damage, which can occur during continuous exposure to noise or impulse exposure to loud impact noise. When exposed to noise of 90 dBA (decibels) for more than 8 hours, 95 dBA for more than 4 hours, 100 dBA for more than 2 hours, or 105 dBA for more than 1 hour, proper ear protection must be worn. (If a normal conversation can be understood about 2 feet away, the noise level is probably less than 90 dBA.)
- Protection must be worn when exposed to impact noise of more than 140 dBA, (e.g., noise similar to a rifle or shotgun.)
- Specific areas where the noise level is greater than 90, dBA shall be identified, and time limits stated.
- Hearing protection is required in all designated areas where hearing protection signs are posted.
- Employees shall wear proper protective devices when exposed beyond posted limits.
- Proper ear protection may consist of any of the following: earmuffs, ear plugs, molded ear protectors, or wax-type earplugs. Plain cotton is not acceptable. Ear protective devices shall be worn properly as instructed to provide the required protection and kept clean to reduce the possibility of ear infection.

5.0 Safe Practices

5.1 Housekeeping (OSHA 29 CFR 1915.81)

- Combustible materials, such as oil-soaked rags, waste, and shavings, shall be kept in approved metal containers with metal lids. Containers shall be emptied as soon as practicable.
- Both clean rags and used rags shall be kept in metal or metal-lined bins having metal covers.
- Flammable liquids shall be used only for their designed purpose. Gasoline, benzene, naphtha, lacquer thinner, etc., shall not be used for cleaning purposes or for starting or kindling fires.
- All solvents should be kept in approved, properly labeled containers. Gasoline, naphtha, lacquer thinner, and other solvents of this class shall be handled and dispensed only in UL-approved, properly labeled (yellow letters) red metal safety cans.
- Permanent floors and platforms shall be kept free of dangerous projections or obstructions and shall be maintained reasonably free from oil, grease, or water. Where the type of operation produces slippery conditions, mats, grates, cleats, or other methods shall be used to reduce the hazard of slipping.
- Stairways, aisles, permanent roadways, walkways, and material storage areas in yards shall be kept reasonably clear and free from obstructions, depressions, and debris.
- Materials and supplies shall be stored in an orderly manner to prevent their falling or spreading and to eliminate tripping and stumbling hazards.
- Paper and other combustible materials shall not be allowed to accumulate, and weeds or other range vegetation shall not be permitted to grow in or around the neighborhood of utility-owned buildings or other structures.
- UL-approved, properly labeled (yellow letters) red

metal safety cans shall be used for the handling and use of flammable liquids such as gasoline, naphtha, and lacquer thinner and in quantities greater than one gallon. For quantities of one gallon or less, only the original container of UL-approved, properly labeled metal safety can shall be used.

- Flammable liquids must be stored in compliant containers such as a Factory Mutual (FM) or Underwriter Laboratory (UL) approved flammable safety can (up to 25 gallons of Category 1 flammable liquids) or placed inside a National Fire Protection Association (NFPA) approved cabinet. Using OSHA 1910.106 (d)(3)(i) as the guideline, "Not more than 60 gallons of Category 1, 2 or 3 flammable liquids, nor more than 120 gallons of Category 4 flammable liquids may be stored in a storage cabinet." See OSHA 1910.106(a)(19) for definitions of flammable liquid categories. A flammable liquid's flashpoint and boiling point can be found on its Safe Data Sheet, Section 9.
- When pouring or pumping gasoline or other flammable liquids from one container to another, metallic contact shall be maintained between the pouring and receiving containers. Transferring flammable liquids from one container to another shall be accomplished only in properly ventilated spaces free from ignition sources.
- Exits, stairways or areas normally used for the safe passage shall be kept clear .
- Strict adherence shall be paid to "No Smoking" and "Stop Your Motor" signs at fuel dispensing locations.

5.2 Safety Signs

Safety signs, labels, stickers, etc. are to be posted throughout the work areas to identify hazards, warn or provide instruction. Standardized colors, symbols, and keywords are used on signs

to provide a consistent method of communication. See OSHA 29 CFR 1910.145 Subpart J for more information.

5.3 Ladders

(OSHA 29 CFR 1910. Subpart D Walking Working Surfaces)

- Wooden ladders shall not be painted so as not to obscure a defect in the wood. Only a clear, nonconductive finish shall be used.
- All ladders shall be inspected prior to each use. Ladders with weakened, broken, or missing steps, broken side rails, or other defects shall be tagged and removed from service.
- Ladders and scaffolds shall be sufficiently strong for their intended use.
- Ladders shall not be placed in front of doors opening toward the ladder unless the door is open, locked, or guarded.
- When ascending or descending ladders, employees shall maintain a 3-point contact (two hands and a foot, or two feet and a hand) when climbing/descending a ladder and face the ladder. Tools must not be carried by hand while climbing up/down a ladder. They can be carried in a tool belt, raised up using a hand line or some other means.
- Only one employee shall work from a ladder at one time (except for hook-type ladders). If two employees are required, a second ladder shall be used.
- Employees shall use only City-owned ladders.
- Ladders shall not be used as scaffold platforms unless specifically designed for that purpose.
- Boxes, chairs, etc. shall not be used as ladders.
- All ladders shall be capable of supporting at least 2.5 times the maximum intended load without failure.
- Portable metal ladders and other portable conductive ladders may not be used near energized

lines, equipment, or with the potential to be energized.

A Straight Ladders

- Portable straight ladders shall not be used without nonskid bases.
- The ladder shall be placed so that the distance between the bottom of the ladder and the supporting point is approximately one-fourth of the ladder length between supports.
- Straight ladders shall not be climbed beyond the third step from the top.
- When working from a portable ladder, the ladder must be securely placed, held, tied, or otherwise made secure to prevent slipping or falling.
- When dismounting from a ladder at an elevated position (such as a roof), the employee shall ensure that the ladder side rails extend at least 3 feet above the dismount position or that grab bars are present.
- Ladders shall not be spliced together to form a longer ladder unless specifically designed to be used as a sectioned ladder.
- A ladder shall not be placed against an unsafe support.

B Step Ladders

- The top step shall not be used except for platform ladders.
- Stepladder legs shall be fully spread, and the spreading bars locked in place.
- Stepladders shall not be used as straight ladders.
- When an employee is working on a stepladder more than 10 feet high (except a platform ladder), another person shall hold the ladder.

C Stationary/Fixed Ladders

(OSHA 29 CFR 1910.23(d) and 29 CFR 1926.1053(a)(19))
The supervisor must ensure:

- Fixed ladders are capable of supporting their maximum intended load.
- If the top of the ladder extends above the access level, the extension must be at least 24 inches wide and not more than 30 inches of clearance, allowing the climber to easily reach both hand rails.
- The minimum perpendicular distance from the centerline of the steps, rungs, grab bars, or both, to the nearest permanent object in the back of the ladder is 7 inches (18 cm), except for elevator pit ladders, which have a minimum perpendicular distance of 4.5 inches (11 cm).
- The side rails of through or side-step ladders extend at least 42 inches (1.1 m) above the top of the access level or landing platform served by the ladder.

Fall protection must be provided for employees climbing or working on fixed ladders whenever the length of climb equals or exceeds 24 feet.

5.4 Hand Tools

Hand tools are necessary for typical maintenance and repair activities. Care must be taken to ensure that these tools are in good order and are used properly. Proper care and use of hand tools include:

- Tools and equipment must be visually inspected and repaired (if necessary) prior to use. Unrepairable tools must be removed from service and reported.
- Tools must be used only for the purpose for which designed.
- A safe position should be assumed before applying pressure to a tool handle.

- When possible, holders should be used when striking hammer-wrenches, chisels, punches, rods, stakes, etc., to prevent hand injuries. Eye protection must be worn when striking tools are used.
- Use hand tools as per manufacturers' recommendations.
- The “mushrooming” or upsetting heads of impact tools such as chisels and sledgehammers shall be removed and replaced.
- Ball peen and sledgehammers must be used in conjunction with striking tools.
- A hammer must not be struck against another hammer.
- Jaws on adjustable (crescent) wrenches must be tightened around the fitting or nut, with force applied to the side of the stationary jaw. A crescent wrench should not be used if a box or open-end wrench of the correct size is available.
- Wrenches should be pulled rather than pushed when possible.
- Tools not bolted, tied, or secured in an approved manner must be removed from elevations where they may fall on employees below.
- Handles on sledges, hammers, mauls, and the like must be securely wedged into the heads. Wooden handles must not be painted, nor should cracked or split handles be taped.

5.5 Air Hoses, Tools, and Air Compressors

Proper care and use of air tools and hoses include:

- Air hoses should not be left lying on the floor when not in use to minimize the risk of a slip, trip or fall incident. Ideally, air hoses should be on retractable reels and stored overhead as close to the workspace as possible to keep them off the ground and easily accessible for workers. Hoses should be retracted

when not in use.

- Eye protection must be worn when using air tools for cleaning. Pressure must not exceed 30 psig (2.1 bar).
- The work area must be checked for possible hazards and employees in the area must be notified before using an air hose.
- Hoses must be kept clean, in good condition, and stored when not in use.
- Air hoses should not be used to raise or lower tools.
- Pressurized air lines not equipped with quick disconnect couplings must be secured with “safety pins” to prevent accidental separation of the couplings.
- Use whip checks on crowsfoot connections in use with pressures exceeding 30 psi.
- Air pressure must be bled off the system prior to disconnecting hoses equipped with non-closing couplings.
- Employees must not use compressed air for dusting off clothing.
- Air compressors and air receiver tanks must be equipped with spring-loaded pressure relief safety valves that are tested periodically. Block valves must not be placed between the air receiver tank and the pressure relief valve.
- Air receiver tanks must be equipped with readily visible pressure gauges.
- Automatic starting compressors must have a warning sign stating that the unit starts automatically.
- Pressure relieving valves and gauges must be rated and set at air receiver manufacturer specifications.
- Leaking pressure relief valves must be repaired/replaced as soon as possible.

5.6 Welding Precautions

(OSHA 29 CFR 1910.252 Subpart Q)

Welding is an activity that introduces an ignition source into the work area. Depending on the work area, a Hot Work Permit may be required.

A Welding and cutting shall be performed only by experienced and properly trained persons. Before welding or cutting is started, the area shall be inspected for potential fire hazards, and a hot work permit will be obtained.

B When welding or cutting in elevated positions, precautions shall be taken to prevent sparks or hot metal from falling onto people or flammable material below.

C Suitable fire extinguishing equipment shall be immediately available at all locations where welding and cutting equipment is used.

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

E A fire watch shall be maintained wherever welding or cutting is performed in locations where combustible materials present a fire hazard. A fire check shall be made of the area 1/2 hour after completion of welding.

F To protect eyes, face, and body during welding and cutting, the operator shall wear an approved helmet or goggles, proper protective gloves, and clothing. Helpers or attendants shall wear proper eye protection. Other employees shall not observe welding operations unless they use approved eye protection.

- Proper eye protection shall be worn to guard against flying particles when the helmet or goggles are raised.

G Machinery, tanks, equipment, shafts, or pipes that could contain explosive or highly flammable materials shall be

thoroughly cleaned and decontaminated prior to the application of heat.

H In dusty or gaseous spaces where there is a possibility of an explosion, welding or cutting equipment shall not be used until the space is adequately ventilated.

I Welders shall place welding cables, hoses, and other equipment so they are clear of passageways, ladders, and stairs.

J Where the work permits, the welder should be enclosed in an individual booth or shall be enclosed with noncombustible screens. Workers or other persons adjacent to the welding areas shall be protected from rays by shields or shall be required to wear appropriate eye and face protection.

K After welding or cutting operations are completed, the welder shall mark the hot metal or provide other means of warning other workers.

L Potentially hazardous materials in fluxes, coatings, covering, and filler metals are released into the atmosphere during welding or cutting operations. While welding or cutting, adequate ventilation or approved respiratory protection equipment shall be used. Refer to the City's Respiratory Protection Program policy no. 410.06. Special precautions shall be taken when using materials that contain cadmium, fluorides, mercury, chlorinated hydrocarbons, stainless steel, zinc galvanized materials, beryllium, and lead. Refer to the department's Hazard Communication Program for specific requirements pertaining to the above listed hazardous materials.

M For gas welding and cutting, only approved gas welding or cutting equipment shall be used.

