

Injury and Illness Prevention Plan



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Chapter 1

Injury and Illness Prevention Program

Written Plan

Every employer should have a written Injury and Illness Prevention plan. This is our plan. Please read it carefully. While no plan can guarantee an accident free work place, following the safety procedures set forth in this manual will significantly reduce the risk of danger to you and your co-workers. If at any time you are unclear or need assistance regarding the information contained herein, notify your immediate supervisor or administration office immediately. Thank you for all our safety.

Introduction to Our Program

State and federal laws, as well as company policy, make the safety and health of our employees the first consideration in operating our business. Safety and health in our business must be a part of every operation, and every employee's responsibility at all levels. It is the intent of Tim Messer Construction, Inc. to comply with all laws concerning the operation of the business and the health and safety of our employees and the public. To do this, we must constantly be aware of conditions in all work areas that can produce or lead to injuries. No employee is required to work at a job known to be unsafe or dangerous to their health. Your cooperation in detecting hazards, reporting dangerous conditions and controlling workplace hazards is a condition of employment. Inform your supervisor immediately of any situation beyond your ability or authority to correct. Employees will not be disciplined or suffer any retaliation for reporting a safety violation in good faith.

Safety First Priority

The personal safety and health of each employee of Tim Messer Construction, Inc. is of primary importance. Prevention of occupationally induced injuries and illnesses is of such consequence that it will be given precedence over operating productivity. To the greatest degree possible, management will provide all mechanical and physical protection required for personal safety and health, but our employees must bear primary responsibility for working safely. A little common sense and caution can prevent most accidents from occurring.

Individual Cooperation Necessary

Tim Messer Construction, Inc. maintains a safety and health program conforming to the best practices of our field. To be successful, such a program must embody proper attitudes towards injury and illness prevention on the part of supervisors and employees. It requires the cooperation in all safety and health matters, not only of the employer and employee, but between the employee and all co-workers. Only through such a cooperative effort can a safety program in the best interest of all be established and preserved. Safety is no accident; think safety and the job will be safer.

Safety Program Goals

The objective of Tim Messer Construction, Inc. is a safety and health program that will reduce the number of injuries and illnesses to an absolute minimum, not merely in keeping with, but surpassing the best experience of similar operations by others. Our goal is zero accidents and injuries.

Safety Policy Statement

It is the policy of Tim Messer Construction, Inc. that accident prevention shall be considered of primary importance in all phases of operation and administration. It is the intention of Tim Messer Construction, Inc.'s management to provide safe and healthy working conditions and to establish and insist upon safe practices at all times by all employees.

The prevention of accidents is an objective affecting all levels of our company and its operations. It is, therefore, a basic requirement that each supervisor make the safety of all employees an integral part of his or her regular management function. It is equally the duty of each employee to accept and follow established safety regulations and procedures.

Every effort will be made to provide adequate training to employees. However, if an employee is ever in doubt about how to do a job or task safely, it is his or her duty to ask a qualified person for assistance. Employees are expected to assist management in accident prevention activities. Unsafe conditions must be reported immediately. Fellow employees that need help should be assisted. Everyone is responsible for the housekeeping duties that pertain to their jobs.

Every injury that occurs on the job, even a slight cut or strain, must be reported to management and/or the Responsible Safety Officer as soon as possible.

Under no circumstances, except emergency trips to the hospital, should an employee leave the work site without reporting an injury. When you have an accident,

everyone is hurt. Please work safely. Safety is everyone's business.

Safety Rules for All Employees

It is the policy of Tim Messer Construction, Inc. that everything possible will be done to protect you from accidents, injuries and/or occupational disease while on the job. Safety is a cooperative undertaking requiring an ever-present safety consciousness on the part of every employee. If an employee is injured, positive action must be taken promptly to see that the employee receives adequate treatment. No one likes to see a fellow employee injured by an accident. Therefore, all operations must be planned to prevent accidents. To carry out this policy, the following rules will apply:

- 1.** All employees shall follow the safe practices and rules contained in this manual and such other rules and practices communicated on the job. All employees shall report all unsafe conditions or practices to the proper authority, including the supervision on the project, and, if corrective action is not taken immediately, a governmental authority with proper jurisdiction over such practices.
- 2.** The RSO shall be responsible for implementing these policies by insisting that employees observe and obey all rules and regulations necessary to maintain a safe work place and safe work habits and practices.
- 3.** Good housekeeping must be practiced at all times in the work area. Clean up all waste and eliminate any dangers in the work area.
- 4.** Suitable clothing and footwear must be worn at all times. Hardhats shall be worn at all times. Other personal protection equipment (such as respirators, eye protection, etc.) will be worn whenever needed by the situation.
- 5.** All employees will participate in safety meetings conducted by their supervisor on a regular basis to continuously provide a safe workplace for all. This is an essential part of our program for protecting our employees from accidents and illness.
- 6.** Anyone under the influence of intoxicating liquor or drugs, including prescription drugs which might impair motor skills and judgment, shall not be allowed on the job.
- 7.** Horseplay, scuffling, and other acts which tend to have an adverse influence on safety or well-being of other employees are prohibited.
- 8.** Work shall be well planned and supervised to avoid injuries in the handling of heavy materials and while using equipment.

9. No one shall be permitted to work while the employee's ability or alertness is so impaired by fatigue, illness, or other causes that it might expose the employee or others to injury.
10. There will be no consumption of liquor or beer on the job.
11. Employees should be alert to see that all guards and other protective devices are in their proper places and adjusted, and shall report deficiencies promptly to the RSO.
12. Employees shall not handle or tamper with any electrical equipment, machinery, or air or water lines in a manner not within the scope of their duties, unless they have received specific instructions.
13. All injuries should be reported to the Supervisor, Responsible Safety Officer, or RSO so that arrangements can be made for medical or first aid treatment.
14. When lifting heavy objects, use the large muscles of the leg instead of the smaller muscles of the back.
15. Do not throw things, especially material and equipment. Dispose of all waste properly and carefully. Bend all exposed nails so they do not hurt anyone removing the waste.
16. Do not wear shoes with thin or torn soles.

Responsible Safety Officer

The identity of the person who is responsible for the Tim Messer Construction, Inc. safety program is Stephen Ferguson. This person must be someone of sufficient authority to implement the program. In addition to other titles, this person is called the *Responsible Safety Officer*.

Safety Committee

At Tim Messer Construction, Inc. there are two employees designated as members of the Company Safety Committee. These members will meet on a regular basis to discuss and evaluate the effectiveness of all company safety programs and policies, and implement any changes that may be necessary to keep all programs and policies current. Minutes from these meetings should be recorded and filed for future reference.

Employee Compliance

Tim Messer Construction, Inc. Injury & Illness Prevention Plan

This written plan contains incentives designed to promote employee participation in the safety program. These incentives are not part of your regular compensation and are not intended to discourage you from reporting accidents.

Agreement to Participate

Every employer is required to provide a safe and healthful workplace. Tim Messer Construction, Inc. is committed to fulfilling this requirement. A safe and healthful workplace is one of the highest priorities of Tim Messer Construction, Inc..

The information in this manual constitutes a written injury and illness prevention program. While Tim Messer Construction, Inc. cannot anticipate every workplace hazard, the following general principals should guide your conduct. To be safe, you must never stop being safety conscious.

Study the guidelines contained in this manual. Discuss the workplace situation with the supervisor or the RSO. Attend all company sponsored training and safety meetings. Read all posters and warnings. Listen to instructions carefully. Follow the Code of Safe Work Place Practices contained herein. Participate in accident investigations as requested. Accept responsibility for the safety of others. Maintain all required documentation.

Each employee shall read and implement this injury and illness prevention program. If you do not understand any policy, please ask your supervisor.

