MILLERICK ENGINEERING INC.
INJURY AND ILLNESS PREVENTION PROGRAM

PURPOSE

Each person working for Millerick Engineering Inc (ME) has the responsibility to perform his/her work in a safe, quality and environmentally conscious manner. To facilitate this work performance, we have established this IIPP program that focuses on improvement of working conditions and the prevention of Safety and Health incidents.

REQUIREMENTS

Millerick Engineering Inc. recognizes that every California Employer must establish, implement and maintain this program, and a copy of the IIPP must be maintained at each worksite. The requirements for establishing, implementing and maintaining an effective IIPP are contained in Title 8 of the California Code of Regulations, Section 3203 (T8 CCR 3203) and consist of the following eleven elements:

- Responsibility
- Compliance
- Disciplinary
- Communication
- Hazard Assessment
- Incident/Exposure Investigation
- Near Hit Policy
- Hazard Correction
- Heat Illness/Stress
- Training and Instruction
- Recordkeeping

RESPONSIBILITY

The Director of Administration and Finance, Ciara Millerick and the VP of Field Operations, Gary Killingsworth, shall be the Injury and Illness Prevention Program Administrator, and shall have the responsibility for implementing and maintaining this program for Millerick Engineering Inc. It shall be the responsibility of the Safety Compliance Manger, Duke Cooper, to provide the necessary leadership and resources to administer an effective Injury and Illness Prevention Program, also to maintain and administer the requirements of each of the eleven IIPP Program Elements listed above.

Gary Killingsworth, Duke Cooper and all supervisors shall be responsible for:

1. Implementing and maintaining the IIPP in their work areas and for answering worker questions about our IIPP.
2. Assuring that a copy of this program is available for review.
3. Knowing the program and providing the necessary leadership to insure its success.
4. Providing employees with proper training and being a good example.
5. Ensuring that all safety and health policies and procedures are clearly communicated and understood by all employees.
6. Enforcing the rules of safety fairly and uniformly.

All employees shall be responsible for knowing the IIPP and giving the program their total support. Employees shall be expected to learn the hazards of their trade, practice safe behavior and help

their fellow employees prevent incidents. All employees shall be responsible for using safe work practices, for following all directives, policies and procedures and for assisting in maintaining a safe work environment.

COMPLIANCE

All employees, including mangers and supervisors, are responsible for complying with safe and healthful work practices. ME's system of insuring that all employees comply with these practices shall be:

- Informing all employees of the provisions of the Injury and Illness Prevention Program.
- Routinely evaluating the safety performance of all employees.
- Recognizing employees who perform safe and healthful work practices.
- Providing training to employees whose safety performance is deficient.
- Disciplining employees for failure to comply with safe and healthful work practices.

DISCIPLINARY

Although we reserve the right to discharge "at will", we believe that the employees found performing work in a manner that would endanger ("endangerment constitutes a safety violation") the employee, his/her coworkers, the general public and/or property at the work site should be disciplined for such unsafe work practice. In consultation with the Safety Compliance Manager and/or the V.P. of Field Operations, the Job Site Supervisor will determine the course of action best suited for the circumstances. The steps to be taken may include the following at management's discretion:

- Verbal counseling, the first step, must be documented in the employee's personnel file.
- Written warning, the second step, is given outlining nature of offense and necessary corrective action.
- 3 or 5 day suspension with retraining, the third step.
- Termination, if an employee is to be terminated, with specific and documented communication between the supervisor and the employee, as outlined, must have occurred, the fourth and final step.

Where deemed appropriate, an employee may be put on suspension from work without pay for up to two weeks.

Some violations of our Safe Practices and Operation rules are grounds for immediate termination. A partial list of the unsafe acts that will result in termination is as follows:

- Possession, use or being under the influence of drugs, debilitating medications or any intoxicating liquor. An employee may show up for work and not be allowed to work. Such does not constitute working under the influence. The second such appearance however, is grounds for termination.
- Striking, hitting etc. of another employee.
- Intentional or negligent disregard of safety requirements.

Supervisors will be subject to disciplinary action for the following reasons:

- **Repeated safety rule violation by their employees.**
- **Failure to provide adequate training prior to job assignment.**
- **Failure to report incidents or to provide medical attention to employees injured at work.**
- **Failure to control unsafe conditions or work practices.**

- **Failure to maintain good housekeeping standards and cleanliness in their departments.**

Supervisors who fail to maintain high standards of safety within their departments will be subject to demotion or termination.

COMMUNICATION

We recognize that open two-way communication between management and staff on health and safety issues is essential to an injury-free, productive work place. The following systems of communication are designed to facilitate this continuous flow of readily understandable safety and health information between management and staff.

New employee orientation includes a review of the company's IIPP and discussion of policy and procedures that employee is expected to follow. Each employee is provided with a copy of the Employee Handbook and must sign the acknowledgment to prove receipt of such document.

At all shops and job sites, it is intended that Tool Box Safety Meetings be held daily and also once weekly. These meetings shall be reported on the "Daily Safety Meeting and Weekly Safety Meeting" form, which shall be available for review.

The suggested order of business for a Tool Box Safety Meeting is as follows:

- Review any recent incidents and the related investigation reports.
- Review any near hits and how they could have been prevented.
- Review any special safety problems that are coming up.
- Invite and answer questions concerning current and upcoming safety concerns.
- Review the Tool Box Safety topics, those supplied monthly by the office.
- Discuss any new (M.S.D.S.) Material Safety Data Sheets.

On occasion, the company will post and/or distribute safety notifications. Employees should check their mail or company bulletin boards regularly for such postings. Safety related memos and documents are to be read promptly. Questions about the meaning or implementation of this information should be directed to supervisors.

It is our policy to encourage all employees to make safety related suggestions and to report hazards existing at their work site to their supervisors so that corrective action can be taken in a timely manner. This reporting can be done in person, anonymously or otherwise in writing or by telephone. Supervisors shall forward all safety suggestions to the Safety Compliance Manager for review.

NO EMPLOYEE WILL BE RETALIATED AGAINST FOR REPORTING HAZARDS OR POTENTIAL HAZARDS OR FOR MAKING SUGGESTIONS RELATED TO SAFETY.