- Approved back flow check valves shall be used on gas welding rigs in both gas and oxygen

lines.

- Welding hose shall not be repaired with tape.
- Matches shall not be used to right a torch; a torch shall not be lit on a hot workspace. A friction lighter or other approved device shall be used.

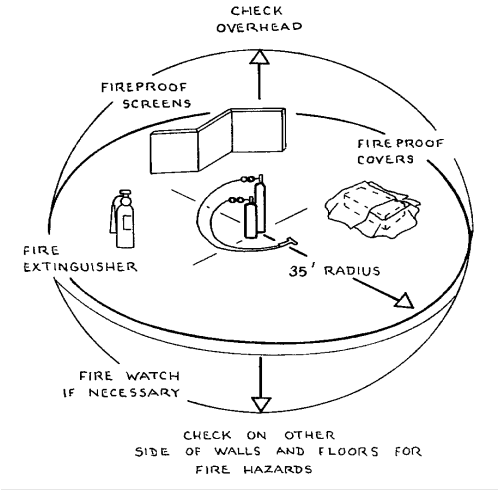
N Welding or cutting operations must not be performed in a confined space until the area has been tested for oxygen and flammable levels and the appropriate permits posted. Refer to the City's Confined Space Entry Program policy no. 410.07.

O When welding or cutting on equipment, ensure that the equipment is properly isolated from service.

P When welding in a hazardous area, the atmosphere should be continually checked with a calibrated combustible gas detector to warn of any dangerous changes in the atmosphere.

Q The **35-Foot Rule** shall be used for all welding and cutting operations:

- All flammable and combustible materials such as paper clippings or wood shavings within a 35-foot radius of hot work must be removed.
- When flammable and combustible materials within a 35-foot radius of hot work cannot be removed, they must be covered with flame-retardant tarps, and a fire watch must be posted.
- Floors and surfaces within a 35-foot radius of the hot work area must be swept free of combustible dust or debris.
- All openings or cracks in the walls, floors, or ducts that are potential travel passages for sparks, heat, and flames must be covered.
-



R Where floors have been wetted down, personnel operating arc-welding or cutting equipment shall be protected from possible shock.

5.7 Isolation/Opening of Equipment/Piping

Prior to performing inspections, repairs, or other maintenance activities, employees must safely take measures to physically isolate the equipment from the flow of hazardous material, de-pressurize, drain or purge and open it for access.

5.8 Product Transfer and Handling

A A qualified person shall conduct transfer operations. For the purposes of this section, a person is “qualified” for if they have been made aware of the hazardous material to be loaded or unloaded and instructed on the procedures to be followed in emergencies. Any person that is required to load or unload a hazardous material shall be trained in the proper loading and unloading of the product.

B At least one qualified person shall remain in the immediate vicinity of the transfer operation at all times.

C Piping, valves, and other equipment shall be protected from corrosion, weathering, and mechanical damage.

D Long grass or weeds shall not be permitted within ten (10) feet of a product container or loading rack.

E Permanent containers shall be properly grounded. Electrical devices shall comply with the National Electrical Code Article 500 for electrically classified areas.

F There shall be no open flames or hot work permitted within 100 feet of a transfer operation. Smoking is only permitted in designated smoking areas.

G No one is permitted to remain in the cab of the vehicle during transfer operations.

H Any employee shall have the right to refuse to load or unload any vehicle that, in their judgment, is mechanically unsafe.

I A proper Bill of Lading is required for each load and proper placards must be in place.

6.0 Work Control

Topics described in this Section relate to types of work in specific potentially hazardous situations. These programs reduce or eliminate potentially hazardous situations through specific procedures. Employees involved with activities that are covered by specific work control programs must be familiar with the respective City program.

6.1 Hot Work

A Hot Work Permit is required for any operation that can produce a spark, flame, or another source having sufficient energy to cause ignition, where the potential for flammable vapors, gases, or dust exist, or when in an Electrically Classified Locations (Class 1, Division 1 and 2). This determination will be made on a job-by-job basis by the supervisor in charge.

Employees performing the Hot Work at a location must be

trained on when to use a Hot Work Permit. A Hot Work Permit is obtained from the supervisor in charge. The completed Hot Work Permit shall be attached to the work order or job file.

A Guidelines

1. When work requires the introduction of an ignition source, the Hot Work Program should be reviewed.
2. Examples of activities that present ignition sources include:

- Welding.
- Cutting or burning.
- Use of open flames.
- Flaming.
- Grinding.
- Soldering.
- Chipping.
- Breaking concrete.
- Abrasive blasting.
- Hot tapping lines or vessels.
- Use of non-explosion proof electrical equipment (e.g., tools, coils, heaters, lights, extension cords, motors)
- Use of non-intrinsically safe electrical equipment (e.g., laptops, personal data assistants, flashlights, pagers, cell phones).

B Atmospheric conditions for Hot Work Permits

1. A Hot Work Permit is not issued unless the following atmospheric conditions are present:

Test	Level
Oxygen	between 19.5% and 23.5%
LEL/LFL	<10.0%

2. The work will stop, personnel removed from the work area, and the permit suspended if the flammability

reading equals or exceeds 10% of the Lower Explosive Limit (LEL) or Lower Flammable Limit (LFL).

6.2 Confined Space Entry

(OSHA 29 CFR 1910.146; For detailed information, refer to the Confined Space Entry policy no. 410.07.)

Entry into confined spaces presents potential hazards to personnel, even though the work itself might not ordinarily be hazardous. Entry into a confined space requires training, planning, and preparedness.

Employees performing work under the Confined Space Entry Program must be trained on the City's Confined Space Entry procedures.

A confined space is a space meeting all three of the following criteria:

- The space is large enough for a person to fully enter; and
- The space has limited means of entry or exit. "Limited means of entry or exit" includes climbing over something or passing through a less-than-door-size entrance or exit; and
- The space is not designed for continuous personnel occupancy

Examples of confined spaces:

- A cellar, valve vault, below-grade sump, or machinery crawl space in which a person would enter while it is in normal operating mode.
- A storage tank that has been drained and opened for inspection or repair.
- A vessel that has been drained and opened for inspection and maintenance.

A Non-Permit Confined Space

- All employees who enter a non-permitted confined space must be trained.
- An attendant, entrant, and entry supervisor must be identified before work begins.
- The attendant's only responsibility is to monitor the work being performed by the entrant.
- A form of communication must be established between the entrant and the attendant.
- A bump test is required before each use of gas monitor equipment. The "bump test" tests the alarms and sensors of the gas detector to be sure they are functional. The test exposes the detector to a known concentration of gases that exceed the lowest alarm set-point for each sensor.
- A Confined Space Entry Checklist must be completed before entering a confined space and air monitoring readings must be recorded throughout the work being performed.
- Manhole blowers or engineered ventilation must continuously cycle air while working.
- Manhole guardrails or warning signs must be in place during the project to identify fall hazards.
- Confined space gases must be monitored continuously while employees are working within a confined space.
- For entering vertically confined spaces, a tripod and winch rescue system must be set up and in use with entrants wearing fall protection unless the tripod has the potential to create harm to the employee.

B Permit Required Confined Space

Confined spaces that are classified as Permit-Required Confined Spaces pose special hazards and, when possible, will not be entered by City employees without

authorization by department management and the Safety Department. Specialty contractors will typically be used in projects requiring entry into Permit-Required Confined Spaces.

- All employees who enter a confined space must be trained.
- An attendant, entrant, and entry Supervisor must be identified before work begins.
- The Attendant's only responsibility is to monitor the work being performed by the entrant.
- A Confined Space Entry Checklist must be completed before entering and air monitoring readings must be recorded throughout the project or at least hourly.
- A form of communication must be established between the entrant and the attendant.
- A bump test is required before each use of gas monitor equipment. The "bump test" tests the alarms and sensors of the gas detector to be sure they are functional. The test exposes the detector to a known concentration of gases that exceed the lowest alarm set-point for each sensor.
- Manhole guardrails or warning signs must be set up to identify fall hazards.
- Manhole blowers or engineered ventilation must continuously cycle air while working.
- Confined space gases must be monitored continuously while employees are working within a confined space.
- A trained Permit Required Confined Space Team shall be maintained, capable of performing work and rescue.
- For vertically confined spaces, a tripod and winch rescue system must be set up and in use

with entrants wearing fall protection unless the tripod has the potential to create harm to the employee.

- For horizontal entries into confined spaces, horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system.
- The Rescue Team must develop a rescue plan with the Safety Department and the Entry Supervisor must sign off on the Team's training and rescue plan prior to entry.

6.3 Excavations

(OSHA 29 CFR 1926.651 Subpart P)

An excavation is defined as any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal.

A Ground Disturbance

Whenever ground is to be disturbed, prior to the disturbance, the area to be disturbed shall be investigated to determine whether any underground objects are present. Examples of underground objects include:

- Electrical lines.
- Telephone, cable, or fiber optic lines.
- Pressurized pipelines (including water lines).
- Non-pressurized pipelines.

B General Requirements

- Before opening an excavation, all interference such as trees, sidewalks, and foundations shall be removed or supported as necessary to protect employees and the public.
- The estimated location of utility and other underground installations that may be encountered during excavation work shall be determined before opening the excavation.

Utility colors are as follows.

White-Proposed Evacuation

Pink-Temporary Survey Markings

Green-Sewer & Drain Lines

Blue-Potable Water

Red-Electrical Power Lines, Cables, Conduit & Lighting Cables

Yellow-Gas, Oil, Steam, Petroleum or Gaseous Materials

Orange-Communications, Alarm/Signal Lines, Cables/ Conduit

Purple-Irrigation and Slurry Lines, Reclaimed Water

- When excavation operations approach the estimated location of underground installations, the exact location of the installations shall be determined by hand digging and the use of probing rods.
- For trench excavations that are 4 feet (1.2 m) or more in depth, a means of egress, such as a stairway, ladder, or ramp, must be provided such that personnel is not required to travel laterally more than 25 feet (7.6 m) to reach the egress point.
- Employees exposed to vehicular traffic shall wear ANSI/ISEA 107-2010 performance class 2 (or better) high-visibility vest or other suitable garments.

- No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials.
- When mobile equipment is operated adjacent to an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system such as barricades, a spotter, or stop logs shall be utilized. If possible, the grade should be away from the excavation.
- Employees shall not work in excavations in which there is accumulated water or in excavations in which water is accumulating unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. The precautions necessary to protect employees adequately vary with each situation but could include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of a body harness and lifeline.
- If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation.
- Materials shall not be stored closer than 2 feet (0.6 m) from the edge of the excavation. This includes excavated soil, equipment, and other work materials unless special precautions are taken.
- Fall protection is required when personnel or equipment are permitted to cross over

excavations that are 6 feet (1.8 m) or deeper including handrails on walkways or bridges.

- Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted before starting work and as needed throughout the shift. Inspections shall also be made after every rainstorm. Where the competent person finds evidence of a situation that could result in a possible cave-in, failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.
- When excavations are left open, warning devices, barricades, or guardrails shall be placed to adequately protect the public and employees.
- At the end of each workday, as much of the excavation as practical shall be closed. No more trench shall be open at one time than is necessary.
- Mechanical excavating equipment that is parked or operating on streets or highways shall be protected by proper warning devices.
- When it is necessary to leave excavating equipment unattended, the blade, bucket, or scoop shall be lowered to the ground and the ignition system locked.

C Protective System Requirements

- Where the stability of adjoining buildings, walls,

or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning shall be provided.

- Employees shall be protected from excavated material or equipment that could fall or roll into excavations. Protection shall be provided by placing and keeping such materials or retaining devices that are sufficient to prevent materials or equipment from falling or rolling into the excavation.
- Each employee in an excavation shall be protected from cave-ins by either sloping or benching or by a shoring or shield system. The only exceptions will be excavations made entirely in stable rock or less than 5 feet (1.5 m) in depth, and examination of the ground by a competent person provides no indication of a potential cave-in.
- When choosing a protective system, a competent person shall take into consideration soil type, vibration sources, previously disturbed soil, layered soil, presence of water, heavy equipment works adjacent to the excavation, limited work area, and other hazard conditions.
- Employees shall be protected from the hazards of cave- ins when entering or exiting the areas protected by shields.
- Shields shall be installed in a manner to restrict lateral or other hazardous movement in the event of a sudden lateral load.
- Employees shall not be allowed in shields when shields are being installed, removed, or moved vertically.
- Shoring and shield systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses,

or being struck by members of the shoring or shield system. Removal of shoring systems shall begin at and progress from the bottom of the excavation. Parts shall be released slowly to note any indication of possible cave-ins or failure of the remaining shoring members.