Employee Safety Suggestion Box

Please give your written safety suggestions to your supervisor during the safety meetings. All safety suggestions will be discussed at the meeting. The group that consistently has the best safety suggestions will also be recognized. Management is the sole judge of the value of safety suggestions, and will implement as many good suggestions as possible.

Training

Employee safety training is another requirement of an effective injury and illness prevention program. While Tim Messer Construction, Inc. believes in skills training, we also want to emphasize safety training.

All employees should start the safety training by reading this manual and discussing any problems or safety concerns with your direct supervisor.

Safety and Health Training

Training is one of the most important elements of any injury and illness prevention program. Such training is designed to enable employees to learn their jobs properly, bring new ideas to the workplace, reinforce existing safety policies and put the injury and illness prevention program into action.

Training is required for both supervision and employees alike. The content of each training session will vary, but each session will attempt to teach the following:

- a)** The success of Tim Messer Construction, Inc.'s injury and illness prevention program depends on the actions of individual employees as well as a commitment by the Company.
- b)** Each employee's immediate supervisor will review the safe work procedures unique to that employee's job, and how these safe work procedures protect against risk and danger.
- c)** Each employee will learn when personal protective equipment is required or necessary, and how to use and maintain the equipment in good condition.
- d)** Each employee will learn what to do in case of emergencies occurring in the workplace. Supervisors are also vested with special duties concerning the safety of employees. The supervisors are key figures in the establishment and success of Tim Messer Construction, Inc.'s injury and illness prevention program. They have primary responsibility for actually implementing the injury and illness prevention program, especially as it relates directly to the workplace. Supervisors are responsible for being familiar with safety and health hazards to which employees are exposed, how to recognize them, the potential effects of these hazards, and rules and procedures for maintaining a safe workplace.

Supervisors shall convey this information to the employees at the workplace, and shall investigate accidents according to the accident investigation policies contained in this manual.

Periodic Safety Training Meetings

Tim Messer Construction, Inc. has safety meetings every month. The purpose of the meeting is to convey safety information and answer employee questions.

The format of most meetings will be to review, in language understandable to every employee, the content of the injury prevention program, special work site hazards,

serious concealed dangers, and material safety data sheets. Each week, the RSO will review a portion of the company's safe work practices contained in this booklet, or other safety related information. Whenever a new practice or procedure is introduced into the workplace, it will be thoroughly reviewed for safety. A sign-up sheet will be passed around each meeting. A copy of the sign-up sheet and any applicable notes will also be placed in the office file. Employee attendance is mandatory, safety training & updates will continue to be a part of our ongoing safety program.

Employee Responsibility for Training

Teaching safety is a two-way street. Tim Messer Construction, Inc. can preach safety, but only employees can practice safety. Safety education requires employee participation.

Every month, a meeting of all employees will be conducted for the purpose of safety instruction. The employees will discuss the application of the Company's injury and illness prevention program to actual job assignments. They will also read and discuss a section of the manual and review application of general safety rules to specific situations.

Remember, the following general rules apply in all situations:

- a)** No employee should undertake a job that appears to be unsafe.
- b)** No employee is expected to undertake a job until he/she has received adequate safety instructions, and is authorized to perform the task.
- c)** No employee should use chemicals without fully understanding their toxic properties and without the knowledge required to work with these chemicals safely. Use the MSDS regularly.
- d)** Mechanical safeguards must be kept in place.
- e)** Employees must report any unsafe conditions to the job site supervisor and the Responsible Safety Officer.
- f)** Any work-related injury or illness must be reported to management at once.
- g)** Personal protective equipment must be used when and where required. All such equipment must be properly maintained.

Communication

Employers should communicate to employees their commitment to safety and to make sure that all employees are familiar with the elements of the company safety program. Tim Messer Construction, Inc. communicates with its employees orally, in the form of directions and statements from your supervisor, written, in the form of directives and this manual, and by example. If you see a supervisor or management do something unsafe, please tell that person. We sometimes forget actions speak louder than words.

Incident Reporting

Definitions

Incident: Any unplanned event that occurs during the performance of work.

First Aid Case: An occupational injury or illness where care given that is not classified as medical treatment according to CAL-OSHA Recordkeeping guidelines.

Medical Treatment Case (CAL-OSHA Recordable Case): An occupational injury or illness requiring medical treatment as defined by the CAL-OSHA Recordkeeping guidelines. Common examples include intrusive procedures (i.e. lancing, stitches, drilling), second or subsequent return visits for treatments of any kind, prescribing medication, broken bones, loss of consciousness, restricted work activities, lost days from work, and welding flash burns of the eye.

Responsibilities

Employee: Employees are required to immediately report all incidents upon their occurrence to their supervisor.

Field Supervision: Supervisors are responsible for ensuring the medical needs of employees are met when an injury or illness results from an incident at work. When medical needs are satisfied, supervisors are responsible for reporting the event, securing the accident scene and initiating the incident investigation process.

Site or Project Safety Representative: Safety representatives are responsible for coordinating the accident investigation process, coordinating root cause analysis meetings, and ensuring accident investigation reports are submitted properly and in a timely manner.

Director of Safety: The Director of Safety, Stephen Ferguson is responsible for the administration of the incident reporting and investigation process, distribution of

corporate reports, and maintaining the incident database.

Management Personnel: Management personnel are responsible for ensuring all incidents are reported, and investigated in accordance with company requirements.

Reporting and Investigation Requirements

Project Reporting Procedures

All locations are required to have a written reporting process that is communicated to all employees. The reporting process shall include client requirements.

Reporting All Incidents

All incidents shall be verbally reported upon their occurrence to the following:

1. Site or location Manager or Senior Management Representative
2. Client in accordance with requirements
3. Site Safety Representative
4. Operations person responsible for the work
5. Responsible supervisor
6. Corporate Workers' Compensation Administrator
7. Others as directed

All incidents shall be documented on the "Incident and Investigation Report" and submitted no later than 10:00 A.M. the following day. The preferred method of reporting is electronic mail.

1. Director of Safety (RSO)
2. Workers' Compensation Representative
3. Field Safety Representative
4. Client as required
5. Others as directed

Significant Event Reporting: Significant Incidents must be reported in accordance with this section. Significant events include:

1. Classified as CAL-OSHA Recordable Cases & Serious Events
2. Could have resulted in serious injury or property damage
3. Example of an unfavorable trend
4. Significant property damage or repeated property damage
5. Theft

6. Involvement of Third Parties
7. A high level of occurrence
8. Must be communicated to affirm a change in a policy, procedure, or standard
9. A new lesson learned
10. As requested by any member of management from General Foreman to the President

Site or Project Safety Representative:

1. Gather pertinent information
2. Notify Corporate Director of Safety and Division Manager immediately.
3. Schedule Root Cause Investigation
4. Complete Root Cause investigation
5. Share all information and learning experiences with site and project where incident occurred with 24 hours of root cause investigation conclusion. (employees and Client Representatives)
6. Forward all information to GSI Corporate Director of Safety within 24 hours of the completion of root cause investigation
7. Forward all information to the Workers' Compensation Administrator within 24 hours of the completion of root cause investigation.

Corporate Safety Director: The RSO, Stephen Ferguson will:

1. Notify President and Vice President that incident has occurred.
2. Assist Site Safety Representative and Project Manager with Root Cause Investigations
3. Share information with client "EH&S" representatives at each site within three days of the completion of Root Cause Investigation. The information to be communicated for Significant Events include the following information to the extent possible:
 - a. Type of Event
 - b. Classification
 - c. Date
 - d. Description
 - e. Root Cause and Factors
 - f. Lesson Learned
 - g. Authorized Photographs, diagrams and other information that are descriptive of the event

Field Supervision

1. Receive information from Corporate Director of Safety of significant incident that has

occurred.