All suggestions will be reviewed by the Safety Compliance Manager, who will initiate an investigation of each report of a hazard, potential hazard or safety suggestion. Any directives issued as a result of the investigation shall be distributed to all employees affected by the hazard or shall be posted on appropriate bulletin boards or mailed.

An Employee Safety Committee will meet regularly to review results of the periodic scheduled inspections, review investigations of all incidents and make suggestions to management for the

prevention of future incidents. This committee will also submit recommendations to assist in the evaluation of worker safety suggestions. Record shall be kept of all meetings.

HAZARD ASSESSMENT

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, we have instituted the procedures described in this section.

ROUTINE INSPECTIONS

The principal approach to reducing incidents is through periodic scheduled and unscheduled inspections. As a general guideline, job site inspections, including subcontractors, shall be visually inspected by the Job Site Supervisor or his designee each workday. This includes the fabrication shop and maintenance shop.

It is required that all projects receive a written daily and monthly job safety inspection.

The results of each inspection shall be reported on the Daily Job Site Inspection Form and the Monthly Job Site Inspection Form and sent to the office monthly.

ADDITIONAL INSPECTIONS

In addition to those times mentioned above, inspections will be conducted wherever:

- New substances, processes, procedures, or equipment are introduced into the workplace that may represent a new occupational safety or health hazard. (Are M.S.D.S available?) (Are employees trained?)
- We are made aware of a new or previously unrecognized hazard.
- An occupational injury or illness incident or an incident involving property damage occurs.

Additionally, unannounced inspections may be conducted by the Safety Compliance Manager, or his designee, as he/she deems appropriate.

The results of each non-routine inspection shall be reported/documented, the original of which is to be sent to the Safety Compliance Manager.

ADDITIONAL PERIODIC EVALUATION OF JOB SITES

In addition to the inspections provided above, we may periodically evaluate job sites for hazards, using one or more of the following approaches:

- An unscheduled job site inspection and evaluation conducted by the company's senior management, the company's workers compensation insurance carrier, or safety consultant
- Review of records, including incident reports, injury reports, workers compensation summaries, etc.
- Employee input from toolbox safety meetings or suggestions to supervisors or to the Safety Compliance Manager

INCIDENT/EXPOSURE INVESTIGATIONS

Employees must report ALL injuries (whether they involve job site first aid treatment only, outside medical attention, no treatment at the time of occurrence, or lost time) immediately upon their occurrence to the job site supervisor – the top authority on the job. Depending upon the circumstances, the job site supervisor will then proceed as follows:

No treatment at time of occurrence or job site first aid treatment only: The injured employee shall report all injuries to his supervisors, who will enter and record same on the appropriate forms. **If the employee later finds that the injury he/she sustained requires medical attention,** he/she shall at once notify the job site supervisor of that fact. The employee and supervisor must then complete and submit the appropriate incident report form to the Safety Compliance Manager. If lost time is also involved, immediately notify the Safety Compliance Manager.

Requires outside medical attention: The employee will, without delay, notify his job site supervisor, who will investigate and complete the appropriate form, then forward to the Safety Compliance Manager.

Lost time injury: In this case, the job site supervisor and employee must immediately investigate and complete the appropriate incident investigation report and send a copy to the Safety Compliance Manager.

Furthermore, if the Safety Compliance Manager becomes aware of an unreported injury, the entire work force remains ineligible for safety drawings/incentives until the month following the receipt of the report at the office.

Second occurrence: At the discretion of the V.P. of Field Operations Manager, both the job site supervisor and the employee involved may be disciplined or terminated.

When accidents, injuries, illnesses, incidents, equipment damage, or near hits occur on the job that require medical care or cause lost time, they will be thoroughly investigated by the job site supervisor. The purpose of the investigation is to find the cause of an incident and to prevent further occurrences, not to assign blame. The investigators will complete the appropriate forms. The investigation will determine, at a minimum:

- Who and what were directly involved in the incident.
- Where and when the incident occurred.
- The cause of the incident, if known.
- Steps/Procedures to take to prevent reoccurrence, if known.

When incidents occur that do not cause injury or illness, but do result in property damage and/or lost production time or near hits, these mishaps usually indicate an unsafe act, faulty procedure or sudden hazard. Investigations of these occurrences can be re-conducted at the discretion of the Job Site Supervisor and/or Safety Compliance Manager. Records of these optional investigations must also be made using the same form job site supervisor's use for accidents, injuries, illnesses, incidents, equipment damage, or near hits.

When fatalities, serious injuries or illnesses occur at the workplace, those fatalities, injuries or illnesses must immediately be reported by phone to the Safety Compliance Manager at the office. The incident must be investigated and the appropriate forms completed and sent to the Safety Compliance Manager at the office within 24 hours of its occurrence.

In California, fatalities and serious injuries or illnesses happening at the workplace must also be reported immediately, within eight hours by telephone or fax to the nearest office of the Division of Occupational Safety and Health as required by California Code of Regulations, Title8, Section 342. **Our Safety Compliance Manager will be responsible for making this call. If he/she is not available then it will be the responsibility of our V.P. of Field Operations' responsibility. No**

one else is permitted to call OSHA for a fatality, serious injury or illness unless otherwise directed by one of these two people.

NEAR HIT POLICY

NEAR HIT REPORTING POLICY STATEMENT

At ME we endeavor to create an open, fair, and incident free safety culture. ME welcomes the knowledge gained from near-hit and adverse events as an opportunity to benefit our employees, customers, and visitors through this sharing process.

Unless there is clear evidence of flagrant malpractice, a complete and wanton disregard for the safety of self or others, maliciousness, intent to harm, theft or fraud the disciplinary policy will not be used for investigation purposes.

Near hit incidents will be investigated for the purposes of learning and implementing practical changes when needed in pursuit of our Target Zero incident goal. All employees are required and encouraged to engage as active participants in this process.

HAZARD CORRECTION

All unsafe or unhealthy work conditions or work practices identified will be evaluated and corrected in a timely manner. However, priority will be given to severe and imminent hazards.