- If sloping is utilized, then the soil must be classified and the appropriate ratio of horizontal to vertical sloping dimensions must be used. This soil classification will be determined by a competent person.
- Sloping or benching, shoring, or shielding for excavations greater than 20 feet deep shall be designed by a registered professional engineer. Refer to OSHA 1926 Subpart P App B for maximum allowable slopes and slope configurations for maximum slope requirements by soil type for excavations less than 20 feet.

D Hazardous Atmospheres

If a Hazardous Atmosphere (e.g., oxygen deficient, flammable, toxic) could be present, then the excavation atmosphere must be tested. Based on the results of the atmospheric tests, the following may be required:

- Confined Space Entry Permit.
- A Hot Work Permit.
- Respiratory protection equipment.
- Ventilation.
- Depending on the configuration of the excavation, personnel entering may be required to wear a safety harness and a lifeline.

E Damaged Lines

<u>Electric Lines</u>

If electric lines are damaged, the following steps shall be taken:

a. The area shall be barricaded, and the public kept out until hazardous conditions can be eliminated.
b. If the damaged line belongs to a utility other than the one performing the work, this utility shall be notified at once.

Gas Lines

If gas lines are damaged, the following steps shall be taken as soon as possible:

a. Call 911 to notify the fire and police departments.
b. The hole shall be left open to allow the gas to dissipate into the atmosphere. All possible sources of igniting the gas shall be removed or eliminated.
c. Residents of the area shall be warned when necessary, and the public kept out of the area.
d. The gas company shall be notified at once.

Communication Cable

If communication cables are damaged, the communication company shall be notified at once.

6.4 Utility Locating

- At the start of each job, an employee shall be designated to review the latest drawings and/or work orders and establish contact with all utility companies. This employee will also contact the local One-Call service at 811at least 2 working days prior to any excavation to have all services marked.
- The State of Texas stipulates a NO DIG ZONE, requiring that marked utilities be potholed a certain distance on either side of the utility locate mark. This zone is 18" plus half the diameter of the utility.
- Locate tickets expire every 14 days and require 48

hour notice for locators to identify the approximate location of the utilities within the right-of-way.

- Any time work will be performed crossing over or under other utilities, a test hole must be dug to verify location and depth.
- The preferred method of digging a test hole is by water method, but if hand digging is needed, start digging the test hole from the outer edge of the tolerance zone and move in.

6.5 Control of Hazardous Energy (Lockout/Tagout (LOTO))

A The Person-in-Charge is responsible to authorize any work within their work area and verify that any authorized employee (LOTO Permit Holder) fully understands the hazards and risks involved in the work and the associated energy isolation requirements.

B LOTO Permit Holder must identify an authorized employee to perform the work. The authorized employee is the one who will create the permit, attach their hold card or similar lockout device, and then do the work.

C A hold card or similar device, that has been placed for the protection of the worker, shall be removed only by the authorized employee and then only after the work has been completed and workers and tools are in the clear.

D In situations where there is more than one authorized employee working on the same equipment or the authorized employee cannot be located, the Safety Department must be contacted to assist the authorized employees with additional required measures.

E Steps to LOTO.

1. Prepare for shutdown.
2. Notify all affected employees of the activities and equipment involved.
3. Shut down the equipment.

4. Isolate the equipment from the hazardous energy source.
5. Dissipate residual energy.
6. Apply applicable lockout or tagout devices.
7. Verify that the equipment is properly isolated.
8. Return all operating controls to the OFF position.
9. Perform required task.
10. Remove LOTO device only after the equipment is fully assembled and all affected employees have been notified.

6.6 Traffic Control
(TXDOT Manual on Uniform Traffic Control Devices (MUTCD) Part 6)

- Work area protection means the protection of pedestrians, motorists, utility workers, and equipment. It is accomplished through the use of adequate barriers, warning signs, lights, flags, traffic cones, high-level standards, barricade rope, flagmen, etc., on approaches to work areas, excavations, open manholes, parked equipment, etc.
- The use of good informative and protective devices accomplishes work area protection. Use of these devices shall be in relation to the location of the workers and the equipment involved. Use of these devices shall also be coupled with proper planning, design, installation, inspection, maintenance, and good common sense. It is of the utmost importance that the work area is properly identified, and that warning devices clearly convey the message to the traveling public well in advance of arrival at the work area.
- The public must be warned in advance, then regulated and guided safely through or around the work area. Proper work area protection shall be planned to ensure the safety and protection of the

public, the worker, and the equipment.

- All employees on site must be aware of the traffic control plan for the workday. Utilize the Temporary Traffic Control (TTC) permit and Manual on Uniform Traffic Control Devices (MUTCD) guidelines for proper set up.

6.7 Lone Worker

- A worker must be able to request assistance in case of an emergency. This can be established over radio or cell phone use.
- When an employee works in an environment that has limited room for personnel, a co-worker shall know where this worker is located.
- A co-worker shall contact the lone worker at specific times to verify the employee is safe.
- If a response from the worker is not received, then a Supervisor shall be notified immediately to be made aware of the situation.

7.0 Material Handling

(OSHA 29 CFR 1910.176 Subpart N)

7.1 General

- An employee shall obtain assistance in lifting heavy objects or using power equipment.
- When two or more persons carry a heavy object to be lowered or dropped, there shall be a prearranged signal for releasing the load.
- When two or more persons are carrying an object, each employee, if possible, should face the direction in which the object is being carried. Employees shall not attempt to lift beyond their capacity. Caution shall be taken when lifting or pulling in an awkward position.
- Employees should avoid twisting or excessive

bending when lifting or setting down loads.

- When moving a load horizontally, employees should push the load rather than pull it.
- When performing a task that requires repetitive lifting, the load should be positioned to limit bending and twisting. The use of lift tables, pallets, and mechanical devices should be considered.
- When using tools such as screwdrivers and wrenches, employees should avoid using their wrists in a bent (flexed), extended, or twisted position for long periods of time. Employees should maintain their wrists in a neutral (straight) position.
- When gripping, grasping, or lifting an object such as a pipe or board, the whole hand and all the fingers should be used. Gripping, grasping, and lifting with just the thumb and index finger should be avoided.

7.2 Proper Lifting and Carrying Techniques

Manual lifting should be avoided as much as possible; however, if no other handling means exist, the following guidelines should be followed:

- Prior to lifting an object, know the path you will take and where you will place the load. Check the path of travel to ensure no obstructions or hazards exist which could cause slipping or tripping.
- If you feel the object cannot be handled by one person safely (e.g., too bulky or heavy), ask for assistance.
- Inspect the object to be lifted for hand hazards such as jagged edges, burrs, pinch points, or slippery surfaces.
- When lifting an object:
    - Correctly position your feet. Keep them about shoulder width apart with one foot alongside and the other foot behind the object.

- Bend at the knees and keep your back in a neutral or upright position.
- Position your body close to the load.
- Grasp the object with a firm grip, using your palms, not just your fingers.
- Keep your chin in and position your body weight centrally over your feet.
- Lift with your legs in a gradual motion.
- While carrying the load, do not twist your body when turning, but turn your complete body as a whole.

- When setting down a load, reverse the process.

7.3 Crane Operation
(OSHA 29 CFR 1910.179, OSHA 29 CFR 1926.1438)

A Only those designated persons who are trained and qualified shall operate hoisting equipment.

B No person shall be permitted to ride any hoisting equipment's hook, sling, or load.

C Load limits as specified by the manufacturer shall not be exceeded under any circumstances.

D The following minimum checks shall be made daily.

- All control mechanisms for maladjustment interfering with proper operation.
- All safety devices for malfunction.
- Deterioration or leakage in the air or hydraulic systems.
- Hooks, hoist lines, slings, and load attachment devices.
- Fire extinguisher available (5 BC or larger).

E Before a lift is attempted, the lifting mechanism shall be level and firmly supported with the hoist line centered over the center of gravity of the load to be lifted.

F For the first lift of each day, the load shall be test lifted and the brakes checked.

G The slings and bindings shall be checked and shall be readjusted as necessary to ensure safety and stability.

H A designated signalman must be in the view of the crane operator at all times. Standard hand signals for controlling crane operations must be used (See Appendix A). All hand signals must be given by the designated signalman, but the operator should obey any emergency stop signal given by anyone.

I When hoists, cranes, or similar lifting devices are used near energized lines or equipment, the lifting device shall be:

- Properly grounded, or
- Insulated, or
- Isolated, or
- Considered as energized.

J No employee shall stand or work near a cable, chain, or rope under tension unless their work requires it.

K Winch lines, ropes, or wire cables shall not be guided by hand when standing within reach of the drum or sheave.

L Wire rope loops shall be made by proper splicing or mechanical clamping of the tail section.

M Operators shall not leave their position at the controls while the load is suspended.

7.4 Elevated Work Platforms

- Operators of elevated work platforms shall exercise extreme caution when near energized lines or equipment.
- Lifting equipment (e.g., aerial lift trucks, scissor lift trucks) shall be grounded and barricaded while working near overhead power lines or energized

equipment..

- Elevated work platforms operated near, under, or over power lines must maintain clearances as outlined in Appendix B, Table 1 except where the power lines have been de-energized and visibly grounded at a point of work, or where insulating barriers have been erected to prevent physical contact with the power lines.
- The clearances outlined in Appendix B, Table 2 must be maintained for all elevated work platforms in transit.

7.5 Rigging/Slings
(OSHA 29 CFR 1926.753)

A All rigging equipment shall be of sufficient strength, proper type, and safe for its intended use.

B Rigging equipment shall not be loaded beyond its rated capacity.

C Before each use, a qualified person shall inspect all slings and attachments for damage or defects. Defective equipment shall be removed from service.

D Slings shall not be shortened with knots, bolts, or other makeshift devices.

E Slings used in a basket hitch shall have the load balanced to prevent slippage.

F Slings shall be securely attached to the load by hooks with retaining devices, shackles, or another positive latching device.

G Slings used in a basket hitch shall have the load balanced to prevent slippage.

H Slings shall be padded or protected from the sharp edges of their loads.

I A sling shall not be pulled from under a load when the load

is resting on the sling.

J Slings shall be long enough to provide the maximum practical angle between the sling leg and the horizontal plane of the load.

K Rigging shall be such that the angle of the sling to the load shall never be less than 30 degrees (See Appendix C).

L Shackle pins shall never be replaced with bolts or other non-approved devices.

M Only hooks with approved retaining devices shall be used. Hooks shall never be rigged so they are point loaded at the tip of the hook. The load shall be securely seated in the saddle of the hook.

N When eyebolts are used, care shall be taken to ensure the bolt is not side loaded.

7.6 Forklift Operations
(OSHA 29 CFR 1910.178)

- All powered industrial trucks must be inspected before each use.
- Only qualified persons trained in their use shall operate industrial trucks.
- Equipment with faulty brakes, mechanical, or electrical defects shall not be operated.
- Equipment shall always be operated at a safe speed for existing conditions.
- Before moving industrial trucks, the operator shall ensure that the path is free of people and objects. Overhead clearances in all directions shall be verified.
- When picking up a load, forks shall be set as far as possible under the load. Forks should not be raised or lowered while traveling, whether loaded or empty. Forks should be carried as low as possible but high enough to clear uneven surfaces.

- Loads shall not be suspended or swung over other persons.
- The operator shall always face in the direction of travel.
- Loaded lift trucks shall be driven with the load on the upgrade side of the driver, whether ascending or descending.
- Sudden stops, which might spill the load, shall be avoided.
- All loads shall be securely fastened and positioned to prevent tipping or falling.
- No one shall be allowed to ride the truck, forklift, or other equipment other than the operator.
- When left unattended, the parking brake shall be set and the wheels choked.

7.7 Compressed Gas Cylinders

Compressed gas cylinders must be properly handled, used, and stored.

A Handling

- When necessary to remove compressed gas cylinders, a cart or other mechanical device designed for that purpose should be used. Cylinders may also be rolled on their bottom edge but never dragged.
- Cylinders handled by a crane must be carried in a cradle, basket, or similar device, and care must be taken to prevent them from falling. Slings, ropes, or an electromagnet must not be used.
- Cylinders must not be dropped or allowed to strike each other.
- Cylinders must not be used for support or for any other purpose than to contain gas.
- Empty cylinders must be marked and labeled

"EMPTY." Valves must be tightly closed and the valve protector caps replaced.

