



**Injury and Illness Prevention Program
(IIPP)**

Corporate Safety Policy

Titan Carports Inc. believes that all incidents and injuries are preventable, and is committed to achieving and sustaining an Incident and Injury Free Culture (IIFC) through management commitment and leadership, open line of communication, and continuous improvement of our safety programs and procedures. It is not enough to make safety a priority, as priorities are constantly changing. At Titan Carports Inc. Inc., safety is a core corporate value. It is woven into the everyday processes and business decisions we make. Our safety goal is to work incident and injury free. This Corporate Safety Policy covers all Titan Carports Inc. employees.

Our management team is fully committed to making IIFC a reality and is engaged in the safety process in the office and in the field, walking and talk and demonstrating pride of ownership in the safety process.

There are several key elements to the Titan Carports Inc. occupational safety and health (OS&H) program:

- Management commitment to ownership of, participation in the accountability for OS&H performance.
- Consistent OS&H expectations that are communicated through the organization.
- Establishment of standard operating procedures and commitment to continuous improvement through adoption and implementation of industry best practices.
- Corporate-wide reporting of occupational safety and health performance.
- Commitment to internal development of OS&H representatives with diverse experience and broad skill base.
- Development and implementation of behavior-based safety program.
- Participation in selected professional organizations (American Society of Safety Engineers (ASSE), National Electrical Contractors Association (NECA), National Fire Protection Association (NFPA), National Safety Council, etc.).

To achieve and sustain an Incident and Injury Free Culture, we will need all employees to support and participate in our safety program and initiatives. We need to hear your ideas and suggestions for how we can continuously improve safety on our jobsites. Safety is Everyone's responsibility.

Overview and Goals

This Injury and Illness Prevention Program has been prepared to help you be aware of the policies, procedures, and safe work practices we all must follow in our daily work in the office and in the field. Both Federal and State regulations have been taken into consideration in the handbook's preparation, however, it is intended to be used as a guide and should not be considered the only source for safety and health matters.

It is the earnest desire of Titan Carports Inc. to conduct its operations with the utmost regard for the safety and health of its employees and the public. It is our hope that all employees will assist in making all areas of operations a safe place to work.

Our goals for having a Safety and Health Program are as follows:

1. To effectively eliminate all incidents which result in personal injury, property damage and damage to company equipment.
2. To establish the means to provide a safer working environment for both the employees and the public.
3. To provide education in matters of safety.
4. To promote safety as the responsibility of every employee.
5. To promote incident and injury prevention as an integral part of every operation.
6. To conserve manpower, equipment and dollars.
7. To build better employee-employer relations.

TCI resources, including financial, material and personnel, have been allocated for the purpose of identifying and controlling hazards and potential hazards, purchasing personal protective equipment and promoting and training employees about safety and health.

We hope that this handbook will help you find the answers to any health and safety questions that you may have; however, we do not expect it to answer all of them. The Production Office and Corporate Safety will be a major source of information; we encourage you to call our Director of Corporate Safety (720) 696-0507, whenever you have a question or a concern that is not addressed in this handbook.

Please read this handbook carefully and keep it for future reference.

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SECTION 1 – INJURY AND ILLNESS PREVENTION PROGRAM

SECTION 1.1: INTRODUCTION

Titan Carports Inc., hereafter referred to as “TCI,” has developed and implemented this Injury and Illness Prevention Program (IIPP) as part of our health and safety program.

The work performed by our personnel is varied, both in nature and location. Under all circumstances, it is the intent of TCI to: 1) comply with the requirements and spirit of the California Code of Regulations, Title 8; and 2) provide a safe and healthful work environment for employees. Accordingly, TCI has implemented this OOPP in compliance with Senate Bill 198, encoded as labor Code 6401.77, and the California Code of Regulations (CCRO, Title 8, Section 3203. TCI expects and requires all employees to follow the requirements set forth in this IIPP.

This IIPP is written with recognition that all ironworkers working for TCI are all competent. Each ironworker has completed required training and instructional programs on steel erection installation and required safety training. The only exceptions are apprentices who are under the direct supervision of a trained journeyman ironworkers while on the jobsite and attend training classes provided by a state certified entity.

SECTION 1.2: RESPONSIBILITY FOR SAFETY AND HEALTH

TCI has designated a Director of Corporate Safety, as the responsible person at TCI for the IIPP. It is the responsibility of the Responsible Person to ensure overall implementation of the IIPP by directing the following tasks:

1. Identify and evaluate workplace hazards, to include procedures for investigating occupational injuries and illnesses.
2. Establish and / or review methods and procedures for correcting unsafe and unhealthy conditions and work practices.
3. Ensure that employees receive training programs on general and specific safety and health practices for the company and on each of their job assignments.
4. Ensure that there is a procedure for communicating to employees, in an understandable manner, TCI’s safety and health rules and procedures.
5. Ensure compliance with health and safety work practices.
6. Ensure that records on training, inspections, and corrective measures are properly maintained, as required by this Injury and Illness Program and other Cal/OSHA-required programs in accordance with Title 8 CCR.

The responsible person is supported by a team of Corporate and Area Safety Managers. In addition, the following individuals have a key role in assisting the responsible person as follows:

Managers and Superintendent Responsibilities

1. Earnestly and actively support the safety program.

2. Set a proper example for other supervisors and employees.
3. Be a good leader.
4. Be familiar with safety rules and regulations.
5. Assist in formulating safety guidelines and procedures.
6. Evaluate safety performance.
7. Carry out the policies, regulations and procedures of the company.
8. Conduct investigations for all serious incidents or injuries.
9. Conduct periodic inspections to identify unsafe conditions and work places.

Foreman Responsibilities

1. Foremen and others in a supervisory capacity will set the proper example for the workers to follow.
2. Titan Carports Inc. guidelines and procedures will be complied with and enforced at all times.
3. Foremen are responsible at all times to see that the work is performed in a safe manner and that safety rules, regulations and instructions are followed.
4. Foremen will take disciplinary action when there has been an obvious violation of published safety rules and safe practices.
5. Foremen are responsible for orienting new employees on the safety aspects of the job itself.
6. Foremen are responsible for the inspection of all tools and equipment. Foremen will give prompt attention to equipment repairs and to safety suggestions.
7. Foremen will not permit the use of any intoxicating liquors on the job or allow any employee onto the job site that is under the influence of alcohol or drugs.
8. Foremen are responsible for seeing that all incidents, (injuries, vehicular accidents, property/equipment damage and near misses) are investigated and reported to Risk Management and the Safety Department immediately.
9. Foremen will be held accountable for all incidents on their jobs, unless investigation proves they were due to circumstances or conditions beyond their control.
10. Foremen will see that first aid, safety equipment and protective devices are provided, and used, for each job.
11. Foremen will take prompt corrective action wherever unsafe conditions and unsafe acts are noted or reported. Actions will be determined by the severity of the hazard.
12. All Foremen must maintain a current CPR/1st Aid certification.
13. Foremen are responsible to develop, implement and monitor Safety Task Planners to be used by field personnel throughout all phases of construction.

Worker Responsibilities

1. General
 - Ensure personal tools to be used are in good condition.
 - Observe safety notices posted on bulletin board.
 - Use all required personal protective equipment.
 - Attend all safety meetings.

- Obtain all necessary training for the work to be performed.
 - Report any potential safety hazards to their Supervisor.
 - Follow requirements outlined in the IIPP and other safety policies and procedures.
2. Housekeeping
 - Keep work areas orderly. Clean as you go.
 - Make sure lighting is sufficient for work being performed. Obtain additional task lighting if required.
 - Immediately clean up any oil, grease, or chemical spills.
 3. First Aid and Emergency Response
 - Be aware of the location of the First Aid Station.
 - Report any injury or incident promptly to their immediate Supervisor.
 - Understand emergency response procedures and evacuation plans.
 4. Drugs and Alcohol
 - Drinking and possession of intoxicants on the job is forbidden. The use of any narcotic, unless authorized by a physician and the project supervisor is notified, is forbidden. The job Foremen should be notified if a physician has prescribed drugs that could affect work performance. If so, the employee's duties will be evaluated as to the appropriateness of working while taking prescription drugs (a doctor's certification may be required). Violation of the above could cause disciplinary action **up to and including immediate termination.**

Each employee has safety and health responsibilities, as well as production responsibilities. Without exception, employees are expected to work in a safe manner at all times.

SECTION 1.3: EMPLOYEE COMPLIANCE/DISCIPLINARY POLICY

Under TCI policy, all employees are required to follow safety policies and operating procedures. Our System of ensuring that all workers comply with these practices includes the following practices:

1. Informing workers of the provisions of our IIPP.
2. Evaluating the safety performance of all workers.
3. Recognizing employees who perform safe and healthful work practices.
4. Providing training to workers whose safety performance is deficient.
5. Disciplining workers for failure to comply with safe and healthful work practices.

Willful or flagrant violations of safety requirements that place individuals or fellow coworkers at risk for serious injury or fatality will result in immediate worker removal from the jobsite. At a minimum, zero tolerance items may include willful violations of fatality prevention programs such as Fall Protection, lockout/tagout, Energized Electrical Work (EEW), Confined Space Entry, and Trenching/Excavation.

For minor safety violations, a progressive disciplinary action process should be used, to consist of:

1. First offense: Coaching and verbal warning.
2. Second offense: Written warning and retraining, as needed.
3. Third offense: Removal from jobsite.

SECTION 1.4: COMMUNICATION OF SAFETY AND HEALTH MATTERS

The elements and requirements of the TCI IIPP and all aspects of its safety and health program will be communicated in a readily understandable manner to all employees. It is our policy to encourage all employees to report hazards existing at their worksite to their supervisors or the Responsible Person so

that corrective action can be taken in a timely manner. Employees who report such conditions will not be disciplined, nor will they suffer any reprisals due to their actions. TCI will keep all employees informed of the requirements of the IIPP and the safety program through the following methods.

1. New Employee Orientation
2. Tool Box Safety Meeting – Conducted by the Superintendent, General Foreman, or Foreman on a weekly basis.
3. Safety Training – Conducted and/or coordinated by the Superintendent, General Foreman, Foreman, or Safety Department. This training may be dictated by operations and changing conditions on the job site. Specific equipment training falls into this category.
4. TCI Safety Flash Report – The TCI Safety Flash Report is a newsletter which is distributed to all employees on a monthly basis. The Flash Report highlights recent injuries and key lessons learned and provide information on various safety topics for both home and personal use.
5. Posting and Notices – Updated by the Superintendent, General Foreman, or Foreman as appropriate.

SECTION 1.5: EMPLOYEE SUGGESTIONS OR COMMENTS

It is the policy of TCI to encourage all employees to report hazards existing at their worksite to their supervisors so that your Project Superintendent or the Corporate Safety Department if an reported hazards are not being addressed.

Employees may submit written suggestions or comments to the Corporate Safety Department at the following address:

7935 W Tangerine Rd
Marana, AZ 85658

Suggestions may be submitted anonymously, if desired. Employees who report unsafe conditions will not be disciplined, nor will they suffer any reprisals.

Safety suggestions will be reviewed each quarter in the Safety and Health Forum meeting (or more frequently, depending on the nature of the suggestion).

We are depending on your knowledge and experience to help make our incident and injury prevention program successful.

SECTION 1.6: IDENTIFICATION AND EVALUATION OF WORKPLACE HAZARDS

The goal of this IIPP is to identify and evaluate unsafe work conditions and practices so that incidents, injuries, and job-related illnesses are minimized, if not completely eliminated. To this end, TCI has instituted the procedures outlined in the following sections.

SECTION 1.7: HAZARD ASSESSMENT AND CONTROL

1. Each **employee** is responsible for working in a safe manner at all times.
2. **Field Foremen/Supervisors** are responsible for overseeing day-to-day activities and correcting any hazards or unsafe conditions they encounter basing their actions on the severity of the hazard. Pre-task planning shall be performed to ensure hazards have been identified and mitigated to prevent incidents and injuries. Foreman's daily reports are to include any hazards discovered or investigations of near misses.

3. **Field Foremen/Supervisors** are to complete a jobsite safety inspection monthly to assess hazards, controls, and identify areas needing attention. A copy of the inspection documentation is maintained in the jobsite safety file.
4. The **Superintendent** makes inspections (at least month) of large projects to confirm conditions are acceptable.
5. **General Superintendents** and **executive management** reviews all incidents and injuries on a monthly and quarterly basis to determine areas that may need special attention.
6. Our insurance company schedules regular visits to jobsites to point out any hazards or conditions they feel are unsafe.
7. Inspections will also be conducted at the following intervals, in addition to those times mentioned above:
 - a. Whenever new substances, processes, procedures, or equipment are introduced to the workplace that represents a new occupational safety and health hazard.
 - b. Whenever TCI is made aware of a new or previously unrecognized hazard
8. Existing conditions of new job sites will be determined before starting work by an inspection or a test conducted by the project **Forman**:
 - a. Such conditions should include, but are not limited to: energized lines and equipment, condition of poles, and the location of circuits, switches, and equipment, including power and communications lines, CAT, and fire alarm circuits.
 - b. An initial determination regarding hazardous materials and substances will also be made at this time.
 - c. Electrical equipment and lines will be considered energized until determined to be de-energized by tests or other appropriate methods.
 - d. Operating voltage of equipment and lines will be determined before working on or near energized part.

SECTION 1.8: INCIDENT AND INJURY INVESTIGATIONS

An Incident Report will be filled out by a Forman or Supervisor for all incidents where an employee is injured or damage to facilities or equipment has occurred. The report is to be submitted to the Safety Department within 24 hours of the incident. Information on serious incidents is communicated to applicable business groups to share lessons learned and prevent reoccurrence.

The Safety Department will notify Dal-OSHA (or the applicable state/federal OSHA agency for work outside of California) in the event of any work-related or suspected work-related fatalities, catastrophes, and serious injuries or illnesses immediately by phone or fax to the nearest Cal/OSHA district office.

The information shall be provided to the Cal/OSHA district office within 8 hours and shall consist of the name of the person injured and the employer, nature and location of the accident, time and date of the accident and the person reporting the accident, where the injured was taken for treatment, other agencies that responded to the accident, and a description of the events of the accident.

Cal/OSHA defines a serious injury or illness as one which requires inpatient hospitalization for more than 24 hours for other than medical observation or in which an employee suffers a loss of any member of the body or suffers any serious degree of permanent disfigurement.

A General Superintendent will schedule and facilitate a Root Cause Analysis for all recordable injuries or other injuries with the potential for serious injury or illness to identify all causal factors and corrective actions necessary to prevent incident reoccurrence.

All incidents and injuries will be reviewed on a monthly basis by management team representatives to identify potential trends and corrective actions necessary for injury prevention.

SECTION 1.9: METHODS AND PROCEDURES FOR CORRECTING UNSAFE WORK CONDITIONS OR WORK PRACTICES

All unsafe work conditions, or work practices, identified will be corrected in a timely manner, as determined by the severity of the hazard. Under no condition will TCI personnel be required to, or permitted to, work under conditions that pose a clear or imminent hazard.

Problems that cannot be corrected immediately will be assigned to the Responsible Person to ensure completion of the corrective action. Once corrected, written documentation of the action take will be developed or obtained by the Responsible Person.

When an imminent hazard exists which cannot be immediately corrected without endangering employees and/or property, the following steps will be followed:

1. Remove all potentially endangered employees;
2. Provide employees necessary to correct the hazardous condition with the necessary safeguards;
3. Document the corrective action and date corrected in accordance with this Section. The documentation is to be completed by the Responsible Person or her/his designee. The Responsible Person will maintain documentation on file.

Unsafe or unhealthy work conditions needing corrective action will be documented by using the Job Site Safety Checklist.

It is the policy of TCI that engineering controls will first be used to eliminate or minimize unsafe or unhealthy work conditions. If engineering controls are impractical or unfeasible, administrative controls will be used. If engineering controls alone, or in combination with administrative controls, cannot adequately minimize the hazard, personal protective equipment will be used.

Unsafe work practices will immediately be corrected by providing the affected employees with retraining. Retraining is to be provided by the Responsible Person or her/his designee.

All Operating Procedures will be reviewed at least annually, whenever new chemicals or equipment are introduced into the system, or when there is a process change. When changes are made affected employees will receive additional training.

SECTION 1.10: SAFETY AND HEALTH TRAINING AND INSTRUCTION

All employees will receive training and instruction in the following areas:

1. General safety and health work practices; and
2. Specific instruction with respect to hazards unique to the job assignment.

Training of employees at TCI as to this IIPP will occur:

1. When the program is first established;
2. For all new employees;
3. For all employees given a new job assignment for which training has not previously been received.

4. Whenever new substances, processes, procedures, or equipment are introduced to the workplace and represent a new hazard; and
5. Whenever TCI is made aware of new or previously unrecognized hazards

In accordance with this IIPP, at a minimum the following training will be provided:

Ongoing training opportunities are provided in a number of ways. Workshops and classes are available through TCI, and through approved online training.

Toolbox Safety Meetings

Toolbox safety meetings are used to address actual problems that exist on the job or in the shop. The foreman leading the meeting can draw on the experience of others to remind all employees, especially newer employees, of the dangers of working with particular kinds of machinery, tools, equipment, and materials.

The foreman will choose a topic where a safety review may be needed. Employees are encouraged to suggest topics because they often know best what and where the dangers are.

The following rules are to be followed by the job foremen when holding toolbox safety meetings:

1. Foremen will hold toolbox safety meetings weekly. These meetings will be held with the cooperation of the employees, at all points throughout our operations. All employees on the jobsite are required to attend these meetings.
2. Safety meetings will be logged as an integral part of daily reports.
3. A toolbox safety meeting conducted by the general contractor and attended by TCI employees may constitute a valid safety meeting.
4. Foremen are to share information on recent injuries which have occurred at TCI (using the Injury & Illness tracker that is distributed to all Foremen) to discuss lessons learned. The Injury & Illness tracker provides information on all reported injuries, including report-only and first aid injuries.

Supervisor Safety Training

Additional safety training will be provided to supervisors on an annual basis to provide refresher training and familiarize them with any new safety and health hazards to which employees under their immediate direction and control may be exposed.

SECTION 1.11: MAINTENANCE OF RECORDS

TCI will keep records of the actions taken to implement and maintain this IIPP. The records will be maintained on file for a minimum of three years. The records kept by TCI will not adversely affect the retention of medical and exposure records in accordance with Title 8, California Code of Regulations, Section 3204 "Access to Employee Exposure and Medical Records."

Records of scheduled and unscheduled periodic inspections, as well as other records including methods used to identify and evaluate workplace conditions and work practices, will also be retained for a minimum of three years.

Records relating to the IIPP will include at a minimum: personnel conducting the inspection or evaluation; the unsafe conditions and work practices that have been identified; and, actions taken to correct the identified condition or work practice.

Records and documentation of safety and health training will include, at a minimum: the name of employee and/or employee number; date of training; training topic(s); training format; and instructor.

Records of employees who have worked for less than one year for TCI may be turned over to the employee upon termination as long as the terminated employee signs an acknowledgement letter documenting the records that have been turned over to him or her.

SECTION 1.12: SAFETY AND HEALTH FORUM

Management representatives from all departments and an employee representative meet on a monthly basis to discuss incident and injury trends and best known methods for injury prevention. This forum is also responsible for the following activities:

1. Review the potential safety or health hazards of all new processes, methods, or materials introduced into the workplace.
2. Serve as a conduit of communication between employees and management.
3. Review trends from Peer Review assessments and conducted in the past quarter.
4. Ratify proposed changes to the IIPP or new health and safety policies and procedures to address incident or injury trends observed.
5. Assist in the evaluation of employee safety suggestions.
6. Prepare minutes for all meetings and make them available to employees.

SECTION 2 – CORPORATE POLICIES AND PROCEDURES

SECTION 2.1: CODE OF SAFE PRACTICES

1. All employees are expected to follow this Code of Safe Practices and render every possible aid to safe operations.
2. Failure to abide by the Code of Safe Practices may result in disciplinary action **up to and including termination.**
3. Immediately report any unsafe conditions, incidents, injuries or illness to your foreman, superintendent, or manager.
4. If you are unsure of the safe method to do your job, **STOP** and ask your supervisor. Ignorance is no excuse for a safety violation.
5. No one will knowingly be permitted to work while the employee's ability or alertness is impaired by fatigue illness, prescription or over-the-counter drugs. Employees who are suspected of being under the influence of illegal or intoxicating substances, impaired by fatigue or an illness will be prohibited from working.
6. Never work while under the influence of an illegal or intoxication substance fatigued or ill.
- 7.
8. Anyone known to be under the influence of any drugs or intoxicating substances that impair the employee's ability to safely perform the assigned duties will not be allowed on the job.
9. Horseplay, scuffling, fighting and other acts that tend to have an adverse influence on the safety or wellbeing of the employees are prohibited.