Under NO circumstances will personnel be required or permitted to work in conditions that pose a clear or threatening hazard, nor will they be permitted to enter an imminently hazardous area without prior specific approval of the Safety Compliance Manager.

Problems that cannot be corrected immediately will be assigned to the Safety Compliance Manager to ensure completion of the corrective action. Once corrected, written documentation of the action taken will be developed or obtained by the Safety Compliance Manager.

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

- Remove all potentially endangered employees;
- Provide employees who are responsible for correcting the condition with necessary safeguards;
- Correct the problem; and
- Document the corrective action and the date corrected. The documentation is to be completed by the Safety Compliance Manager or his/her designee and will be maintained on file by the Safety Compliance Manager.

Unsafe or unhealthy work conditions needing corrective action, and the reduction/elimination of such hazards, will be documented on the appropriate form. Corrective action to be taken may include:

- Fixing or replacing defective equipment
- Implementing safer procedures
- Installing guards or modifying equipment

- Employee training
- Posting warning notices

All action taken and the dates they were completed shall be documented on the appropriate forms.

HEAT ILLNESS/STRESS

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.

The regulation 3395 that was adopted by California in June 2006 covers these four basic steps:

- Provide training for employees and supervisors
- Provide enough fresh water – one quart per hour if the employee wants it. Encourage them to drink it.
- Provide access to shade for employees who believe he or she needs preventive treatment.
- Develop and implement written procedure for complying with the Heat Illness Prevention standard.

The amount of heat that stays in the body depends on the:

- Environment
- Level of Physical Activity
- Type of Work
- Personal Protective Equipment Required
- Time Spent Working
- Number of Length of breaks between work periods

The amount and rate of heat – Gain or Loss depends on:

- Air Temperature
- Temperature of surrounding objects
- Air Movement (caused by wind or fans)
- Humidity (amount of water/vapor in the air)

Heat Rash, also known as "Prickly Heat" can keep the body from releasing heat. To prevent this keep your skin dry and clean and you should also wear loose fitting clothing.

Sun Burn can stop your body from thermoregulating efficiently. Skin that is already hot may not release body heat into the air, which may also lead to skin cancer.

To minimize harmful skin exposure you should apply sunscreen liberally and often and try to work in the shade if it's possible.

If you are sunburned, stay out of the sun as much as possible.

If the body warns you to cool down and you ignore it, hyperthermia increases until you risk permanent damage.

Heat Cramps are severe muscle cramps and you should move into the shade and drink lightly salted water.

Heat Exhaustion occurs when your body's thermoregulation is overwhelmed but not completely broke down. You may suffer a headache and nausea and eventually collapse. Victims must seek medical attention. Heat exhaustion symptoms may include:

- Clammy, cool, moist and pale skin
- Fatigue or weakness
- Heavy perspiration
- Intense thirst from dehydration
- Low to normal blood pressure
- Anxiety or agitation
- Clouded senses or impaired judgment
- Fainting or loss of coordination
- Loss of appetite
- Nausea or vomiting
- Rapid breathing
- Slightly low oral temperature

If you suspect heat exhaustion:

- Move the victim into the shade
- Remove or loosen clothing and boots
- Fan the victim
- Elevate the victim's legs
- Massage the victim's limbs
- Give the victim lightly salted water
- Pour water and ice on the victim
- Stay with the victim until medical help arrives

Heat Stroke is the most severe of the heat disorders. A victim may experience heat cramps or heat exhaustion then fall into a rapid physical and medical decline. Early symptoms include:

- High body temperature of 105˚ and above
- No perspiration on skin
- Hot, red or flushed skin
- Rapid pulse
- Difficulty breathing
- Constricted pupils
- High blood pressure
- Headache or dizziness
- Confusion or disorientation
- Weakness
- Nausea or vomiting

Heat stroke victims must be given immediate medical attention.

Heat stroke advance symptoms include:

- Seizure or convulsions
- Collapse
- Loss of consciousness
- Deep coma
- No detectable pulse

- Body temperature over 108˚F

The victim's body temperature must be lowered as quickly as possible. Complete immersion in water or applying ice packs to armpits, elbows, wrists or backs of knees may help. Call an ambulance immediately.

Never try to give fluids to someone who is unconscious!

In addition to recognizing signs of heat stress and knowing first-aid measures, you can prevent heat stress disorders by gradually getting used to the environment and having proper food and water intake.

Acclimatization is the development of the ability to work in a hot environment by gradually getting yourself used to the conditions. In order to acclimate safely you must be in good physical condition. Physical work in the heat is necessary for full acclimatization, but should be done during increasingly longer work periods alternated with rest periods. Some people reach full acclimatization within a week. Others may take longer. You may begin losing your resistance to heat after one week of working in a cooler environment and lose your acclimatization totally in about a month.

Employees shall have access to portable drinking water. Where it is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity at the beginning of the work shift to provide one quart per employee per hour for the entire shift. Portable containers used to dispense drinking water shall be equipped with faucet or drinking fountain shall be capable of being tightly closed and serviced in sanitary condition. Water shall not be dipped from container. Container shall be marked "Drinking Water". Cups shall be provided along with a place to keep and discard them.

Fluid replacement is the most important way to protect your body's thermoregulation system. You must take in as much fluid as you lose during the day and replace salts your body uses up in cooling. The frequent drinking of water shall be encouraged. Often your body needs fluid before you feel thirsty, so don't wait for thirst to drink fluids. Many people don't realize that a hot meal adds to body heat. Heavy meals can also reduce your ability to release heat because your blood flow is redirected to your stomach instead of to your skin for cooling. A light, cool lunch may actually provide more work energy for the rest of the day. If you are going to work in the heat and do not have a medical reason to avoid salt, add a little to your meal before work to help you avoid heat-stress disorders.

In addition to the medical hazards of heat stress, you are also more likely to have accidents in hot environments. Slippery hands, fogged glasses and perspiration in the eyes are some examples. Irritability, anger and fatigue are some examples of indirect ways the heat could help cause accidents.

TRAINING AND INSTRUCTION

All employees, including managers and supervisors, shall have training and instruction on general and job-specific safety and health practices. Training and instruction shall be provided as follows:

1. When the IIPP is first established.
2. To all new employees.
3. To all employees given new job assignments for which training has not been previously provided.