- Cylinders must be loaded and secured in an upright position unless they are designed to be used and transported horizontally.
- Valve protection caps must not be used for lifting the cylinder.
- Cylinder valves must be kept closed with the valve protector cap in place during handling.

B Use

- Acetylene cylinders must be used in a secured and upright position.
- A valve protector cap must be kept on the cylinder except when a regulator is attached, or the cylinder is hooked into a manifold system.
- Threads on a regulator or union must correspond to those on the cylinder valve outlet. Connections must not be forced.
- A cylinder of compressed gas must not be used without a pressure-reducing regulator attached to the cylinder valve.
- Regulators and pressure gauges must only be used with gases for which they are designed.
- The cylinder valve must always be closed before attempting to stop leaks.
- Leaky or damaged cylinders must be taken out of service immediately. They should be removed to a safe location and observed until safely depressurized. They must be marked and labeled as "DAMAGED."
- Sparks, molten metal, electrical currents, excessive heat or flames must not be permitted to come in contact with the cylinder or attachments. This includes propane or welder's torches and space heaters.

- Oil or grease must never be used as a lubricant on valves or attachments to oxygen cylinders since oil and oxygen under pressure can be a fire hazard. Also, oxygen regulators must not be handled with greasy or oily hands or gloves.
- Cylinder contents must only be used for the purposes for which they were intended.

C Storage

- Oxygen cylinders must not be stored within 20 feet (6.1 m) of fuel gas cylinders or combustible/flammable materials (especially oil or grease) unless protected by a noncombustible barrier at least 5 feet (1.5 m) high having a fire-resistance rating of at least one-half hour.
- Cylinders must be stored and secured in an upright position and in a safe, dry, well-ventilated place, not exposed to heat.
- Compressed gas cylinders must not be accepted from the supplier without the cylinder contents labeled and valve protector caps in place.
- Cylinder valves must be kept closed during storage with a valve protection cap in place.
- Empty cylinders (properly labeled as ”empty”), shall be stored separately from full cylinders.

7.8 Drum Handling and Storage

The contents of drums can be potentially hazardous and, therefore must be properly handled and stored. Full drums pose handling issues due to weight and storage issues due to the material contained inside.

A Handling

- Drums should be handled by either a hand truck, a dolly equipped for drum handling, or a drum

tilter.

- If it is necessary to handle a drum by manual means:
  - Do not roll drums with the feet.
  - Roll drums by gripping chimes or otherwise keeping the hands on the center or top.
- If a drum starts to fall, do not attempt to catch it.
- Be aware of pinch points when setting drums.

B Mechanical Handling

- When drums are moved by forklifts, cranes, or other mechanical means, drums should be properly secured.
- Drums should not be lifted any higher than necessary for safe transport.
- Caution should be taken to ensure that drums are not punctured

C Storage

- Drums should be stored as appropriate for the contents. Review the storage recommendations for the material from the respective SDS.
- Drums must be labeled as to the contents.
- Empty drums should be returned to the vendor, disposed of, or recycled. Consult the Environmental Services department for proper disposal or recycling procedures.

For safety, never handle drums or chemical containers with unknown contents. Contact the Environmental Services or Safety department for proper classification, handling and disposal procedures.

8.0 Electrical Safety

(OSHA 29 CFR 1910.301 Subpart S)
Employees must be trained in basic electrical safety. Work on electrical equipment and systems, which includes troubleshooting and repair, must be performed only by Qualified Persons.

The American Public Power Association Safety Manual shall be applied to all work on power lines, substations, and equipment associated with the power grid.

8.1 General

- Qualified Persons must use LOTO procedures when working on electrical equipment that can be activated by a switch or disconnect.
- Pull and junction boxes for systems over 600 volts must have their covers permanently marked with wording such as “DANGER, HIGH VOLTAGE” or “DANGER, 600 VOLTS.”
- Each disconnecting means for equipment or circuits shall be legibly marked to indicate the equipment or circuit it applies to. In addition, “ON” and “OFF” shall be clearly distinguishable.
- Electrical switchgear must be labeled to identify the equipment it controls.
- Employees must not wear rings, watches, or similar metallic objects while working on electrical systems.
- Where feasible, electrical systems (circuits) must be de-energized (“cold”) and tested before performing work. If work must be performed on a “hot” energized circuit, only Qualified Persons shall do the work, and suitable protective equipment must be used (e.g, certified non-conductive gloves, mats, blankets, line insulators, hot sticks) to provide insulation from the ground and conductors.

- Hands, shoes, and clothing should be dry when handling any energized electrical equipment.
- Interlocks must not be rendered inoperative by removal, modification, or destruction except by a Qualified Person.
- Employees should avoid being near switch boxes, pumping units, or other electrically operated equipment during an electrical storm.
- When high structures or equipment are operated near electrical power lines, the lines should be de-energized and tested when feasible. If this is not possible, proper clearance between the equipment and the power lines must be maintained. (See Appendix B, Table A)
- Overload protection (fuses and/or circuit breakers) must be provided to protect the circuit's maximum current carrying capacity (e.g., a 30-amp fuse must not be used on a 20 amp circuit).
- A fuse puller must be utilized to remove and replace fuses. A fuse puller must be kept clean and dry to prevent a conductive film from forming on the surface of the fuse puller.
- Substitutes for fuses are prohibited.
- Electrical connections to ground must not be made to gas pipes, steam pipes, sprinkler systems, or light protection systems.
- Electrical motors must be externally grounded through a ground cable connection from the base of the motor to the ground rod.
- Water must not be used on electrical equipment fires. When possible, electrical equipment must be de-energized before fighting a fire.
- Extension cords must be of a three-wire grounded type, free of splices. Extension cords are not an acceptable substitute for permanent wiring.

- Employees must not stand in front of an electrical switch box when opening or closing a switch.
- The covers and all bolts on electrical boxes must be replaced and tightened upon completion of work.
- Non-qualified personnel must not attempt to make repairs to electrical equipment.
- Defective appliances, lines or cords, electrical equipment, etc., must be taken out of service, tagged, and be reported.

8.2 Ground Fault Circuit Interrupter (GFCI)

All portable electric tools and lights that may be used in wet or damp locations shall be used with ground fault circuit interrupters (GFCI) or be included in an assured grounding program.

8.3 Power Hand Tools

(OSHA 29 CFR 1910.242)

Misuse of power hand tools can create potentially hazardous conditions. Proper handling and use of power tools include:

- The power supply source must be disconnected before repairs or services are performed on the tools.
- Where there is a danger of explosion or fire, pneumatic (air-operated) power tools should be used.
- Natural gas shall not be used for pneumatic power tools.
- Electrically operated tools must not be used on tanks, lines, vessels, in compressor stations, or other areas where flammable gases may be present until these areas have been checked with a gas detector and determined to be gas free.
- Portable electric tools and equipment must be Underwriters Laboratory (U.L.) listed or approved by an applicable international certifying body, double insulated, or be grounded through a third wire.

- Outlets supplying power to portable electric tools which may be used in a wet location (e.g., outdoors) must have ground fault circuit interrupter (GFCI) protection or be included in an assured grounding program.
- Electrically powered tools and equipment with deteriorated or inadequate insulation, defective cords, etc., must be tagged and removed from service until repaired. Taped splices in cords are not considered properly repaired and must not be used.

Employees shall not tamper with or remove a safety guard.

8.4 Lighting

Improper lighting maintenance or installation may create hazardous conditions.

- OSHA electrical safety guidelines for hazardous locations must be followed in all locations where flammable gas or liquids may be present. Portable lights used in hazardous locations must be approved for the intended hazardous atmosphere.
- The outside globe and guard on stationary lights or portable hand lights must be maintained and in place during use.
- Portable lights and cords must be kept in good repair. The cords must be checked for bad insulation and the lights checked for cracked or broken protective globes.
- When changing a broken or burned-out light bulb, the circuit must be de-energized.

8.5 Explosion Proof or Intrinsically Safe Electrical Equipment

Electrical equipment used or installed in a potentially flammable or explosive location must be rated, installed, and maintained as specified by the manufacturer.

- Electrical equipment in flammable or explosive atmospheres must be explosion-proof or intrinsically safe and meet NEC (National Electric Code) Article

500 requirements.

- Explosion-proof equipment must be maintained in good condition to retain the integrity for which it was designed.
- Explosion-proof caps, covers, boxes, etc., must be secured and seated to maintain the integrity of the system.
- For non-intrinsically safe Personal Electronic Devices (e.g., PDAs, cell phones, laptops), refer to Section 10.2 PEDs for additional information.

9.0 Chemical Safety

(Hazard Communication Directive policy no. 410.03)
Employees working with chemicals shall be familiar with their department-specific Hazard Communication Program and procedures.

A Employees working with chemicals shall be trained on the hazards of the chemical, including the content of the chemical's Safety Data Sheet (SDS), how to access the SDS, and the location of the written Hazard Communication Program.

B Employees working with chemicals must wear appropriate PPE as specified by the SDS or as required by the City. Employees must properly use, maintain, and store the PPE.

C Employees shall not use materials they find in unlabeled containers. Employees shall report unlabeled containers and containers with damaged labels to their supervisor and/or Hazard Communication Coordinator.

D Employees shall not transfer a hazardous substance from a labeled container to an unlabeled container unless the unlabeled container is under the employee's exclusive control or is labeled as outlined in the department's Hazard Communication Program.

E Employees shall report all hazardous material spills as specified in Section 2.3 of this Safety Manual. Employees shall not attempt to control or clean up spills unless they have been properly trained and have the required personal protective equipment.

10.0 Fire Safety

10.1 General

Caution must always be exercised regarding potential fire hazards which may be present. A fire hazard absent one day may be present the following day.

- Smoking, burning, or the use of an ignition source is prohibited in locations where a fire or explosion may occur.
- Matches or cigarette lighters must not be taken into areas containing flammable materials.
- Designated areas should be established for the storage of flammable liquids. When gasoline is stored, a label containing the words “Gasoline” and “Flammable” must be attached to the container.
- Engine-magnetos, spark plugs, or other ignition devices must not be tested where flammable gas vapors are present.
- Natural gas starter piping, connections, and vents must be checked after performing repairs or maintenance and before attempting to start the engine. Vents must be vented outside any building or enclosure.
- Cans of oil, kerosene, oily rags, waste, etc., are prohibited near stoves, furnaces, or gas fires.
- Oily rags, waste, and other combustible materials must be stored in labeled, covered metal containers to prevent fire from spontaneous combustion.
- Flammable liquids (e.g., gasoline, condensate) must not be used as cleaning agents.

- Flammable aerosol (e.g., paints, insect spray, most paint removers) must not be used near open flames or other ignition sources.
- Bonding and grounding procedures must be followed during the transfer or collection of flammable liquids into portable containers to prevent ignition from static electricity.
    - Bonding minimizes the difference in electrical potential between two or more conductive objects and will prevent sparking between them. Bonding is the joining of metallic parts to form an electrically conductive path which will assure electrical conductivity and the capacity to safely conduct any current likely to be imposed.
    - Grounding minimizes the difference in electrical potential between the objects and ground. A ground is a conducting connection between an electrical circuit or equipment and the earth or to some conducting body that serves in place of the earth.
- Thief hatch (sample or gauging port) covers must be kept closed on chemical tanks except when tanks are being gauged or cleaned.
- Quantities of flammable or combustible liquids in excess of 25 gallons shall be stored outdoors or in approved flammable storage cabinets. The maximum allowable storage of liquids in such a cabinet is 60 gallons for flammable liquids and 120 gallons for combustible liquids. Whenever possible, large quantities of flammables should be stored outdoors in a safe, designated area. Cabinets used for the storage of flammable liquids must be ventilated and appropriately labeled.
- Gasoline or other flammable products must be

stored in U.L. approved safety containers.

- Flammable liquids must be transported in containers rated appropriately.

10.2 Fire Extinguishers

Successful fire protection depends on preparedness. Properly maintained fire extinguishers and trained employees are critical elements of fire safety preparedness.

- Employees expected to use fire extinguishing equipment shall be trained in its use.
- A discharged fire extinguisher must be replaced immediately with a fully charged unit of equal rating.
- Sprinklers, halon, CO2, dry chemical, and foam systems must be inspected and tested according to the manufacturer's instructions or regulatory requirements.