2. Communicate significant incident with all Tim Messer Construction, Inc. employees on site or project within 24 hours of receiving information from corporate Director of Safety.

Fatal Events: In the event of a fatal event certain government agencies, company officials, client/owners and others as are required to be notified as defined below:

1. President
2. Director of Safety
3. Manager of Human Resources
4. Safety Contact responsible for Area
5. Workers' Compensation Administrator
6. Public law enforcement agency (who will contact the coroner)
7. Area Federal or State Occupational Safety and Health Office (CAL-OSHA). Director of Safety or a company legal representative must be notified prior to contacting this agency.
8. Mine Safety and Health Administration (MSHA) if they have jurisdiction.

CAL-OSHA Reporting: The Director of Safety must be notified before any contact with the Occupational Safety and Health Administration regarding the reporting of work related injuries.

The general requirements for reporting accidents to CAL-OSHA are:

Within eight (8) hours after the death of any employee from a work-related incident or the in-patient hospitalization of three or more employees as a result of a work-related incident, you must orally report the fatality/multiple hospitalization by telephone or in person to the Area Office of the Occupational Safety and Health Administration (CAL-OSHA), U.S. Department of Labor, that is nearest to the site of the incident. You may also use the CAL-OSHA toll-free central telephone number, 1-800-321-CAL-OSHA (1-800-321-6742).

If the Area Office is closed, the incident must be reported by using the 800-telephone number.

Accident Prevention Policy Posting

Each employee has a personal responsibility to prevent accidents. You have a responsibility to your family, to your fellow workers and to the Company. You will be expected to observe safe practice rules and instructions relating to the efficient handling of your work.

Your responsibilities include the following:

- * Incorporate safety into every job procedure. No job is done efficiently unless it has been done safely.
- * Know and obey safe practice rules.
- * Know that disciplinary action may result from a violation of the safety rules.
- * Report all injuries immediately, no matter how slight the injury may be.
- * Caution fellow workers when they perform unsafe acts.
- * Don't take chances.
- * Ask questions when there is any doubt concerning safety.
- * Don't tamper with anything you do not understand.
- * Report all unsafe conditions or equipment to your supervisor immediately.

Accident Prevention Policy Posting

A copy of this manual will be posted in the work area.

It is the policy of Tim Messer Construction, Inc. to provide a safe and clean workplace and to maintain sound operating practices. Concentrated efforts shall produce safe working conditions and result in efficient, productive operations. Safeguarding the health and welfare of our employees cannot be stressed too strongly.

Accident prevention is the responsibility of all of us. Department heads and supervisors at all levels shall be responsible for continuous efforts directed toward the prevention of accidents. Employees are responsible for performing their jobs in a safe manner.

The observance of safe and clean work practices, coupled with ongoing compliance of all established safety standards and codes, will reduce accidents and make our company a better place to work.

Substance Abuse Program and Policy

It is the policy of Tim Messer Construction, Inc. to have a drug-free workplace. All employees are expected to report to work in a drug-free physical and mental condition that will allow them to perform their work in a safe, and competent manner. Employees who voluntarily, or through testing prove to have a substance abuse problem may be referred to a community substance abuse program to seek help.

Prohibited/ Illegal Substances

The type of illegal substances prohibited includes, but is not limited to the following:

1. Illegal and unauthorized drugs (including any amounts in the urine or bloodstream).
2. Unauthorized alcoholic beverages.
3. Drug-related paraphernalia.
4. Unauthorized weapons, firearms, or explosive devices (including those found in vehicles).
5. Stolen property (including proprietary information).
6. Abuse of prescription or legally controlled substances.

Detection

As part of our substance abuse program, new workers may be given an initial drug screening/ test. Workers who test positive for drugs, or other signs of substance abuse will not be hired. Additionally, random drug testing may be performed throughout your term of employment at Tim Messer Construction, Inc.'s discretion, including but not limited to the following:

1. Any workers involved in jobsite or vehicular accidents, or near-misses may be subject to immediate drug testing.
2. Random searches by outside inspection services (including drug detection dogs).
3. Reasonable suspicion (or cause) testing.
4. Post rehabilitation/ probationary testing.
5. Testing to comply with contractual obligations, or governmental agencies.
6. Routine, periodical testing.

Workers already employed by Tim Messer Construction, Inc. who test positive for drugs may be terminated, or referred to a community substance abuse program for help, disciplinary action, or notification of authorities, at the discretion of the employer.

Hazard Identification & Abatement

This written safety and health plan sets out a system for identifying workplace hazards and correcting them in a timely fashion. Please review it carefully with your

supervisor. Remember, safety is everyone's responsibility.

Safety Audits

The best method to establish a safer workplace is to study past accidents and worker compensation complaints. By focusing on past injuries, Tim Messer Construction, Inc. hopes to avoid similar problems in the future. Therefore, whenever there is an accident, and in many cases upon review of past accidents, you may be requested to participate in a safety audit interview. During the interview, there will be questions about the nature of the investigation and the workplace safety related to the incident. Please answer these questions honestly and completely. Also, please volunteer any personal observations and/or suggestions for improved workplace safety.

Based upon the study of past accidents and industry recommendations, a safety training program has been implemented. In addition to other preventative practices, there will be a group discussion of the cause of the accident and methods to avoid the type of accidents and injury situations experienced in the past. Work rules will be reviewed and modified based upon the study of these accidents.

In addition to historical information, workplace safety depends on workplace observation. Your supervisor is responsible for inspecting your working area daily before and while you are working, but this does not mean you are no longer responsible for inspecting the workplace also. Each day, before you begin work, inspect the area for any dangerous conditions. Inform your supervisor of anything significant, so other employees and guests are advised. You may also be given written communications regarding unsafe conditions or serious concealed dangers. Review this communication carefully and adjust your workplace behavior to avoid any danger or hazards. If you are unclear or unsure of the significance of this written communication, contact your supervisor and review your planned actions before starting to work. It is better to wait and check, then to go ahead and possibly cause an injury to yourself and others.

Managers must provide written notice to employees of any serious concealed dangers of which they have actual knowledge. In addition to providing written notice of all serious concealed dangers to employees managers are required to report serious concealed dangers to either CAL-OSHA or an appropriate administrative agency within fifteen days, or immediately if such danger would cause imminent harm, unless the danger is abated.

Merely identifying the problem is not sufficient. The danger must be reported to the appropriate supervisor and the Responsible Safety Officer, who then will correct the problem. If the danger cannot be corrected, then all employees will be warned to take protective action so that the danger will not result in any injuries.

Workplace Inspections

In addition to the examination of records, work place safety inspections will occur periodically every week, when conditions change, or when a new process or procedure is implemented. During these inspections, there will be a review of the injury and illness prevention policy and Tim Messer Construction, Inc.'s code of safe work practices.

Accident Investigation

A primary tool used by Tim Messer Construction, Inc. to identify the areas responsible for accidents is a thorough and properly completed accident investigation. The results of each investigation will be reduced to writing and submitted for review by management and Tim Messer Construction, Inc.'s insurance risk management advisors, and, if the accident resulted in serious injury, to company attorneys.

If the accident resulted in serious injury, the procedure will be directed by the attorneys to provide the most reliable evidence or description legally permissible. All investigations pursuant to the directions of legal counsel will be protected by all applicable privileges, if any. The attorney will provide more detail on this topic during the investigation.

Every job location will have on site at least one camera, preferably either a video or a sixty second type, with enough film to take pictures immediately after any accident occurrence. Some workplaces will have a video camera.