4. Whenever new substances, processes, procedures or equipment are introduced to the workplace and represent a new hazard.
5. Whenever ME is made aware of a new or previously unrecognized hazard.
6. To supervisors to familiarize them with the safety and health hazards to which employees under their immediate direction and control may be exposed.
7. To all employees with respect to hazards specific to each job assignment.

Workplace safety and health training practices include, but are not limited to the following:

1. Implementation and maintenance of ME's IIPP and Fire Prevention Plan.
2. Measures for reporting any unsafe conditions, work practices, and injuries.
3. The use of appropriate clothing, including gloves, footwear and personal protective equipment.
4. Information about chemical hazards to which employees could be exposed and other hazard communication program information.
5. Availability of toilet, hand-washing and drinking water facilities.
6. Provisions for medical services and first aid including emergency procedures.
7. Prevention of musculoskeletal disorders, including proper lifting techniques.
8. Proper housekeeping, such as keeping stairways and aisles clear, work areas neat and orderly, and promptly cleaning up spills.
9. Prohibiting horseplay, scuffling, or other acts that tend to adversely influence safety.
10. Proper storage to prevent stacking goods in an unstable manner and storing goods against doors, exits, fire extinguisher equipment and electrical panels.
11. Proper reporting of hazards and incidents to supervisors.
12. Hazard communication, including employee awareness of potential chemical hazards, and proper labeling of containers.
13. Proper storage and handling of toxic and hazardous substances, including prohibited eating or storing food and beverages in areas where they can become contaminated.
14. Providing specific instructions to all employees regarding hazards unique to their job assignment, to the extent that such information is not already covered in other training.

RECORDKEEPING

We keep records of the actions taken to implement and maintain this IIPP. Each supervisor will maintain an updated copy of the company's IIPP. The Safety Compliance Manager will retain the following records on file for a minimum of three years:

- Master copy of IIPP (as well as changes and updates)
- Documents that verify that the company has maintained on-going two-way communication with employees regarding safety and health issues, i.e. memos, letters.
- New employee's safety orientation forms
- Employee suggestions and company response

Records of inspections/investigations, including date, name of person who performed the inspection/investigation, the unsafe condition and work practices identified, the corrective action taken, and the date the corrective action was taken. Forms covered under this section include:

- Daily Job Site Inspection Forms
- Record of Unsafe Hazard or Condition
- Incident Investigation Report

- Occupational Incident, Injury or Illness Investigation Report
- Supervisors Report of Injury

These records should contain the employee's name, training date, type of training and identification of the trainer. Forms covered under this section include:

- Employee Safety Training Record
- Tool Box Safety Meeting Reports
- Safety Committee Records

Inspection records and training documentation shall be maintained for a minimum of one year, except for training records of employees who have worked for less than one year, which are provided to the employee upon termination of employment.

MILLERICK ENGINEERING INC

CODE of SAFE PRACTICES and OPERATING PROCEDURES

A. General Practices

B. Hand Tool Safety

C. Fire Safety

D. Grinder Safety

E. Material Handling Safety

F. Operations and Care of Heavy Construction Equipment

G. Roll-Over Protection (ROPS) and Seatbelts

H. Haulage and Earth Moving Equipment

I. Forklift & Gradall

J. Vehicle-Mounted Elevating Work Platforms

K. Cranes

L. Mobile Hydraulic Cranes

M. Slings

N. Excavations, Trenches, and Earthwork

O. Confined Spaces

P. Traffic Control for Public Streets and Highways

Q. Equipment Maintenance Shop

R. Fabrication Shop

S. Office and Clerical

T. Lock out, Tag out

SAFE PRACTICES AND OPERATING PROCEDURES

These practices and rules may apply either alone or in addition to the Code of Safe Practices as determined by conditions or operations.

A. General Practices

1. Employees must enter, leave and conduct themselves at all times in an orderly manner while on company property.
2. There must be no running or horseplay.
3. Intentional misuse of any tool, equipment or material is strictly forbidden.
4. Safety clothing, equipment, devices and guards must be used as prescribed and designated.
5. No person shall remove, displace, damage, destroy or carry off any safety device, safeguard notice or safety sign.
6. Approved eye, head and ear protection must be worn in designated areas and/or designated jobs.
7. Footwear, which is inappropriate to the extent that its ordinary use creates the possibility of foot injuries, must not be worn. Such footwear includes sandals, sneakers or gym shoes, other canvas shoes and open toe or open heel shoes.
8. Gloves must not be worn while working with or on rotating equipment such as lathes without prior supervisory approval.
9. Suitable clothing must be worn at all times to ensure maximum efficiency and minimum hazard to employees. The wearing of loose and baggy clothing including sweaters, shirt tails, shirt sleeves, etc., is forbidden around moving machinery.
10. Wrist watches, rings or other jewelry should not be worn when working with rotating equipment such as lathes, grinding wheels, etc.
11. Floor areas around machines shall be kept clean, dry and free of tripping hazards.
12. Do not oil, clean or adjust a machine unless the power is shut off and locked out.
13. Keep fingers away from points of operation on machines, such as cutters, saws, drills, etc.
14. Turn off power on machines before attempting to remove stuck or jammed pieces of material.
15. If a machine is to be repaired, it must be locked in the "off" position during repair and physically disconnected from its source of power. Caution signs with appropriate wording must also be placed on the machine controls using Lock Out Tag Out procedures.
16. Do not operate any machine unless safeguards are in place and working properly. Machine guards may be removed only to make necessary adjustments and repairs and must be replaced before the machine is again put back into operation.
17. Be cautious in the use of compressed air. Compressed air should not normally be used for cleaning clothing and equipment. If this is done at all, it must be done with no more than 10 pounds of line pressure.