10. Work must be well planned and supervised to prevent incidents and injuries.
11. Keep your work area clean, free of debris, electrical cords and other hazards.
12. Immediately clean up spilled liquids.
13. Always notify all other individuals in your area who might be endangered by the work you are doing.
14. Do not operate equipment that you are not familiar with. Do not attempt to use such equipment until you are fully trained and authorized.
15. You are responsible for ensuring all safety guards are operable and in place. If they are not, **STOP** working and tell your supervisor.
16. **Never** bring firearms, weapons, illegal drugs or alcoholic beverages on company or customer property or to the job site.
17. A red tag system identifies equipment that is NOT to be operated, energized or used. All lockout and tagout notices and procedures must be observed and obeyed.
18. Do not block exits, fire doors, aisles, fire extinguishers, first aid kits, emergency equipment, electrical panels, or traffic lanes.
19. Do not leave tools, materials, or other objects on the floor that might cause other to trip and fall.
20. Do not distract others while working. If conversation is necessary, make sure eye contact is made prior to communicating.
21. Employees will not enter confined spaces (such as manholes, underground vaults, chambers, tanks, silos, or other similar places that receive little ventilation) unless they have been trained and the TCI Confined Space Entry Checklist and Permit has been completed and authorized by their supervisor, acknowledging that it is safe to enter.
22. Employees will ensure that all guards and other protective devices are in proper place, adjusted and will report any deficiency promptly to their foreman or superintendent.
23. Materials, tools, or other objects will not be thrown from buildings or structures until proper precautions are taken to protect others from the falling objects.
24. Employees will wash their hands thoroughly after handling chemicals.
25. Any damage to scaffolds, false work or other supporting structures will immediately be reported to the foreman and repaired before use.
26. When using power tools, ensure guards are properly installed and always use the second handle provided for high power equipment such as rotohammers and ½" drills.
27. Employees shall not be permitted to wear ear devices for listening to music or radio in the work area.

SECTION 2.2: FALL PROTECTION

Duty to Provide Fall Protection

1. TCI will not permit its employees or subcontractors to expose themselves to falls during their course of work. This will be accomplished by providing the proper fall protection training and equipment to its employees. In situations where fall protection systems fall directly under the responsibility of a general contractor, TCI will ensure that prior to beginning work at elevated levels, fall protection systems are in place and adequate.
2. It is TCI policy to utilize fall protection measures any time an employee is exposed to a fall hazard of 6 feet (6') or more. NOTE: Refer to Section 2.7 for guidance on fall protection systems and / or a fall protection plan.

3. TCI will evaluate the fall hazards on each jobsite and will determine the appropriate fall protection methods to be utilized.

Guardrail Systems

1. Guardrail systems utilized by TCI employees will meet the following criteria:
 - a. The top rail will be constructed of wire rope, wood, steel or other material at least ¼ inch in diameter and be capable of withstanding, without failure, a force of 200 pounds in any outward and downward direction applied at any point along the top edge.
 - b. TCI employees and its subcontractors will not use steel banding, plastic banding, or other unsuitable material for top rails and mid-rails.
 - c. The top edge of the top rail will be mounted in a manner that it stands no less than 42 inches or more than 45 inches from the walking or working surface.
 - d. The top rail will be sufficiently strong so that when a 200 pound test load is applied in a downward force, the top edge of the top rail will not deflect to a height less than 39 inches.
 - e. A mid-rail will be constructed and installed halfway between the top edge of the top rail and the walking/working surface.
 - f. The mid-rail will be constructed from material and in such a manner that it will withstand, without failure, a force of 150 pounds applied in an outward or downward direction at any point along the mid-rail.
 - g. Toe boards measuring at least 4 inches tall will be provided at any leading edge where employees working or traveling below will be exposed to falling objects.
 - h. Top rails and mid-rails will be surface as to prevent injury to an employee from punctures or lacerations and to prevent snagging of clothing. Double-head nail will not be used for rails unless they are pounded flush.
 - i. Top rails and mid-rails will not be allowed to overhang the terminal posts or other attaching devices unless such overhang does not constitute a projection hazard.
 - j. Toe-boards will not overhang the terminal posts or other attaching devices unless such an overhang does not constitute a tripping hazard.
 - k. Should TCI determine that mesh or screen are required to protect employees below from falling objects, mesh and/or screens will be installed in a manner that they are completely covering the space between the top rail and the walking/working surface.
 - l. Screen and/or mesh, if used in place of a mid-rail, will be constructed of material that is capable of withstanding, without fail, a force of 150 pounds in any outward or downward direction when applied at any point along the screen or mesh.
2. Whenever TCI employees or its subcontractors must use a loading or hoisting area normally protected by a guardrail system, and the need exists to remove a portion of the guardrail, other means of fall protection such as a fall arrest system or work restraint system will be employed. Upon completion of the task, the portion of the guardrail removed will be immediately replaced.
3. When employees are working on ladders near the edge of a floor protected by guardrails, the guardrail must be raised to provide adequate protection **or** a personal fall arrest system must be employed to protect the employee from the fall hazard. It the ladder can be positioned back and

away from the guardrail a minimum of 1.5 times the height of the ladder, a modification to the guardrails personal fall arrest systems are not required.

4. Whenever TCI employees or its subcontractors are required to pass through holes or other floor openings protected by a guardrail system, they will ensure that a gate is provided or the guardrails offset so that a person cannot walk directly into the hole.
5. If TCI employees or its subcontractors are required to work on or travel across ramps, walkways or other runways that are elevate 6 feet or more above a lower level, they will ensure that all leading or unprotected sides or edges are protected by guardrail systems.

Personal Fall Arrest Systems (PFAS)

1. Fall protection, such as standard railings or a full body harness and lanyard, will be used at all times when working 6 feet or more above the level below.
2. When using a full body harness and lanyard to protect against a fall hazard, workers must be tied off 100% of the time. This may require the use of a double lanyard.
3. Floor and wall openings, unfinished balconies, elevator shafts and similar areas must be guarded, covered or barricaded to prevent falls.
4. Never remove fall protection rails, covers, or barricades without permission from your foreman and special precautions.
5. All safety harnesses will be the full body type with a shock-absorbing lanyard attached to a substantial anchorage capable of withstanding an impact load of 5,000 pounds per person attached to that anchorage point. Lanyards will be attached at the wearer's upper back. And have a locking snap hook or locking carabineer for the point of attachment. Body belts are not to be worn as fall protection. All safety harnesses and lanyards shall be labeled as meeting or exceeding all applicable ANSI requirements.
6. Whenever Self-retracting lifelines and lanyards are used, they shall be capable of limiting free fall distance to 2 feet or less and will be capable of sustaining a minimum tensile load of 3,000 pounds.
7. Read and obey all manufactures' instructions relating to your fall arrest system (safety harness and lanyard).
8. Inspect all components of your harness and lanyard prior to each use and after a fall. Defective equipment is not to be used. Lanyards must be destroyed after a fall and never reused.
9. Safety harness and lanyards should limit free fall distance to less than 4 feet and prevent contact with any level or objects below you.
10. Never use any part of a fall arrest system, such as a harness or lanyard, to hoist materials or for any other purpose.
11. Safety harnesses and shock absorbing lanyards are required to be worn at all times while in boom lifts.
12. Daisy chaining lanyards is prohibited.
13. TCI and its subcontractors will ensure that all personal fall arrest systems used by TCI and/or its subcontractors comply with all applicable federal and state regulations.
14. TCI and its subcontractors will never allow the use of body belts as part of a personal fall arrest system.

15. TCI will verify prior to use that a qualified person had installed all horizontal lifelines used as part of a personal fall arrest.
16. TCI and its subcontractors will ensure that any rope or strap used in lanyard, lifelines and/or strength component of any harness is made from synthetic fibers.
17. TCI will ensure that any anchorage point used for fall protection with a personal fall arrest system be capable of supporting at least 5,000 pounds for each person attached to it.
18. Employees of TCI and its subcontractors will only attach lanyards to the attachment point of the harness.
19. Snap hooks integrated into a personal fall arrest system will be of the double locking type.
20. TCI and its subcontractors will provide measures to promptly rescue any employee that had fallen.
21. No employee of TCI or its subcontractors will ever use any guardrail as an anchorage point.
22. Calculating Total Fall Distance:
 - a. The total fall distance must be calculated prior to using personal fall arrest equipment. The length of the lanyard, potential lanyard expansion, height of the anchorage connection point and the height of the worker must all be comprehended when calculating total fall distance.
 - b. Example calculation for a 6 foot tall worker, wearing a full body harness and secured to an anchorage point 2 feet above their dee-ring using a 6 foot shock absorbing lanyard (maximum additional expansion of 3.5 feet):
 - The worker will free fall 4 feet before the shock absorbing lanyard will deploy, slowing (decelerating) the worker's fall and elongating an additional 3.5 feet.
 - The full body harness will stretch and the dee-ring will slide to the level of the workers head (6 feet).
 - 6' worker height + 6' lanyard length + 3 ½' deceleration distance = 15 ½'. Add 3' for a margin of safety = 18 ½' clear space required to avoid striking the level below.

Personal Fall Restraint Systems (PFRS)

1. Anytime an employee of TCI or its subcontractors are using a personal fall restraint system instead of a personal fall arrest system, the following will be adhered to:
 - Restraint devices will be rigged such that an employee cannot free fall. A restraint device will allow an employee to reach a leading edge but will not allow him/her to pass it.
 - Anchorage points for restraint systems must withstand a minimum of 4 times the intended load.
2. Employees of TCI and its subcontractors will inspect all components of any personal fall restraint system they will be using prior to each.

Positioning Device Systems

1. Positioning devices shall be rigged such that an employee cannot fall more than 2 feet.
2. Positioning device systems shall be inspected prior to each use.
3. Anchorage points for positioning device systems shall be capable of supporting two times the intended load or 3,000 pounds (whichever is greater).

Covers

1. Covers will be required for all floor openings or other holes 2 inches X 2 inches in size or greater. Covers for small diameter floor penetrations (typically less than 6") must either be designed/installed to lay flush or be marked with high visibility color paint/other materials to prevent trips.
2. Whenever TCI employees or its subcontractors create or control holes or other floor openings 6 feet deep or greater, they will be protected by guardrail systems whenever possible. If guardrails are not feasible, holes and other floor openings will be protected by the use of covers. Covers will be made of a material capable of supporting 400 pounds or twice the expected load of workers and material, and be securely fastened. Covers must be clearly marked with the words "COVER" or "HOLE-DO NOT REMOVE", with minimum 1 inch high letters.
3. Should employees of TCI or its subcontractors be required to remove a cover for any reason, TCI or its subcontractors will be responsible for replacing and re-securing the cover.

Skylights

Skylights pose a unique hazard to workers on roofs. While working near skylights employees must ensure that protective measures have been taken to prevent the possibility of falling through the skylight. Skylight screens must be constructed and mounted so that they are capable of withstanding a load of at least 200 pounds and that under ordinary loads or impact, they will not deflect downward and break the glass below them. Where existing skylights are not protected by screens, employees will need to do one of the following if they need to approach within 6 feet of the skylight:

- Use a Personal Fall Protection System
- Install temporary covers capable of meeting the strength requirements over the skylight
- Erect temporary guardrails around the skylight
- Implement a fall protection plan approved by the Safety Department when conventional fall protection measures are deemed impractical or would create a greater hazard

Protection from Falling Objects

1. TCI and its subcontractors will ensure that any time they are performing work that may endanger other trades to falling objects; they will take appropriate actions to prevent the hazard. Such steps may include, but are not limited to installing toe boards and barricading off lower areas to prevent entry.
2. When toe boards are used, they will be constructed to a minimum vertical height of 4 inches from the walking/working surface, with not more than ¼ inch clearance above the walking/working surface.
3. Employees of TCI and its subcontractors will wear hard hats at all times while on the site.
4. Should tools or other materials be required to be piled higher than the top edge of the toe board, TCI or its subcontractors will install screen or mesh from the top edge of the toe board to the mid-rail or top rail, whichever would provide the greatest amount of protection, of the guardrail system

Roof Top Work/Warning Line Systems

1. The warning line shall be erected around all exposed sides of the roof work area.
2. When used to control access to areas where leading edge and other operations are taking place, the controlled access zone shall be defined by a warning line or by any other means that restricts access.
3. When warning lines are used, they shall be erected not less than 15 feet from the unprotected or leading edge, except when erecting precast concrete members.
4. The warning line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge.
5. The warning line shall be connected on each side to a guardrail system or wall.
 - a. The warning line shall be erected not less than 15 feet from the roof edge/
 - b. Points of access, materials handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines.
 - c. When the path to a point of access is not in use, a rope, wire, chain, or other barricade, equivalent in strength and height to the warning line, shall be placed across the path at the point where the path intersects the warning line erected around the work area, or the path shall be offset such that a person cannot walk directly into the work area.
 - d. Warning lines shall consist of ropes, wires, or chains, and supporting stanchions erected as follows:
 - 1) The rope, wire, or chain shall be flagged at not more than 6-foot intervals with high-visibility material;
 - 2) The rope, wire, or chain shall be rigged and supported in such a way that its lowest point (including sag) is no less than 34 inches from the walking/working surface and its highest point is no more than 39 inches from the walking/working surface;
 - 3) After being erected , with the rope, wire, or chain attached, stanchions shall be capable of resisting, without tipping over, a force of at least 16 pounds applied horizontally against the stanchion, 30 inches above the walking/working surface, perpendicular to the warning line, and in the direction of the floor, roof, or platform edge;
 - 4) The rope, wire, or chain shall have a minimum tensile strength of 500 pounds, and after being attached to the stanchions, shall be capable of supporting, without breaking, the loads applied to the stanchions; and
 - 5) The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.
 - e. No employee shall be allowed in the area between a roof edge and a warning line unless the employees are protected by a warning line system, guardrail system, or personal fall arrest system.

Trenches and Excavations

Workers within six feet (6') of trench or excavation edges with a fall hazard of 6 feet or greater will be protected by one of the fall protection systems outlined in this section.

Fall Protection Plan

1. The Plan will be prepared by a qualified person and developed specifically for the site where the leading edge work is being performed. A competent person will be assigned to:
 - a. Recognize fall hazards
 - b. Warn employees if they are unaware of a fall hazard/acting in an unsafe manner
 - c. Be on same working surface and in visual sight.
 - d. Stay close enough for verbal communication.
 - e. Not have other tasks that would take monitors attention form the monitoring function.
2. A qualified person is defined as “one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project”
3. A qualified person will approve any changes to the plan.
4. A copy of the plan with all approved changes will be kept at the jobsite.

SECTION 2.3: ELECTRICAL SAFETY

GENERAL REQUIREMENTS

1. Only trained, qualified, certified, and authorized employees are allowed to make electrical repairs or work on electrical equipment or installations.
2. All electrical equipment and systems will be treated as energized until **tested** or otherwise **proven** to be de-energized. Test before you touch.
3. All energized equipment and installations will be de-energized prior to the start of any work. If the equipment, or installation, must be energized for test or other purposes, special precautions will be taken to protect against the hazards of electric shock
4. If work **must** be performed on an energized circuit, the Foreman must fill out a “Method of Procedure” (MOP) and have it approved by a Superintendent.
5. All equipment will be locked out and tagged out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy-isolating device bearing a lock and tag.
6. Safety grounds will always be used where there is a danger of shock from back feeding or other hazards.
7. Employees working in areas where electrical hazards are present will be provided with, and shall use, protective equipment that is designed and constructed to protect a person from arc flash and shock hazards. An arc flash hazard analysis must be performed to determine the arc flash protection boundary and the personal protective equipment that people within the arc flash protection boundary shall use.
8. Always exercise caution when energizing electrical equipment or installations. Take steps to protect yourself and other employees from an arc blast and exploding equipment in the event of a fault.

9. All power tools will be grounded or double insulated. Tools with defective cords or wiring will not be used.
10. Metal jewelry should not be worn around energized circuits.
11. Extension and temporary power cords must be designed for hard or extra-hard usage and be grounded. Frayed or defective cords will not be used.
12. Never remove ground pins from electrical tools, extension cords or equipment.
13. Temporary electric cords located in established walk-ways or other locations where they may be exposed to damage or create tripping hazards shall be elevated or protected.
14. Temporary electric cords must not be fastened with staples, hung by nails, or suspended by any un-insulated wire.
15. Cords and cables must not run through fixtures, cabinets, or panel knockouts without bushing and strain relief.
16. All extension cords and electrical cords to power tools or equipment shall be inspected prior to use.
17. Bulbs for temporary lighting must be guarded. Broken and burned out lamps must be replaced immediately.
18. Suitable temporary barriers, or barricades, will be installed when access to opened enclosures containing exposed energized equipment is not under the control of an authorized person.
19. Electrical installations must be protected from accidental contact by enclosures or tight fitting covers.
20. Any 15 and 20 ampere outlets on single-phase / 120 Volt circuits that are not part of the permanent wiring of a building or structure on a construction site must be protected by Ground-Fault Circuit Interrupters (GFCIs)
21. Temporary power boxes should be inspected and tested regularly. Recommend testing at intervals no greater than every 3 months (or more frequently based on conditions and/or use).
22. Circuits will not be overloaded with equipment or extension cords.
23. Metal measuring tapes, fish tapes, ropes or other metal devices are prohibited where they may contact energized parts of equipment or circuits.
24. If work is to be performed within 10 feet of overhead power line, the lines shall be de-energized and grounded, or other protective measures shall be provided before work is started.

WORKING ON ENERGIZED CIRCUITS

TCI' policy is to not perform work on energized circuits. Protecting our employees from hazards or risk is the responsibility of every supervisor at TCI. It is with this in mind that every effort must be made to carry out electrical work in the de-energized state. It is the only true way to ensure that an employee will not be at risk from electrical shock or arc flash. Only after every alternative means has been considered and eliminated, and the customer has been made aware of the risk and liability, that energized work will be considered.

SECTION 2.4: RODENTS, SNAKES, AND INSECTS

Insects, Spiders and Ticks

- To protect yourself from biting and stinging insects, wear long pants, socks, and long-sleeved shirts.
- Use insect repellents that contain DEET or Picaridin.
- Treat bites and stings with over-the-counter products that relieve pain and prevent infection.
- Avoid fire ants; their bites are painful and cause blisters.
- Severe reactions to fire ant bites (chest pain, nausea, sweating, loss of breath, serious swelling or slurred speech) require immediate medical treatment.

Rodents and Wild or Stray Animals

- Dead and live animals can spread diseases such as Rat Bite Fever and Rabies.
- Avoid contact with wild or stray animals.
- Avoid contact with rats or rat-contaminated buildings. If you can't avoid contact, wear protective gloves and wash your hands regularly.
- Get rid of dead animals as soon as possible.
- If bitten/scratched, get medical attention immediately.

Snakes

- Watch where you place your hands and feet when moving debris. If possible, don't place your fingers under debris you are moving. Wear heavy gloves.
- If you see a snake, step back and allow it to proceed. Wear boots at least 10 inches high.
- Watch for snakes sunning on fallen trees, limbs or other debris.
- A snake's striking distance is about ½ the total length of the snake.
- If bitten, note the color and shape of the snake's head to help with treatment.
- Keep bite victims still and calm to slow the spread of venom in case the snake is poisonous. Seek medical attention as soon as possible.
- Do not cut the wound or attempt to suck out the venom. Apply first aid: lay the person down so that the bite is below the level of the heart, and cover the bite with a clean, dry dressing.

SECTION 2.5: LOCKOUT/TAGOUT

General Requirements

1. All machinery and electrical equipment will be locked out and tagged prior to repair, cleaning, maintenance or adjustment. Any work which must be performed with the equipment energized by a Superintendent in compliance with electrical safety requirements outlined in Section 2.3.
2. Only authorized persons are allowed to perform lockout/tagout.
3. Equipment must be capable of accepting lockout/tagout.
4. Unacceptable means of lockout/tagout include interlocks, Emergency Off Buttons, selector switches, software controls, and control circuit devices.
5. Lockout/tagout device may NOT be removed on behalf of another person.
6. Each authorized employee participating in work require lockout/tagout must be protected with their own uniquely keyed lock. No one else shall have a key for you lock. Destroy all duplicate keys and maintain control of your key at all times to prevent unauthorized use.
7. Never remove another employee's lock or energize tagged equipment.
8. Always "Test Before You Touch".
9. Authorized employees performing lockout/tagout must be trained in lockout/tagout procedures prior to commencing work.

LOCKOUT/TAGOUT PROCEDURE

Preparation for Shutdown:

1. Identify all types and amounts of energy that power that piece of machinery (e.g, electrical, mechanical, potential energy). Make a thorough check for all switch(es), valve(s), or other energy isolation devices that apply to the piece of machinery.
2. Identify all potential hazards of that energy.
3. Identify the correct means to isolate the energy from the piece of equipment (i.e., the correct form of lockout device, multiply lockout for a team of workers, or a single lock for one servicing employee).

Equipment Shutdown

1. Notify all affected employees. Authorized employees will notify all affected employees that a lockout/tagout system is being implemented and the reason(s) for the action.
2. Shut the system down. If the machine is operating, shut it down by the normal stopping procedure. Operate the energy isolating devices (e.g., circuit breaker on knife witch) so that the equipment is isolated from is energy sources. Be sure to isolate all energy sources – secondary power supplies as well as the main ones (i.e., emergency power).
3. Stored energy must be completely dissipated. Stored energy, such as that in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure must be dissipated or restrained by methods such as repositioning, blocking, bleeding down, etc. Thoroughly survey the piece of equipment for capacitors. Energy stored in electrical capacitors will be discharged by proper use of a grounding stick.