A written report should be prepared from notes and diagrams made at the scene, or a portable Dictaphone will be used to record direct eyewitness statements as near to the actual time of observation as possible. All statements should include the time and date given, and the town or county where the statement was made. If the statement is intended to be used in court proceedings, a suitable jurat is required, otherwise, a simple statement that the description is sworn to be true under penalty of perjury with the date, place and time should be included. All pictures should be similarly identified. Let people know on tape that they are being recorded. Also, make sure that the names and addresses and day and evening phone numbers of all eye witnesses are noted or recorded.

If a formal police report or other official investigation is conducted by any government agency, get the name and badge number of the official, or a business card, and find out when a copy of the official report will be available to the public. If you are requested to make a statement, you have the right to have the company lawyer or representative

attend your statement at no cost to you.

A satisfactory accident report will answer the following questions:

- 1.** What happened? The investigation report should begin by describing the accident, the injury sustained, the eyewitnesses, the date, time and location of the incident and the date and time of the report. Remember: who, what, when, where and how are the questions that the report must answer.
- 2.** Why did the accident occur? The ultimate cause of the accident may not be known for several days after all the data are analyzed. However, if an obvious cause suggests itself, include your conclusions as a hypothesis at the time you give your information to the person in charge of the investigation.
- 3.** What should be done? Once a report determines the cause of the accident, it should suggest a method for avoiding future accidents of a similar character.

This is a decision by the Responsible Safety Officer and the supervisor on the project, as well as top management. Once a solution has been adopted, it is everyone's responsibility to implement it.

- 4.** What has been done? A follow up report will be issued after a reasonable amount of time to determine if the suggested solution was implemented, and if so, whether the likelihood of accident has been reduced.

Records

Tim Messer Construction, Inc. maintains records of employee training, hazard identification and abatement, and accident investigation.

CAL-OSHA Records Required

Copies of required accident investigations and certification of employee safety training shall be maintained by the Responsible Safety Officer. A written report will be maintained on each accident, injury or on-the-job illness requiring medical treatment. A record of each such injury or illness is recorded on CAL-OSHA Log and Summary of Occupational Injuries Form 300 according to its instructions. Supplemental records of each injury are maintained on CAL-OSHA Form 301, or Employers Report of Injury or Illness Form 5020. Every year, a summary of all reported injuries or illnesses is posted no later than February 1, for three months, until April 30, on CAL-OSHA Form 301. These records are maintained for five years from the date of preparation.

General Statement on Safety

Tim Messer Construction, Inc. strives to maintain a safe place to work and to employ safe workers. It is your responsibility to conduct your work in a safe, responsible manner. Immediately report all accidents occurring on Company premises to your supervisor.

General Statement on Safety

Each employee has an individual responsibility to prevent accidents. It is to the benefit of all employees and Tim Messer Construction, Inc. that you report any situation or condition you believe may present a safety hazard, including any known or concealed dangers in your work area. Tim Messer Construction, Inc. encourages you to report your concern either to your immediate supervisor or to a member of the Safety Committee. The supervisor or Safety Committee will take immediate action to investigate the matter.

Safety Equipment

Proper safety equipment is necessary for your protection. The company provides the best protective equipment it is possible to obtain.

Use all safeguards, safety appliances, or devices furnished for your protection and comply with all regulations that may concern or affect your safety. Wear your gear properly - all snaps and straps fastened, cuffs not cut or rolled.

Your supervisor will advise you as to what protective equipment is required for your job.

Certain jobs require standard safety apparel and appliances for the protection of the employee. Your supervisor is aware of the requirements and will furnish you with the necessary approved protective appliances. These items shall be worn and effectively maintained as a condition of your continued employment and part of our mutual obligation to comply with the Occupational Safety and Health Act.

Safety goggles, glasses and face shields shall correspond to the degree of hazard, i.e., chemical splashes, welding flashes, impact hazard, dust, etc. Do not alter or replace an approved appliance without permission from your supervisor.

Rubber gloves and rubber aprons shall be worn when working with acids, caustics or other corrosive materials.

Specified footwear must be worn.

No jewelry shall be worn around power equipment.

Hearing protection appliances (approved muffs or plugs) shall be worn by all employees working within any area identified as having excess noise levels. Your supervisor will instruct you in the proper use of the appliance.

Protective Clothing

Proper safety equipment is necessary for your protection. The company provides the best protective equipment it is possible to obtain. Use all safeguards, safety appliances, or devices furnished for your protection and carry out all regulations that may concern or affect your safety. Wear your gear properly - all snaps and straps fastened, cuffs not cut or rolled.

Your supervisor will advise you as to what protective equipment is required for your job.

Smoking and Fire Safety

Fire is one of the worst enemies of any facility. Learn the location of the fire extinguishers. Learn how to use them.

You can help prevent fires by observing the smoking rules:

- * Smoking is not allowed on the site, except in designated areas.
- * Smoking is not permitted in rest rooms.
- * If you are not sure about where you may smoke, ask the supervisor.

Safety Recognition

Definitions

Milestone Safety Achievement A level of safety performance that meets or exceeds a statistical objective or expectations.

Safe Behavior Performance An individual or individuals performing work in accordance with standards, requirements and expectations.

Behavior Based Safety means a process where behavioral performance of individuals is the key element of accomplishing safe work objectives.

Responsibilities

The Director of Safety and Training, Stephen Ferguson is responsible for the general administration of this policy. Project management is responsible for implementing project level recognition programs.

Recognition Guides

Recognition of safe performance should not be the driving force in achieving safety success. Safe work performance should be viewed as part of successful planning and execution of work.

Milestone Safety Achievement

On a corporate level, Tim Messer Construction, Inc. itself should recognize global and group safe work performance. The President, and Director of Safety will determine the type and extent of global and group recognition. The expectation of employees to work each day without an incident dictates that acceptable statistical performance objectives are "0".

Milestone safety achievements should be based on this premise. Recognition for such performance should be based upon the level of hours worked.

Key milestone markers are:

Calendar Year
50,000 hour increments
100,000 hour increments

Behavior Based Recognition

Projects and locations are encouraged to implement behavior based safety recognition of individuals and groups. Examples of safe behavior include:

Effective participation in the proactive evaluation process
Proactive safety suggestions
Demonstration of consistent safe behavior
Making observations and taking intervening actions
Participation in safety teams

Safe Behavior Performance Recognition

Any member of supervision or management may recommend recognition of an individual, project, group or discipline. This recommendation must be in written form and submitted to the RSO, Stephen Ferguson for consideration. This recommendation must be based upon safe behavior performance. Information that must be submitted includes:

Project or Group Name
Employee Name as applicable
Reason for recommendation and time frame
Type of corporate recognition recommended

Chapter 2

General Code of Safe Work Practices

General Fire Safety

Portable fire extinguishers are provided in adequate number and type and are located within our facility. The fire extinguisher is mounted in a readily accessible location next to the front door. Fire extinguishers are recharged regularly and the date of last inspection noted on their tags. All employees are periodically instructed in the use of extinguishers and fire protection procedures. Notify the Responsible Safety Officer of any damage to fire protection equipment.

Powder Actuated Tools

The employees using powder-actuated tools must be properly trained and will be issued a card as proof of that training. Some of the powder-actuated tools being used have written approval of the Division of Occupational Safety and Health. Check to see which tools require a certification and which certificates have been issued.

Each powder-actuated tool should be stored in its own locked container when not being used. Signs measuring at least 7" by 10" and in bold face typed reading "POWDER-ACTUATED TOOL IN USE" must be placed conspicuously when the tool is being used.

All powder-actuated tools must be left unloaded until they are actually ready to be used.

Each day before using, each powder-actuated tool must be inspected for obstructions or defects.

The powder-actuated tool operators must have and must use appropriate personal protective equipment such as hard hats, safety goggles, safety shoes and ear protectors whenever they are using the machines.