11.0 Medical and First Aid

11.1 Bloodborne Pathogens

Bloodborne Pathogens (BBP) are microscopic infectious organisms carried by bodily fluids that can cause human disease. These pathogens include the hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV).

A For a potential bloodborne infection to occur, contact must occur between broken skin or mucous membranes and infected blood or other bodily fluids. Contact with potential bloodborne pathogens can occur during situations such as emergency medical care, sewer work, police work, and housekeeping, among others. Blood and other bodily fluids are considered hazardous waste and require special clean-up materials, transportation, and disposal.

B If an employee is involved in a potential exposure incident, the City will provide evaluation, post-treatment, and follow-up. Any potential exposure incident experienced on the job

should be reported immediately to your supervisor, safety representative, and reported to Risk Management by submitting an Accident/Injury form.

11.2 First Aid Kits

A First aid supplies (kits) shall be accessible in City facilities and some City vehicles.

B Employees shall be familiar with the location of first aid supplies.

C First aid kits shall be routinely inspected to ensure they are adequately stocked.

D First aid kits shall include appropriate personal protective equipment for protection from bloodborne pathogen exposure.

11.3 Silica Dust Exposure
(OSHA 29 CFR 1910.1053 Subpart Z)
Exposure to silica dust can lead to the development of lung cancer, silicosis (an irreversible scarring and stiffening of the lungs), kidney disease and chronic obstructive pulmonary disease. Therefore, the following controls shall be followed when cutting, sawing, grinding, drilling, and crushing stone, rock, concrete, brick, block, and mortar.

A Wet cutting. Where water is used, the flow rate must be sufficient to minimize the release of visible dust while drilling or excavating.

B Ventilation controls that use vacuums and high efficiency particulate air (HEPA) filters to control dust.

11.4 Heat Exposure
Employees can become overheated while working in hot conditions. Appropriate clothing, frequent breaks, plenty of water, and proper work management assists with the control of potential heat exposure.

Supervisors and crew leaders shall ensure the following is enforced if the outside temperature exceeds 95ºF:

- Employees should take a 10 minute break every 2 hours, at a minimum.
- Water shall be provided in sufficient quantity at the beginning of the work shift to provide a minimum of one quart per employee per 8-hour shift.

See Heat Index Chart in Appendix D.

The three stages of heat exposure are:

- Heat cramps;
- Heat exhaustion; and
- Heat stroke

A Heat Cramps

Symptoms

Heat cramps may include muscle spasms in the stomach and the extremities, visible twitching, and moist or cool skin.

Treatment

Move the victim to a cool place and massage the muscles. Give cool water to drink.

B Heat Exhaustion

Symptoms

Heat exhaustion may include pale, clammy skin, rapid, weak pulse, near normal body temperature, weakness, headache, nausea, abdominal or limb cramps, and excessive perspiration.

Treatment

Call 911.

As soon as possible, move the victim to a cool place.

Have them rest with their head lower than the body and protect them from chilling. Give cool water to drink, if conscious.

C Heat Stroke

Symptoms
Heat stroke symptoms include a high temperature, a red face and hot and dry skin with no sweating. Headaches, dizziness and labored breath are common, and the victim may become unconscious.

Treatment
Call 911.
It is very important to reduce the body temperature as soon as possible. Move the victim to a cool place and lay them down with their head *raised*. Remove as much clothing as possible and cool their body with cool water. Do not pack ice around the victim, as it may result in shock. If the victim was unconscious and consciousness returns, watch for signs of shock and treat accordingly. Shock symptoms include but are not limited to: confusion; altered mental status; slurred speech; low blood pressure; hot, dry skin or profuse sweating; weak or rapid pulse.

11.5 Cold Exposure

The best defense against cold-related injuries is to prioritize and limit outside work during temperature and wind chill extremes, dress for the conditions, and use the appropriate PPE for any outside work. Special attention should be given to the protection of the face and head, hands, wrists, and feet. Gloves with gauntlets should be used to prevent exposed skin areas between the jacket and gloves.

Frostbite is the freezing of body tissue and may range from minor injury (frostnip) to the complete freezing of an extremity. Untreated frostbitten areas will first become reddened and then become gray or white, particularly on exposed ear lobes,

cheeks, or the nose. If left untreated, the skin becomes numb and dead white. Every employee should watch for symptoms of frostbite on themselves and their co-workers. Treatment for frostbite is to transport immediately to a medical facility.

Hypothermia is the lowering of the core body temperature to the point where the body is no longer functioning properly. Symptoms include intense shivering, poor coordination, stumbling, loss of memory, thickness of speech, and drowsiness. Hypothermia is often not recognized and, if left untreated, may result in death. It is important to note that most hypothermia cases are reported during cool weather (per CDC, cool weather can be defined at temperatures above 40 degrees Fahrenheit if a person is chilled from rain, sweat, or submersion in cold water). Treatment is to transport immediately to a medical facility.

See the Wind Chill Chart in Appendix E.

A Proper cold weather clothing must be worn by employees when working in cold, wet, and windy conditions.

B Do not underestimate the wetting effects of perspiration.

C It is easy to become dehydrated in cold weather. If possible, heavy work should be scheduled during the warmer parts of the day.

D Take breaks out of the cold.

E If a worker who has been exposed to cold temperature shows signs or reports symptoms of cold stress or injury, the worker must be brought into a warm area and monitored to ensure their safety.

F New employees should be given enough time to acclimate to cold temperatures and protective clothing before assuming a full workload.

G Follow these work practices to stay safe in cold weather:

- Know the symptoms of cold stress: reddening skin, tingling, pain, swelling, leg cramps, numbness, and blisters.
- Dress properly: wear at least three layers of loose-fitting clothing, insulated gloves and boots, and a head covering.
- Monitor your physical condition and that of your coworkers.
- Stay dry and pack extra clothes; moisture can increase heat loss from the body.
- Take frequent breaks in warm, dry areas.
- Drink warm liquids.

12.0 Transportation Safety

(See Comprehensive Driving and City Vehicle Use policy no. 409.05 City's Policy #409.05) Note: Police Officers and firefighters are subject to the applicable provisions of Texas Local Government Code Chapter 143, the Rules of the City of Denton Firefighters and Police Officers Civil Service Commission, and the general and special orders of the Police and Fire Departments, which may incorporate some or all of the provisions of this section.

12.1 Motor Vehicle Operations

A General

B (See Comprehensive Driving policy, no. 409.05 and Anti-substance Abuse and Rehabilitation policy, no. 108.12))

- Defensive driving must be practiced at all times. Defensive driving means the driver must be constantly alert for accident producing situations and be prepared to take necessary evasive action.
- Employees who operate City vehicles as an

essential function of their job will attend Defensive Driving Training every 2 years. The training will include defensive driving techniques and how to recognize and compensate for hazardous road and weather conditions.

- All traffic laws must be observed.
- Manufacturer approved seatbelts shall be worn at all times.
- Drivers are prohibited from using Personal Electronic Devices (PEDs) such as cell phones, pagers, radios, cameras, Personal Digital Assistants (PDAs), laptops, or similar equipment while driving a City vehicle or driving any vehicle on City business unless employing a hands-free device and the device does not distract from the driver's vision. If a device cannot be operated hands-free or creates a distraction for the driver, the use of PEDs are only allowed when the vehicle is parked in a safe location.
- Operation of a vehicle on City business while under the influence of intoxicating substances is prohibited. In addition, employees taking a drug or medication that may impair their ability to perform their job duties, including but not limited to the operation of vehicles or motorized equipment, must notify their supervisor before operating a vehicle or equipment on City business. Any employee seeking an exception or accommodation from the above, should contact Human Resources.
- Picking up hitchhikers is prohibited.
- If involved in a vehicle accident, see Section 2.2 of this Safety Manual.
- Employees shall report any change in their driver's license status to their supervisor as soon as possible.

- Automotive equipment must be maintained in a safe condition.
- Speed must be consistent with road, weather conditions, and posted limits.
- Automotive equipment must not be operated in a non-ventilated building.
- A vehicle should be parked to minimize backing. Whenever possible, the first move should be forward.
- Gasoline or other flammable material must be transported in an Underwriter Laboratory (UL) approved flammable safety can or Department of Transportation approved container in quantities of 5 gallons or less. Generally, any tank over 119 gallons is a bulk tank requiring compliance with the federal hazardous materials rules to include placarding, licensing, shipping, etc.
- Cargo and heavy tools must not be transported in the passenger section of trucks or vans when passengers are occupying this section.
- Hard hats or any loose or sharp objects must not be stored in the rear window tray or on the front dash.
- All City vehicles should be inspected to ensure proper vehicle registration and current safety inspection.
- Vehicle operators and employees must give proper attention to electric lines and equipment when working or driving vehicles equipped with gin poles, ”A frames”, masts, or other protruding objects.
- Employees should not try to stop a shifting, falling, or tumbling load.
- Trucks must not be loaded beyond the Gross

Vehicle Weight Rating (GVWR).

C 360º Walk-Around and Spotter Use

Prior to moving a vehicle, the area should be cleared by completing a 360° walk-around of the City Vehicle.

Use of a visual barrier (e.g., a 360 sticker º on the driver's side window, a cone placed in front of the vehicle) is encouraged as a reminder to the employee of this requirement.

- The visual barriers do not replace or eliminate the need for traffic control requirements as stated in the Manual on Uniform Traffic Control Devices (MUTCD).
- Unless the driver is alone, a spotter is required to assist with all backing operations, regardless of the size of the vehicle.
- If a driver loses sight of their spotter at any time during the operation, the driver must stop until the driver and spotter obtain eye contact.
- Spotters are required to wear an ANSI/ISEA 107-2010 performance class 2 (or better) high-visibility vest for the entire duration of all backing operations.
- Spotters are required even for City Vehicles with backup sensors or similar devices or cameras.

D Vehicles over 26,001 lbs

- Employees who operate a vehicle over 26,001 lbs. shall complete a Daily Vehicle Inspection Report (DVIR) to ensure all vehicles are safe to operate. The supervisor shall be responsible for ensuring the DVIR is complete.
- The DVIR must be completed before an employee starts their on-duty operation of a vehicle or combination of vehicles that have a

GVWR of 26,001 lbs. or more.

- If a defect is found, the vehicle operator must notify Fleet Services to determine how to proceed with any necessary repair(s) based on the defect and ensure the safe operation of the vehicle and/or equipment.

E Winch Truck

- Employees must not stand between the truck and a load when there is a strain on the winch line.
- The winch hook should be securely fastened to the truck bed or other fastening point when not in use.
- Winch lines should be visually inspected prior to use, or anytime they are subjected to potential damage.
- Winch lines should be inspected annually and replaced if damaged or as per manufacturer recommendations.

12.2 Tractors, Loaders, and Backhoes

- Personnel who operate or work near tractors, loaders, and backhoes are at risk of being struck by the equipment or the components. Other risks include rollovers, electrocutions, and slides into trenches.
- Wheel type agricultural and industrial tractors over 20 hp will be equipped with a Rollover Protection System (ROPS). This includes a roll bar and seatbelt. While operating equipment with ROPS, the seat belt shall be worn.
- Employees authorized to operate equipment must be familiar with the operating manual.
- Operators must not operate or hoist items the operator cannot see unless there is a spotter

providing signals for such operation and hoisting.

- Communications between the equipment operator and other onsite personnel should be established before each workday begins.
- Personnel must be aware of established swing areas and blind spots before the operator works the equipment. Personnel should not be within this swing area.
- Personnel should not approach the tractor, backhoe, or loader until they signal the operator and receive an acknowledgment from the operator to approach the machine.
- Never permit anyone to ride in or work from a backhoe or loader bucket. No passengers are allowed on the equipment.
- The equipment must not be driven at an unsafe speed.
- Caution should be used on steep grades. Equipment should not be operated on grades steeper than specified by the manufacturer.
- Turn off the equipment and lower all attachments before stepping off for any reason.

12.3 Boat Safety

Assumption: Powerboats in use are less than 16 feet in length.

A Employees conducting work or riding to a work location by boat must follow the Captain's or boat operator's instructions. The Captain has ultimate authority over all activities on the vessel.

B Employees who work over or near water must wear a fully secured personal flotation device (PFD) in the performance of their job duties, except when working on immovable installations where guardrails are provided or in enclosed areas.