4. Portable Equipment. When work is performed on portable powered equipment the power supply line will be disconnected from the power source. The disconnected power supply line must remain within the control of the authorized foreman.

Applying Lockout/Tagout Devices

1. All energy-isolating devices are to be locked using a red uniquely keyed, lock. Use a lockout device such as a “block” or circuit breaker lockout, valve lockout, etc. if the energy isolation device cannot be locked out using just the lock. The lockout devices and key locks are not to be used for any other purpose. Note: yellow locks should be used for custodial/equipment lock-out. These locks are NOT to be used for personal protection.
2. Each Authorized Employee on the crew will attach his/her own personal lock to the energy isolation device. In a crew situation, a lockout device (i.e., a lockout hasp or lock box) must be used.
3. Attach Tag. Attach a completed **DANGER** tag on the locked out energy isolation device (or power cord) and at the controls of the equipment. **DANGER** tags will be secured such that they are not easily removed. A **DANGER** tag is not a substitute for a lockout device. Ensure that a **DANGER** tag is located on the piece of equipment and is visible to passing employees if the equipment must be left unattended. Include the name of the employee being protected, a contact phone number can list Foreman’s phone number if needed) and the date the tag was placed.

Testing/Verification of Zero Energy

1. After ensuring that no employees are exposed, and as a check of having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate. **Caution: Return operating controls to the neutral position after the test.**
2. After applying LOTO equipment for electrical sources, test for zero voltage using test instrumentation. Perform a 3-point test when using variable voltage testers or inductance testers:
 - a. First, check voltage at a known source to confirm testing equipment is working.
 - b. Second, check voltage at the electrical source that was locked out.
 - c. Third, re-check voltage at a known source to confirm testing equipment is still functioning.
3. When using variable voltage tester (i.e., Wigi, multimeter) which require direct contact, arc flash personal protective equipment will be required.
4. TCI may designate a primary authorized employee for complex LOTO operations (involving many employees and numerous energy isolating devices) to coordinate LOTO and verify voltage. All authorized employees must place their personal locks/tags on energy control points (lock box, multi-lock hasp, etc.) after the primary authorized employee has completed voltage verification.

Performing the Work:

1. Never bypass the lockout when working on a circuit. Be sure to stay within the bounds affected by the lockout procedure.

2. Locks and tags will not be removed until the individual in charge of the work has made certain that all personnel are in the clear and no one is exposed to harmful energy.

Returning Equipment to Service:

1. Performed ONLY by the person(s) that placed the lockout/tagout on the equipment.
2. Foreman's initial required after following tasks:
 - Verify that no tools, or loose components, remain in the equipment and that the equipment is safe to operate (i.e., replace all guards and other safety equipment that may have been removed).
 - Safeguard all employees in the area. Conduct a head count to ensure that everyone is clear of the equipment.
 - Notify Affected Employees that the equipment is about to be returned to service.
 - Remove blocks, and/or chains, in the reverse order that they were put on.
 - Verify that the equipment's controls indicated that it is off.
 - Remove the lockout and tagout devices. The person who put it on will remove each lockout device and tag.
 - Perform continuity test or tiltmeter test to confirm circuit is free and clear of grounds or cross-phasing, as required.
 - Re-energize the equipment. Follow the manufacturer's checklist of required steps to re-energize the equipment.

Crew Lockouts:

1. When more than one person is working on a piece of equipment, each individual will have his/her own lock on the energy shut-off device on the equipment, and follow the procedures.
2. Every lock will be secured so that it alone guarantees that the equipment is locked out.
3. The foreman for the shift will assign one of the workers as lockout coordinator.
4. The foreman will assure that communications are maintained within the crew.

Shift Change or Personnel Change:

When changing shift, or personnel, work on a piece of equipment will not continue until all personnel working on that equipment have agreed upon a safe procedure to affect the transfer of the work. All involved workers will then, as a group, make the switch over of lockout/tagout devices. The foreman will list all pertinent information regarding the lockout(s) in progress, who implemented the lockout(s) and the status of the PM or other project. The employee(s) coming on the shift will "try" the equipment before beginning work on it, to assure that the lockout was effective.

SECTION 2.6: COMPANY VEHICLES/FLEET SAFETY

TCI has the responsibility to its employees and to the community to ensure that all employees driving company vehicles are safe drivers. Therefore, TCI has the responsibility, and is required, to adhere to the acceptable insurance industry standards. The insurance industry has determined that drivers who fall within a set of criteria are considered “bad risk” drivers, and are therefore “unacceptable.”

UNACCEPTABLE is defined as any driver who (over 3 consecutive years):

1. Has had more than two (2) minor driving infractions (speeding, turns, failure to yield, etc.)
2. Is cited for driving while under the influence of alcohol or drugs, reckless driving, ect.
3. Is involved in an incident that is determined to be preventable towards the driver, resulting in a negative claim against our insurance carrier; and has one (1) or more minor driving infractions.

Every employee has a responsibility to maintain a clean driving record, both on the job and off. If your license is suspended, or revoked, due to your personal driving record you could become unemployable and, in fact, lose your job.

Employees issued vehicles will be required to participate in the DMV Pull Program. TCI has become a member of DMV’s Pull Program in order to monitor employees’ driving records more closely. The Pull Program gives TCI immediate notice (within five days) when a driver gets any new violations against them.

Employees who have additional infractions and/or chargeable accidents will be subject to warning notices or other actions necessary to correct the problem.

As an employee, you must realize that your personal DMV driving record report is an important document and obtaining additional infractions which result in an unacceptable rating by the insurance carrier could affect your ability to perform your employment duties.

Violations involving overloads, mechanical problems, or other company related infractions are not included in this policy, nor will any warning notices be given. However, this does not relieve the driver from ensuring that the vehicle is mechanically sound prior to driving upon any road, street or highway.

TCI will review the driving standard of their employees on an ongoing basis and will inform any employee not meeting current driving criteria and standards.

New Hire Process:

Potential employees looking for employment with TCI as a driver are required to submit a Motor Vehicle Report (MVR) from the state(s) in which they have a driver’s license. At the time of hire, the employee is required to complete a driver’s application and the employee’s current driver’s license is checked for validation within the State of California (or other applicable state agency).

Vehicle Inspection and Maintenance:

A systematic preventative maintenance program is the best known, and most economical, means of protecting TCI’s auto investment. By maintaining your vehicle at a high level of mechanical fitness and safety you can avoid accidents arising from faulty equipment and excessive repair costs.

Drivers of pool trucks/heavy equipment are required by State Law to perform daily inspections on their vehicle. The Driver's Vehicle Inspection Report should be used for this inspection. Tractors are to be inspected weekly using the Driver's Vehicle Inspection Report provided by the Department of Transportation (MOT). Driver's Vehicle Inspection Reports are to be given to the Fleet Manager once an inspection is complete. This assures continuous maintenance records for all vehicles.

A daily driver's inspection should involve a walk around the vehicle and a test of the brakes, lights, or signaling devices. Drivers will be responsible to report to the Fleet Manager or Foreman any defects identified. If brakes, lights, or signaling devices are not working properly they will be adjusted or repaired before the vehicle is put in operation. No motor vehicle will be operated at the night unless properly equipped with headlights.

The driver is responsible for ensuring that their vehicle remains in a safe operating condition, performing all scheduled preventative maintenance required for the vehicle.

Operation of Vehicles and Other Mobile Equipment:

1. General:

- a. Only specifically authorized personnel who possess valid licenses or permits pertaining to the particular type vehicle they are operating will operate company equipment or personally owned vehicles on company business.
- b. Drivers will not permit unauthorized persons to drive, operate or ride in or on a company vehicle.
- c. The use of seat belts is mandatory for the driver and all passengers of any company-owned vehicles.
- d. Drivers will know and obey all state and local motor vehicle laws that apply.
- e. Employees will not let anyone ride on the running boards, fenders, or any part of a motorized vehicle except the seat or inside the body walls. Passengers will not stand in moving vehicles. Rather, they should sit where no part of their body protrudes beyond the vehicle top or sides.
- f. Employees will not ride on loose material or equipment carried on trucks.
- g. Employees will not ride on trailers.
- h. Employees will not jump on or off vehicles in motion.
- i. For access into/off large trucks (i.e., semi-trucks, flatbeds, ect.), use a ladder or moveable stairs.
- j. If your driver's license is revoked or expired, notify your supervisor immediately and do not drive.
- k. Employees who use cell phones while driving will be required to use a hands-free device. Texting while driving is permitted.
- l. Under no circumstances will any TCI vehicle be driven under the influence of physician-prescribed, over-the-counter, or illegal drugs, or any substance that may impair the operator's functions.
- m. Keys are not to remain in the vehicle when the vehicle is unattended.

2. Operation:

- a. The operator of the motor vehicle will clearly indicate their intentions of passing, stopping or turning.
- b. Drivers will be prepared to stop and yield the right of way in all instances where necessary to avoid an accident.
- c. Drivers following other vehicles will stay a safe distance behind.
- d. Drivers will keep a sharp lookout for children, especially in school zones or where they are playing and will be prepared to stop immediately.
- e. Any truck or trailer that is stopped on a public roadway will be protected by flagging, proper warning lights or reflectors in accordance with traffic safety requirements.
- f. Vehicles will not be parked on bridges or culverts except where necessary for work. (If it is necessary to work in these places, the vehicle should be adequately protected by activating four-way emergency flashers, using a flagger and incorporating such items as "Employee Working" signs, traffic cones, etc.)
- g. Before backing a vehicle, a driver will ensure that the space needed is clear. The driver must back up slowly, keeping a constant lookout the entire time they are backing up. When backing up trucks and a spotter is available, the spotter will be stationed so that they can warn the driver of approaching danger and assist the driver in maneuvering the vehicle. It is preferable to station the spotter on the left hand side of the truck so that the driver, when looking into the left hand mirror, may see them.
- h. When entering or leaving any building or enclosure, or to or from an alley where vision is obstructed, a complete stop will be made and the driver will proceed with caution.
- i. Trucks on which derricks or booms are erected above traveling heights will not be moved except under the immediate direction to the movement.
- j. When refueling, all ignition systems will be turned off, and the employee will not smoke or use a cell phone.
- k. Load limits of booms, derricks and other hoisting equipment will not be exceeded.
- l. When proceeding downgrade, the clutch will not be disengaged. Trucks, especially heavily loaded ones, and will be in low gear on steep grades.
- m. When stopped on inclines, drivers will be sure that the brakes are properly applied, the vehicle is in gear where possible, and the wheels are at an angle against the curb, whether the vehicle is facing up or down grade.

Reporting Accidents:

Report all incidents immediately to your supervisor and Risk Management. Every TCI vehicle is required to have a Vehicle Accident Report form in the glove box. This packet will ensure that all appropriate actions are taken before leaving the scene of an accident.

1. At the Scene:

- a. Obtain medical aid if necessary.

- b. Report accident to State or Local Police.
 - c. Insure the safety of personnel, vehicle and cargo.
 - d. Gather key information about the accident, including names, phone number and addresses of any witnesses. Completing the Vehicle Accident Report form will assure all necessary information is obtained.
 - e. Obtain an Accident Report Number from Police.
 - f. **Do Not** discuss the cause of accident or amounts of insurance available with other involved parties or their representatives. If a party contacts you immediately contact the corporate claims administrator and your supervisor.
2. Within 24 hours:
 - a. Notify Risk Management and the Safety Department of the accident.
 - b. Complete and submit TCI' Vehicle Accident Report.
 - c. Notify the Fleet Manager if repairs are necessary.

SECTION 2.7: LADDER SAFETY

General Requirements:

1. Inspect the ladder before using it. If it is damaged or broken, throw it out or return it to the Support Center for repair. Ladders to be repaired must be tagged "Defective-Do Not Use" and removed from service. Never attempt to repair a broken ladder yourself. Get a new one. Keep portable stairways, ladders and step stools in good condition and use them only in a safe manner.
 - Look for broken or missing steps, rungs, or cleats, broken side rails, and other faulty parts.
 - Ensure rung or steps are free from grease, mud, oil or other slippery substances.
 - Joint between steps and side rails must be tight and all hardware and fittings should be attached firmly.
 - Moveable parts should operate freely without binding or undo play.
2. Use the proper ladder for the job. Do not use "A" frame ladders as straight ladders. Make sure the ladder is tall enough to reach the work area. Fiberglass ladders are required. Do not use metal or wooden ladders.
3. Do not place ladders in passageways, doorways, or any location where they might be hit or jarred, unless protected by barricades or guards.
4. Ladders should only be placed on hard level surfaces. Make sure the ladder feet are not placed on sandy, slippery or sloping surfaces. Clean or sweep the area where the ladder will be and make sure the rubber feet are in good shape.
5. Arrange your work so you are able to face the ladder and use both hands while climbing. Do not carry tools or equipment while climbing a ladder. Climb the ladder and then hoist the tools or equipment with a line or a hoisting device.
6. TCI does not build job-made ladders. Job-made ladders provided by the General Contractor may be used.

7. Secure portable straight or extension ladders in the place and at a pitch so the leveling indicator is in alignment or the distance from the wall to the base of the ladder is at least 1' for every 4' of height (see additional information below).
8. To prevent slipping, all straight ladders will be tied off at the top.
9. Be aware of objects below you. Move, or cover, sharp objects in case you fall. Cap or bend all rebar.
10. When working on stepladders, do not stand on, or work from, the 2nd step from the top or above. For straight or extension ladders, do not stand or work from the top 3 rungs or cleats of the ladder unless there are members of the structure that provide a firm handhold or you are protected by a personal fall protection system. Also do not reach too far from the ladder. Keep your belt buckle between the side rails. Your belt buckles should not extend above the top cap/rung of the ladder.
11. When working on a ladder at elevations of 6 feet or greater, the type of work being performed will dictate whether a personal fall arrest system is required. When performing tasks that do not require excessive force or torque, and all of the ladder safety guidelines in this section and being met, no personal fall arrest system will be required.
12. Extension ladders will extend at least 36" above the level being accessed.
13. Do not stand on the cross bracing on all ladders. Cross bracing is not intended for climbing.
14. When employees are working on ladders near the edge of a floor protected by guardrails, the guardrail must be raised to provide adequate protection **or** a personal fall arrest system must be employed to protect the employee from the fall hazard. If the ladder can be positioned back and away from the guardrail a minimum of 1.5 times the height of the ladder, a modification to the guardrail or personal fall arrest systems are not required.
15. Do not "walk" ladders; come down from the ladder and relocate it to your next position if you need to move your ladder.

Requirements for Setting up Straight or Extension Ladders

1. Lean a straight or extension ladder at about a 75° angle. The distance from the wall should be ¼ the working length of a ladder.
 - a. Ladder rungs are one foot apart on standard ladders. Divide the number of rungs in the working length by 4 to determine the feet of horizontal distance. For example, if 16 rungs are counted, the horizontal distance should be 4 feet.
 - b. Tie off the top of the ladder to keep it from tipping back or side-to-side, or have someone support the ladder while in use.
 - c. If you have to use a ladder at a flatter angle, brace the feet to prevent it from slipping.
 - 1) Brace a ladder in one if these ways:
 - Tie off the feet to the wall.
 - Nail a board to brace the feet.
 - Put a brace between the ladder and the facing wall.

- Have someone brace the ladder with his or her feet.
2. The side rails of a ladder should reach at least 3 feet past the level you are climbing to and the ladder must be tied off at the top or be supported by another employee.

SECTION 2.8: FORKLIFT SAFETY

1. Only trained and authorized employees are allowed to use forklifts. If you aren't trained, stay off. Operators must be trained on the type of equipment they are operating.
2. A copy of the Operating Rules for Industrial Trucks must be posted on all jobs where forklifts are used.
3. Seat belts must be worn at all times.
4. No one will be permitted to ride on the forklift except the operator.
5. Read and obey all manufacturers' instructions and safety precautions. A copy of the manufacturers' manual must be available inside each forklift.
6. Inspect all forklifts prior to use. Document the inspections. Defective equipment will be tagged out and removed from service immediately.
7. Use electric forklifts inside occupied buildings.
8. Only manufacturer-approved fork attachments will be used.
9. The operator is the sole responsible person in charge of the load and the surrounding area.
10. Only one individual is to give hand signals to the operator.
11. Always have a clear line of sight when operating a forklift. Use a spotter in congested areas.

SECTION 2.9: BOOM LIFTS, AND BUCKET TRUCKS

1. Only trained and authorized employees are allowed to use boom lifts, scissor lifts, or bucket trucks. If you aren't trained, stay off. Equipment operators must have a current certification card.
2. Read and obey all manufacturers' instructions and safety precautions.
3. Inspect all lifts prior to use. Tag and remove any defective equipment out of service immediately.
4. A full-body harness with a lanyard must be worn while using boom lifts or bucket trucks. Harnesses are not required for scissor lifts, provided you do not leave the work platform and the chain or gate are in place. Note: Some General Contractors and Owners may require the use of fall protection in a scissor lift.
5. Always stay inside the platform railing. Do not use planks or ladders, to extend, your reach.
6. Ensure the guardrail gate is closed or safety chain is up at all times.
7. Lower lifts before moving. If short distances must be travelled in a scissor lift in the elevated position, ensure there are no depressions, holes or other obstacles creating a tip-over hazard on the travel path as a part of the documented safety pre-task plan prior to beginning work.
8. Never use scissor lifts on uneven ground. Scissor lifts are designed for use primarily on concrete floors.

9. Ensure scissor lifts used outdoors are rated for wind load. Refer to the maximum wind speed rating on the serial number plate to verify the lift is intended for each use with wind loads and do not use the lift when conditions exceed the rating.
10. Never exceed the equipment's rated working load.
11. Never utilize a boom lift, scissor lift, or bucket truck as a hoisting or pushing mechanism.
12. Check for overhead power lines before moving the equipment. Work in lifts near overhead power lines need to be reviewed and approved by a Superintendent prior to beginning work.
13. Keep hoses, electrical cords and welding cables clear of the moving parts when raising or lowering the platform.
14. When the machine is equipped with outriggers or stabilizers, deploy these in accordance with manufacturer's instructions.
15. Maintain three points of contact when boarding and disembarking the lift; NO SWING JUMPING OUT.
16. For bucket trucks, only one person may occupy the bucket at a time, unless specifically designed for more personnel.
17. Bucket trucks must be independently tested and certified for di-electrical properties at no greater than 6-month intervals.

SECTION 2.10: PERSONAL EQUIPMENT (PPE)

1. Use the correct PPE for each job assignment. If you don't know, ask.
2. PPE will be maintained in good condition and cleaned regularly.
3. PPE will be stored properly when not in use to protect it from damage.
4. Damaged or PPE must be returned to your foreman for replacement.
5. Hard hats must be worn on the job sites at all times. Hard hats must be worn with the bill facing forward.
6. ANSI approved safety glasses with side shields or goggles must be worn at all times.
7. Work above t-bar ceilings, scraping, or shooting, and other tasks such as blowing down areas must be done wearing ANSI approved goggles or gasketed safety glasses to prevent fine dust particles getting into the eyes.
8. Reflective high visibility vests and/or clothing must be worn at all times on jobsite, except while plasma cutting and welding.
9. Face shields with safety glasses are required when grinding, operating chop saws, and operating powder-actuated tools. Note: If operating powder-actuated tools overhead, ANSI approved safety goggles or gasketed safety glasses must be worn with the face shield. Face shields with safety goggles are required when working with hazardous chemicals and there is a potential for splash to the face or eyes.
10. Employees must wear industrial work shoes in the shop and sturdy work boots on construction projects. The shoes and boots must have complete leather uppers, skid resistant soles and be in good condition. Steel toe protection or metatarsal covers may be required on some jobsites or when performing certain tasks.

11. Athletic style shoes, tennis shoes, open toe shoes, plastic or vinyl shoes or shoes with decorative accessories are not allowed.
12. Hearing protection (ear plugs or ear muffs) must be worn when working with loud equipment such as saws, air hammers or grinders.
13. Be sure the protective clothing you wear will not hamper or restrict freedom of movement due to improper fit.
14. Long pants of heavy-duty material must be worn. No shorts or sweat pants allowed.
15. While operating machines which could cause entanglement do not wear: loose, torn or frayed clothes; dangling ties; finger rings; dangling earrings; jewelry items; or, long hair unless it is contained in a hair net.
16. If required, wear NIOSH approved respirators when applying adhesives, paint, welding, grinding or working with chemicals. Medical evaluation, training, and fit-testing will be required prior to respirator use. Please contact the Safety Department for more information. Facial hair is not permitted on the sealing surface area of the respirator.
17. Hand protection is required at all times. Contact your Foreman if you identify a task that would be more hazardous if performed with gloves.
18. Long sleeves or cut resistant arm guards are required when performing work above t-bar ceilings or work inside of switchgear to prevent cuts/lacerations from occurring due to contact with exposed sharp edges.