18. Good housekeeping should be uppermost in the minds of all employees.
    a. Keep floors, aisles, work areas and exits clean and clear at all times.
    b. Tripping hazards such as air hoses, nuts, bolts, nails, screws, pieces of wire and other extraneous material should be picked up.
    c. Oil and water spots on floors should be cleaned up immediately.
    d. Tools and other materials should be kept in their designated places.
19. All defective personal protective equipment (PPE) shall be replaced immediately.
20. When moving about your work area keep your eyes on your intended walking path at all times. (Look Where You Walk and Walk Where You Look)

B. Hand Tool Safety

1. Use the proper tool for the job.
2. While chipping, protect yourself and others from flying chips.
3. Do not pound on a screwdriver handle unless it is designed for such use.
4. Avoid holding work in your hand when using a screwdriver, as it may slip and cause a severe stab wound.
5. When possible, use a box wrench instead of an open-end wrench.
6. Use adjustable wrenches only when necessary.
7. Keep burrs off the handles of all tools.
8. Use only tools that have properly fitted handles.
9. Never use a mushroom-headed tool.
10. Keep tools clean and grease free.
11. Do not use a file as a pry bar.
12. Be sure work is properly secured in the vise or on the bench.
13. Portable Electric Tools

    Many portable, hand-held electric drills and other electric motor tools have exposed, non-current carrying, metal parts, which are likely to become energized in case of an internal short. In the past, this has resulted in the electrocution of workers. To prevent this, such tools must be grounded or be double insulated. The grounding contact in the receptacle must also be attached to a continuous ground.

C. Fire Safety

1. Observe the "no smoking" rule around accumulations of dust and other flammable materials such as paint thinners, solvents, alcohol, gasoline, etc.
2. Only small amounts of gasoline, paint thinner, etc., may be kept in the work area and only in approved safety cans -- all cans shall be labeled and kept in Flammable Liquid Storage Cabinets.
3. Spills of flammable materials shall be cleaned up at once.

4. Access to fire extinguishers and other fire equipment must be kept clear at all times.

5. Current certification on fire extinguishers should be maintained.

D. Grinder Safety

1. Wear eye protection at all times when grinding. (Full face shield and safety glasses)

2. Make sure that all guards are in place and that the tool rest is positioned within 1/8 inch of the grinding wheel and 1/8 inch of the top tongue guard.

3. Stand out of the rotation path when starting and using the grinder.

4. Use only the face of the wheel for grinding, unless the wheel is designed for side grinding.

5. Do not strike the wheel suddenly or use excessive pressure.

6. The hood guard that covers the spindle end, nut, and flange projections shall not be removed.

7. Guards shall not be removed on hand held grinders while in use.

Grinder Wheel Replacement Shall be in compliance with Cal/OSHA –General Industry Safety Orders § 3580 pg. 616, and shall include but is not limited to the following:

1. Inspecting new wheel for any defects.

2. Performing a “ring test on new wheel before installation”.

3. Installing the proper blotters if applicable.

4. Test running the new wheel for 2 minutes before use.

E. Material Handling Safety

1. Lift the safe way -- keep the body upright. Lift with the leg muscles and not with the back. Always secure help when lifting heavy objects.

2. Wear hand pads or gloves when handling sharp or rough objects.

3. Keep floors free of tripping hazards.

4. Remove all projecting nails from barrels, crates, wood boards, pallets and other objects where they might cause injuries.

5. Safety shoes shall be worn at all times except in approved office areas.

6. Any load over 60lbs shall be a two person lift.

7. Bulky loads that block vision or are difficult to grasp and carry properly must be transported by hand truck or with assistance from a co-worker.

F. Operation and Care of Heavy Construction Equipment

No employee shall operate any vehicle; piece of construction equipment or machine unsupervised until his or her skills and proficiency in the use of such device is adequate.

1. Repairs must not be made to powered equipment until workers are protected from movement of the equipment or its parts. (Lock Out Tag Out)
2. Wherever mobile equipment operation encroaches upon a public thoroughfare, a system of traffic controls must be used.
3. Flaggers (wearing high-visibility vests) are required at all locations where barricades and warning signs cannot control the moving traffic.
4. Vehicles used to transport employees must have adequate exterior lighting and be equipped with seatbelts.
5. Equipment (and systems) must be checked for proper operation at the beginning of each shift and recorded on inspection tags.
6. Seat belts shall be worn at all times.

G. Rollover Protection (ROP) and Seatbelts

Where rollover protection devices have been installed on Off Road Work Machines, seat belts must be provided and employees shall be instructed in their use.

H. Haulage and Earth Moving Equipment

1. All construction equipment must be equipped with manually operated warning devices.
2. All equipment operating in areas where backward movement is hazardous must be equipped with an automatic back-up alarm or its equivalent.
3. Every piece of equipment with a body or haulage capacity of 2.5 cubic yards or more (which is used to haul dirt, rock, concrete or other construction material) shall be equipped with a warning device that starts operating immediately when the equipment is shifted into reverse.
4. Haulage vehicles in operation must be under operator control and must be kept in gear when descending grades.
5. The brakes on a haulage vehicle must meet the criteria specified by the Construction Safety Orders, Section 1591(c).
6. The control devices on a haulage vehicle must be inspected at least once each work shift.
7. Exposed scissor points on front-end loaders must be guarded.
8. The engine must be stopped during refueling.
9. Lights are required for night operation.
10. Scrapers, carryalls, power units and hauling units, operated at over 15 mph, must be equipped with fenders or equivalent.
11. Vehicles loaded by cranes, shovels, loaders and similar devices must have an adequate cap or canopy for operator protection.
12. Scrapers must have service brakes, a parking brake, and an emergency stopping system.

13. Dust must not be allowed to seriously limit visibility.

14. Respirators are required for drivers when air contamination becomes hazardous.

15. A spotter should be used when heavy equipment is working near or traveling under power lines. All equipment shall maintain a minimum clearance of 10' from all overhead power lines that carry greater than 50 volts.

I. Forklifts and Gradalls

1. The rated lifting capacity must be posted in a location readily visible to the operator.

2. A forklift and gradall must not be used to elevate employees unless a platform with guardrails is provided, the employee is using a safety harness with lanyard and it is secured to the mast of the lift.