Machine Guarding

Before operating any machine, every employee must have completed a training program on safe methods of machine operations. It is the primary purpose of supervision to ensure that employees are following safe machine operating procedures. There will be a regular program of safety inspection of machinery and equipment.

All machinery and equipment must be kept clean and properly maintained. There must be sufficient clearance provided around and between machines to allow for safe operations, set up, servicing, material handling and waste removal.

All equipment and machinery should be securely placed, and anchored when necessary, to prevent tipping or other movement that could result in personal injury. Most of the time, machinery should be bolted to the floor to prevent falling during an earthquake, and the electrical cord to the machinery fixed with a breaker or other shut-off device to stop power in case of machine movement.

There must be a power shut-off switch within reach of the operator's position at each machine. Electrical power to each machine shall be capable of being locked out for maintenance, repair or security. The non-current carrying metal parts of electrically operated machines must be bonded and grounded.

The foot-operated switches are guarded and/or arranged to prevent accidental actuation by personnel or falling objects. All manually operated valves and switches controlling the operation of equipment and machines must be clearly identified and readily accessible.

All EMERGENCY stop buttons are colored RED. All the pulleys and belts which are within 7 feet of the floor or working level are properly guarded. All moving chains and gears must be properly guarded. All splash guards mounted on machines that use coolant must be positioned to prevent coolant from splashing the employees.

The supervisor will instruct every employee in the work area on the methods provided to protect the operator and other employees in the machine area from hazards created by the operation of a machine, such as nip points, rotating parts, flying chips and sparks. The machinery guards must be secure and arranged so they do not present a hazard. All special hand tools used for placing and removing material must protect the operator's hands. All revolving drums, barrels and containers should be guarded by an enclosure that is interlocked with the drive mechanisms, so that revolution cannot occur unless the guard enclosure is in place. All arbors and mandrels must have firm and secure bearings and be free of play. A protective mechanism has been installed to prevent machines from automatically starting when power is restored after a power failure or shutdown. Machines should be constructed so as to be free from excessive vibration when the size tool is mounted and run at full speed. If the machinery is cleaned with compressed air, the air must be pressure controlled and personal protective equipment or other safeguards used to protect operators and other workers from eye and bodily injury. All fan blades should be protected by a guard having openings no larger than 1/2 inch when operating within 7 feet of the floor.

Saws used for ripping equipment must be installed with anti-kickback devices and spreaders. All radial arm saws must be arranged so that the cutting head will gently return to the back of the table when released.

Lockout-Blockout Procedures

All machinery or equipment capable of movement must be de-energized or disengaged and blocked or locked out during cleaning, servicing, adjusting or setting up operations, whenever required. The locking-out of the control circuits in lieu of locking-out main power disconnects is prohibited. All equipment control valve handles must be provided with a means for locking out. The lock-out procedure requires that stored energy (i.e. mechanical, hydraulic, air) be released or blocked before equipment is locked out for repairs.

Appropriate employees are provided with individually keyed personal safety locks. Employees are required to keep personal control of their key(s) while they have safety locks in use. Employees must check the safety of the lockout by attempting a start up after making sure no one is exposed.

Where the power disconnector does not also disconnect the electrical control circuit, the appropriate electrical enclosures must be identified. The control circuit can also be disconnected and locked out.

Welding, Cutting and Brazing

Only authorized and trained personnel are permitted to use welding, cutting or brazing equipment. All operators must have a copy of the appropriate operating instructions and are directed to follow them. Many areas may require a HOT WORK permit to be used before starting any welding or cutting operations. Check with the RSO before attempting any work without a permit.

Compressed gas cylinders should be regularly examined for obvious signs of defects, deep rusting, or leakage. Use care in handling and storing cylinders, safety valves, relief valves and the like, to prevent damage. Precaution must be taken to prevent mixture of air or oxygen with flammable gases, except at a burner or in a standard torch. Only approved apparatus (torches, regulators, pressure-reducing valves, acetylene generators, manifolds) may be used.

Cylinders must be kept away from sources of heat. It is prohibited to use cylinders as rollers or supports. Empty cylinders must be appropriately marked, their valves closed and valve-protection caps on.

Signs reading: DANGER - NO SMOKING, FLAMES, OR OPEN LIGHTS, or equivalent must be posted. Cylinders, cylinder valves, couplings, regulators, hoses and apparatus must be kept free of oily or greasy substances. Care must be taken not to drop or strike cylinders.

Unless secured on special trucks, all regulators must be removed and valve-protection caps put in place before moving cylinders. All cylinders without fixed hand wheels must have keys, handles, or non-adjustable wrenches on stem valves when in service. Liquefied gases must be stored and shipped valve-end up with valve covers in place. Before a regulator is removed, the valve must be closed and gas released from the regulator. All employees are instructed never to crack a fuel-gas cylinder valve near sources of ignition. Red is used to identify the acetylene (and other fuel-gas) hose, green for oxygen hose, and black for inert gas and air hose. All pressure-reducing regulators must be used only for the gas and pressures for which they are intended.

The open circuit (No Load) voltage of arc welding and cutting machines must be as low as possible and not in excess of the recommended limits. Under wet conditions, automatic controls for reducing no-load voltage must be used. Grounding of the machine frame and safety ground connections of portable machines must be checked periodically. Electrodes must be removed from the holders when not in use. All electric power to the welder must be shut off when no one is in attendance.

Suitable fire extinguishing equipment must be available for immediate use before starting to ignite the welding torch. The welder is strictly forbidden to coil or loop welding electrode cable around his/her body.

All wet welding machines must be thoroughly dried and tested before being used. All work and electrode lead cables must be frequently inspected for wear and damage, and replaced when needed. All connecting cable lengths must have adequate insulation. When the object to be welded cannot be moved and fire hazards cannot be removed, shields must be used to confine heat, sparks and slag.

Fire watchers will be assigned when welding or cutting is performed in locations where a serious fire might develop. All combustible floors must be kept wet, covered by damp sand, or protected by fire-resistant shields. When floors are wet down, personnel should be protected from possible electrical shock.

When welding is done on metal walls, precautions must be taken to protect combustibles on the other side. Before hot work is begun, used drums, barrels, tanks and other containers must be so thoroughly cleaned that no substances remain that could explode, ignite or produce toxic vapors. It is required that eye protection helmets,

hand shields and goggles meet appropriate standards.

Employees exposed to the hazards created by welding, cutting or brazing operations must be protected with personal protective equipment and clothing. Check for adequate ventilation where welding or cutting is performed. When working in confined spaces, environmental monitoring tests should be taken and means provided for quick removal of welders in case of emergency.

Compressors and Compressed Air

All compressors must be equipped with pressure relief valves and pressure gauges. All compressor air intakes must be installed and equipped to ensure that only clean, uncontaminated air enters the compressor. Every air receiver must be provided with a drain pipe and valve at the lowest point for the removal of accumulated oil and water. Compressed air receivers must be periodically drained of moisture and oil. All safety valves shall be tested frequently and at regular intervals to determine whether they are in good operating condition. A current operating permit issued by the Division of Occupational Safety and Health shall be maintained. The inlet of air receivers and piping systems must be kept free of accumulated oil and carbonaceous materials.

Compressed Gas and Cylinders

Cylinders with a water weight capacity over 30 pounds must be equipped with means for connecting a valve protector device, or with a collar or recess to protect the valve. Cylinders must be legibly marked to identify clearly the gas contained. Compressed gas cylinders should be stored only in areas which are protected from external heat sources such as flame impingement, intense radiant heat, electric arcs or high temperature lines. Cylinders must not be located or stored in areas where they will be damaged by passing or falling objects, or subject to tampering by unauthorized persons.