SECTION 2.11: HAND AND POWER TOOLS

1. Proper eye protection must be worn when using hand and power tools.
2. Know your hand and power tool applications and limitations. Always use the proper tool for the job.
3. Inspect cords and tools prior to use. Do not use tools that are faulty in any way. Tag them and remove them out of service immediately.
4. Power tools must be grounded or double insulated. All power tools are to be plugged into a grounded GFCI outlet.
5. Do not use power tools in explosive atmospheres.
6. Do not lift, lower or carry portable electrical tools by the power cord.
7. Keep all safety guards in place and in proper working order.
8. Use clamps or vises to secure work pieces.
9. Do not apply excessive force when using power tools. Apply only enough pressure to keep the unit operating smoothly.
10. Return all tools and other equipment to their proper place after use.
11. Unplug all power tools before changing bits and/or grinding disks.
12. Never leave chuck keys in the tool during operation.
13. Do not use a screwdriver as a chisel.
14. Before using sledged, axes, or hammers make sure the handles are securely fastened with a wedge made of sound material.
15. Do not use a handle extension on any wrench.

16. Files shall be equipped with handles and should not be used as a punch or pry.
17. Do not use utility knives.
18. Always use the second handle provided for high power equipment such as a rotohammers and ½” drills.

POWDER-ACTUATED TOOLS

1. Only trained and authorized employees are allowed to use powder-actuated tools. If you aren't currently trained, and certified, on the exact model you intend to use, don't use it.
2. Read and obey all the manufacturer's instructions and safety precautions.
3. Full-face shields must be worn over your safety glasses when using powder-actuated tools. Note: If operating powder-actuated tools overhead, ANSI approved safety goggles or gasketed safety glasses must be worn with the face shield.
4. "Powder Actuated Tools in Use" signs must be posted.
5. Wear hearing protection (ear plugs or muffs), especially in enclosed or confined spaces.
6. The type and size of fastener to be used shall be compatible with the type and size of the material which the fasteners are to be driven into.
7. Powder actuated tools shall not be used in explosive or flammable atmospheres.
8. Powder actuated tools shall not be loaded until just prior to the intended firing time.
9. Do not leave unfired cartridges lying on the ground. Return all unfired, and misfired, cartridges to the Support Center. Identify **misfired** cartridges.
10. Loaded powder actuated tools shall never be left unattended. Lock away powder actuated tools and cartridges when not in use.
11. Powder actuated shall never be pointed at anyone.
12. Inspect all tools prior to use. Defective equipment will not be used.

SECTION 2.13: TRENCHING AND EXCAVATION

Prior to Excavation or Boring

1. Before digging or boring, layout planned route and call USA (811) a minimum of 48 hours prior to any work.
2. The use of 3rd party locators shall be used unless a TCI superintendent has deemed that there is no hazard present.
3. All work is to be planned and performed by a TCI trained competent underground representative.
4. Site surveys shall be performed to locate any landmarks (i.e. vaults, light poles, storm drains, etc.). Identify any valves or shut-offs that pertain to your excavation.
5. Always request a current copy of as-builts from the owner or utility company.

6. Cal-OSHA must be notified in writing, 24 hours prior to anyone entering a trench 5' or deeper. Notify your Superintendent to ensure proper paperwork is completed.
7. Communicate information on known utilities located in the immediate vicinity of the trench/excavation to all employees and subcontractors participating in the trenching/excavation work. This information should be documented on the safety pre-task plan.
8. If work is to be done around a known line and it will be impacted; follow a Lock Out Tag Out on the line. Have all affected personnel working or around the area in question do a LOTO as well.

Potholing

1. Using hand tools, expose all marked or unmarked utilities within 2' of any planned excavation or boring.
2. The use of air/water to remove material to pothole can only be used if authorized by the owner of the utility.
3. All boring shall follow the same guidelines for potholing as conventional excavations.

Auger Drilling

1. Follow the instructions in the manufacturer's operating and preventive maintenance manual.
2. Conduct daily pre-task meetings to ensure that all employees are aware of the correct procedures to prevent an unwanted incident and any hazards associated with the job task.
3. Look for obstacles that may need to be removed. Hand digging may verify the presence or absence of underground material, including utilities.
4. Prior to drilling, cut a hole in the landscape fabric sufficiently larger than the diameter of the auger to prevent contact or entanglement with the fabric.
5. Except for the operator, employees should not be near the auger when it is operating.
6. Employees using hand tools should not move or remove spoil-pile while the auger is operating.
7. The operator should sit or stand at the operator's station while operating the auger.
8. Do not modify the operator's station or disable safety controls beyond manufacturer's recommendations (for example: hold-to-run or seat switch controls).
9. Remain a safe distance (a minimum of 10 feet) from the auger when helping the operator.
10. When placing the auger bit on auger do not stand the auger up and try to place it in, do so with the auger bit place on the ground (if on asphalt or concrete; place protection between the ground and the auger to avoid damaging the asphalt or concrete).

Trenching & Excavations

1. When employees will need to enter a trench or excavation, they shall be protected from cave-ins by an appropriate protective system unless the excavation is made entirely in stable rock, or the excavation is less than 5 feet deep and the TCI designated competent person has determined there is no potential for a cave-in. In the selection of the protective system, the TCI designated competent person will perform visual and manual soil analysis to classify soil as type A, B, or C, document results on TCI Visual and Manual Soil Analysis Checklist, available from the Safety Department.

2. All excavations and trenches 5 feet deep or greater must be shored, sloped or benched to protect workers from the hazards of moving earth. No work will be performed outside of the protected (shored, sloped or benched) area. All trenching must be done in accordance with Cal/OSHA regulations and supervised by a designated competent person.
3. Protective systems for excavations deeper than 20 feet shall be designed by a registered engineer.
4. Additional bracing must be used when vibration or surcharge loads are a hazard.
5. A ramp, stairway, or ladder (straight, trench or extension) will be provided for access to the trenches and excavations 4' deep or greater. Employees shall not have to travel more than 25 feet to reach a ladder/ramp/stairway. Additional ladders/ramps/stairways may not be required in locations where the access way is not in the line of sight.
6. Keep all spoils 2' from the edge. Protect employees from falling materials by scaling, installation of protective barriers, or other methods.
7. Barricade trenches or use caution tape to warn others of their presence.
8. A designates competent person will inspect all trenches and excavations and protective systems at a minimum daily before work, as needed throughout the shift (i.e. after a rainstorm, etc., to look for potential cave-ins, failures, hazardous atmospheres, or any other hazards. These inspections will be documents. The competent person must be on the site to take prompt corrective action or remove employees from the hazard.
9. Do not jump over trenches. Use wood planks or sheeting. Walkways or bridges with standard guardrails must be installed when employees or equipment are required or permitted to cross over excavations that are at least 6 feet deep and wider than 30 inches.
10. While the excavation is open, the underground utilities must be protected, supported, or removed, as necessary.
11. Do not work under loads handled by lifting or digging equipment.

SECTION 2.14: HAZARDOUS MATERIALS AND CHEMICALS

General Requirements:

General Requirements:

1. Read all warning labels and Material Safety Data Sheets (MSDS) before using any chemicals. MSDS' contain personal protective equipment and safety information and are available from your foreman.
2. Hazardous materials will be handled in accordance with the MSDS and label. If personal protective equipment is required, use it.
3. Mixing of chemicals is prohibited at all times unless required by the label. Before you mix, review all MSDS.
4. Emergency drenching facilities (i.e. safety shower and/or eyewash station) must be provided in areas of hazardous chemical use. Locate the nearest eyewash or safety shower prior to working with hazardous chemicals.

5. Always wash your hands thoroughly after handling chemicals and before eating or smoking, even if you were wearing protective gloves.
6. Never use solvents for hand cleaning. Use the non-toxic hand cleaners provided.
7. Store all hazardous materials properly in suitable containers that are properly labeled.
8. Use chemicals only in well-ventilated areas.
9. When using secondary containers, ensure that they are labeled as to their contents and hazards.
10. Cutting and welding on stainless steel or galvanized metal, and work with lead, asbestos, cadmium and other toxic compounds require special precautions. Do not attempt to attempt to perform this work without special equipment and training.
11. Coordinate disposal of hazardous materials, including non-electronic ballasts, fluorescent light tubes and bulbs, high intensity discharge, metal halide, sodium, and neon bulbs, and chemical containers (i.e. PVC cement, etc.) with the building owner or Support Center Manager.

Hazard Communication/Right-to-Know (RTK) Program

The TCI Hazard Communication/Right-to-Know Safety (HazCom/RTK) Program is administered by the Corporate Safety Manager. The Corporate Safety Department is responsible for supporting Branch/Company personnel, (Superintendents, General Foremen and Foremen) with the responsibilities listed below, and for verifying that Branch/Company facilities and jobsites:

1. Maintain a list of hazardous chemicals that are on each jobsite.
2. Retain Material Safety Data Sheets (MSDS) on substances that contain hazardous chemicals.
3. Explain the MSDS to employees as part of the ongoing safety training. Employees have a right to receive data contained on the sheets. Employees will not be discharged or discriminated against for exercising their rights in this regard.
4. Provide information and training to all employees relative to the Hazard Communication Regulation and about the known potential exposure to hazardous chemicals.
5. Maintain records of employee accidental over-exposure to hazardous chemicals.
6. Make available to, and share with, other contractors or subcontractors MSDS information on hazardous chemicals on the jobsite.
7. Training will be conducted, and documented, at safety meetings and will provide at least the following:
 - a. Information on which hazardous chemicals are in the work area.
 - b. How to read, interpret and comply with information on MSDS and labels.
 - c. Signature verification of specific training on highly toxic substances.

Material Safety Data Sheets:

MSDS is the abbreviation used to identify a Material Safety Data Sheet. An MSDS is a document that supplies information about a particular hazardous chemical.

The MSDS must provide information on the physical and chemical characteristics of the hazardous chemical; known acute and chronic health effects and related health information; exposure limits; whether the chemical is considered to be a carcinogen by NTP, IARC, or OSHA; precautionary measures; emergency and first aid procedures; and the identification of the organization responsible for preparing the sheets, including name, address, and telephone number.

Access to information:

The written Hazard Communications Program, included in this Injury and Illness Prevention Program, is provided to all employees and copies may be provided to their designated representative (IBEW, etc.).

Copies of MSDS for hazardous substances to which employees of this company may be exposed are kept in the corporate office and at all jobsites. The foremen of stationary jobsites will be responsible for maintaining the data sheet system for their site.

The Superintendent will review incoming data sheets for new significant health/safety information. They will see that any new information is passed on to the affected employees.

Labeling:

Materials received at the jobsites are required to be properly labeled. If labels are not provided, contact the supplier for specified labels. Information contained on labels must not conflict with federal, state, or local laws and/or regulations in labeling requirements. These labels should provide the following:

1. Identify the chemical product or substances in the container.
2. Hazard warnings.
3. List name, address and telephone number of the manufacturer or other responsible party.
4. Target organs affected by chemical.

Use of Labels

1. The labels must not be removed and will be replaced if illegible.
2. All containers of chemical products, including laboratory bottles, solvent cans and dispensers must be consistent with the standards that are specified above. Only those chemicals that can be classified as "immediate use" are exempt from the labeling procedures described above.

Immediate use is defined as the hazardous chemicals under control of and used only by the person who transfers it from the labeled container and only within the work shift in which it is transferred.

Training:

Employees will receive a copy of this IIPP to provide information and training regarding hazard communication. The hazard communication portion of the program includes:

1. An overview of the requirements contained in the hazard communication regulation.
2. Physical and health effects of hazardous chemicals.
3. Methods and observation techniques used to determine the presence of or the release of hazardous chemicals in the work area.
4. How to lessen, or prevent, exposure to these hazardous substances through the use of engineering controls, work practices, and/or the use of personal protective equipment.
5. Emergency and first aid procedures to follow if employees are exposed to hazardous substances(s).
6. How to read labels and review an MSDS to obtain appropriate hazard information

Each employee will be required to sign an acknowledgment form stating he/she has received a copy of the Injury and Illness Prevention Program (IIPP). Note: It is critically important that all employees understand the training. Contact the superintendent or foreman with any questions.

If new hazardous chemicals are introduced the foreman will review the hazard and relate new information to all employees in a safety meeting.

Access to information by other employers:

When employees of a subcontractor may be exposed to hazardous chemicals while working on the jobsite, the general contractor will provide a list of hazardous chemicals being used at the jobsite by the appropriate company's superintendent and make available the applicable MSDS' for all required protective measures.

Likewise, it will be the responsibility of all subcontractors to provide the appropriate MSDS' to the general contractor for all hazardous chemicals being used by their company at the jobsite.

When exposure to a hazardous chemical exists, each employer is responsible for the appropriate training of his or her employees.

If requested, names, addresses, and telephone numbers of suppliers or manufactures of the hazardous chemicals being used will be provided.

Record-Keeping at Stationary Jobsites:

1. MSDS
2. Hazardous chemical list.

Additional Information:

Further information on this written program, the Hazard Communication Standard, and applicable MSDS' is available from the superintendent.

Asbestos

Asbestos was used in many building materials that were installed prior to 1980.

The potential for a health hazard occurs when the asbestos-containing material is damaged, releasing airborne asbestos fibers that can be inhaled. Asbestos materials are most often damaged by sawing, cutting, or sanding operations.

Exposure to asbestos fibers can lead to life-threatening illnesses such as asbestosis, a scarring of the lungs, mesothelioma, a cancer of the lungs and abdomen, and various other forms of cancer. There is no cure for asbestos-related illnesses, so preventing exposure is critical.

Before Starting Work:

- When performing demolition or renovation work in existing older building, the Project Manager or Superintendent should obtain a copy of the asbestos survey performed by the building or facility owner. If no survey is available, all potentially asbestos-containing materials must be presumed to be asbestos-containing until proven otherwise by laboratory testing or documentation. This includes ceiling tile, floor tile, insulation, thermal system insulation, mastic, putty, cement board, cement pipe and cement panels.
- Never disturb any asbestos containing material. Only trained, authorized individuals should work with asbestos. If you are not sure whether a material contains asbestos, STOP and ask your foreman.

Crystalline Silica

Crystalline Silica is a natural occurring material found in sand, quartz, and granite rock. Crystalline silica dust can be generated during activities such as sandblasting, stone cutting, and drilling, chipping, grinding, or cutting concrete. At high levels, exposure to crystalline silica dust can cause silicosis, a serious and sometimes fatal respiratory disease.

To control crystalline silica exposures:

- Limit the amount of dust inhaled.
- Use engineering controls, such as using wet cutting methods, and dust collection system.
- Follow safe work practices, such as using wet cleaning methods and good housekeeping to prevent dust accumulation.
- Make good hygiene a priority; wash your hands before eating, drinking, or smoking.
- And finally, use respiratory protection if engineering and administrative controls are not effective in keeping crystalline silica below safe levels.

Contact your Foreman or Supervisor if you have any concerns about silica exposures in the workplace.

Lead

Lead is toxic if you breathe in lead containing dust or if you swallow it. Large amounts of inhaled or ingested lead can cause severe anemia, harm reproductive function and damage the kidneys, brain and nervous system. In construction, the main sources of lead exposure are torch cutting, abrasive blasting, stripping, sanding, heating and other work that disturbs surfaces coated with lead-based paint. Lead is also found in many electrical applications, including lead sheath, high voltage cable, and lead anchors.

Protect Yourself:

- Wear gloves and wash hands when working with lead cable, lead anchors, or sheathing.
- If you're working with or near a painted surface that will be disturbed, ask your Foreman if the paint contains lead.
- Use wet methods, local exhaust ventilation, or respiratory protection if lead containing materials will be worked on.
- Use wet methods, local exhaust ventilation, or respiratory protection if lead containing materials will be worked on.
- Before you use a torch for cutting, safely remove lead paint. Heating lead paint will produce lead fumes.
- Never smoke, eat or drink around work with lead surfaces.
- Always wash your hands and face to remove any lead dust before eating, drinking or going to the bathroom.
- Work involving the removal or disturbance of any significant amount of lead based paint requires awareness training, engineering controls, blood lead testing and air monitoring.

SECTION 2.15: FIRE PREVENTION AND HOUSEKEEPING

1. Always take precautions to prevent fires which may be started, particularly from oily waste, rags, gasoline flammable liquids, acetylene torches, improperly installed electrical equipment, leafs or brush and trash.
2. Firefighting equipment is to be inspected on a regular basis. All discharged, damaged or missing equipment is to be immediately reported to a supervisor. Tampering with fire equipment is prohibited.
3. Access to fire extinguishers must be kept clear at all time. Make note of the location of firefighting equipment in your work area.
4. A portable fire extinguisher will be provided and maintained at the job site trailer or office, trucks and/or the gang box(es). Each portable fire extinguisher shall have a minimum 2A:20B:C rating. Maximum travel distance to any fire extinguisher shall not exceed 75 feet.
5. Ensure fire extinguishers are inspected monthly and certified yearly by a fire extinguisher service company.
6. Never use gasoline or flammable solvents for cleaning purposes.
7. Smoking is prohibited within 20 feet of where flammable substances are present.
8. In case of fire, employees will consider the safety of themselves and other individuals before saving property.

9. Keep your work areas free of debris. Remove useless material from the work area as fast as required to help reduce tripping hazards. Clean as you go.
10. Maintain awareness of potential hazards when walking about the job site.
11. Keep tools, materials, and equipment out of walkways and stairways at all times.
12. Sharp wires or protruding nails must be kept bent.
13. Place tools and equipment so they will not slide off the roof.
14. Tie material down at day's end so they will not slide off the roof.
15. All employees designated as a Fire Watch will require training on Fire Extinguishers.

SECTION 2.16: TRAFFIC SAFETY

1. Where hazards to workers exist because of vehicular traffic, traffic controls must be used in accordance with the State of California Manual of Traffic Controls for Construction and Maintenance Work Zones (or other applicable state agency requirements). Additionally controls, such as detours, warning signs, or barricades, may be used.
2. Flaggers must be used at locations on a construction site as soon as barricades and warning signs cannot effectively control moving traffic.
3. Flaggers must be placed in locations so as to give effective warning.
4. Warning signs must be placed according the State of California Manual of Traffic Controls for Construction and Maintenance Work Zones (or other applicable state agency requirements).
5. All employees exposed to traffic hazards are required to wear orange or strong yellow-green warning garments (shirts, vests, jackets, or rainwear) at all times.
6. During hours of darkness, flaggers' stations must be illuminated and flaggers must wear reflectorized garments that are visible at a minimum of 1000 feet.
7. Employees performing traffic flagging must possess a valid Registered Flagger training certification.
8. When possible, construction vehicles are to be place between the employees and traffic to prevent vehicles from entering the work area and hitting members of the crew.
9. Traffic controls are to be properly maintained throughout the workday. Signs and cones must be kept upright, visible and in their proper position at all times.

SECTION 2.17: SCAFFOLDS

1. Scaffolds are to be erected, dismantled, altered or repaired by the scaffold contractor ONLY. A signage system will be used to communicate the status of the scaffold (i.e. green/yellow/red tag system).
2. A competent person must inspect scaffolds prior to use and report any damage immediately to the foreman to prohibit use. Do not use damaged scaffolds.
3. Know the Safe working load of all scaffolds.
4. The following special conditions must be met for employees to ride on a rolling scaffold moved by others and requires Foreman authorization:
 - Surface is level and free of pits, holes and obstructions

- Minimum dimension of the scaffold base, when ready for rolling, is at least ½ of the height.
 - Outriggers, if used, shall be installed on both sides of staging.
 - The wheels are equipped with rubber or similar resistant tires.
 - Before a scaffold is moved, each employee on the scaffold must be made aware of the move.
 - No employee shall be on any part of the scaffold which extends outward beyond the wheels, casters, or other supports.
5. At least 2 people are required to move rolling towers. Before moving secure or remove all tools and material.
 6. Always use guard railing on all scaffolds regardless of height. Personnel must wear safety harnesses and be properly tied off any scaffold platform over 6 feet which is not equipped with standard handrails, midrails, or completely decked.
 7. Use only high quality planking or scaffolds and be sure the planks are secure to prevent shifting.
 8. Always apply aster brakes and use outriggers when scaffolds are stationary.
 9. Do not use planks or guard rails as a temporary means of obtaining greater height.
 10. Be aware of the objects below you; move ore cover sharp objects in case you fall. Cap or bend all rebar.

SECTION 2.18: CRANES AND RIGGING

For any tasks involving the use of a crane, a pre-lift plan will need to be prepared and reviewed prior to job-start. Information to be included in plan is outlined below:

- Type of crane.
- Exact size and weight of the loads to be lifted and description of rigging.
 - a) Include crane & rigging components that would add to the weight.
 - b) Include information on any ancillary components or equipment that would add to the weight.
- Load chart for the crane.
- Diagram showing crane position and location around building, height of lift, the load radius, and boom length and angle for the entire range of the lift.
- Safety plan (also include other relevant information related to the lift).
 - a) Evacuation plan for areas under the lift zone and barricading plan.
 - b) Environmental conditions under which lift operations are to be stopped.
- Crane certification documentation.
- Copy of daily inspection checklist that will be used for the job.
- Ground conditions, outrigger or crawler track requirements, and adequacy of mats, steel plates, or cribbing to assure for stability.
- Inspection of work site for power lines, equipment/system hazards, and underground utilities, adequate footing not endangered by excavations or unstable soil conditions; sufficient space for outriggers so they will not intrude into roadways and other access routes; barricading of the danger zone.

Because conditions can change from the pre-planning stage to when the crane actually arrives on site, the contractor performing the lifting operation must hold a pre-lift meeting to ensure that all hazards have been controlled and all inspections have been completed. All personnel participating in the lift must attend.