3. Employer must post and enforce a set of operating rules for forklifts and gradalls.

4. Basic Operating Rules:
   a. Only trained and authorized persons.
   b. Stunt driving and horseplay are prohibited.
   c. Employees must not ride on the forks.
   d. Employees must never be permitted under the forks (unless the forks are blocked).
   e. Each driver must inspect his or her forklift or gradall at the beginning of each shift.
   f. The operator must look in the direction of travel and must not move the vehicle until all persons are clear of the vehicle.
   g. Forks must be carried as low as possible in a downhill position.
   h. The operator must lower the forks, shut off the engine and set the brakes (or block the wheels), before leaving the forklift or gradall unattended.
   i. Lifts must have their brakes set and wheels chocked, and tied down before being transported on trailers.
   j. Extreme care must be taken when tilting elevated loads.
   k. Every industrial lift must have operable brakes capable of safely stopping it when fully loaded.
   l. Industrial lifts must have parking brakes.
   m. Industrial lifts must have an operable horn.
   n. When the operator is exposed to possible falling objects, industrial lifts must be equipped with overhead protection (canopy or ROPS).

J. Vehicle-Mounted Elevating Work Platforms

This is a personal-lifting aerial device, which telescopes and/or articulates and includes extendable boom platforms, aerial ladders, articulating boom platforms and vertical towers.

1. General
   a. Elevated platforms must not rest on any structure.
   b. Controls must be tested daily.
   c. Only trained and authorized persons may operate this type of equipment.

d. Tying off safety belts to structures is prohibited.
e. Workers may stand only on the floor of the basket.
f. Safety harnesses must be worn at all times and attached to the boom or basket harness attachment points.
g. Brakes must be set when employees are elevated.
h. An aerial lift truck must not be moved with an elevated boom.
i. The following information must be displayed on the device:
- Manufacturer's name, model and serial number
- Rated capacity
- Operating instructions
- Cautions and restrictions
- Load Chart (if applicable)

Platforms must be guarded by handrails (or equivalent protection) and provided with a safety belt attachment.

K. Cranes

1. Each crane, derrick and cableway exceeding 3 tons capacity must be certified annually by a qualified person.
2. All cranes must be equipped with an operable warning device controllable by the operator.
3. No crane shall be operated with wheels or tracks off the ground unless properly secured on outriggers.
4. A signal person shall be provided when the point of operation is not in full and direct view of the crane operator.

L. Mobile Hydraulic Cranes

1. A load-rating chart must be posted at a location readily visible to the operator and the following items confirmed before lifting a load.
- Weight of load
- Load Radius
- Boom angle
2. An operator shall not move any load until it is confirmed safe by the load chart.
3. The hydraulic hoses must be visually inspected each day for the following defects:
- Oil leakage at flexed surfaces or couplings.
- Blistering or deformation.
- Oil leakage at threaded or clamped joints.
- Excessive abrasion.
4. Each hydraulic crane shall have the following capabilities:
- Outriggers must be used according to certifying agency requirements.
- Boom angle indicator (telescopic booms) must be installed.
- Boom hoist disconnect (boom stop) must be installed.

M. Slings

1. Slings and attachments must be inspected daily, for damage or defects.
2. Damaged/defective slings must be removed from service immediately.
3. Chain or wire rope slings must not be shortened by knots, bolts, or other means.

4. Sling legs must not be kinked.
5. Slings must not be overloaded.
6. Slings must be padded to protect against damage from sharp loads.
7. Suspended loads must be kept clear of all obstructions.
8. Slings and chokers shall be kept clean and free of contaminants.
9. Avoid operations that expose employees to overhead loads.
10. When loads must pass over workers all workers shall be instructed to move to a safe location as load passes their work area.
11. Deformed or defective sling hooks and rings must not be used and be destroyed.

N. Excavations, Trenches, and Earthwork

A permit by DOSH (Division of Occupational Safety and Health) is required before starting work on excavations five feet deep or more in which workers are required to enter before excavating. Public agencies are exempt, however outside contractors are required to obtain a permit.

1. Determine the location of underground utilities and notify all Regional Notification Centers and all known owners of underground facilities in the area of proposed work at least 2 days prior to the start of excavation work. An exception is made for emergency repair work to underground facilities.
2. When excavation operations approach the estimated location of underground installations, the exact location is to be determined by safe and acceptable means such as hand digging.
3. All open excavations are to be protected, supported or removed as necessary to protect employees.
4. Provide stairways, ladders, ramps or other safe means of egress in trench excavations 4 feet or more in depth so as to require no more than 25 feet of lateral travel for employees.
5. Employees exposed to public vehicular traffic shall be provided with and wear, warning vests or other garments marked with or made of Type III retro-reflective or high-visibility material.
6. No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall stand away from any vehicle being loaded or unloaded to avoid being struck by spillage or falling materials.
7. Warning systems such as barricades, hand or mechanical signals, or stop logs shall be used to alert mobile equipment operators working near the edge of an excavation.
8. Atmospheric monitoring of excavations greater than 4 feet in depth must be conducted to test for oxygen deficiency or flammable gas when the excavations are in landfill areas or areas where hazardous materials are stored nearby. Monitoring and ventilation will be conducted as often as necessary to ensure the atmosphere is safe.

9. Employees entering deep and confined footing excavations shall wear a harness with a lifeline attached to it and shall be individually attended while in the excavation.

10. Employees shall not work in excavations in which there is accumulated water or where water is accumulating unless precautions are taken to ensure the safety and protection of the employee.

11. Employees shall not work in excavations below the level of the base or footing of any foundation or retaining wall that could be expected to pose a hazard to the employee unless a support system is provided, the excavation is in stable rock, or a registered professional engineer has determined the excavation work will not pose a danger to the employee.

12. Employees shall not work in excavations adjacent to undermined sidewalks, pavements or similar structures unless a support system to prevent collapse is installed.

13. Employees shall be protected from loose soil, rocks or materials that could fall or roll from the excavation face. Materials, equipment and spoils shall be kept at least two feet from the edge of excavations.

14. A competent person shall complete a trench permit; make daily inspections of excavations, adjacent areas, and protective systems prior to the start of work. Inspections shall be made after every rainstorm or other hazard increasing occurrence.

15. Walkways or bridges with standard guardrails shall be provided over excavations greater than 6 feet deep and wider than 30 inches where employees or equipment are permitted to cross over.