- A PFD includes a work vest or life jacket. PFDs

must meet US Coast Guard (U.S.C.G.) approval.

- Employees are responsible for the care and maintenance of the City provided PFD. A PFD must be replaced when it is no longer an effective flotation device.

C Additional required safety equipment includes:

- U.S.C.G. approved type B-1 marine fire extinguisher.
    - Fire extinguisher must be easily accessible and in good working condition.
- One sound producing device is required (e.g., whistle, horn, or other sound device).
- U.S.C.G. approved red and green side lights and white all-around lights are required when not at dock and operating from sunset to sunrise or visibility is restricted.
- Ventilation systems are required of all vessels using liquid fuel unless the boat is of "open construction."
- If a vessel is equipped with an exhaust cut off switch (ECOS) lanyard, it shall be attached to the operator of the vessel. In the event the operator falls overboard, the ECOS will activate, shutting off the engine to prevent unmanned vessels from operation.
- A mirror no less than 4" is required when towing a person.
- If operating at night, dusk, or dawn, then the use of visual distress signals including flares, smoke signals, and non-pyrotechnic signals is required.

13.0 Environmental Miscellaneous

A Deposit chemical waste in appropriately labeled safety containers.

B Do not discharge waste (hazardous or non-hazadous) into a sewer, storm drain, waterway, or the environment.

C All hazardous chemical spills shall be reported immediately.

D All chemicals shall be stored in labelled manufacturer containers or similar container compatible with the chemical and properly labelled. Secondary containment may be required.

E Needles shall be disposed of in a “sharps” container.

F Drums or other containers containing hazardous waste must not be disposed of in solid waste or recycling dumpsters.

G Batteries, some pesticides, mercury-containing thermostats, paint and paint-related waste, aerosol cans, and lamps (bulbs) are hazardous wastes. These hazardous wastes are eligible to be managed as Universal Waste (UW) by the Universal Waste Rule under Title 30 Texas Administrative Code (30 TAC) Section 335.Subchapter H, Division 5 which provides alternative management standards for managing these types of hazardous waste.

- UW must not be disposed solid waste or recycling dumpsters.
- UW must be collected and can be stored for up to 1 year. Contact Environmental Services for disposal planning.

H New product drums or containers should never be re-used for the storage of hazardous waste.

I Do not throw garbage (e.g., water bottles, food wrappers) into excavations or storm drains.

J Municipal Solid Waste placed into dumpsters shall comply with the City's soild waste ordinance.

K Recycling materials placed in City recycling containers/dumpsters shall comply with the City's solid waste ordinance.

Appendix

A Basic Crane Hand Signals

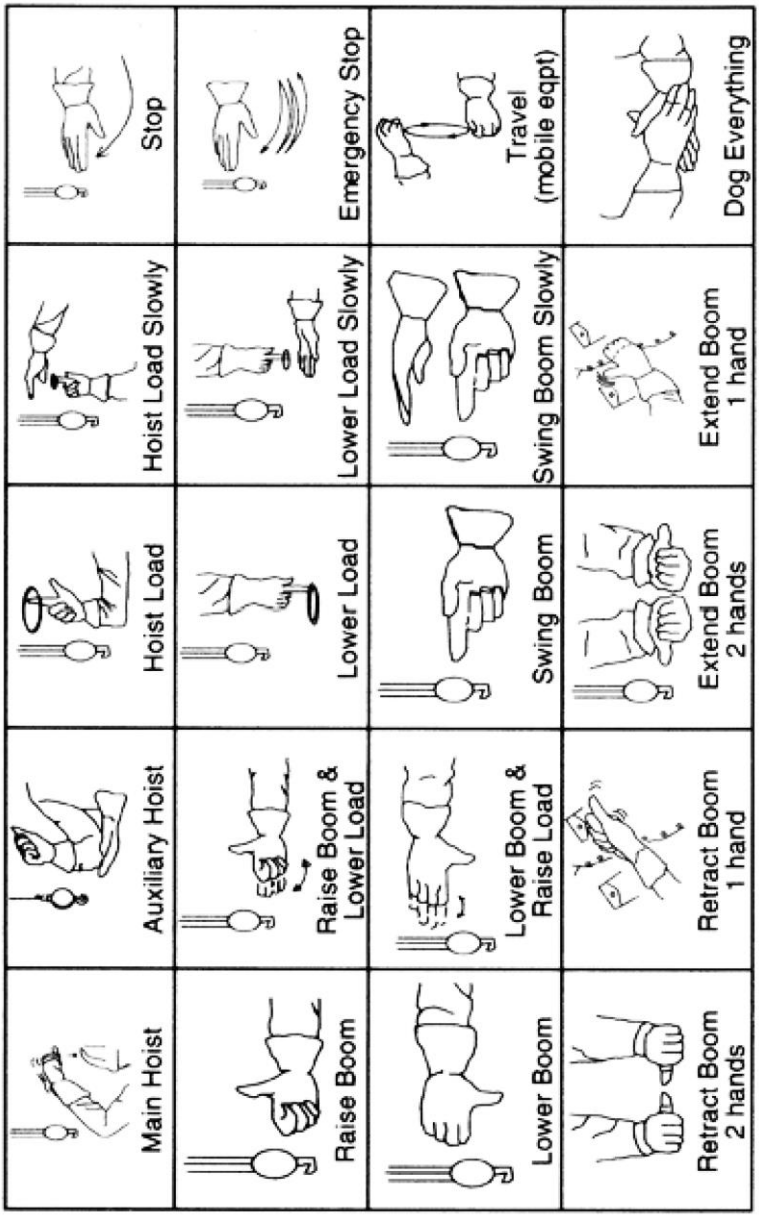


TABLE A - MINIMUM CLEARANCE DISTANCES

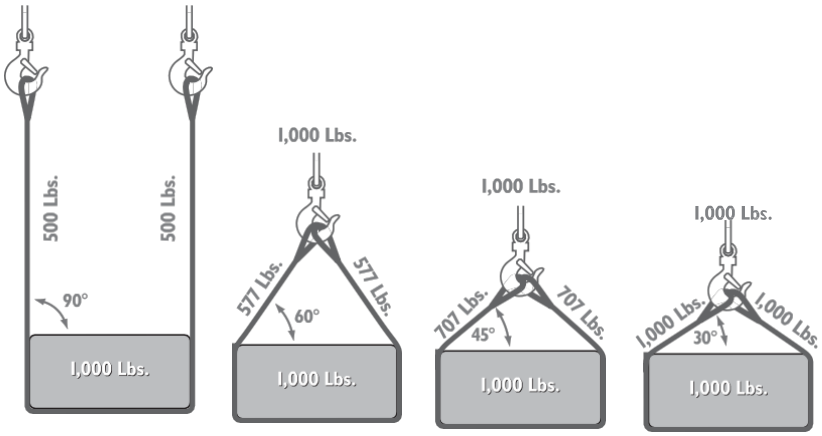
Voltage (nominal, kV, alternating current)	Minimum clearance distance (feet)
up to 50	10
over 50 to 200	15
over 200 to 350	20
over 350 to 500	25
over 500 to 750	35
over 750 to 1,000	45
over 1,000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution)

Note: The value that follows "to" is up to and includes that value. For example, over 50 to 200 means up to and including 200kV.
[75 FR 48142, August 9, 2010]

Required Minimum Clearances From High Voltage Lines when a Crane is in Transit with No Load and Boom Lowered	
Line Voltage (Volts)	Minimum Clearance (Ft/m)
Less than or equal to 50,000	4/1.2
Over 50,000 – 75,000	10/3.0
Over 345,000 – 750,000	16/4.9

C Rigging Angle Chart

Sling Stresses at Various Sling Angles
(The sling angle shall never be less than 30 degrees)



Horizontal Sling Angle	Load Angle Factor	
90°	1.000	
85°	1.004	
80°	1.015	
75°	1.035	
70°	1.064	
65°	1.104	
60°	1.155	
55°	1.221	
50°	1.305	
45°	1.414	
40°	1.555	
35°	1.742	
30°	2.000	
25°	2.364	
20°	2.924	Not Recommended
15°	3.861	Not Recommended
10°	5.747	Not Recommended
5°	11.490	Not Recommended

Tension in Each Leg =
(Load/2) x Load Angle Factor

D Heat Index Chart

HEAT INDEX °F (°C)

The heat index is an accurate measure of how hot it really feels when the affects of humidity are added to high temperature.

	RELATIVE HUMIDITY (%)												
Temp.	40	45	50	55	60	65	70	75	80	85	90	95	100
110	136												
(47)	(58)												
108	130	137											
(43)	(54)	(58)											
106	124	130	137							nbsp;			
(41)	(51)	(54)	(58)										
104	119	124	131	137									
(40)	(48)	(51)	(55)	(58)									
102	114	119	124	130	137								
(39)	(46)	(48)	(51)	(54)	(58)								
100	109	114	118	124	129	136							
(38)	(43)	(46)	(48)	(51)	(54)	(58)							
98	105	109	113	117	123	128	134						
(37)	(41)	(43)	(45)	(47)	(51)	(53)	(57)						
96	101	104	108	112	116	121	126	132					
(36)	(38)	(40)	(42)	(44)	(47)	(49)	(52)	(56)					
94	97	100	103	106	110	114	119	124	129	135			
(34)	(36)	(38)	(39)	(41)	(43)	(46)	(48)	(51)	(54)	(57)			
92	94	96	99	101	105	108	112	116	121	126	131		
(33)	(34)	(36)	(37)	(38)	(41)	(42)	(44)	(47)	(49)	(52)	(55)		
90	91	93	95	97	100	103	106	109	113	117	122	127	132
(32)	(33)	(34)	(35)	(36)	(38)	(39)	(41)	(43)	(45)	(47)	(50)	(53)	(56)
88	88	89	91	93	95	98	100	103	106	110	113	117	121
(31)	(31)	(32)	(33)	(34)	(35)	(37)	(38)	(39)	(41)	(43)	(45)	(47)	(49)
86	85	87	88	89	91	93	95	97	100	102	105	108	112
(30)	(29)	(31)	(31)	(32)	(33)	(34)	(35)	(36)	(38)	(39)	(41)	(42)	(44)
84	83	84	85	86	88	89	90	92	94	96	98	100	103
(29)	(28)	(29)	(29)	(30)	(31)	(32)	(32)	(33)	(34)	(36)	(37)	(38)	(39)
82	81	82	83	84	84	85	86	88	89	90	91	93	95
(28)	(27)	(28)	(28)	(29)	(29)	(29)	(30)	(31)	(32)	(32)	(33)	(34)	(35)
80	80	80	81	81	82	82	83	84	84	85	86	86	87
(27)	(27)	(27)	(27)	(27)	(28)	(28)	(28)	(29)	(29)	(29)	(30)	(30)	(31)

Category	Heat Index	Possible heat disorders for people in high risk groups
Extreme Danger	130°F or higher (54°C or higher)	Heat stroke or sunstroke likely.
Danger	105 - 129°F (41 - 54°C)	Sunstroke, muscle cramps, and/or heat exhaustion likely. Heatstroke possible with prolonged exposure and/or physical activity.
Extreme Caution	90 - 105°F (32 - 41°C)	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.
Caution	80 - 90°F (27 - 32°C)	Fatigue possible with prolonged exposure and/or physical activity.

National Weather Service, https://www.weather.gov/ffc/hichart

E Wind Chill Chart

National Weather Service
Wind Chill Chart

Temperature (°F)

Wind (mph)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5		36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10		34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15		32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20		30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25		29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30		28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35		28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40		27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45		26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50		26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55		25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60		25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times

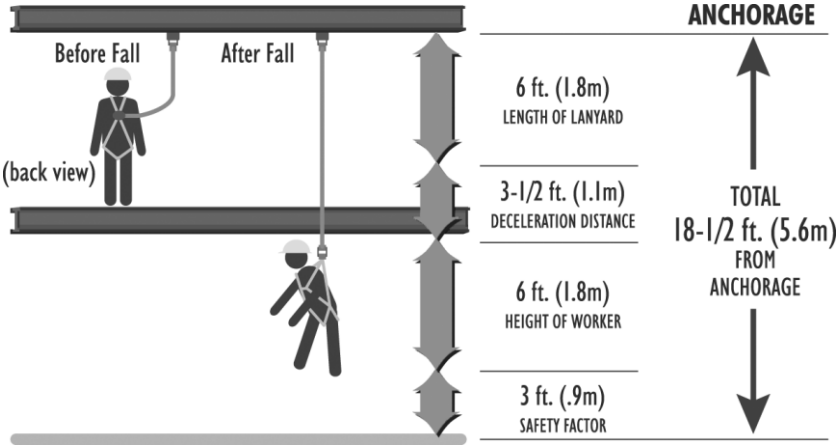
30 minutes 10 minutes 5 minutes

F Calculating Fall Clearance Distance

When selecting connecting devices and anchorage connectors, it is important to understand how to calculate potential fall clearance distance. Fall clearance distance is defined as the height at which a worker must attach to an anchorage to avoid contact with a lower level.