The pre-lift meeting should include at a minimum:

- Completed daily inspection checklist.
- The person in charge shall have a clear understanding of the work to be performed and consider all potential dangers at the job site.
- Evaluation of current weather conditions and determination of limits (i.e. high wind conditions).
- A walk around inspection must be conducted prior to the lift to ensure that the machine is in proper working order.
- Only qualified persons may operate the crane. The operator must have a copy of their crane operator's license available for review.
- Ensure that inspection and maintenance records are available and verify that the appropriate operator's manual and load charts for the particular crane in use are available.
- Ensure that the crane operator set the crane up level and in a position for safe rotation and operation.
- Ensure the outriggers, where applicable, are extended and being used in accordance with manufacturer's recommendations. Ensure the surface below outriggers is protected.
- Establish signaling plans and assignment of personnel authorized to signal crane movement.
- Use of the two-block system.
- Ensure all clearance requirements are met working around or near electrical power lines.

General Requirements:

- At no time will a crane be operated with computer systems or limit switches in a non-functioning or override condition.
- Do not work or stand under any suspended load. Crane operators will avoid swinging loads over people.
- The operator is the sole responsible person in charge of the load and surrounding area. Only one individual is to give hand signals to the operator.
- Always have a clear line of sight when operating a crane.
- All rigging shall be done by a qualified Rigger.
- All rigging gear must be inspected before each use. Damaged equipment must be immediately taken out of service. All rigging gear must be rated appropriately for the maximum intended load. When not in use, rigging equipment shall be removed from the immediate work area. On an annual basis, slings must be inspected by a qualified person, with the results documented.
- Hooks on overhaul ball assemblies, lower load blocks, or other attachment assemblies shall be of a type that can be closed and locked, eliminating the hook throat opening. An alloy anchor type shackle with a blot, nut and retaining pin may be used as an alternative.

- Tag lines shall be used unless their use creates an unsafe condition.
- Christmas treeing of loads (more than one load rigged from the hook) must be pro-approved by the TCI Safety Department. Written justification will be required, as well as appropriate safety measures identified for this type of operation.
- No employee is permitted to ride on loads, hooks, or slings of any crane, hoist, or derrick. Use of man-baskets is not allowed, unless no other feasible work methods are possible and TCI Safety Department personnel have approved the proposed work plan.
- Depending on the proximity of the lift site to the closest airport runway, a Federal Aviation Administration permit may be required.
- If the radius of multiple crane booms are within each other's reach, a written safety plan must be submitted to include provisions for radio communications between all operators and signal personnel, clearly defined quadrants of operation, and daily crane coordination meetings for operators, dedicated signal personnel and riggers, and foremen of crews using cranes.

SECTION 2.19: WELDING AND CUTTING

1. Make sure your welding equipment is installed properly, grounded and in good working condition.
2. Always wear protective clothing suitable for the welding or cutting to be done.
3. Always wear proper eye protection when welding, brazing, soldering, flame cutting or plasma cutting. This includes eye protection underneath your welding helmet.
4. Keep your work area clean and free of hazards. Make sure that no flammable, volatile or explosive materials are in, or near, the work area.
5. Handle all compressed gas cylinders with extreme care. Keep caps on when not in use. Make sure that all compressed gas cylinders are secured in the vertical position to the equipment carriage, wall or other structural supports. When compressed gas cylinders are empty close the valve, install the cap and return to correct bottle storage area.
6. Store compressed gas cylinders in a safe place with good ventilation. Stored acetylene cylinders and oxygen cylinders should be kept at least 20 feet apart.
7. Do not weld or cut in confined spaces without special precautions and your Forman's authorization.
8. Do not weld on containers that have held combustibles or flammable materials.
9. Use mechanical exhaust ventilation at the point of welding when welding lead, cadmium, chromium, manganese, brass, bronze, zinc or galvanized metals. These metals are highly toxic and their fumes should not be breathed.
10. Make sure all electrical connections are tight and insulated. Do not use cable with frayed, cracked or bare spots in the insulation. Repair immediately if found.
11. When the electrode holder or cutting torch is not in use, hang it on the brackets provided. Never let it touch a compressed gas cylinder.
12. Dispose of electrode and wire stubs in proper containers since stubs and rods on the floor are a safety hazard.
13. Use welding curtains to shield others from the light rays produced by your welding.

14. Make sure all compressed gas connections are tight and check for leaks. Do not use hoses with frayed or cracked spots.
15. Keep your leads orderly and out of walkways.
16. DO NOT WELD if lead or machine are in, or near, water.
17. A fire watch must be in place while any non-electrical hot work is ongoing, with fire extinguishing equipment immediately available at the work area.
18. The fire watch must remain in the work area for 30 minutes after non-electrical hot work has been completed.
19. Keep your work area clean and free of hazards. When flame cutting, sparks can travel 30-40 feet. Combustibles within 35 feet of the work area should either be removed or covered with fire resistive protection (i.e. fire blankets, etc.). Do not allow open flame or sparks to hit hoses, regulators or cylinders.
20. Use oxygen and acetylene or other fuel gases with the appropriate torches and tips only for the purpose intended.
21. Never use acetylene at a pressure in excess of 15 pounds per square inch. Higher pressure can cause an explosion.
22. Never use oil, grease or any other hydrocarbon containing material on any apparatus or thread fitting in the oxyacetylene or oxyfuel gas system. Hydrocarbons such as oil and grease in contact with oxygen will cause spontaneous combustion.
23. Always use the correct sequence and technique for assembling and lighting the torch. Always use the correct sequence and technique for shutting off a torch.
24. Check valves must be used on all compressed gas cylinders to prevent back flow of the gas.

Transporting, Moving, and Storing Compressed Gas Cylinders

- Valve protection caps shall be in place and secured.
- When cylinders are hoisted, they shall be secured on a cradle, slingboard, or pallet. They shall not be hoisted or transported by means of magnets or choker slings.
- Cylinders shall be moved by tilting and rolling them on their bottom edges. They shall not be intentionally dropped, struck, or permitted to strike each other violently.
- When cylinders are transported by powered vehicles, they shall be secured in a vertical position. Valve protection caps shall not be used for lifting cylinders from one vertical position to another. Bars shall not be used under valves or valve protection caps to pry cylinders loose when frozen. Warm, not boiling, water shall be used to thaw cylinders loose.
- Unless cylinders are firmly secured on a special carrier intended for this purpose, regulators shall be removed and valve protection caps put in place before cylinders are moved.
- A suitable cylinder truck, chain, or other steadying device shall be used to keep cylinders from being knocked over while in use.
- When work is finished, when cylinders are empty, or when cylinders are moved at any time, the cylinder valve shall be closed.
- Compressed gas cylinders shall be secured in an upright position at all times, if necessary, for short periods of time while cylinders are actually being hoisted or carried.

- Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of 20 feet (6.1 m) or by a noncombustible barrier at least 5 feet (1.5 m) high having a fire-resistance rating of at least one-half hour.
- Inside of buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location, at least 20 feet (6.1 m) from highly combustible materials such as oil or excelsior. cylinders should be stored in definitely assigned places away from elevators, stairs, or gangways. Assigned storage places shall be located where cylinders will not be knocked over or damaged by passing or falling objects, or subject to tampering.
- The in-plant handling, storage, and utilization of all compressed gases in cylinders, portable tanks, rail tank cars, or motor vehicle cargo tanks shall be in accordance with Compressed Gas Association Pamphlet P-1-1965.

Placing Cylinders

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

Treatment of Cylinders

- Cylinders, whether full or empty, shall not be used as rollers or supports.
- No person other than the gas supplier shall attempt to mix gases in a cylinder. No one except the owner of the cylinder or person authorized by him, shall refill a cylinder. No one shall use a cylinder's contents for purposes than those intended by the supplier. All cylinders used shall meet the Department of Transportation requirements published in 49 CFR Part 178, Subpart C, Specification for Cylinders.
- No damaged or defective cylinder shall be used.

Use of Fuel Gas

All employees shall adhere to the safe use of fuel gas, as follows:

- Fuel gas shall not be used from cylinders through torches or other devices which are equipped with shutoff valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.
- Before a regulator to a cylinder valve is connected, the valve shall be opened slightly and closed immediately. (This action is generally termed "cracking" and is intended to clear the valve of

dust or dirt that might otherwise enter the regulator.) The person cracking the valve shall stand to one side of the outlet, not in front of it. The valve of a fuel gas cylinder shall not be cracked where the gas would reach welding work, sparks, flame, or other possible sources of ignition.

- The cylinder valve shall always be opened slowly to prevent damage to the regulator. For quick closing, valves of fuel gas cylinders shall not be opened more than 1½ turns. When a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel gas flow can be shut off quickly in case of an emergency. In the case of manifolded or coupled cylinders, at least one such wrench shall always be available for immediate use. Nothing shall be placed on top of a fuel gas cylinder, when in use, which may damage the safety device or interfere with the quick closing of the valve.
- Before a regulator is removed from a cylinder valve, the cylinder valve shall always be closed and the gas released from the regulator.
- If, when the valve on a fuel gas cylinder is opened, there is found to be a leak around the valve stem, the valve shall be closed and the gland nut tightened. If this action does not stop the leak, the use of the cylinder shall be discontinued, and it shall be properly tagged and removed from the work area. In the event that fuel gas should leak from the cylinder valve, rather than from the valve stem, and the gas cannot be shut off, the cylinder shall be properly tagged and removed from the work area. If a regulator attached to a cylinder valve will effectively stop a leak through the valve seat, the cylinder need not be removed from the work area.
- If a leak should develop at a fuse plug or other safety device, the cylinder shall be removed from the work area.

Fuel Gas and Oxygen Manifolds

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

Manifold hose connections, including both ends of the supply hose that lead to the manifold, shall be such that the hose cannot be interchanged between fuel gas and oxygen manifolds and supply header connections. Adapters shall not be used to permit the interchange of hose. Hose connections shall be kept free of grease and oil.

When not in use, manifold and header hose connections shall be capped.

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

Hose

Fuel gas and oxygen hose shall be easily distinguishable from each other. The contrast may be made by different colors or by surface characteristics readily distinguishable by the sense of touch. Oxygen and

fuel gas hoses shall not be interchangeable. (See accompanying figure for example.) A single hose having more than one gas passage shall not be used.

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

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

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

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

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

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

Torches

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

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

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

Regulators and Gauges

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

Oil and Grease Hazards

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

Additional Rules

For additional details not covered in this subpart, applicable technical portions of American National Standards Institute, Z49.1-1967, Safety in Welding and Cutting, shall apply.

ARC WELDING AND CUTTING

Manual Electrode Holders

Only manual electrode holders which are specifically designed for arc welding and cutting , and are of a capacity capable of safely handling the maximum rated current required by the electrodes, shall be used.

Any current-carrying parts passing through the portion of the holder which the arc welder or cutter grips in his hand, and the outer surfaces of the jaws of the holder, shall be fully insulated against the maximum voltage encountered to ground.

Welding Cables and Connectors

All arc welding and cutting cables shall be of the completely, insulated, flexible type, capable of handling the maximum current requirements of the work in progress, taking into account the duty cycle under which the arc welder or cutter is working.

Only cable free from repair or splices for a minimum distance of 10 feet from the cable end to which the electrode holder is connected shall be used, except that cables with standard insulated connectors or with splices whose insulating quality is equal to that of the cable are permitted.

Cables in need of repair shall not be used. When a cable, other than the cable lead referred to above, becomes worn to the extent of exposing bare conductors, the portion thus exposed shall be protected by means of rubber and friction tape or other equivalent insulation.

When it becomes necessary to connect or splice lengths of cable one to another, substantial insulated connectors of a capacity at least equivalent to that of the cable shall be used. If connections are effected by means of cable lugs, they shall be securely fastened together to give good electrical contact, and the exposed metal parts of the lugs shall be completely insulated.

Ground Returns and Machine Grounding

A ground return cable shall have a safe current-carrying capacity equal to or exceeding the specified maximum output capacity of the arc welding or cutting unit which it services. When a single ground return cable services more than one unit, its safe current-carrying shall exceed the total specified maximum output capacities of the all the units which it services.

Pipelines containing gases or flammable liquids, or conduits containing electrical circuits, shall not be used as a ground return.

When a structure or pipeline is employed as a ground return circuit, it shall be determined that the required electrical contact exists at all joints. The generation of an arc, sparks, or heat at any point shall cause rejection of the structures as a ground circuit.

When a structure or pipeline is continuously employed as a ground return circuit, all joints shall be bonded, and periodic inspections shall be conducted to ensure that no condition of electrolysis or fire hazard exists by virtue of such use.

The frames of all arc welding and cutting machines shall be grounded either through a third wire in the cable containing the circuit conductor or through a separate wire which is grounded at the source of the current. Grounding circuits, other than by means of the structure, shall be checked to ensure that the circuit between the ground and the grounded power conductor has resistance low enough to permit sufficient current to flow to cause the fuse or circuit breaker to interrupt the current.

All ground connections shall be inspected to ensure that they are mechanically strong and electrically adequate for the required current.

Operating Instructions

All employees shall adhere to the safe means of arc welding and cutting as follows:

- When electrode holders are to be left unattended, the electrodes shall be removed and the holders shall be so placed or protected that they cannot make electrical contact with employees or conducting objects.
- Hot electrode holders shall not be dipped in water; to do so may expose the arc welder or cutter to electric shock.
- When the arc welder or cutter has occasion to leave his work or to stop work for any appreciable length of time, or when the arc welding or cutting machine is to be moved, the power supply switch to the equipment shall be opened.
- Any faulty or defective equipment shall be reported to the supervisor.
- A disconnecting means shall be provided in the supply circuit for each motor generated arc welder, and for each AC transformer and DC rectifier arc welder which is not equipped with a disconnect mounted as an integral part of the welder.
- A switch or circuit breaker shall be provided by which each resistance welder and its control equipment can be isolated from the supply circuit. The ampere rating of this disconnecting means shall not be less than the supply conductor ampacity.

Shielding

Whenever practicable, all arc welding and cutting operations shall be shielded by noncombustible or flameproof screen which will protect employees and other persons working in the vicinity from the direct rays of the arc.

FIRE PREVENTION

When practical, objects to be welded, cut, or heated shall be moved to a designated safe location or, if these objects cannot be readily moved, all movable fire hazards in the vicinity shall be taken to a safe place, or otherwise protected. If these objects cannot be moved and if all the fire hazards cannot be removed, positive means shall be taken to confine the heat, sparks, and slag, and to protect the immovable fire hazards from them.

No welding, cutting or heating shall be done where the application of flammable paints, or the presence of other flammable compounds, or heavy dust concentrations creates a hazard.

Suitable fire extinguishing equipment shall be immediately available in the work area and shall be maintained in a state of readiness for instant use.

When the welding, cutting, or heating operation is such that normal fire prevention precautions are not sufficient, additional personnel shall be assigned to guard against fire while the actual welding, cutting, or heating operation is being performed, and for a sufficient period of time after completion of the work to ensure that no possibility of fire exists. Such personnel shall be instructed as to the specific anticipated fire hazards and how the firefighting equipment provided is to be used.

When welding, cutting, or heating is performed on walls, floors, and ceilings, since direct penetration of sparks or heat transfer may introduce a fire hazard to an adjacent area, the same precautions shall be taken on the opposite side as are taken on the side on which the welding is being performed.

For the elimination of possible fire in enclosed spaces as a result of gas escaping through leaking or improperly closed torch valves, the gas supply to the torch shall be positively shut off at some point outside the enclosed space whenever the torch is not to be used or whenever the torch is left unattended for a substantial period of time, such as during the lunch period. Overnight and at the change of shifts, the torch and hose shall be removed from the confined space. Open end fuel gas and oxygen hoses shall be immediately removed from enclosed spaces when they are disconnected from the torch or other gas-consuming device.

Except when the contents are being removed or transferred, drums, pails, and other containers which contain or have contained flammable liquids shall be kept closed. Empty containers shall be removed to a safe area apart from hot work operations or open flames.

Drums, containers, or hollow structures which have contained toxic or flammable substances shall, before welding, cutting, or heating is undertaken on them, either be filled with water or thoroughly cleaned of such substances and ventilated and tested.

Before heat is applied to a drum, container, or hollow structure, a vent or opening shall be provided for the release of any built-up pressure during the application of heat.

VENTILATION AND PROTECTION IN WELDING, CUTTING, AND HEATING

Mechanical Ventilation

Mechanical ventilation shall consist of either general mechanical ventilation systems or local exhaust systems.

Ventilation shall be deemed adequate if it is of sufficient capacity and so arranged as to remove fumes and smoke at the source and keep their concentration in the breathing zone within safe limits.

Contaminated air exhausted from a working space shall be discharged clear of the source of intake air.

All air replacing that withdrawn shall be clean and respirable.

Oxygen shall not be used for ventilation purposes, comfort cooling, blowing dust from clothing, or for cleaning the work area.

Welding, Cutting, and Heating in Confined Spaces

Except where airline respirators are required or allowed as described below, adequate mechanical ventilation meeting the requirements described above shall be provided whenever welding, cutting, or heating is performed in a confined space.

When sufficient ventilation cannot be obtained without blocking the means of access, employees in the confined space shall be protected by air line respirators. An employee on the outside of the confined space shall be assigned to maintain communication with those working within it and to aid them in an emergency.

Where a welder must enter a confined space through a small opening, means shall be provided for quickly removing him in case of emergency. When safety belts and lifelines are used for this purpose they shall be so attached to the welder's body that his body cannot be jammed in a small exit opening. An attendant with a pre-planned rescue procedure shall be stationed outside to observe the welder at all times and be capable of putting rescue operations into effect.

Welding, Cutting, or Heating of Metals of Toxic Significance

Welding, cutting, or heating in any enclosed spaces involving the following metals shall be performed with adequate mechanical ventilation as described above:

- Zinc-bearing base or filler metals or metals coated with zinc-bearing materials;
- Lead base metals;
- Cadmium-bearing filler materials;
- Chromium-bearing metals or metals coated with chromium-bearing materials.

Welding, cutting, or heating in any enclosed spaces involving the following metals shall be performed with adequate local exhaust ventilation as described above or employees shall be protected by air line respirators in accordance with the requirements of Subpart E:

- Metals containing lead, other than as an impurity, or metals coated with lead-bearing materials;
- Cadmium-bearing or cadmium-coated base metals;
- Metal coated with mercury-bearing metals;

Beryllium-containing base or filler metals, because of its high toxicity, work involving beryllium shall be done with both local exhaust ventilation and air line respirators.

Employees performing such operations in the open air must use and be protected by filter-type respirators, except that employees performing such operations on beryllium-containing base or filler metals must use and be protected by airline respirators.

Other employees exposed to the same atmosphere as the welders or burners shall be protected in the same manner as the welder or burner.

Inert-Gas Metal-Arc Welding

Since the inert-gas metal-arc welding process involves the production of ultra-violet radiation of intensities of 5 to 30 times that produced during shielded metal-arc welding, the decomposition of chlorinated solvents by ultraviolet rays, and the liberation of toxic fumes and gases, employees shall not be permitted to engage in, or be exposed to the process until the following special precautions have been taken:

- The use of chlorinated solvents shall be kept at least 200 feet, unless shielded, from the exposed arc, and surfaces prepared with chlorinated solvents shall be thoroughly dry before welding is permitted on such surfaces.
- Employees in the area not protected from the arc by screening shall be protected by filter lenses meeting the requirements of Subpart E. When two or more welders are exposed to each other's arc, filter lens goggles of a suitable type, meeting the requirements of Subpart E, shall be worn under welding helmets. Hand shields to protect the welder against flashes and radiant energy shall be used when either the helmet is lifted or the shield is removed.
- Welders and other employees who are exposed to radiation shall be suitably protected so that the skin is covered completely to prevent burns and other damage by ultraviolet rays. Welding helmets and hand shields shall be free of leaks and openings, and highly reflective surfaces.
- When inert-gas metal-arc welding is being performed on stainless steel, adequate local exhaust ventilation as described above or air line respirators in accordance with the requirements of Subpart E shall be used to protect against dangerous concentrations of nitrogen dioxide.

General Welding, Cutting, and Heating

Welding, cutting, or heating not involving conditions or toxic materials described above may normally be done without mechanical ventilation or respiratory protective equipment. These protections shall be

provided, however, where an unsafe accumulation of contaminants exists because of unusual physical or atmospheric conditions.

Employees performing any type of welding, cutting, or heating shall be protected by suitable eye protective equipment.

WELDING, CUTTING, AND HEATING IN WAY OF PRESERVATIVE COATINGS

Before welding, cutting, or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made by a competent person to determine its flammability. Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

When coatings are determined to be highly flammable, they shall be stripped from the area to be heated to prevent ignition.

Protection against toxic preservative coatings:

- In enclosed spaces, all surfaces covered with toxic preservatives shall be stripped of all toxic coatings for a distance of at least 4 inches from the area of heat application, or the employees shall be protected by air line respirators.
- In the open air, employees shall be protected by a respirator.

The preservative coatings shall be removed a sufficient distance from the area to be heated to ensure that the temperature of the unstripped metal will not be appreciably raised. Artificial cooling of the metal surrounding the heating area may be used to limit the size of the area required to be cleaned.