16. Physical barriers shall protect all remotely located excavations. Wells, pits, shafts, etc. shall be barricaded or covered. Upon completion of operations, these wells, pits or shafts shall be backfilled.

O. Confined Spaces

Employees are not to enter a confined space unless they have been trained on the hazards of confined spaces and understand procedures for safe entry.

1. All confined spaces must be identified and categorized appropriately.

2. Never enter a confined space without testing the atmosphere, continuously ventilating, and filling out a permit.

3. Confined space entry procedures must be established (written) and followed.

P. Traffic Control for Public Streets and Highways

1. Where a hazard exists to employees because of traffic or haulage conditions at work sites that encroach upon public streets or highways, a system or traffic control in conformance with the most recent approved "Manual of Traffic Control", published by the California Department of Transportation, shall be required so as to abate the hazard.

   Note: Additional means of traffic control, such as continuous patrol, detours, barricades or other techniques for the safety of employees may be employed.

2. Specifications for the size and design of signs, lights and devices used for traffic control shall be as described in the "Manual of Traffic Control".

3. Employees (on foot) exposed to the hazard of vehicular traffic shall wear reflective jackets or vests.
   a. Flaggers shall be utilized at construction sites where barricades and warning signs cannot control the moving traffic.
   b. When flaggers are required, they shall be placed in relation to the equipment or operation so as to give effective warning.
   c. A warning sign shall be placed ahead of the flaggers reading: "Flagman Ahead". The distance between the sign and the flagger shall be based on the traffic speed, allowing approximately 50 feet for each 10 miles per hour.
   d. Flaggers shall wear orange, strong yellow-green or fluorescent versions of these colored warning garments such as vests, jackets or shirts. Rainwear shall be orange, strong yellow-green or yellow.
   e. During the hours of darkness, flaggers' stations shall be illuminated in such a way that the flagger will be clearly visible to approaching traffic and flaggers shall be outfitted with Type III retro reflective garments.
   f. Flaggers shall be trained in the proper fundamentals of flagging moving traffic before being assigned as flaggers. Signaling directions used by flaggers shall conform to the "Manual of Traffic Controls".

Q. Equipment Maintenance Shop

1. Slippery Floors
   a. Slippery floors caused by spilled oil, grease, gasoline, water, etc., are among the most common causes of incidents in the equipment maintenance industry.
   b. These incidents can be prevented by using good housekeeping rules. Each mechanic should be required to sweep his or her stall and clean up all spills after each job or more often if necessary.
   c. The floor may be wet and slippery most of the time due to the nature of the work. In such cases, a grating should be used which provides a friction-walking surface raised above the water level.

2. Engine Exhausts

   To protect employees from hazardous concentrations of carbon monoxide, an effective ventilation system or a provision to prevent the release of engine exhaust in the work area should be required. This is commonly handled by providing at each work location, a flexible tube, attached to the vehicle's exhaust pipe that carries the exhausts outside the shop. Even short term exposure to engine exhausts can be hazardous. Headache, nausea, fatigue and eye irritation can result, which can affect the employee's judgment and lead to unsafe performance.

3. Asbestos Dust from Brake and Clutch Jobs

   The dust from brake and clutch repairs may contain asbestos, which, if inhaled, can cause very serious lung diseases. Due to the seriousness of this hazard,

strict requirements have been adopted for locations where airborne asbestos fibers are produced during brake and clutch repairs.

4. Tire Inflation Equipment

   Tire inflation rules must be posted at the worksite.

5. Jacks

   Never work under a car, which is supported only by jacks. Always place adjustable stands or other substantial supports beneath the car so that it will not fall if the jack fails.

6. Flammable Liquids
   a. Fire is an ever-present hazard in equipment maintenance shops due to the presence of gasoline and other flammable liquids. Flammable liquids must be kept in approved flammable liquid storage cabinets when not in use. The containers must be identified so that they can be distinguished from those containing non-flammable liquids.
   b. Gasoline or other flammable liquids are not to be used for cleaning. Liquids such as Stoddard solvent, kerosene or diesel fuel are much safer to use for cleaning parts and don't require the elaborate ventilation system necessary when flammable liquids are used.

7. Changing and Charging Storage Batteries
   a. Employees working with batteries to measure the specific gravity or handle the electrolyte must wear safety splash goggles and shields, which provide front and side protection. A splash of electrolyte in the eye can cause permanent damage. An eye wash station must be available for flushing contaminated eyes and body parts.

   b. Battery charging areas must be well ventilated because batteries, during charging, release flammable gases, which can explode and burn. For the same reason, open flames, sparks or electric arcs must not be permitted in battery charging areas.

8. Automotive Lifts
   a. For your safety, ME requires all automotive lifts be built to accepted standards. Each lift must also have a nameplate which shows the State Approval Number or a statement to the effect that it complies with ANSI B-153, I-1974 if installed before November 1976. New lifts installed after August 17, 1994 shall be constructed, maintained, and used in accordance with the provision of ANSI/ALI B153.1-1990.

   b. This only assures that the lift met these standards when it was new. In order to make sure it remains safe, it must not be overloaded or improperly used and it must be maintained in a safe condition. The oil level on all hydraulic lifts must be checked periodically.

9. Paint Spray Booths
   a. Paint spray booths must have adequate ventilation systems. These systems must dilute flammable vapors to less than 10% of their lower explosive limit. The lower explosive limit is the leanest mixture of the flammable vapor in air, which will ignite.

b. It is also necessary that all metal parts of the spray booths and exhaust systems, as well as any conductive object being sprayed, are grounded. These grounding requirements are to prevent sparks caused by static electricity from igniting flammable vapors. Unless specifically designed otherwise, airless, high-pressure spray guns must also be grounded. In addition, no source of ignition is permitted within 20 feet of the spray booth opening.

c. Respirators must be worn by spray booth operators any time they are downstream from the object begin sprayed.

10. Belt and Pulley Drives

a. All v-belt and pulley drives within 7 feet of the floor must be guarded (fully enclosed) to prevent employees from getting their hands, hair or clothing caught in them.

b. If there is an air compressor in your shop which starts automatically, it must have a warning sign on it stating that it starts without warning.