Cylinders must be stored or transported in a manner to prevent them from creating a hazard by tipping, falling or rolling. All cylinders containing liquefied fuel gas must be stored or transported in a position so that the safety relief device is always in direct contact with the vapor space in the cylinder. Valve protectors must always be placed on cylinders when the cylinders are not in use or connected for use. All valves must be closed off before a cylinder is moved, when the cylinder is empty, and at the completion of each job.

Low pressure fuel-gas cylinders must be checked periodically for corrosion, general distortion, cracks, or any other defect that might indicate a weakness or render them unfit for service. The periodic check of low pressure fuel-gas cylinders includes a close inspection of the cylinder's bottom.

Hoists and Auxiliary Equipment

Every overhead electrical hoist shall be equipped with a limit device to stop the hook travel at its highest and lowest points of safe travel. Check these limits without a load to ensure the device is working correctly. Each hoist should automatically stop and hold any load up to 125 percent of its rated load if its actuating force is removed. Check this periodically under controlled conditions. Make sure that the rated load of each hoist is legibly marked and visible to the operator. Stops should be provided at the safe limits of travel for trolley hoists.

The controls of hoists should be plainly marked to indicate direction of travel or motion. Every cage-controlled hoist must be equipped with an effective warning device. Close-fitting guards or other suitable devices should be installed on hoists to assure hoist ropes will be maintained in the sheave grooves.

All hoist chains or ropes must be of sufficient length to handle the full range of movement for the application, while maintaining two full wraps on the drum at all times.

All nip points or contact points between hoist ropes and sheaves which are permanently located within 7 feet of the floor, ground or working platform must be guarded. It is prohibited to use chains or rope slings that are kinked or twisted.

The operator should avoid carrying loads over people. Only employees who have been trained in the proper use of hoists are allowed to operate them.

Industrial Trucks-Forklifts

Only trained personnel should be allowed to operate industrial trucks. Lift Truck Operating rules must be posted and will be strictly enforced.

When operating any industrial truck, substantial overhead protective equipment will be provided on high lift rider equipment. Directional lighting is also provided on each industrial truck that operates in an area with less than 2 foot candles per square foot of general lighting.

Each industrial truck must have a warning horn, whistle, gong or other device which can be clearly heard above the normal noise in the area where operated. Before using a forklift, check that the brakes on each industrial truck are capable of bringing the vehicle to a complete and safe stop when fully loaded. The parking brake must effectively prevent the vehicle from moving when unattended. When motorized hand and hand/rider trucks are operated, and when the operator releases the steering

mechanism, make sure that both the brakes are applied and power to the motor shut off. Maintenance records are available so that a driver can check on the servicing of the truck in case of questions.

When an industrial truck operates in areas where flammable gases, vapors, combustible dust, or ignitable fibers may be present in the atmosphere, the vehicle must be approved for such locations with a tag showing such approval posted on the vehicle itself.

Industrial trucks with internal combustion engines, operated in buildings or enclosed areas, should be carefully checked to ensure that the operation of the vehicle does not cause harmful concentration of dangerous gases or fumes.

Spraying Operations

In any spraying operation there should be adequate ventilation before starting any spraying job. As to the conditions of the area where the spray job is to be done, consideration should be taken before beginning work.

If the area is enclosed, does it require mechanical ventilation? Before working, make sure that the area is free of combustible materials, and that there are "No Smoking" signs adequately posted and easily seen. If mechanical ventilation is provided when spraying in enclosed areas, air should not be recirculated so as to avoid contamination. There should be adequate space and ventilation for all drying areas.

Also in an enclosed area, spray operations must be at least 20 feet from flames, sparks, operating electrical motors and other ignition sources. The spray area should be free of any hot surfaces. Any solvent used in the cleaning process should not have a flash point of 100 degrees or less. If portable lamps are used to illuminate the spray areas they must be approved for the location and must be suitable for use in a hazardous area.

Approved respiratory equipment will be provided and must be used when appropriate during spraying operations. If a sprinkler system is within the confines of the spraying area operation, it should be in working order and will be inspected semi-annually to make sure that it is in operating condition.

If a spraying booth is used for the spraying operation, it must be made of metal, masonry or other noncombustible material. Make sure that "NO SMOKING" signs are posted in spray areas, paint rooms, paint booths and paint storage areas. The spray booth must be completely ventilated. Booth floors and baffles must be easily cleaned and noncombustible. Ducts and access doors must be easily cleaned. Lighting fixtures

for both outside and inside the spray booth must be enclosed in clear see-through sealed panels. Electric motors for exhaust fans must be placed outside the booth. Belts and pulleys must be completely enclosed. Drying apparatus should be located in a well ventilated area in the booth and properly grounded.

Infrared drying apparatus must be kept out of the spray area during a spraying operation.

Confined Spaces

Before entry into a confined space, all impellers, agitators, or other moving equipment contained in the confined space must be locked-out. Ventilation must be either natural or mechanically provided into the confined space. All hazardous or corrosive substances that contain inert, toxic, flammable or corrosive materials must be valved off, blanked, disconnected and separated. Atmospheric tests should be performed to check for oxygen content, toxicity and explosive concentration. Atmospheric tests must be performed on a regular basis in a confined area where entry is required.

The area must also be checked for decaying vegetation or animal matter that could produce methane. Adequate lighting must be provided within the space. If the confined area is located below the ground or near where motor vehicles are operating, care must be taken that vehicle exhaust or carbon monoxide does not enter the space.

When personnel enter a confined area, assigned safety standby employees who are alert to the work being done, are able to sound an alarm if necessary and to render assistance, must be in the area. These standby employees must be trained to assist in handling lifelines, respiratory equipment, CPR, first aid, and be able to employ rescue equipment that will remove the individual from the confined area. Standby personnel should be in teams of two during such an operation or else within the vicinity if working separately. There must also be an effective communication system utilized while the operation is occurring.

When equipment which utilizes oxygen, such as salamanders, torches or furnaces, is used in a confined space, adequate ventilation must be provided to guarantee oxygen content and combustion for the equipment. When this equipment is used, adequate measures must be taken to assure that exhaust gases are vented outside the enclosure. When gas welding or burning is used, hoses must be checked for leaks. Compressed bottled gas must be outside the area and torches must be lit outside the area also. The atmosphere must be tested each time before lighting a torch.

Environmental Controls

All employees must be aware of the hazards involved when working with chemicals and the remedies that need to be used when an accident does occur. A training program will give instructions on how to handle the chemical being used and first aid to be applied to victims of chemical exposure. First aid and caution signs will be conspicuously posted so as to alert individuals on a constant basis. Charts identifying the chemicals utilized in the workplace, their symptoms and effects must also be posted. The workers must know what the acceptable level of exposure to a chemical is and what safety systems must be in place when working with a chemical. Staff should also be aware of new chemical products which may be available that are less harmful, and they must ensure that facilities are adequately ventilated when using chemicals on the premises.

Spray painting operations done in spray rooms or booths must be equipped with an appropriate exhaust system. Periodic inspections must be made of the booth and noted on an inspection tag posted on the booth.

If welding is done, the welder should be certified. In the area of operation where the welding is taking place, the welder must be aware of ventilation available, the type of respirator that can be used in the area, and if exposure time or other means will suffice as a safe and adequate measure when welding as to the fumes that will be emitted. Welders should also be supplied with protective clothing and a flash shield during welding operations.

When forklifts and other vehicles are used in buildings or other enclosed areas, carbon monoxide levels must be kept below maximum acceptable concentration.

Noise levels also present a potential hazard. Noise levels within a facility must be at acceptable levels and if not, steps must be taken to reduce the level using recommended engineering controls.