SECTION 2.20: MATERIAL HANDLING & STRAIN AND SPRAIN PREVENTION

General Requirements

1. Always plan for the safest route. Consider weight, shape, length, as well as pinch points, and other hazards when handling material. Never place your body between a load and a fixed object where you could be crushed.
2. Use hand trucks, dollies, carts, or other mechanical means whenever possible.
3. Push rather than pull. Pushing a load is generally less stressful on your body because you use the weight of your body and maintain a more neutral posture. When you pull, your body is often twisted and you frequently use only one hand.
4. If material must be handled manually, use a two person lift/carry when handling long, heavy, or awkward shaped material. Be sure to plan the lift and coordinate the moves.
5. Maintain a low center of gravity, placing heavy objects on the bottom.
6. Maintain a clear line of vision, making sure the pathway is clear of any debris, obstacles, or uneven surfaces.
7. Follow these steps when lifting materials to avoid back injuries:
 - a. Protect Yourself

- Wear the proper gloves and supportive work shoes.
- b. Examine and Evaluate the Load
 - Is the load too heavy or awkward for one person?
 - Is anything protruding from the load, such as nails, splinters, sharp edges, or rough strapping?
 - Is my path flat and clear of obstructions?
 - c. Get Ready to Lift
 - Establish solid footing.
 - Center your body weight over your feet.
 - Keep your back straight.
 - Don't slouch.
 - d. Lift the Object Properly
 - Get a good grasp on the object.
 - Pull the object close to your body.
 - Lift with your legs, not your back.
 - Move your feet when turning; never twist your back.
 - Avoid twisting.

Stretch for Your Health

1. Stretching is recommended prior to the start of work tasks which pose a risk for soft tissue injuries, such as:
 - a. Tasks with repetitive motions
 - b. Working in awkward postures
 - c. Body positions creating contact stress (i.e. extended kneeling)
 - d. Work requiring forceful motions (manual material handling, pushing, pulling, etc.)
 - e. Tasks with vibration force
 - f. Working in static postures
2. Before beginning any stretch, put your body into a neutral position: stand up straight and relaxed, with feet shoulder width apart, shoulders, neck and arms relaxed, shoulders and head back and stomach slightly tensed.
3. To get the maximum out of your stretches, they should be held for 15-30 seconds at a time. Stretches should be taken to a comfortable tension. Once we reach the point of comfortable tension, let your muscles relax, breath and hold the stretch. **DO NOT BOUNCE** and **DO NOT STRAIN**.
4. Stretching exercise options are provided below. Recommend performing one stretch from each muscle group (as applicable).

SECTION 2.21: REGULATORY AGENCY INSPECTIONS

OSHA has the right to inspect the jobsite only if consent is given. Refusal to allow inspection is not recommended.

1. Notify the Safety Department and Project Superintendent immediately of any regulatory agency visit.
2. The focus of the inspection could be project-wide or specific to one or more individual subcontractors. For any inspections involving TCI, the Foreman will be asked to participate in an opening conference to discuss the purpose and scope of the inspection.
3. Provide information requested but avoid making informal remarks or sharing person opinions. If you do not know the answer to a question, inform the inspector that you will obtain the information and get back to them.
4. The Foreman must accompany the inspector during a jobsite walk. During the inspection, the Foreman should take detailed notes. If the inspector takes photos, the Foreman should take photos also (either during the inspection or as soon as possible afterwards).
5. At the closing conference the inspector may issue citations but has up to six months to do so. If we are issued a citation, a copy must be posted in the area where the citation occurred for three working days, or until the violation is corrected, whichever is longer.

SECTION 2.22: CONFINED SPACE

Introduction

Employees may need to work in locations that are considered “confined spaces” because their configuration hinders the activities of any employees who must enter into, work in, and exit from them. In many instances, employees who work in confined spaces face an increased risk of exposure to serious physical injury from hazards such as entrapment, engulfment, or hazardous atmospheric conditions.

To be considered a confined space, a work space must meet all three of the following conditions:

1. Is large enough and so configured that an employee can bodily enter and perform work
2. Has limited or restricted means of egress (i.e. entry or exit)
3. Is not designed for continuous human occupancy.

A “permit-required confined space” is one that meets the above definition of a confined space and has one or more of these characteristics:

1. Contains or has the potential to contain a hazardous atmosphere
2. Contains a material that has the potential for engulfing an entrant
3. Has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a small cross section
4. Contains any other recognized serious safety or health hazards such as an area with physical hazards where excessive heat or moisture are present.

General Requirements

All work locations must be evaluated to determine if any work spaces meet the definition of a confined space. Any confined spaces are then further reviewed to determine if spaces are, or could become, a

permit- required confined space (see flow chart below). For work in existing facilities, consult with the Facility Owner regarding the classification of the space, hazards present, and any special entry conditions. The TCI entry supervisor or field Forman will inform exposed employees of the existence, location, and danger posed by the space or location. This will be accomplished by posting appropriate signs or by another equally effective means. For confined spaces that are classified as permit required, the following language will be used to notify employees or emergency response personnel.

DANGER – PERMIT REQUIRED CONFINED SPACE AUTHORIZED PERSONNEL ONLY

Our goal is to not perform work in permit required confined spaces, by controlling the known or potential hazards so that the space can be re-classified as non-permit required. TCI will not enter any confined space to perform work under a supplied air condition (i.e., self-contained breathing apparatus). Furthermore, any proposed hot work in a confined space (i.e., welding, cutting, or grinding requires review and approval by a Superintendent).

Potential Hazards in Confined Spaces

Confined spaces may contain one or more of the following hazards presenting a potential for injury, illness, disablement or death.

1. Possibility of accumulation of hazardous chemicals above the Permissible Exposure Limit (PEL) or Immediately Dangerous to Life & Health (IDLH) levels.
2. An oxygen deficient atmosphere (less than 19.5%) inadequate for the support of life or an oxygen rich atmosphere (more than 23.5%).
3. A flammable gas, vapor or mist in excess of 10% of its Lower Explosive Limit (LEL).
4. Sloped floor or inwardly converging walls tapering to a cross section that can pin down a worker.
5. Electrical shock or electrocution risk.
6. Potential for engulfment by particulate matter.
7. Airborne dust obscuring vision at a distance of 5 feet or less.
8. Crushing due to mechanical energy or falling objects (physical hazard).
9. Temperature extremes.
10. Noise and vibration.

Training and Education

Before initial work assignment begins, TCI will provide training for all workers who are required to work in confined spaces, both non-permit and permit-required spaces. Upon completing this training, TCI must ensure that employees have acquired the understanding, knowledge and skills necessary for the safe performance of their duties.

All employees working within or providing assistance to other employees in confined spaces must be trained in the following:

1. Identification and location of confined spaces.

2. Recognition of potential hazards associated with confined spaces.
3. Recognition of the effects caused by confined space hazards.
4. Use of safety equipment and monitoring equipment.
5. Safe entry procedures including the entry permit.
6. Emergency response and retrieval procedures and
7. Safe evacuation of confined spaces

Attendants must also be trained in CPR and 1st Aid.

Addition training will be required when:

1. The job duties change.
2. There is a change in the confined space program or a confined space operation presents a new hazard.
3. When an employee's job performance shows deficiencies.

TCI Confined Space Entry Checklist and Permit System

A TCI Confined Space Entry Checklist & Permit, signed by a TCI entry supervisor verifying that pre-entry preparations have been completed and that the space is safe to enter, is required for any confined space entry (non-permit or permit required). The completed form will be posted at entrances or otherwise be made available to entrants before they enter the confined space.

For ease of use, the Entry Checklist & Permit has been formatted for use in both non-permit and permit-required situations. The instructions highlight; which additional sections must be completed if a permit-required entry is being performed.

The duration of the entry checklist % permit will not exceed the time required to complete an assignment. The TCI entry supervisor will terminate entry and cancel entry checklist & permit when an assignment has been completed or when new conditions exist. New conditions will be noted on the canceled permit and used in revising the confined space program. TCI Entry Supervisors are asked to send a copy of the cancelled entry checklist & permit to the Safety Department. It is the policy of TCI to keep all canceled entry checklists & permits for at least one year.

Information Included on the TCI Confined Space Entry Checklist and Permit

1. Name and signature of person who authorizes entry (TCI entry supervisor);
2. Name and location of space to be entered, authorized entrant(s), authorized attendants, and stand by emergency response team personnel (as applicable);
3. Purpose of entry and known space hazards;
4. Measures to be taken to isolate permit spaces and to eliminate or control space hazards (i.e., locking out or tagging of equipment and procedures for purging, making inert, ventilating, and flushing permit space);
5. Atmospheric test results;

6. Name and telephone number of rescue and emergency services, as applicable;
7. Date and authorized duration of entry;
8. Acceptable entry conditions;
9. Communication procedures and equipment to maintain contact during entry;
10. Additional permits, such as for hot work, that have been issued to authorize work in the permit space;
11. Special equipment and procedures, including personal protective equipment, alarm systems, emergency response and retrieval procedures, methods for safe evacuation of confined spaces; and
12. Any other information needed to ensure employee safety.

Confined Space Monitoring

1. Prior to conducting confined space monitoring, the monitor must be checked to ensure that it is calibrated and operating properly. The confined space entrant(s) should be given the opportunity to verify this process and to witness the confined space monitoring.
 - a. Instrument must have a valid documented calibration performed within the last 30 days.
 - b. A bump test must be performed with a test gas each day of use prior to entry. Do not use an instrument which fails the bump test; contact the Support Center to have a replacement instrument sent to your jobsite.
2. Pre-entry atmospheric testing shall be performed to ensure that acceptable entry conditions are present.
3. Acceptable atmospheric entry conditions include:
 - a. Oxygen levels have been determined to be between 19.5% and 23.5%
 - b. Flammable gas and vapor levels are less than 10% of LEL for that gas or vapor.
 - c. Any recognized potential toxic compound level is below the Permissible Exposure Limits (PEL).
 - d. Entrants should understand the reason for any significant atmospheric deviations from normal atmospheric conditions (i.e. 20.9% oxygen, 0% LEL, 0ppm CO/H₂S, etc.).
4. Confined Spaces shall be tested or monitored for oxygen, then for combustible gases and vapors, then for toxic gases and vapors, and then for any other recognized hazard(s) to determine if acceptable entry conditions are being maintained during the course of entry operations.
5. At a minimum, confined space testing or monitoring shall be conducted at the top, middle and bottom of the confined space to locate varying concentrations of gases and vapors. Deep confined spaces may require monitoring at periodic elevations from top to bottom. Due to the varying physical characteristics of the gases and vapors most likely to be encountered in confined spaces, it is essential to perform testing or monitoring at differing elevation prior to entry and the introduction of forced ventilation.
6. Continuously monitor the soave due to the fact that conditions can change. Document the results of atmospheric monitoring on the Confined Space Entry Checklist and Permit throughout the day.

Authorized Entrant's Duties

1. Know space hazards, including information on the mode of exposure (e.g., inhalation or dermal absorption), signs or symptoms, and consequences of the exposure.
2. Use appropriate personal protective equipment properly (e.g., face and eye protection and other forms of barrier protection such as gloves, aprons, and coveralls).
3. Maintain communication as necessary (i.e., telephone, radio, visual observation) with attendants to enable them to monitor the situation.
4. Alert the attendant when a prohibited condition exists or when warning signs or symptoms of exposure exist.
5. Exit from permit space as soon as possible when indicated by an Attendant, Entry Supervisor, or Emergency Response Team Personnel. Exit may be prompted by recognition of warning signs or symptoms of exposure, when a prohibited condition exists or when an automatic alarm is activated.

Attendant's Duties

1. Remain outside permit space during entry operations unless relieved by another authorized attendant or Emergency Response Team Personnel.
2. Direct non-entry rescues.
3. Know existing and potential hazards including information on the mode of exposure, signs or symptoms, consequences of the exposure, and their physiological effects.
4. Maintain constant communication with and keep an accurate account of those workers entering the confined space. If entrant(s) are out of visual range, the attendant and entrant(s) will remain in audible contact. This can be accomplished using two-way radios or a Push-to-Talk (PTT) feature on a Nextel. Cellular telephone communications is not acceptable. Note: At least one other employee, who may have other duties, will be within sight or call of the attendant at all times. This requirement may be waived if the standby is in radio or phone communication with personnel present on the jobsite.
5. Order evacuation of the permit space when a prohibited condition exists, when monitoring detects a hazardous condition, when a worker shows signs of physiological effects of hazardous exposure, when an emergency outside the confined space exists and when an attendant cannot effectively and safely perform required duties.
6. Summon rescue and other services during an emergency.
7. Ensure that unauthorized personnel stay away from permit spaces or exit immediately if they have entered the permit space.
8. Inform authorized entrants or entry supervisor of entry by unauthorized personnel.
9. Perform no other duties that will interfere with the attendant's primary duties.
10. The attendant will perform, and record, confined space monitoring as required by the monitoring section of this program until work in the confined space is completed.
11. The attendant will be trained in first aid and CPR.
12. Upon completion of confined space operations the attendant will submit a copy of the completed confined space entry permit to the entry supervisor or superintendent.

13. An attendant may be assigned to monitor more than one space, provided they can perform the duties identified above and provided the entry supervisor has received authorization from the Safety Department.

Entry Supervisor's Duties

1. Know space hazards including information on the mode of exposure, signs, or symptoms and consequences of exposure.
2. Verify emergency plans and specified plans and specified entry conditions such as permits, tests, procedures, and equipment before allowing entry.
3. Issue CEI Confined Space Entry Checklist and Permit, terminate entry and cancel permits when entry and cancel permits when entry operations are completed or if a new condition exists.
4. Take appropriate measures to remove unauthorized entrants.
5. Ensure that entry operations remain consistent with the entry checklist and permit and that acceptable entry conditions are maintained.

Emergencies

If a permit-required confined space entry is performed, trained emergency response team (ERT) personnel must be available on stand-by. ERT personnel are provided with, and trained in, the proper use of personal protective and rescue equipment, including respirators; trained to perform assigned rescue duties; and have had authorized entrant's training. The standard also requires that all ERT's be trained in first aid and CPR.

Also, when appropriate, authorized entrants or ERT personnel who enter a permit space must wear a full body harness with a retrieval line attached. Wristlets may be used when TCI can demonstrate that the use of a chest or full body harness is infeasible or created a greater hazard. Also, TCI will ensure that the other end of the retrieval line is attached to a mechanical device or to a fixed point outside the permit space. A mechanical device must be available to retrieve personnel from vertical type permit spaces more than 5 feet deep. For non-permit required confined space entry, entrants are asked to consider wearing a full body harness during entry if feasible to assist with rescue in the event a personal medical condition arises.

Alternate Procedures

For confined spaces containing hazards that can be completely controlled by the use of forced ventilation, entry may be performed using alternate procedures listed below. Please contact the Safety Department to discuss your planned procedures prior to entry.

- Complete TCI Confined Space Entry Checklist and Permit.
- Before an employee enters the confined space, test the internal atmosphere with a calibrated, direct-reading instrument for all of the following, in this order:
 1. Oxygen content.

2. Flammable gases and vapors.
 3. Potential toxic air contaminants.
- Provide entrants, or their authorized representatives, with an opportunity to observe the pre-entry and periodic testing.
 - Use continuous forced air ventilation, as follows:
 1. Wait until the forced air ventilation has removed any hazardous atmosphere before allowing entrants into the space.
 2. Direct forced air ventilation toward the immediate areas where employees are, or will be, and continue ventilation until all employees have left the space.
 3. Provide the air supply from a clean source and make sure it does not increase hazards in the space.
 - Test the atmosphere within the space as needed to make sure hazards do not accumulate. Document results on the TCI Confined Space Entry Checklist and Permit throughout the day.
 - If a hazardous atmosphere is detected during entry:
 1. Evacuate employees from the space immediately.
 2. Evaluate the space to determine how the hazardous atmosphere developed.
 3. Implement measures to protect employees from the hazardous atmosphere before continuing the entry operation.
 4. Verify the space is safe for entry before continuing the entry operation.
 - Post a copy of the completed TCI Confined Space Entry Checklist and Permit at the location of work.

Subcontractor Coordination

Subcontractors involved in confined space entry work at our facilities or on our jobsites will be informed that entry is allowed only through compliance with TCI's confined space program.

- Subcontractors shall be notified of the hazards identified, TCI's experience with the space and any precautions or procedures implemented for the protection of employees in or near confined spaces where subcontractor personnel will be working.
- Safety pre-task plans shall include steps to coordinate entry operations when subcontractors and TCI employees are working simultaneously as authorized entrants in a confined space so that employees of one employer do not endanger the employees of any other employer.
- Subcontractors shall be debriefed at the conclusion of any permit-required confined space entry work regarding issues and hazards confronted or created during operations.
- Subcontractor Responsibilities:
 - Complying with TCI confined space requirements.
 - Providing confined space training to any subcontractor employees performing confined space entry.
 - Coordinating entry operations with TCI when subcontractor personnel will be working in or near confined spaces.
 - Informing TCI of their company confined space program requirements.

- Notify TCI of any hazards confronted or created during confined space entry through a debriefing or during the entry operation.

SECTION 2.23: FIRST AID

First Aid Kit(s), appropriate to the needs of the project will be provided and maintained at the job site trailer or office and/or the gang box(es). First Aid supplies must be in individually sealed packages and be stored in a weather-proof container. First Aid kits must include barriers against blood borne pathogens, such as gloves, masks, etc. All Foremen are expected to maintain a current CPR/1st Aid Certification. CPR and First Aid training courses are offered periodically by Titan Carports Inc. to refresh training and maintain skills.

The location of the nearest clinic and hospital must be posted on the jobsite, in addition to emergency contact numbers.

General Rules

The following rules are applicable to most first aid situations that might be encountered:

1. Assume that all body substances are infectious and always take measures to reduce exposure prior to initiating first aid or CPR. (Refer to additional information on preventing disease transmission, below).
2. Be calm, size up the situation as completely and quickly as possible before giving first aid.
3. Take care of the most important conditions first. Severe bleeding, stoppage of breathing and poisoning must be treated immediately before anything else is done.
4. Be gentle in handling an injured person. If the injury is serious, keep the person lying down and make him as comfortable as possible. Do not move him unless you know it can be done without making the person worse.
5. Be clean in treating a wound. A basic knowledge of bandaging and familiarity with aseptic technique concerning hands, instruments and materials is essential.
6. Call Emergency Medical Services (EMS) if the condition is serious or life threatening.
 - Using a land line, dial 911. If a land line is not available, dialing 011 from a cellular phone often connects the caller with the District Highway Patrol dispatch center. Supervisors on projects without land lines should make an effort to identify the NON-911 Emergency phone number for the jobsite location, and program it into their cellular phone.
 - When contacting EMS, be sure to give the street address and the nearest cross street. If the jobsite is remote, advise the EMS that an employee will be sent to the nearest cross street or turn-off to meet the emergency responders. Send an employee to the nearest cross street or turn-off to meet the emergency responders.
7. Notify your Superintendent and Risk Management of any work-related injuries.

Preventing Disease Transmission

First aid providers must be aware of the risk of blood borne pathogens, such as Hepatitis B, Hepatitis C, and HIV, the virus that causes AIDS. It is important to treat all blood and bodily fluids as infectious. The following guidelines, considered “universal precautions”, should be followed prior to initiating first aid or CPR to prevent exposure:

1. Use barriers to isolate direct contact with patients. Common barriers include disposable gloves, ventilation masks, protective face shields, and safety glasses.
2. Each first aid kit is supplied with disposable gloves. Be sure gloves are not damaged when you put them on. First aid kits contaminated with blood or body fluids should be discarded.
3. Replace gloves before dealing with another patient or if they get heavily soiled.
4. Remove gloves carefully to prevent splattering. Turn gloves inside out as you remove them. Never attempt to clean or re-use gloves.
5. If you need to provide rescue ventilations, use a ventilation shield or ventilation mask to eliminate direct mouth –to-mouth contact with the patient.
6. Immediately wash your hands or other areas with possible exposure using soap and water.

Place materials contaminated with blood or other infectious materials in a leak-proof bag and coordinate disposal with a medical care provider, as these materials are considered a biohazard. Ensure any surfaces that came in contact with the blood or other infectious materials are cleaned and decontaminated. Contact your Superintendent for direction. The use of specific PPE will be detailed in the exposure control plan for each job where a risk of exposure to blood borne pathogens exists. If protective clothing is required, request these materials well in advance of the work to assure that materials are available on-site before work starts since some of these materials may have to be special ordered.

Treatment Following Exposure

As soon as an exposure has been noticed, flush the area with water and wash with disinfectant cleanser. Exposure to the eyes should be treated by flushing eyes for a minimum of 15 minutes. Immediately seek medical consultation at the facility to obtain medical evaluation, blood testing, vaccinations or other appropriate treatment.

SECTION 2.24: BARRICADING

Barricades, safety signs, stanchions, safety cones or safety warning tape should be readily available on the jobsite to isolate/protect unsafe work areas from workers, pedestrians or vehicle traffic, as required.

Barricading must completely enclose the unsafe area. In some instances, signage may be required on the barricade to inform other workers of the hazards present, planned duration of the barricading, and contact information (name/phone number) for any questions. Remove all barricading and signage after work is complete and the hazard is eliminated.