Calculating Fall Clearance Distance Using a Shock-Absorbing Lanyard and D-Ring Anchorage Connector.

- First, add the length of the shock-absorbing lanyard (6 ft.) to the maximum elongation of the shock absorber during deceleration (3-1/2 ft.) to the average height of a worker (6 ft.).
- Then, add a safety factor of 3 ft. to allow for the possibility of an improperly fit harness, a taller than average worker, and/or a miscalculation of distance.



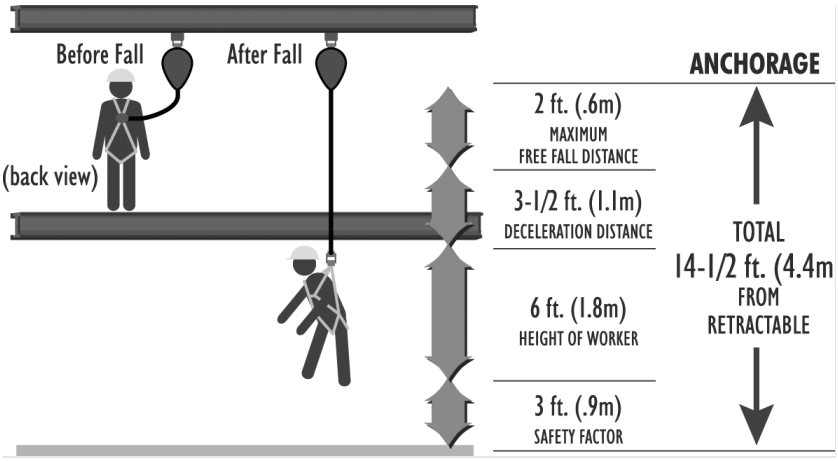
NOTE: Should the shock-absorbing lanyard be used in conjunction with a cross-arm anchorage connector, the additional length of the anchorage connector must be taken into consideration.

Calculating Fall Clearance Distance Using Retractable Lifeline.

-
- First, add the maximum free fall distance (2 ft.) with a retractable lifeline to the maximum deceleration distance (3-1/2 ft.) to the average height of a worker (6 ft.).

- Then, add a safety factor of 3 ft. to allow for the possibility of an improperly fit harness, a taller than average worker, and/or a miscalculation of distance.

The total, 14-1/2 ft., is the suggested safe fall clearance distance for this example.



NOTE: When using a retractable lifeline, the distance is calculated from the point where the retractable lifeline attaches to the back D-ring of the worker's harness

1- Parks and Recreation Supplement

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Table of Contents

1.0 Grounds Maintenance

The following sections provide general guidelines and requirements for ground maintenance safety.

1.1 General Lawn Safety

From flower care to lawn care, tree trimming, leaf collection and fertilizing, employees are responsible for safely maintaining grounds. Gardening tools and mechanical lawn care devices, such as lawn mowers, power blowers, and chainsaws, present special safety concerns for grounds maintenance personnel.

The basic guidelines below should be followed to ensure safety:

- Before operating any piece of equipment, employees must be properly trained.
- Understand the equipment owner's manual for operation and safety.
- Use the right equipment for the job.
- Inspect equipment before each use.
- Keep hand tools in good condition; remove, replace or repair split or rotten handles.
- Never leave a rake, shovel, or hoe on the ground facing up to prevent foot injuries from exposed metal and head injuries from handles that pop up unexpectedly.
- Know how to control and stop the equipment quickly.
- Wear PPE as necessary, including eye protection, hearing protection, long pants, steel-toe boots, work gloves, and any other necessary PPE.
- Apply sunscreen to exposed areas of skin.
- Be careful to avoid fatigue and heat stress. (See Section 11.4 of this Safety Manual.)
- Take special precautions when working with electrical equipment. If you are using an extension

cord, take care not to cut it accidentally.

- Power equipment shall not be refueled while running or hot; allow hot equipment to cool before refueling.
- Do not smoke around gas-powered equipment.
- Department of Transportation (DOT) approved metal or plastic cans shall be used for gasoline storage. Do not allow the can to sit in direct sunlight.
- Make sure all guards are in place and in good condition; never remove a guard.

It is best practice to keep pedestrians and bystanders at least 30 feet away when using powered equipment.

A Mower Safety

Safety begins before moving.

General mower safety guidelines include:

- Dress for the job. Choose close-fitting clothes and long pants, hearing protection, eye protection, steel-toe work boots with traction, and heavy gloves (when handling blades). Do not wear loose-fitting clothes or jewelry that can get caught or hung up on a machine and cause injury.
- Know the machine. All mowers of a given type have some of the same basic equipment parts. For example, front-deck mowers all have features such as panel controls, seat controls, foot controls, fuel tank, fuel filter, engine oil fill and check, hydraulic oil fill and check, mower deck, grass deflector, height adjustments, radiator, and air cleaner. However, every machine includes unique features; it is important to know the equipment and read the operator's manual if necessary to get familiar with the machine. Report minor and major machine

problems to your supervisor or mechanic as they arise. Reporting problems right away will help you avoid potential hazards.

- Read warning labels and check safety features. Check the safety guards and devices to ensure that they are in proper working condition. Never operate a mower if the safety guards and devices are not in place.
- Conduct daily inspections. Conduct daily mower inspections on a hard, flat surface away from the mowing area. Inspections should include:
    - Open the hood and check the mower's oil level.
    - Check the hydraulic system for the appropriate level of fluid.
    - Inspect the cooling system to make sure there is enough coolant in the radiator.
    - Clean any debris off the screen and front of the radiator.
    - Check the condition of the air-restriction indicator or the condition of the air cleaner and empty any debris found.
    - Ensure that all parts, such as belts, pulleys, catchers, and guards, are in proper working order.
- All adjustments should be made while the engine is turned off. Adjust the cutting height of the deck. Make sure the height of the mower deck is consistent on all machines, so there is a uniform cut. Never adjust the mower height when the engine is running.
- Check the collection/discharge system. Most commercial mowers have some combination of material collection system (MCS), side discharge, or mulching system. Always check to make sure that the MCS, discharge chute, and

mulching attachments are properly secured and in good working order. Never start the mower if attachments are not securely fastened.

- Check the fuel level. Check the mower's fuel level and fill if necessary. If the mover is refueled during the day, move your mower to a flat, concrete surface, turn the engine off and allow the engine to cool. Carefully fill the fuel tank and avoid spilling. (Spilled gasoline will evaporate, releasing hydrocarbon emissions into the atmosphere.) Smoking is prohibited when checking mower's fuel level and refueling.
- Clear the work area. While inspecting the work area for debris, be on the lookout for bees, fire ants, and poison ivy. Taking note of potential area hazards will increase productivity as well as safety. Also, avoid improper working conditions, such as overly saturated grounds, which can cause slippery conditions.
- Perform routine maintenance. Preventive maintenance is key to the machine's longevity. Although your operator's manual will provide specific routine maintenance procedures, certain common maintenance procedures apply to all commercial mowers. Refer to the operator's manual for routine daily, monthly, quarterly, and yearly maintenance procedures.
- If the mower features adjustable Roll Over Protection Structure (ROPS), ensure they are always in the up position. The ROPS **MUST** be in the up position at all times when the mower is being used.
- NEVER stick your hand under the mower's deck or in the engine compartment when the mower's engine is running.

While mowing, the safety guidelines below should be followed:

- Make a perimeter pass. Always start the mower from the operator's seat—never while standing beside the mower. When ready to mow, engage the Power Take Off (PTO). When engaging the blades, do so at the lowest recommended engine setting rather than full throttle. Release the brake and gradually depress the foot pedal to begin forward motion. Start by making a perimeter pass with the discharge chute or grass catcher to the inside away from the sidewalk, pavement, curb or whatever structure borders the turf. This will keep the mower from hitting curbs, trees, bushes, and other obstacles. The perimeter pass will allow U-turns in the grass, avoiding tire and grass stains on the concrete.
- Start mowing. Always mow in straight lines, alternating directions and changing the pattern every week, if possible. For the best-quality cut, ensure your blades are sharp and mow with the engine running at maximum speed. If you are mowing long grass, use the highest cut setting for the first pass, then make a second pass to cut the grass at a lower setting. Discharge clippings toward previously cut lawn areas. Never position the side-discharge chute toward people or property.
- Know the surroundings. If a person or animal approaches you while working, stop your mower and turn off the engine. You may resume mowing once the work area is clear of all people and animals.
- Avoid rubbing objects. When mowing, keep a safe distance from trees and other landscape features. Avoid hitting or rubbing the mower or

its tires on buildings, cars, signs, trees, and other property features to prevent damage to the property or equipment.

- Pick up any missed debris. If any debris is missed in the initial inspection, stop the machine, turn off the engine, and pick up the debris. Do not attempt to clear debris while the machine's engine is still running.
- Unclog the deflection chute. Sometimes while mowing, the deflection chute can become clogged with grass clippings. To unclog it, turn off the engine and make sure the blades are stopped. To ensure safety, disconnect the spark plug wire and use a tool or stick to clear grass clippings. NEVER clear the deck or chute with your hands, and NEVER place your hands or feet near the cutting blades.
- Be extra careful on slopes. Always mow up and down slopes - never mow across slopes. Decrease your speed when mowing down slopes or around sharp corners to help prevent tipping. Maintain minimal ground speed and make wide gradual turns. Avoid sudden starts, stops, and turns. Remember: if it looks dangerous, it almost certainly is dangerous so use caution accordingly.

After mowing, the safety guidelines below should be followed:

- Shut down before performing maintenance. Always shut down the machine from the operator's seat - never dismount from a running mower. Ensure the mower is completely stopped and the engine is off before beginning clean-up and maintenance procedures. Your operator's manual will detail specific daily clean-up and

maintenance tasks.

- Clean the mower. Your mower should be cleaned after each job by removing clippings and other landscaping debris from the mower deck and deflection chute. Lingering debris can cause unwanted buildup and potential malfunctions or breakdown of parts. Also, the accumulation of grass, leaves, or excessive grease can be a fire hazard.
- Perform a mower check. Check the mower's tire pressure and adjust if necessary. Check all fluid levels, belts, guards, and blades. From your inspections, prepare a list of potential maintenance problems for your supervisor or mechanic.
- Tend to repairs immediately. If the machine requires any repairs, tend to them immediately. Delaying repairs will delay productivity. If repairs are overlooked, and the mower is reused, damage to additional mower parts or operator injury may result.

Riding Lawn Mowers

In addition to the general guidelines for mower safety above, follow these guidelines for riding lawn mower safety.

- Before starting the engine, make sure the transmission is out of gear and the mower blade clutch is disengaged.
- Never allow extra riders on the lawn mower.
- Always look behind you before backing.
- If you hit a large rock or stump, stop the mower and inspect the blades and shaft. Report damaged blades.
- Never leave a running mower unattended. Before leaving the seat, park the mower on a flat

area, disengage the mower blades and remove the ignition key.

Walk-Behind Mowers

In addition to the general guidelines for mower safety above, follow these guidelines for walk-behind mower safety.

- Do not bypass the safety device that stops the blade when the operator releases their grip on the handle.
- Mow across slopes rather than up and down slopes.
- Work slowly and patiently when mowing tall grass or tough weeds. Forcing the mower may cause repeated clogs and engine stalls.
- Never leave a running mower unattended. If you stop momentarily, cut the throttle to idle and ensure the mower will not roll away.

B Chainsaw Safety

Chainsaws are ideal for trimming trees and cutting fallen limbs into smaller pieces. Unfortunately, chainsaws are associated with many serious injuries each year.

To avoid injury, you must respect chainsaw hazards and handle chainsaws skillfully. In addition to general lawn safety guidelines, follow these instructions for safely using chainsaws.