When fibrous materials such as asbestos are being handled, the necessary precautions must be taken to protect the employee from the material. The material must be labeled, along with signs conspicuously posted that these materials are being used in the area. Employees should be aware of effective methods used to prevent emission of airborne asbestos fibers, silica dust and other similar hazardous materials. Some of the recommended methods of controlling the emission of these materials are by using water and vacuuming, rather than blowing and sweeping, the materials.

Machinery such as grinders, saws and other tools that produce a fine airborne dust must be vented to an industrial collector or central exhaust system. In any ventilation system the system should be designed and operated at an airflow and volume

necessary for proper application and effectiveness. In the design of the ventilation system the ducts and belts must be free of obstructions and slippage.

As with all operations, there must be written standards on the procedures for the equipment, description of the job task, usage of the protective equipment provided, such as the selection and use of respirators, and when they are needed.

Any water that is provided to an employee throughout the facility should be clearly identified as to whether it is for drinking, washing or cooking. All restrooms must be kept clean and sanitary.

Employees should be screened before taking positions that may expose them to hazards they are not physically capable of handling. An employee who takes an assignment which requires physical labor must be trained to lift heavy loads properly so as not to damage themselves physically.

If the work assignment involves dealing with equipment that produces ultra-violet radiation, the employee must be properly protected or given the correct protective clothing.

An employee posted to an assignment on a roadway where there is heavy traffic must be given the designated protective clothing (bright colored traffic orange warning vest) and safety training regarding the hazards of this job.

Hazardous Chemical Exposures

In any company which utilizes chemical substances, a training program on the handling, hazards, storage, exposure risks, symptoms of chemical exposure, and first aid needs to be part of any new employees training. There must also be follow-up training sessions as to any new chemical or processes that may be initiated by the company. Follow-up training sessions act as a reinforcement of safety standards that need to be followed on a daily basis.

In a training program, employees will learn acceptable levels of chemical exposure, proper storage and labeling of chemicals, and usage of protective clothing and equipment for handling chemicals. They will also learn about potential fire and toxicity hazards, when not to have a chemical in a confined area, or to store in closed containers, usage of eye wash fountains and safety showers, and the necessary posting of open, and dangerous areas. It is important that an employee recognize the Threshold Limit Values or Permissible Exposure Limits of airborne contaminants and physical agents in the workplace.

A procedural manual or set of instructions must be part of the program, with periodic inspections that clearly indicate whether an employee may be mishandling a chemical or endangering himself or others. Part of the manual or procedures must establish a standard of when and how to deal with chemical spills, neutralizing, and disposing of spills or overflows. These procedures must also be posted in an area that is easily accessible for reference usage.

First aid training and equipment will be routine in any facility where chemicals are used. Employees must know how to handle equipment in emergency situations, what equipment needs to be used and whether the equipment is adequate for the situation.

Respirators may be used either as protective safety equipment or for emergency usage. Therefore, the employee should recognize that respirators need to be stored in a clean, sanitary and convenient location and inspected on a regular basis. Also what respirators are approved by NIOSH for their particular applications.

With a first aid program an employee will recognize when a problem may be occurring by exposure to a chemical ranging from headaches, nausea, dermatitis problems to other factors of discomfort when they use solvents or chemicals.

In the design of a facility that transports chemicals from storage to vats, the content of pipes and storage containers must be clearly marked. Within that facility design there must be an emergency shut off system in case of accident. Each employee will be trained as to these emergency shut-off systems.

Ventilation is another major factor in the design of any facility. Whether by natural means or mechanical, the system must be designed to control dust, fumes, solvents, gases, smoke or vapors which may be generated in the workplace. It is also important that a medical or biological monitoring system be in operation as part of the safety standards. If internal combustion engines are used in the facility, or if there is a chance of leakage or mixture with a chemical that could create a toxic gas, atmospheric gas levels must be monitored. If toxic chemicals are used and stored in the facility they should be located in an isolated area to guarantee safety.

Hazardous Substances Communication

When hazardous substances are used in the workplace, a hazard communication program dealing with Material Safety Data Sheets (MSDS), labeling and employee training will be in operation. MSDS materials will be readily available for each hazardous substance used. A training program plus regular question and answer sessions on dealing with hazardous materials will be given to keep employees informed.

The program will include an explanation of what an MSDS is and how to use and obtain one; MSDS contents for each hazardous substance or class of substances; explanation of the "Right to Know"; identification of where employees can see the employer's written hazard communication program and where hazardous substances are present in their work area; the health hazards of substances in the work area, how to detect their presence, and specific protective measures to be used; as well as informing them of hazards of non-routine tasks and unlabeled pipes.

Electrical

Non-Qualified Workers

The workplace will be aware of the CAL-OSHA Electrical Safety Standards and will comply with the same. Non-Qualified Employees will be required to report any hazard to life or property that is observed in connection with a job, electrical equipment or lines.

Non-Qualified Employees will be expected to make preliminary inspections or appropriate tests to determine conditions before starting work. When equipment or lines are to be serviced, maintained or adjusted, employees must be aware of open switches. Lockouts must be tagged whenever possible.

Equipment such as electrical tools or appliance must be grounded or of the double insulated type. Extension cords being used must have a grounding conductor. The workplace supervisor must be aware if multiple plug adapters are prohibited.

In wet or damp locations, electrical tools and equipment must be appropriate for the use or location, or otherwise protected.

The location of electrical power lines and cables (overhead, underground, under floor, other side of walls) must be determined before digging, drilling or similar work is begun.

All metal measuring tapes, ropes, hand lines or similar devices with metallic thread woven into the fabric are prohibited for use where they could come in contact with energized parts of equipment or circuit conductors.

The use of metal ladders is prohibited in areas where the ladder or the person using the ladder could come in contact with energized parts of equipment, fixtures or conductors.

Use ground-fault circuit interrupters or an Assured Equipment Grounding Conductor Program for each temporary 15 or 20 ampere, 120 volt AC circuit at all locations.

Qualified Electricians

Qualified Electricians must be aware of the following:

Exposed wiring and cords with frayed or deteriorated insulation must be repaired or replaced.

Clamps or other securing means must be provided on flexible cords or cables at plugs, receptacles, tools, equipment. The cord jacket must be held securely in place.

All cord, cable and raceway connections must be intact and secure.

All disconnecting switches and circuit breakers must be labeled to indicate their use or equipment served.

A means for disconnecting equipment must always be opened before fuses are replaced.

All interior wiring systems must include provisions for grounding metal parts or electrical raceways, equipment and enclosures.

All electrical raceways and enclosures must be fastened securely in place.

All energized parts of electrical circuits and equipment must be guarded against accidental contact by approved cabinets or enclosures.

Sufficient access and working space will be provided and maintained around all electrical equipment to permit ready and safe operations and maintenance.

All unused openings (including conduit knockouts) in electrical enclosures and fittings must be closed with appropriate covers, plugs or plates.

Electrical enclosures such as switches, receptacles, junction boxes must be provided with tight-fitting covers or plates.

Disconnecting switches for electrical motors in excess of two horsepower must be capable of opening the circuit when the motor is in a stalled condition without exploding. (Switches must be horsepower rated equal to or in excess of the motor hp rating).

Low voltage protection must be provided in the control device of motor driven machines or equipment which could cause injury from inadvertent starting.

A motor disconnecting switch or circuit breaker must be located within sight of the motor control device.

Motors: a) must be located within sight of their controller; b) must have their controller disconnecting means capable of being locked in the open position; c) or must have separate disconnecting means installed in the circuit within sight of the motor.

A controller for a motor in excess of two horsepower must be rated equal to but not in excess of the motor it services.

Employees who regularly work on or around energized electrical equipment or lines will be instructed in cardio-pulmonary resuscitation (CPR) methods.