When colored barricade tape is used, select the correct color of tape for the hazard present. The two common colors for barricade tape are yellow and red. Yellow “Caution” tape is intended for situations

where minor safety hazards exist. Other workers may enter an area taped off with yellow caution tape after identifying the hazards present and complying with any requirements to access the area. Red “Danger” tape is needed for high hazard environments, and should never be crossed unless express permission is granted by the individual(s) who placed the barricade tape, and all safety requirements to enter the area have been met. Examples of tasks or situations requiring barricading with red “Danger” tape include: Energized electrical work, overhead suspended load present, and leading edges or floor openings posing a fall hazard present.

SECTION 2.25: COMPRESSED GASES

Store cylinders in a clearly identified, dry, well protected, well ventilated storage area away from doorways, aisles, elevators and stairs.

- Assigned storage places shall be located where cylinders shall be adequately secured to prevent them from being knocked over, damaged by passing or falling objects, or subject to tampering.
- Compressed gas cylinders shall be adequately secured in an upright position using chains or appropriate non-combustible material.
- Cylinders shall be stored in segregated areas depending on their hazard categories and compatibility.
- Cylinders shall be stored at least 50 feet away from the nearest defined smoking area.
- Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil and grease) by a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour. Appropriate signage and fire extinguishers are to be provided at the defined storage location.
- Cylinders not in use shall have protection caps tightly secured. Replace the valve caps on cylinders when regulators are removed.
- Cylinders shall never be dropped, rolled, slid or allowed to fall, and shall be protected from contact with ice, snow, water, salt corrosion and high temperatures.

SECTION 2.26: LIGHTING

OSHA has specified the minimum lighting levels required on jobsites. Light can be provided by permanent, temporary, or spot sources. Fine detail work may require additional lighting. The minimum illumination intensities in foot-candles will be as follows:

REQUIRED LIGHTING LEVELS

AREA	FOOT-CANDLES
General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas.	3
Indoor: warehouses, corridors/hallways and exit ways.	5
General construction plant and shops (e.g. sub-fab, fab level, mechanical and electrical equipment rooms, carpenter shops, store rooms, and indoor toilets and workrooms, break and lunch rooms).	10
First aid stations and offices.	30

SECTION 2.27: SLIP, TRIP. & STEP HAZARDS

Slipping, tripping, and stepping on walking surfaces poses the risk of worker falls to the same level and potentially serious injuries. The work area should be evaluated for potential trip and slip hazards during task planning and during daily job walks.

Slip and Fall Hazards

To prevent slipping on surfaces, a high coefficient of friction (COF) is needed between the shoe and walking surface. On icy, wet, and oily surfaces, the COF can be as low as 0.10 with shoes that are not slip resistant. A COF of 0.40 to 0.50 or more is needed for excellent traction. To put these figures in perspective, a brushed concrete surface and a rubber heel will often show a COF greater than 1.0. Leather soles on a wet smooth surface, such as ceramic tile or ice, may have a COF as low as 0.10.

Providing dry walking and working surfaces and slip-resistant footwear are the answer to slips and their resultant falls and injuries. In work areas there the walking and working surface is likely to be slippery, non-skid strips, or floor coatings should be used. Immediately clean up any spills on walking surfaces.

When working outside in unpaved areas, walk paths should be provided to prevent slips on wet muddy surfaces.

Trip and Fall Hazards

As little as a 3/8" rise in a walking surface can cause a person to "stub" their toe resulting in a trip and fall. Nails, screws, and other types of debris left on the ground, electrical cords routed on the ground, and bunched up floor coverings are all potential trip hazards in the work place. Proper housekeeping in work and walking areas can contribute to safety and all prevention falls. Clean as you go to prevent accumulation of debris on the ground. Place electrical cords overhead or out of main corridors and walkways. Work with your Foreman or Supervisor to address trip hazards created by others.

Step and Fall Hazards

Another type of working and walking surface fall is the "step and fall." This occurs when a person's front foot lands on a surface lower than expected, such as when unexpectedly stepping off a curb in the dark. In this type of fall, the person normally falls forward. A second type of step and fall occurs when a person steps forward or down, and either the inside or outside of the foot lands on an object higher than the other side. The ankle turns, and one tends to fall forward and sideways.

Contributing Factors & At-Risk Behaviors

Adequate lighting to ensure proper vision is important in the prevention of slips and falls. Moving from light to dark areas, or vice versa, can cause temporary vision problems that might be just enough to cause a person to trip over a misplaced object.

Other at-risk behaviors that can lead to slips, trips and falls include: running in the work place, distractions/not watching where one is going, carrying materials which obstruct view; wearing sunglasses in low-light areas; and failure to use handrails.

SECTION 2.28: HEAT STRESS HAZARDS

Working in hot environments (indoors or outside) can place tremendous stress on the body. Heat stress at its simplest is the stress placed on the body by heat. Heat stress can be as minor as a heat rash or as life threatening as a heat stroke. A Heat Stress Prevention Protocol has been implemented to protect workers from the hazards of heat stress. This Protocol has seven (7) major components:

- Definitions applicable to the Heat Stress Prevention Protocol
- Provisions for water
- Access to Shade
- Responding to Symptoms of Heat-Related Illness
- Training
- Responsibilities for Supervisors
- High Heat Protocols

1. Definitions applicable to the TCI Heat Stress Prevention Protocol

- a. "Acclimatization" means temporary adaption of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.
- b. "Heat Illness" means a serious medical condition resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope and heat stroke.
- c. "Environmental risk factors for heat illness" means working conditions that create the possibility that heat illness could occur, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.
- d. "Personal risk factors for heat illness" means factors such as an individual's age, degree of acclimatization, health, water consumption, and use of prescription medications that affect the body's water retention or other physiological response to heat.
- e. "Preventative recovery period" means a period of time to recover from the heat in order to prevent heat illness.
- f. "Shade" means blockage of direct sunlight. Canopies, umbrellas and other temporary structures or devices may be used to provide shade. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning.

2. Provisions for Water

TCI will provide access to potable drinking water in sufficient quantities as identified in the OSHA regulations. Employees are encouraged to drink water throughout the day to remain sufficiently hydrated.

3. Access to Shade

TCI will provide access to shade for work occurring outdoors in hot environments (as defined in the Definitions above). Employees suffering from heat illness or believing a preventative recovery period is needed, will be provided access to an area with shade that is either open to the air or provided with ventilation or cooling for a period of no less than 5 minutes. Such access to shade shall be permitted at all times.

A shade area(s) must be available at the beginning of the shift if the predicted temperature forecast is for the temperature high above 85 degrees F. Provide enough shade to accommodate 25% of the employees on a shift at any given time. Employees should be able to sit comfortably in the shade without touching each other.

Shade area must not cause exposure to another hazard and be located as close as practical. Shade should be reachable within a 2.5 minute walk. In no case should the shade area be located more than ¼ mile or a 5 minute walk away (whichever is shorter).

Employees must receive a verbal authorization from their immediate supervisor prior to taking a preventative recovery period and report back to the same supervisor when reporting back to work after the preventative recovery period. The supervisor should review the reasoning used by an employee requesting a preventative recovery period. This is not an interrogation, but rather to ascertain if there are any other concerns that the supervisor should be aware of:

- a. Reported symptoms of nausea, dizziness, lightheadedness or vomiting?
- b. Signs of profuse sweating?
- c. Was the workspace enclosed, or without air circulation or both?
- d. Was the workspace hot or humid?
- e. Was the workspace shady or subjected to direct sunlight?
- f. Is the employee on any prescription medications?
- g. Are there any signs of alcohol use?
- h. Is the employee new to the job?
- i. Does the employee have allergies?
- j. Has the employee been drinking water? If yes, how often and how much?

Employees will be escorted to the shaded recovery area and remain there until they are ready to return to work. Employees cannot leave the jobsite during the preventative recovery period without permission from their immediate supervisor. The shaded recovery area will be located within visual range of the jobsite trailer or some other location where the condition of an employee or employees can be continually observed.

Employees will be sent to a medical clinic for evaluation and/or medical attention if their symptoms have not resolved after 15 minutes in the shaded recovery area. The supervisor will evaluate the need for an employee to be sent to a medical clinic for evaluation and/or medical attention if that employee request more than one recovery period in a 4 hour work period.

4. Responding to Symptoms of Heat Related Illness

The various illnesses associated with heat stress and the associated symptoms and treatment protocols are identified in Section 5, below. Employees exhibiting signs of heat rash, heat cramps or early heat exhaustion (symptoms subside in the shaded recovery area), that need to be sent to a medical clinic for evaluation and/or medical attention will be driven to the clinic in a TCI vehicle by a supervisor or person designated by the supervisor. An ambulance and the Emergency Medical Services (EMS) will be contacted immediately in the event that an employee exhibits symptoms of moderate heat exhaustion or heat stroke.

5. Training

TCI will provide training to all employees with potential exposure to heat stress. This training will cover the following areas (as identified in the Cal-OSHA Heat Illness Prevention standard):

- a. The environmental and personal risk factors for heat illness/heat stress
- b. The employer's procedures for complying with the requirements of the Heat Illness Prevention standard
- c. The importance of frequent consumption of small quantities of water, up to 4 cups per hour, when the work environment is hot and employees are likely to be sweating more than usual in the performance of their duties.
- d. The importance of acclimatization
- e. The different types of heat illness and the common signs and symptoms of heat illness
- f. The importance to employees of immediately reporting to the employer, directly through the employee's supervisor, symptoms or signs of heat illness in themselves, or in co-workers
- g. The employer's procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider
- h. The employer's procedures for ensuring that, in the event of an emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders

Heat Stress Training Topics

a. **WHERE DOES HEAT STRESS OCCUR IN CONSTRUCTION?**

Construction operations involving heavy physical work in hot, humid environments can put considerable heat stress on workers. Hot and humid conditions can occur either indoors or outdoors.

Examples of indoor and outdoor construction operations that are frequently associated with heat stress among workers include (but are not limited to):

1) Indoors

- a) Steel mills and foundries
- b) Boiler rooms
- c) Pulp and paper mills
- d) Electrical utilities
- e) Petrochemical plants
- f) Smelters
- g) Furnace operations
- h) Oil and chemical refineries
- i) Electrical vaults
- j) Interior construction and renovation

2) Outdoor

- a) Road building
- b) Building construction
- c) Work on bridges
- d) Trenching
- e) Pouring and spreading tar or asphalt
- f) Working on flat or shingle roofs
- g) Excavation and grading

In addition to environmental aspect of heat stress associated with the operations listed above, work on or near energized electrical circuits, inside asbestos containment structures for asbestos removal, work with hazardous wastes, and other operations that require workers to wear semi-permeable or impermeable protective clothing can contribute significantly to heat stress. Heat stress causes the body's core temperature to rise.

b. HOW TO RECOGNIZE HEAT-RELATED ILLNESS?

Heat stress disorders range from minor discomforts to life-threatening conditions:

- Heat rash
- Heat cramps
- Heat exhaustion
- Heat stroke

1) Heat Rash

Heat rash- also known as prickly heat- is the most common problem in hot work environments. Symptoms include:

- Red blotches and extreme itchiness in areas persistently damp with sweat
- Prickling sensation on the skin where sweating occurs

Treatment-Cool environment, cool shower, and thorough drying. In most cases, heat rashes disappear a few days after heat exposure ceases. If the skin is not cleaned frequently enough the rash may become infected.

2) Heat Cramps

Under extreme conditions, such as working for several hours in heavy protective gear, the body may lose salt through excessive sweating. Heat cramps can result. These are spasms in larger muscles-usually back, leg and arm. Cramping creates hard painful lumps within the muscles.

Treatment- Stretch and massage muscles; replace salt by drinking commercially available carbohydrate/electrolyte replacement fluids

3) Heat Exhaustion

Heat exhaustion occurs when the body can no longer keep blood flowing to supply vital organs and at the same time send blood to the skin to reduce body temperature. Signs and symptoms of heat exhaustion include:

- Weakness
- Difficulty continuing work
- Headache
- Breathlessness
- Nausea or vomiting
- Feeling faint or actually fainting

Workers fainting from heat exhaustion while operating machinery, vehicles, or equipment can injure themselves and others.

Treatment-heat exhaustion casualties respond quickly to prompt first aid. If not treated promptly, however, heat exhaustion can lead to heat stroke-a medical emergency.

- Call 911
- Help the casualty to cool off by
 - Resting in a cool place
 - Drinking cool water
 - Removing unnecessary clothing
 - Loosening clothing
 - Showering or sponging with cool water

It takes 30 minutes at least to cool the body down once a worker becomes overheated and suffers heat exhaustion.

4) Heat Stroke

Heat stroke occurs when the body can no longer cool itself and body temperature rises to critical levels.

WARNING: Heat stroke requires immediate medical attention.

The primary signs and symptoms of heat stroke are:

- Confusion
- Irrational behavior
- Loss of consciousness
- Convulsions
- Lack of sweating
- Hot, dry skin
- Abnormally high body temperature – for example, 41°C.

Treatment- For any worker showing signs or symptoms of heat stroke:

- Call 911
- Provide immediate, aggressive, general cooling
 - Immerse worker in tub of cool water or place in cool shower or spray with cool water from a hose
 - Wrap worker in cool, wet sheets and fan rapidly
- Transport worker to hospital
- Do not give anything by mouth to an unconscious worker.

WARNING:

- **Heat stroke can be fatal even after first aid is administered. Anyone suspected of suffering from heat stroke should not be sent home or left unattended unless that action has been approved by a physician.**
- **If in doubt as to what type of heat-related disorder the worker is suffering from, call for medical assistance.**

c. WHAT FACTORS ARE USED TO ASSESS HEAT STRESS RISK?

Factors that should be considered in assessing heat stress include:

- Personal risk factors
- Environmental factors
- Job factors

1) Personal risk factors

It is difficult to predict just who will be affected by heat stress and when, because individual susceptibility varies. There are, however, certain physical conditions that can reduce the body's natural ability to withstand high temperatures:

a) Weight

Workers who are overweight are less efficient at losing heat.

b) Poor physical condition

Being physically fit aids your ability to cope with the increased demands that heat places on your body.

c) Previous heat illnesses

Workers are more sensitive to heat if they have experienced a previous heat-related illness.

d) Age

As the body ages, its sweat glands become less efficient. Workers over the age of 40 may therefore have trouble with hot environments. Acclimatization to the heat and physical fitness can offset some age-related problems.

e) **Heart disease or high blood pressure**

In order to pump blood to the skin and cool the body, the heart rate increases. This can cause stress on the heart.

f) **Recent illness**

Workers with recent illnesses involving diarrhea, vomiting, or fever have an increased risk of dehydration and heat stress because their bodies have lost salt and water.

g) **Alcohol consumption**

Alcohol during the previous 24 hours leads to dehydration and increased risk of heat stress.

h) **Medication**

Certain drugs may cause heat intolerance by reducing sweating or increasing urination. People who work in a hot environment should consult their physician or pharmacist before taking medications.

i) **Lack of acclimatization**

When exposed to heat for a few days, the body will adapt and become more efficient in dealing with raised environmental temperatures. This process is called acclimatization.

Acclimatization may take up to 14 days. Benefits include:

- Lower pulse rate and more stable blood pressure
- More efficient sweating (causing better evaporative cooling)
- Improved ability to maintain normal body temperatures

2) **Environmental factors**

Environmental factors such as ambient air temperature, air movement, and relative humidity can all affect an individual's response to heat. The body exchanges heat with its surroundings mainly through radiation and sweat evaporation. The rate of evaporation is influenced by humidity and air movement.

a) **Radiant Heat**

Radiation is the transfer of heat from hot objects through air to the body. Working around heat sources such as kilns or furnaces will increase heat stress. Additionally, working in direct sunlight can substantially increase heat stress. A worker is far more comfortable working at 75°F under cloudy skies than working at 75°F under sunny skies.

b) **Humidity**

Humidity is the amount of moisture in the air. Heat loss by evaporation is hindered by high humidity but helped by low humidity. As humidity rises, sweat tends to evaporate less. As a result, body cooling decreases and body temperature increases.

c) **Air Movement**

Air movement affects the exchange of heat between the body and the environment. As long as the air temperature is less than the worker's skin temperature, increasing air speed can help workers stay cooler by increasing both the rate of evaporation and the heat exchange between the skin surface and the surrounding air.

3) Job factors

a) Clothing and Personal Protective Equipment (PPE)

Heat stress can be caused or aggravated by wearing PPE such as fire or chemical retardant clothing. Coated and non-woven materials used in protective garments block the evaporation of sweat and can lead to substantial heat stress. The more clothing worn or the heavier the clothing, the longer it takes evaporation to cool the skin. Remember too that darker colored clothing absorbs more radiant heat than lighter colored clothing.

b) Workload

The body generated more heat during heavy physical work. For example, construction workers shoveling sand or laying brick in hot weather generate a tremendous amount of heat and are at risk of developing heat stress without proper precautions. Heavy physical work requires careful evaluation even at temperature as low as 73°F to prevent heat disorders. This is especially true for workers who are not acclimatized to the heat.

6. Responsibilities for Supervisors

Supervisors of employees having exposure to heat stress shall participate in general employee training for heat stress prevention and ensure their employees have been trained. They are also responsible for:

- Ensuring adequate water supply is available.
- Ensuring appropriate shade has been provided for work outdoors.
- Monitoring the employees' preventative recovery periods and implementing the protocols identified in "**Responding to Symptoms of Heat Related Illness**" (listed in Section 4, above) should an employee need to be sent to a medical clinic for evaluation and/or medical attention or EMS need to be called.
- For new employees who are not acclimatized to working in hot environments, lessen the intensity of the employees' work during a two-week break-in period and be extra-vigilant with new employees, and recognize immediately symptoms of possible heat illness.

7. High Heat Protocols

When the temperature equals or exceeds 95°F or during a heat wave, Foremen must:

- Ensure effective communication (by voice, observation or electronic means)
- Observe employees for alertness and signs and symptoms of heat illness
- Give more frequent reminders to drink plenty of water
- Closely supervise new employees, and all workers during heat wave

SECTION 2.29: COLD STRESS HAZARDS

When the body is unable to warm itself, serious cold related illnesses and injuries such as frost bite and hypothermia can occur, which may result in permanent tissue damage or death. Cold related illnesses can slowly overcome a person who has been chilled by low temperatures, brisk winds, or wet clothing.

Frost bite occurs when deep layers of skin and tissue freeze. The skin may take on a waxy-white skin color and become hard and numb. Frost bite usually affects the fingers, hands, toes, feet, ears, and nose. If an employee is suspected of having frost bite:

- Move the person to a warm area. Don't leave the person alone.
- Remove any wet or tight clothing that may cut off blood flow to the affected area. Do not rub the affected area, because rubbing causes damage to the skin and tissue. Gently place the affected area in a warm (105°F) water bath and monitor the water temperature to slowly warm the tissue. Seek medical attention as soon as possible.

Hypothermia is a potentially life threatening illness that occurs when the normal body temperature drops to 95°F or below. Normal body temperature is around 98.6°F. It can occur when land temperatures are above freezing (32°F). Symptoms of hypothermia include fatigue or drowsiness, uncontrolled shivering, cool bluish skin, slurred speech, clumsy movements, and irritable, irrational or confused behavior. If an employee is suspected of having hypothermia:

- Call for immediate emergency help (Call 911).
- Move the person to a warm, dry area. Don't leave the person alone. Remove any wet clothing and replace with warm, dry clothing or wrap the person in blankets.
- Have the person drink warm, sweet drinks (sugar water or sports-type drinks) if they are alert. Avoid drinks with caffeine (coffee, tea, or hot chocolate) or alcohol.
- Have the person move their arms and legs to create muscle heat. If they are unable to do this, place warm bottles or hot packs in the arm pits, groin, neck, and head areas. Do not rub the person's body or place the, in warm water bath, as this may stop their heart.

There are personal factors which may increase a worker's risk for developing a cold stress illness or injury. These include:

- Predisposing health conditions such as cardiovascular disease, diabetes, and hypertension.
- Use of certain medication (check with your doctor, nurse, or pharmacy and ask if any medicines you are taking affect you while working in cold environments).
- Poor physical conditioning or poor diet.

To prevent cold stress illnesses and injuries, select proper clothing for cold, wet, and windy conditions. Layer clothing to adjust to changing environmental temperatures. Wear a hat and gloves, in addition to underwear that will keep water away from the skin (i.e. polypropylene, etc.). Take frequent short breaks in warm dry shelters to allow the body to warm up. If possible, perform work during the warmest part of the day. In addition, avoid exhaustion or fatigue because energy is needed to keep muscles warm. Use the buddy system when working in cold environments and drink warm sweet beverages (sugar water, sports-type drinks) throughout the day. Avoid drinks with caffeine, such as coffee, tea, or hot chocolate.