- Ear protection, safety glasses, or goggles are required when operating a chainsaw.
- Use safety gloves.
- Always wear chainsaw protective apron chaps when operating a chainsaw or pole saw.
- Stay alert while sawing. Most injuries occur below the waist when the operator is not paying attention.

- Do not use a chainsaw or pole saw alone. Have someone else stand nearby in case of an emergency.
- Inspect the chainsaw carefully.
- Use the correct size chainsaw for the job at hand.
- Ensure that the chain is sharp and the tension is taut.
- Ensure that smaller chainsaws have a safety tip to prevent kickbacks. (Kickbacks cause one-third of all chainsaw injuries).
- Wear a hard hat to protect you from falling limbs.
- Always operate a chainsaw with two hands.
- Limbs at shoulder height or higher present a special safety problem and can cause the user to lose their balance. Use a pole saw to reach areas higher than shoulder height. If a pole saw cannot reach them, use a bucket truck.
- Never allow the tip of a running chain saw to touch the ground, a chain link fence, or any other obstruction. This could cause a serious kickback injury.
- To avoid kickback injuries, stand to the side of a running chainsaw. Do not stand directly behind it.
- Move brush and limbs as you work to maintain a clear operating area.
- Never force a chainsaw through a limb.
- Never stand on a log or limb while cutting it.
- Wear safety glasses/goggles when loading or hauling brush.
- Canvas gloves are to be worn when handling brush; chaps are recommended.

C Power Blowers

Because power leaf blowers produce air gusts up to 200 mph, all manufacturers' safety precautions must be followed. Always walk towards the work when using a power leaf blower; do not back away from the work. Be aware of pedestrians or others in the area. Always wear safety goggles.

1.2 Trimming Equipment

Follow the below safety guidelines for trimming equipment such as hedge trimmers, string trimmers, grass shears, and edgers.

- Ensure you wear the proper PPE that is recommended by the manufacturer.
- Wear safety glasses with side shields.
- Avoid touching rocks, debris, and gravel with trimming equipment. These items could cause serious injury if a kickback occurs.
- Make sure all screws and chains are tight. Vibrating equipment can cause screws to loosen.
- Walk towards your work; do not back away from your work when using a trimmer.
- If using electric trimmers, keep extension cords clear of blades.

Tree trimming, of trees taller than 12', and removing limbs that cannot be reached from the ground require a bucket truck or portable lift.

- Employees shall be trained in safe tree trimming operations.
- The tree shall be evaluated and inspected for rot, damage, and electrical lines running through it or near it.
- Hard hats, safety shoes, chainsaw protective apron chaps, gloves, ear protection, and eye protection are always required.

- All climbing equipment and ropes shall be inspected prior to use. Only approved climbing ropes shall be used. If any of the equipment is showing frays or wear, it must be replaced and shall not be used.
- Street work safety procedures shall be followed when working near streets. Areas below trees shall be roped off or posted to warn the public.

1.3 Chemicals

See Sections 2.3 and 9 of the City Safety Manual for additional chemical safety requirements.

A Pesticide Use

All pesticide applications must comply with the laws and regulations set forth by the Texas Department of Agriculture.

Pesticides shall be chosen from the Integrated Pest Management (IPM) Manual.

Pesticides may not be used without the supervision or direction of an applicator who is licensed by the Texas Department of Agriculture.

When working with pesticides, the following precautions shall be taken.

- Use rubber gloves, rubber boots, suits, and goggles or face shields when working with pesticides. Use all manufacturer's recommendations.
- Read labels carefully for proper mixing, application, and disposal.
- When applying pesticides, mix only the amount necessary for the particular job in accordance with the manufacturer's recommendations.
- Know the handling and environmental

specifications listed on the pesticide's Safety Data Sheet (SDS).

B Low-Pressure Sprayers

Low-pressure sprayers include pump-up, bean, or solo sprayers.

- Rubber gloves (canvas or cloth gloves are not acceptable) and any other protective apparel as directed by the label, are required when filling, cleaning, and spraying.
- Chemical goggles only (safety glasses or dust goggles are not acceptable) are to be worn when filling, cleaning equipment, and spraying.
- The exteriors of rubber gloves are to be cleaned after each use or disposed of properly if using disposable gloves.
- Appropriate warning signs are to be posted in the area of applications and left until re-entry can occur per the manufacturer's recommendations.

C Pesticide Disposal

The best way to dispose of spray chemicals is to plan the spray projects so that there are no excess spray solutions left in the spray tanks. Next, follow the manufacturer's recommendations. In the event there is solution left after completing the spray application or the desired target area and the label is unclear of how to dispose of the excess chemical, contact the Environmental Services department to coordinate disposal.

2.0 Swimming Pool Safety

The following information provides general guidelines and requirements for swimming pool safety according to or in compliance with Texas Administrative Code Subchapter L;

Public Swimming Pools and Spas.

2.1 Physical Control Measures

- Clearly mark water depths.
- Post “No Swimming” or “No Diving” signs where appropriate.
- Check the application of non-skid surfaces where appropriate.
- Conduct regularly scheduled inspections of the facility, equipment, and grounds.
- Ensure proper design, installation, and maintenance of the pool, surrounding areas, and diving equipment.

2.2 Management of Participants, Equipment, and Emergency Situations

- Provide periodic training to personnel.
- Post safety rules in clear view.
- Establish formal operational policies such as the Lifeguard Manual and Emergency Action Plan.
- Formal emergency procedures should include: conducting and documenting emergency response drills, posting emergency telephone numbers in clear view, and designating responsibilities to staff members.
- Ensure the appropriate life-saving equipment is properly maintained and easily accessible.

2.3 Safety Guidelines

A Swimming Pools

Discourage unauthorized entry into the pool area.

- Walls, fences, and self-locking gates must be secure.
- Be mindful of tables and chairs used to jump over fences.
- Be mindful of tree limbs that can be used to

mount fences.

General Safety Considerations.

- Make sure the lifeguard stand is safe (non-slip material, no loose parts, shade provided).
- Make sure the starting block is firmly anchored, the non-slip coating is in good condition, and it is square and level.
- Evacuate the pool during electrical failure or thunderstorm.
- Be familiar where/how to locate SDS on-site.
- Only authorized personnel shall handle chlorine.
- Regular inspections should be made by trained and certified personnel.
- If there is a heavy odor in the pump room, notify the pool manager or person in charge.
- Hazard warning signs shall be placed on all rooms with chemicals being used or stored.
- If you are checking for chemical leaks, do so with another trained employee.
- PPE should be worn at all times when handling any chemicals.
- Chlorine monitoring sensors and alarms must be used in the chemical and pump rooms.

Locker Room Safety

- Examine benches for slipperiness, missing paint, and unstable mountings.
- Check paper towel holders, sink, etc. for stability.
- Check toilet fixtures for cracks, leaks, etc.
- Check that lights are functioning.
- Ensure that there is an adequate daily supply of soap and paper products.
- Report any maintenance issues and document

them.

B Lifeguards First Aid Do's and Don't's

Lifeguards must follow the policies listed in the current Lifeguard Manual. Lifeguards are considered "first responders" and, therefore, have a legal and moral obligation to the public to provide first aid and rescue. However, there are certain limitations and the following is provided as a guide.

DO:

- Use a throwing assist to help distressed swimmers that are beyond 10 feet away. Inspect the throwing assist daily to ensure that it is not tangled.
- If a swimmer is struggling near the edge, anchor yourself by lying down and pulling them out of the pool.
- Use the shepherd's crook rescue hook to assist distressed swimmers about 10 feet from the edge.
- Administer CPR/AED.
- Apply first aid to wounds ensuring universal precautions are taken for protection from blood exposures. This includes applying tourniquets and band aids. Make sure to cleanse the wound before applying an adhesive bandage.
- Administer ice packs for swelling.
- Attempt to clear a blocked airway with the use of the Heimlich maneuver.
- Assist with the administration of personal medication only in an emergency. An example would be nitroglycerin for chest pain.
- Use the Incident Report to document all first aid administration and be specific as to what was done. Report the incident, regardless if the

injured individual is a guest or employee, to Risk Management by submitting an Accident/Injury form.

- Make sure the first aid supply kit is well stocked and inspected/inventoried frequently.

DO NOT:

- Do not leave a victim alone. Wait until Fire-Rescue or a family member arrives.
- Do not move victims that have sustained a head, neck, or spinal injury once rescued from the pool.
- Do not come into contact with blood/bodily fluids without appropriate protection and bloodborne pathogen training.
- Do not attempt intubation or any other medical intervention or procedure (e.g., suturing wounds).
- Do not apply or supply sunscreen or tanning lotions to the public.

C Replacing light fixture in existing pool

In accordance with the National Electrical Code and all applicable local codes and ordinances, underwater lights must be installed by a licensed or certified electrician or a qualified pool service technician. Improper installation will create an electrical hazard that could result in death or serious injury to pool users, installers, or others due to electrical shock and may cause damage to property.

D Integrated Lightning Prediction and Warning System

The Integrated Lightning Prediction and Warning System is designed to provide Parks & Recreation employees and patrons with reliable lightning prediction by audible and visual advanced warnings. If, however, staff ever feels uncomfortable with incoming weather and the warning

system has yet to issue a Red Alert, employees should not wait. Employees should either sound the horns manually, if available or issue a warning to cease activities in your area.

There are four hazard levels: All Clear, Caution, Warning, and Red Alert based on the current energy activity.

- All Clear means there is no significant energy. This indicates there is a safe environment.
- Caution means normal atmospheric energy shifts are occurring and, depending on the situation, may increase to a Warning.
- Warning means a significant amount of energy has moved into the area being monitored.
- Red Alert means the conditions for a local strike are prevalent. Activities should cease and seek immediate cover.

3.0 Playground Safety

3.1 Protective Surfacing:

- Shall be IPEMA Playground Surfacing Certified.
- Shall meet the following ASTM Standards:
  - ASTM 1292: Playground Surfacing Impact Attenuation.
  - ASTM 1951: Playground Surfacing ADA Accessibility.

3.2 ASTM Standards for Specific Playground Surfacing:

- Engineered wood fiber: ASTM 2075
- Poured-In-Place: ASTM 2479
- Synthetic Turf: ASTM 1551
- Loose-Fill Rubber: ASTM 3012

3.3 U.S. Consumer Product Safety Commission's 10 Steps toward a Safer Playground:

1. The surfaces under and around the play equipment

should be soft enough to cushion falls. For most play equipment, these surfaces should contain a minimum depth of 12 inches.

2. Fall Zones: To cushion a fall, the shock absorbing material should extend a minimum of 6 feet in all directions from stationary pieces of play equipment. In front of and behind swings, the materials should extend a distance equal to twice the height of the suspending bar.
3. Equipment Spacing: Play structures should be spaced at least 12 feet apart to allow children space to circulate or fall without striking another structure. Moving pieces of equipment should be located in an area away from other play structures, so children have adequate room to pass from one play area to another without being struck by a moving swing or by another child exiting from a slide.
4. Catch Points and Protruding Hardware: There should be no dangerous pieces of hardware, such as protruding bolt ends and narrow gaps in metal connections or open "S" hooks at the top and bottom of swings. Exposed hardware can cut children, puncture skin, or catch clothing drawstrings, which could strangle a child.
5. Openings That Can Trap: Openings in guardrails and spaces between platforms and between ladder rungs should measure less than 3.5 inches or more than 9 inches. Children can get trapped and strangled in openings where they can fit their bodies but not their heads through the space.
6. Pinch, Crush, Shearing, and Sharp Hazards: Equipment should not have sharp points or edges that could cut skin. Moving pieces of equipment, such as suspension bridges, track rides, merry-go-rides, or see-saws should not have accessible moving parts that might crush or pinch a child's

finger.

7. Tripping Hazards: There should be no exposed concrete footings, abrupt changes in surface elevations, tree roots, tree stumps, and rocks, which can trip children or adults.
8. Guardrails: Elevated surfaces, such as platforms, ramps, and bridge-ways should have guardrails to prevent falls.
9. Routine Maintenance: The playground should have a designated official who periodically inspects the play equipment for preventative maintenance including replacing missing, broken, or worn-out components, securing hardware, checking for deterioration in wood, metal or plastic materials, maintaining the proper 12-inch depth of surfacing material and cleaning up debris.
10. Supervision: The play area should be designed so that children can be observed while at play.