11. Eye Protection

All employees in shop shall wear OSHA eye protection during working hours, as shall others in the area, such as inspectors, stock handlers and supervisors. Prescription safety glasses must have side shields attached.

R. Fabrication Shop

1. Definition

Machines include all power-driven machines, not portable by hand, used to shape or form metal by cutting, impact, pressure, electrical techniques or a combination of these processes. Grinders, buffers, welders, plasma cutters and similar machines are included in this definition.

2. General Safety Rules

a. Operation, adjustment, and repair of any machine must be restricted to experienced and trained personnel or apprentices under "close" supervision.

b. Safe work procedures must be established, with short-cuts and chance-taking prohibited.

c. Supervisors must be responsible for the enforcement of this policy and for making certain that no deviation from the safety rules is permitted.

d. A tool rack should be provided for the convenience of the operator, repair, and maintenance personnel. All wrenches and tools needed for normal operations and adjustments should be included as standard equipment.

e. Each machine must have a disconnect switch which can be locked in the **OFF** position, to disconnect the machine from the power source.

f. Maintenance or repair should be permitted on any machine only after its disconnect switch has been shut off, padlocked in the **OFF** position and tagged. (Lock Out Tag Out)

g. Machines should never be left running while unattended.

h. Operators should not wear jewelry or loose-fitting clothing, especially loose sleeves or cuffs of shirts or jackets and neckties. Long hair, which could be caught by moving parts, should be covered.

i. All employees in shop shall wear OSHA eye protection and footwear at all times during working hours, as shall others in the area, such as inspectors, stock handlers and supervisors. Prescription safety glasses must have side shields attached.

j. Throwing refuse or spitting in the machine coolant should not be allowed -- such actions foul the coolant.

k. Manual adjusting and gauging (callipering) of work should not be permitted while the machine is running.

l. Operators should use brushes, vacuum equipment, or special tools for removing chips.

m. Operators should use the proper hand tools.

n. Compressed air or other compressed gases in excess of 10 pounds per square inch should not be used to blow dirt, chips, or dust from clothing or hair. Brushes and/or vacuum equipment provide a less dangerous method.

o. Baffles or shields should be placed around each machine so that employees from other machines or areas are not endangered.

p. Splash guard shields, and other means should be considered to minimize the exposure of cutting oils to the workers, which may cause skin irritation. Personal hygienic measures by the employee will also tend to minimize skin irritation.

S. Office and Clerical

1. Good housekeeping is a vital safety measure. Keep your office and work area neat and orderly.

2. Store materials in cabinets or rooms designated for that purpose, and keep them orderly.

3. Heavy objects should be stored near floor levels.

4. Furniture and equipment that is defective must be removed from service and reported to your supervisor immediately.

5. Do not leave chairs, wastebaskets, cords, and other articles in aisles where they constitute a tripping hazard.

6. File cabinets, desk drawers, cabinet doors, and furniture extensions must be kept closed when not in use.

7. No more than one drawer of a file cabinet may be kept open at the same time.

8. Place the heaviest load in lower file cabinet drawers.

9. When closing a drawer, grasp the handle to avoid finger injuries.

10. Do not use common or sharp pointed pins for fastening paper together. Use staples or other approved fasteners.

11. Broken glass should be wrapped in paper, labeled "broken glass," and placed in a wastebasket or in a special container provided for this purpose.

12. Use only approved ladders or step stools to reach material on high shelves or other similar locations. The use of office furniture in place of stepladders is prohibited.

13. Paper cutters should be of safe construction and kept in good condition. Use these two common-sense precautions: keep your fingers away from the knife; keep the knife in the down position when not in use. Loose springs or guards should be repaired immediately.

14. When using or refilling staplers, keep fingers away from the operating parts.

15. Electrical equipment used in offices must be properly grounded or double insulated to prevent shock. Use approved three-conductor extension cords with a ground.

16. All electrical devices must be inspected for safety prior to use and periodically thereafter.

17. Electrical cords that are badly worn or damaged must be repaired or discarded. Electrical cords may not be spliced.

18. Materials and supplies may not be stored in a manner that will block access to electrical panels.

19. Machines with exposed moving parts or hot surfaces must have appropriate guards in place.

20. Flammable liquids must be stored in approved metal containers, properly labeled, and kept away from heat.

21. Incompatible substances must not be stored in close proximity to each other.

22. Caution should be taken in the use and storage of knives, scissors, letter openers, and other sharp-pointed objects.

23. Turn on lights before entering a dark room or dark corridor.

24. To avoid falling, do not tilt back in a straight chair or lean back too far in a swivel chair.

25. All employees should be aware of emergency procedures for their work areas with respect to fires, bomb threats, and emergency exits.

28. All aisles, hallways, and stairways must be clean of obstructions.

29. Do not read while walking, keep eyes on path

30. Never run in halls or offices.

31. Cables, extension cords, etc., must not be strung across surfaces where people may walk without proper walkover protection.

32. Keep to the right when walking in hallways, especially at doorways and blind corners.

33. Use caution when approaching doors that swing toward you.

34. When working directly behind a closed door, lock it.

35. All office machinery and equipment that can roll or slide about in an earthquake must be adequately secured.

36. Request help when lifting or moving heavy office supplies and equipment.

37. Never carry a load of such size that it reduces your visibility, especially when going up or down stairs.

38. Employees must use extra caution when going up or down stairs. Use the handrail at all times. (Look Where You Walk and Walk Where You look)

39. Report any hazards to your supervisor for correction.

40. Torn carpets, loose or curled mats, liquids spilled on floors, inadequate lighting, failure of lights, or any condition that could cause tripping or slipping should be reported immediately to your supervisor for correction.

41. Fire protection cabinets should be placed away from doors or passageways so they do not interfere with the office or work area exits.

T. Lock Out, Tag Out

When work on machinery or equipment poses a potential hazard to employees, the current for electrical switches, equipment and apparatus must always be turned off and the electrical disconnect locked out before the work is started.

All associated equipment whose operation could create a hazard to personnel in and around the equipment being repaired must be locked out.

A lock on a circuit is considered sufficient warning to all employees that the equipment or apparatus is being worked on and no one is to tamper with the disconnect lock or circuit in any way.