SECTION 2.30: HEAVY EQUIPMENT/MATERIAL HANDLING AND EARTHMOVING EQUIPMENT

1. Equipment shall be maintained in good working order. At the beginning of each shift, inspect equipment for defects in:
 - a. Service brakes, trailer brake connections, parking brake system, and emergency stopping system (brakes).
 - b. Tires, horn, steering mechanism, seat belts, operating controls, back-up alarm, and safety devices.
 - c. Lights, reflectors, windshield wipers, defrosters, and fire extinguishers.
2. When equipment is used in the dark or when visibility conditions warrant additional light, vehicles in use shall be equipped with at least two headlights and two taillights in operable condition.
3. All vehicles shall be equipped with an audible warning device (horn) and automatic back-up alarm that sounds immediately upon backing:
 - a. In congested areas or areas with high ambient noise which obscures the audible alarm, a spotter will be provided in clear view of the operator to direct the backing operation.
4. Immediately replace any cracked or broken windshields.
5. Seat belts must be used at all times.
6. Trucks with dump bodies must be equipped with a positive means of support that is permanently attached to prevent accidental lowering of the body while maintenance or inspection work is being done.
7. Operating levers controlling hoisting or dumping devices on haulage bodies shall be equipped with a latch or other device that will prevent accidental starting or tripping of the mechanism.
8. Trip handles for tailgates of dump trucks shall be so arranged that, in dumping, the operator will be in the clear.
9. All rubber-tired motor vehicle equipment must be equipped with fenders.
10. Before starting the motor, the operator shall check to make sure that all operating controls are in the neutral position.
11. Before starting the equipment, the operator shall walk around the equipment to make sure that no other personnel, equipment or material will be struck.
12. Never leave a piece of equipment unattended while the motor is running.
13. Block or chock wheels when parking on inclines.
14. No employee other than the operator shall ride on the equipment.
15. Turn the motor off during refueling. Smoking and cell phone use is prohibited during refueling.
16. Remove keys from unattended equipment.
17. Equipment shall be under control at all times and shall be kept in gear when descending grades.
18. No vehicle shall be driven at a speed greater than is reasonable and proper, with due regard for weather, traffic, intersections, width and character of the roadway, type of motor vehicle, any other existing conditions.

SECTION 2.31: RAISED ACCESS FLOORS

When work is to be performed under a raised access floors, the following guidelines should be followed. Review integrity of raised access floor support system and pedestals prior to beginning work.

1. Use a secure trench/straight ladder or other safe method to enter the area.
2. Avoid stepping on insulated pipe. Report damage if it occurs.
3. Use knee pads or kneeling pads and wear long sleeve shirt or Kevlar arm guards if wearing short sleeves.
4. During equipment move-in, do not come within 2 floor tiles of the barricaded area move-in pathway. Never cross red danger tape or disregard spotters.
5. Do not push open a floor tile from below without properly barricading the area above unless it is an emergency evacuation.
6. Use head lamps and/or provide temporary lighting (as needed).
7. Use fans if additional air flow is needed.
8. When traveling a distance under the floor, pull tiles in advance and barricade openings to provide designated areas where employees can surface/stretch.
9. Take micro breaks to stretch when in awkward sustained postures under the floor.
10. Stay well hydrated.
11. Rotate under floor activities. Employees should not work under the floor the entire day.
12. Provide safe storage for removed floor tiles, as they can become a slip/trip hazard for employees walking in the area (place tiles on a cart, provide a cone/barricading, etc.).
13. Provide cones, delineators, or barricading for open floor tile areas (and signage as applicable). Provide delineators and barricade tape if more than one floor tile must be removed.
14. Reinforce flooring on equipment move-in pathways to distribute weight over a larger surface area to avoid floor tile collapse.

SECTION 2.32: PAINTING

1. Painters apply coatings and paint to interior and exterior building surfaces with a variety of jobsites, chemical use, and physical and ergonomic demands.
2. A lot of painting work is done from heights. Inspect ladders daily, set them properly, and work from ladders safely. Make sure a qualified person properly installed your scaffolding. Don't use makeshift ladders or scaffolds that could fail and cause a fall. Know when to use fall protection and how to use it properly.
3. Read the material safety data sheet (MSDS) to learn about the chemicals in paints and surface preparation materials you use. Even though a material may be water-based and labeled "green," it can still contain hazardous ingredients. Good ventilation protects you from paint fumes. Spray booths, fans, open doors, and windows can move fresh air into your workspace.
4. Choose and wear proper personal protective equipment. Goggles or safety glasses protect your eyes from paint splashes during application and mixing. Gloves and coveralls protect your skin from absorbing chemicals. Wear a respirator to protect yourself from dusts, spray paint droplets, and the fumes from solvents and paints.
5. Preparing surfaces by sanding and cleaning can expose you to dust. Get trained in the building hazards of asbestos, mold, and lead. Make sure that trained workers clean up these hazards before you disturb them and make them airborne. Practice good hygiene by washing up during

and after work. Keep your work clothes and shoes separate from your family to prevent cross-contamination at home.

6. Painting is a physical job, so maintain your overall health and fitness. Choose the correct tools for your job task. Use tool handles long enough to prevent you from over-reaching. Handles should be soft, non-slip, and fit your hand. Try different models until you get a comfortable fit.
7. Painting involves repetitive movements and awkward positions. Rotate your job tasks during the day and take rest breaks to prevent fatigue. Use proper lifting techniques to protect your back. Wear comfortable work boots with non-slip soles that will support your feet as you stand all day.
8. Indoors and out, all year long, painting jobsites expose you to hot and cold weather. Dress in light layers that protect you from the sun and cold. Practice good housekeeping on the jobsite to prevent slips, trips, and falls. When you work alone, secure your jobsite by locking doors; communicate your location and expected job duration with others.

Section 3

Standard operating procedures

3.1 Layout

1. Make sure the plans that are being used are up to date.
 - Verify this with onsite superintendent or construction manager.
 - If in question make sure that they sign an affidavit on the planes used for layout.
2. Find a fixed point on the layout and verify it being the point on the planes.
 - Base the first drill location off of a landmark on the planes.
 - If no landmark place in area that will allow all hole locations to be layout.
3. Mark points with white paint
4. Make sure no conflicts exist (i.e. Underground utilities, trees, fire access, or buildings)
5. Layout for USA or blue stake
6. After known utilities, private locations, as-builts, all Christy boxes are verified. Walk the hole locations with the CM. Having him sign that the locations are in the right spot and that it is ok to drill at those locations.
7. Verify the locations to drill using an orange spray painted dot at the center of the X.

3.2 Concrete Sawing / Boring

1. Verify that conditions have not changed or new underground lines have been discovered.
2. Verify the layout with Forman and that all underground utilities are taken into account and you are given the authorization from the CM to Saw cut.
3. If line is present under area of working make sure to follow LOTO procedures include any worker working in the affected area.
4. Saw cut in a manner so that the final product will be to the highest standards
5. Remove saw cut or bore pieces

Note: Often it is required to jackhammer loose pieces out.

3.3 Drilling

1. Verify that conditions have not changed or new underground lines have been discovered.
2. Verify the CM has signed the ok to drill.
3. Verify that the General Contractor has a permit.
4. Have the driller understand the need for a straight hole and the hole depth.
Note: DO NOT SET THE OGER INTO THE DRILL RIG STOOD UP
5. Have a spotter for the driller to verify that the hole is to the proper depth, that the hole is in the correct location, and that hole is going vertical.
Note: Make sure the driller and the spotter both understand the layout before drilling and all markings on the ground.
Note: If any lines are near or if a line will be penetrated have a LOTO in place for all workers in the affected area.
6. Everyone must remain a safe distance (a minimum of 10 feet) from the auger when helping the operator.
7. If hole is deeper than 6ft or required have the worker tie off while hole is uncover and within 6 feet of the hole. Especially while cleaning or putting on the hole cover.
8. Clean around hole so the area around the hole is level with surrounding ground.
9. Keep all spoils 2' from the edge.
10. Verify hole depth.
11. Cover hole with hole cover
Note: Hole Covers must meet certain requirements
 - a. Clearly marked hole in the language(s) used on the job site.
 - b. A thickness to allow 250lbs load without bending
 - c. Weighed down, so accidental movement does not occur
12. Spread dunage and angels weighing down hole covers

3.4 Dirt Removal

1. Removal of dirt is often difficult depending on the area. Make sure the area that the dirt will be located is in an area that will be easily removed for other time or is smoothed out.
2. Sweep and/or flatten out area where dirt piles were located.
3. Pressure wash if need

Note: It may be necessary to follow SWEP guidelines and protect the drains when pressure washing the affected areas.

3.5 Measuring Elevations

1. Spread dunage and angle so that the dunage is perpendicular to the line of columns and the dunage is to one side of the hole parallel to the line of dunage.

- It is necessary to remove the hole cover during this process, if required make sure to be tied off and that the hole cover is placed over the dunage and angle when not shooting the actual elevations

2. Shoot the elevations using a transit that is set up mid-point the building.

Note: if shooting long buildings, in order to keep the accuracy of the elevations, it may be necessary to move the transit. Keep in mind to reshoot the previous two columns and add or subtract the difference in the change after the move of the transit.

- Have a worker with a tape measure, measure from the middle of the dunage going vertical and straight.
- Make sure after shooting to place hole cover back over the hole.
- While shooting elevations keep an eye on the bubble of the transit to keep from it going out of tune.
- While shooting keep notes of the elevations
- After shots are complete send them to the Forman to verify the height requirements.

3.6 Layout material and Weld angels to columns

1. Layout columns so that the tops are all facing away from the holes and that any rebar cages are set near so that they can be placed with ease onto the column.
2. Mark the locations with the given measurements. From that mark measure depth of the hole keeping embedment in mind.

3. Weld angel at the mark, if possible weld in the center of column. Make sure not to have too much over cut and that the weld will not break when place in hole.

Note: If required have welding shield and fire watch present.

4. Based on embedment cut or weld rebar on ends of columns

5. Place rebar cage on bottom of column. Securing it with enough bailing wire to not come unloose while lifting column into place.
6. Place concrete spacers on cages in order to maintain dirt clearance distances.

3.7 Setting columns

1. Fill out a lift plan and have a tail gate meeting to discuss lift plan.
2. After lift plan has been verified and that it has been signed attach truss boom to grade all
3. Inspect rigging equipment
 - Truss boom shackle
 - Chokers
Note: If red thread is showing on chokers remove and throw away immediately.
 - Clevis
Note: If cracking or bend remove and throw away immediately
 - Tag line
4. Attach Clevises to top of column and tag line chocked above angel
5. Place hole cover under bottom of column, rebar, and/or cage, preventing damage from the sliding of the column
6. Place barricade or red danger tape around affected area, have spotters for grade all.
7. Remove hole cover and prep dunage make sure that the dunage is place long side up. If required, tie off while prepping hole or while in a 6 foot vicinity of hole.
8. Lift column into place ensuring that the column does not swing using the tag line.
9. Rough tune the column.
Note: Keep an eye on the weld on the angle to column connection that it is not breaking.
10. Tilt column up checking side to side and front to back.
11. Weld second angle on the back of the column.
Note: If required have welding shield and fire watch present.
12. After weld is complete release the tension on the chokers by letting the grade all down.
13. Unscrew the clevis using a scissor lift or ladder

3.8 Tuning columns

1. Place string line around first and last column in a row
2. Tune position and side to side of the first and last column
3. Bring all other columns off of string line

4. Bring all columns back to string line maintaining the distance between columns and that they are perfectly straight side to side, front to back
 5. Shoot the elevations so that the heights will all be the same
 6. Adjust as necessary
- Note: Often it is easiest to use a man in a scissor lift at the top of the column to move it as adjustments are made and shims placed.

3.9 Pour Concrete

Note: This is the most important process and will make or break your project depending if it is done correctly.

1. Order the concrete making sure that the mix design has been approved and that the truck spacing will be enough for the job at hand.
2. Set up the vibrator
3. Have workers stand on each side of the columns on top of the angles.
4. Set up making sure the grad all is touching the top front of the column for bracing.
5. Pour the concrete on each side of the column make sure to follow the bubble on the torpedo.
6. Finish the concrete so that there are no ridges
7. Tune the tops of the columns to make sure they are all staying in line

3.10 Break-off Angles and Dunage

1. Using a pipe wrench, pry off the angles
2. Stack the dunage and angles on separate pallets
3. Grind off weld marks and if galvanized; spray cold-galvanization on grind marks
4. Clean concrete off of columns either by rubbing it off or grinding with a wire wheel off. Make sure to use a face shield when grinding.
5. Clean excess concrete on the ground up and dispose of it.

3.11 Setting rafters

1. Fill out a lift plan and have a tail gate meeting to discuss lift plan. Make sure to have accurate weights.
2. After lift plan has been verified and that it has been signed attach truss boom to grade all
3. Inspect rigging equipment
 - Truss boom shackle

- Chokers
Note: If red thread is showing on chokers remove and throw away immediately.
 - Tag line
4. Place chokers on rafter so that the rafter when lifted will have a more extreme angle than that of the building requirements, but not too extreme so that the worker pulling the tag line has to pull more than a couple feet down. Place the tag line over the first clip to decrease that angle while setting. Also make sure when setting up chokers that the choker does not twist the rafter sideways.
 5. With hands open and avoiding pinch points place the rafter on the column while workers in a scissor lift either places a spud wrench in the hole while loosely putting in screws or clamping/tack welding the flag plate to the column.
 6. Verify the rafter is straight up and down and that the lower tip is at the correct elevation by verifying the slope is correct with an inclinometer for the first one. After the first one is set use a transit to replicate the same height for all other rafter, note: spot check rafters with the inclinometer to verify the rafter slop.
 7. With the rafter in the right spot either weld back flag plate or bolt down the rafter verifying that the rafter has not changed slop position and roll. When bolting; verify that the bolting is done to code. When welding; verify that the weld is to the correct size using gages.
 8. Once secured, release tension on the chokers
 9. Remove chokers and tag line

3.12 Painting

1. Pressure wash columns and rafters ensuring that all debris is removed including oil dirt and other materials that will prevent the primer and paint from adhering properly.
Note: If steel is galvanized it is required for the steel to have an acid etch. Make sure the steel has had proper time to weather. Clean etcher off using pressured water or other requirements. It may be necessary to capture any liquids and debris during this process.
2. After all steel is completely dry, apply primer coat following guidelines on the method and precautions labeled on primer containers.
3. After specified time apply required finish coats coat following guidelines on the method and precautions labeled on paint containers.
DO NOT PAINT IF MOISTURE LEVELS ARE TOO HIGH, WIND IS TOO HIGH OR ANY POSSIBILITY OF OVERSPRAY DAMAGEING ANY PROPERTY. CHECK YOUR SURROUNDINGS INCLUDING OVER WALLS.

3.13 Purlins

1. Understand the purlin layout for the building.
2. Prep the purlins so that they can be lifted by forklift
 - a. Spread out the amount needed on dunage for one bay at a time.

- b. Visualize how they will be lifted and set and have the purlins set up so that they can be placed where they need to go without having to do many adjustments while setting them on the building.
3. Barricade the area where you are to be lifting purlins up and restrict access underneath in case of loss of load.
4. Lift purlins with forklift on top of the building to spread them.
Note: Do not leave purlins on top of rafters unattended. Make sure the purlins are screwed or clamped in.
5. Have workers either on ladders or scissor lifts clamp the purlins into place and maintain distances between rafters as same as the distance is measured between columns.
6. After the first bay of purlins are secured. Tune building.
7. Place a tape measure on the end of the rafter to the other end of the other rafter, repeat process except on the other tips of rafter.
8. Adjust the rafter using a come along.
9. Periodically check the tune of the purlins that are being place to maintain their tune.

3.14 End Caps

1. Understand the end cap layout for the building.
2. Transport the end caps so not to bend them either by supporting them or hand carrying them with sufficient amount of workers.
3. Barricade the area where you are to be installing the purlins and restrict access underneath in case of loss of load or slip.
4. Lift end caps as a team on ladders or in the scissor lift to the edge of the building
Note: Do not leave end caps on top of rafters unattended. Make sure the end cap is screwed or clamped in.
5. Have workers either on ladders or scissor lifts clamp the end cap into place and maintain distances between purlins as same as the distance is measured between clips on the rafter.

3.15 Sag Rods, and Other Bracing

1. Understand the needed bracing if any.
2. Sag Rods
 - a. Prep the sag rod (either by painting or cleaning it to be painted).
 - b. Measure from the end of one purlin to the other side of the building to the other purlin leaving a quarter inch on each side.
 - c. Cut the sag rod, if needed, so that it will connect at the middle of a purlin.
 - d. Hang the sag rod starting from one side
 - e. Place the approved amount of screws in each purlin sag rod connection.
 - f. Measure each distance between purlins and verify that distance by measuring at the clip on the rafter.

3. Sag Rod to Purlin Bracing
 - a. Review the plans and verify the connection requirements
 - b. Cut the Straps so that you can maintain a 45 degree angle.
 - c. Bend the tips of the straps
 - d. Attach the top of the strap to the highest available placing on the inside of the purlin.
 - e. Straighten the purlin upright
 - f. Clamp the bottom of the strap to the sag rod
 - g. Verify that the purlin is erect and that the distance from one purlin to the next is what is required
 - h. Screw the strap to the sag rod
4. Other bracing
 - a. Review the plans and verify the connection requirements
 - b. Place the strapping and bracing in a way to be uniform with other bracing and strapping.
 - c. Make sure to keep everything in line when placing the bracing

3.16 Sliding Panels

- 1.

3.17 Placing Decking

3.18 Trim

3.19 Final Touch-up Items

Section 4

Training Checklist

Below is list of required certifications, please provide a copy to your Foreman before starting a new jobsite.

- Osha 10
- CPR
- Fall Protection
- Aerial and Scissor Lift
- Fire Extinguisher safety
- LOTO
- Code of Safe Practices
- Welding Certificate 3g position
- Welding Certificate 4g position
- Forklift Class 7
- Rigging

Section 5

Forms

Section 6

Tools

The following is a list of tools that should be kept on a truck. Inspect your tool boxes and inform your Foreman of tools missing or damaged.

1. Welder
 - a. Welding Cables
 - b. 2 Welding Helmets
 - c. 1 box of 7018 1/8" welding rod
 - d. Welding Jacket
 - e. Welding Gloves
2. Air compressor
 - a. Air hose
 - b. Tire inflator
3. 2 Pipe Wrenches
4. 2 String Lines
5. 2 Face Shield
6. Clamps
 - a. 10 Clamps
 - b. 2 Flat Clamps
7. 1 Tag Line
8. 4 Tie-down Traps
9. 2 Clevis

10. 1 Come Along Winch
11. Chokers
 - a. 1 @ 6'
 - b. 1 @ 10'
 - c. 1 @ 12'
12. 1 Roll of Caution Tape
13. 2 Work Belts with Satchels
14. 4 Fall Harnesses
 - a. 4 Lanyards
15. Squares
 - a. 2 Small Squares
 - b. 1 Big Square
16. Tape Measures
 - a. 3 30'+ Tape measures
 - b. 1 Long Tape measure
17. 1 Wire Cleaning Brush
18. Markers
 - a. 2 Sharpies
 - b. 2 Soap Stones
19. Tape
 - a. 1 Roll of Duct Tape
 - b. 1 Roll of Electric Tape
20. 2 Crescent Wrenches
21. Spray Paint
 - a. 2 Cans of White Upside-down Marking Paint
 - b. 1 Can of Orange Upside-down Marking Paint
 - c. 2 Can of Cold Galvanizing Paint
22. 1 Socket Set
23. 1 Packet of foam Brushes
24. 2 Sledge Hammers
25. 1 Welding Hammer
26. 2 Clip Hammers
27. 1 Hammer with Claw
28. 2 Spud Wrenches
29. 1 Puddy blade
30. Caulk
 - a. 2 Tubes Caulk
 - b. 1 Caulk Gun
31. 1 Screw Driver Set
32. 4 Screw Guns
 - a. Screw Gun Tips
33. 2 Skill Saw

- a. 5 Metal Cutting Blades
- b. 2 Wood Blades
- 34. 2 Peanut Grinders
 - a. 2 Wire Brushes
 - b. Cut-off blade adapters
 - c. 5 Cut-off blades
 - d. Grinder Guards
- 35. 1 Big Grinder
 - a. Big Grinder Blade
 - b. Grinder Guard
- 36. 3 Torpedoes (levels)
- 37. 1 Inclinometer
- 38. 1 Transit and Tripod
- 39. 4 Extension Cords
- 40. 1 Box of Tec Screws
- 41. First Aid Kit
- 42. Water Cooler
 - a. Cup Holder
 - b. Cups
- 43. Fire Extinguisher
- 44. Shims
- 45. Oil
 - a. 1 can WD-40
 - b. 1 bottle Air Impact Oil
 - c. 1 liter 10 w 40 engine oil
- 46. 4 Concrete Trowels
- 47. 2 Empty Buckets
- 48. 2 Flat Shovels
- 49. 2 Round Shovels
- 50. 2 Push Brooms
- 51. Gas Cans
 - a. 1 Diesel
 - b. 2 Gas

Optional tools

- 1. Air Impact Gun
 - a. Socket
 - b. Air Hose
- 2. Plasma Cutter
 - a. Plasma cutting tips

- b. Air Dryer adapter
- 3. Pressure Washer
 - a. Hose
 - b. Pressure washer hose
 - c. Pressure washer wand
 - d. Pressure washer tips
- 4. Paint Rig
 - a. 6' Wand
 - b. 2 Tips 515 Reversa tip w/ tip holder
 - c. Wire Brush
 - d. Pain Screen
 - e. Face Masks