Employees will be trained on how to work on energized lines or equipment over 600 volts.

Noise

Noise levels are measured using a sound level meter or an octave bank analyzer and records kept. Engineering controls will be used to reduce excessive noise levels. When engineering controls are not feasible, administrative controls (i.e., worker rotation) will be used to minimize individual employee exposure to noise. An ongoing preventive health program will be utilized to educate employees in safe levels of noise, exposure, effects of noise on their health, and use of personal protection. Approved hearing protective equipment (noise attenuating devices) will be available to every employee working in areas where continuous noise levels exceed 85 dB. To be effective, ear protectors must be properly fitted and employees will be instructed in their use and care.

Fueling

Where flammable liquids are used, employees will be trained to deal with spillage during fueling operations, how it is to be cleaned, the types and designs of fueling hoses and the specific types of fuel it can handle, whether fueling is being done with a nozzle that is a gravity flow system or self-closing, how to avoid spills and recognition that if a spill does occur, the safety of restarting an engine.

Employees must be aware that an open flame or light near any fuel is prohibited when fueling or the transfer of fuel is occurring. "NO SMOKING" signs will be posted conspicuously.

Piping Systems

Substances that are transported through piping need to be identified by color or labeling. Signs must be posted identifying the substance being transported through the pipes as to whether it is hazardous and where turn-off valves, connections and outlets are located. All tags used for labeling will be of a durable material with distinguishable and clearly written print.

When non-potable water is piped through a facility, outlets or taps, notices will be posted to alert employees that it is unsafe and not to be used for drinking, washing or personal use. When pipelines are heated by electricity, steam or other external sources, warning signs or tags placed at unions, valves, or other serviceable parts will be part of the system.

Material Handling

In the handling of materials, employees must know the following:

There must be safe clearance for equipment through aisles and doorways.

Aisle ways must be designated, permanently marked, and kept clear to allow unhindered passage.

Motorized vehicles and mechanized equipment will be inspected daily or prior to use.

Vehicles must be shut off and brakes must be set prior to loading or unloading.

Containers of combustibles or flammables, when stacked while being moved, must be separated by dunnage sufficient to provide stability.

If dock boards (bridge plates) are used when loading or unloading operations are taking place between vehicles and docks, precautions must be observed.

Trucks and trailers will be secured from movement during loading and unloading operations.

Dock plates and loading ramps will be constructed and maintained with sufficient strength to support imposed loading.

Hand trucks must be maintained in safe operating condition.

Chutes must be equipped with sideboards of sufficient height to prevent the handled materials from falling off.

At the delivery end of rollers or chutes, provisions must be made to brake the movement of the handled materials.

Pallets must be inspected before being loaded or moved.

Hooks with safety latches or other arrangements will be used when hoisting materials, so that slings or load attachments won't accidentally slip off the hoist hooks.

Securing chains, ropes, chokers or slings must be adequate for the job to be performed.

When hoisting material or equipment, provisions must be made to assure no one will be passing under the suspended loads.

Material Safety Data Sheets will be available to employees handling hazardous substances.

Transporting Employees and Materials

When employees are transporting either employees or materials, they must have an operator's license for that classification of vehicle and be certified or trained in the operation of that vehicle. For a safety program to be effective, they must also have knowledge of first aid courses and safety equipment, as well as the vehicle and how it operates.

As employees are transported by truck, provisions must be provided to prevent their falling from the vehicle. Vehicles should be in good working condition, inspected on a regular basis and must be equipped with lamps, brakes, horns, mirrors, windshields and turn signals in good working order. If the vehicle transports numerous individuals it must be equipped with handrails, steps, stirrups or similar devices, placed and arranged so that employees can safely mount or dismount.

Safety measures to ensure passenger safety should be observed. When cutting tools with sharp edges are carried in the passenger compartment, they must be placed in closed boxes or secured containers. Carrying flares and two reflective type flares and a fire extinguisher must be part of the standard emergency equipment carried in the vehicle at all times.

Ventilation

In the operation of any facility ventilation system, there needs to be a design to integrate several systems of control which will expel contaminants and provide clean air.

The systems must take into consideration the volume and velocity that will be needed to successfully remove contaminants. The system must not fail in the case of an emergency situation where two contaminants are exposed to each other when a fire or explosion occurs. In the design of the system, clean-out ports or doors that are provided at intervals will not exceed 12 feet in all horizontal runs of exhaust ducts. The system must be operational so that it will not offset the functions of other operations.

Ergonomics

With the introduction of computers into the workplace, new areas of physical debilitation have been recognized.

These new potential hazards have required a redesigning of both the workplace and how employees work.

Furniture will be adjustable, positioned and arranged to minimize strain on all parts of the body. The glare of a computer screen will be minimized by a glare screen to prevent eye strain. Repetitive motions can harm, back, shoulders, neck, wrists and other parts of the body, so employees will not proceed with a task when they are physically feeling impairment.

Crane Checklist

With the operation of cranes there are several functional areas to be considered. Cranes should be inspected on an annual basis with the inspection certificate available when a question arises. The crane must be utilized in an operation which does not violate CAL-OSHA regulations. Cranes will be visually inspected for defective components prior to any work shift. Electrically operated cranes will be effectively grounded, preventive maintenance established, have a clearly visible load; operating controls clearly identified; a fire extinguisher provided at the operator's station; rated capacity visibly marked; an audible warning device mounted on the crane, and sufficient illumination. Crane design shall be such that the boom will not fall over backwards when equipped with boom stops.

Safety Posters

Tim Messer Construction, Inc. is required to post certain employment related information. The required information is maintained in the shop where employees can find the following required posters:

Various state and federal orders regulating the Wages, Hours and Working Conditions in certain industries

Anti-Discrimination Poster

Equal Employment Opportunity is the Law (EEOC form)

CAL-OSHA Safety and Health Protection on the Job

Notice of Workers Compensation Carrier

Notice to Employees: Unemployment Insurance and Disability Insurance

Notice: Employee Polygraph Protection Act (form WH 1462)

Access to Medical and Exposure Records

Notice to Employees: Time Off to Vote

In addition to some of the above listed notices, a copy of this injury prevention program, a log and summary of Occupational Injuries and Illnesses, a copy of Tim Messer Construction, Inc. code of Safe Work Practices and a Fire Prevention and Evacuation Plan will be available.

Material Safety Data Sheets for Tim Messer Construction, Inc.'s premises or worksites are available in the vehicle or office. When employees are required to work on the premises of any other employer, such as a service call or installation situation, the job site will maintain a collection of Material Safety Data Sheets that describe any hazards unique to that site. Check with the other employer's job site coordinator or supervisor for the exact location of the MSDS information.

In addition to these required safety postings, emergency numbers are maintained in the vehicle.

In most cases of real emergency call 911. State your name, the nature of the emergency, and exact location of the injury. Answer all questions completely. DO NOT use 911 for routine or non-emergency calls to police or fire departments.

Licenses and Permits

In addition to other postings required by law, Tim Messer Construction, Inc. maintains a copy of all necessary business licenses, permits, and notices required by the National Labor Relations Board or other governmental bodies, notices of citations during abatement periods, and other required information which are posted during the

appropriate times in the shop.

Personal Protective Equipment Clothing

- 1.** Where there is a danger of flying particles or corrosive materials, employees must wear protective goggles and/or face shields provided [or approved] by Tim Messer Construction, Inc..
- 2.** Employees are required to wear safety glasses at all times in areas where there is a risk of eye injuries such as punctures, contusions or burns.
- 3.** Employees who need corrective lenses are required to wear only approved safety glasses, protective goggles, or other medically approved precautionary procedures when working in areas with harmful exposures, or risk of eye injury.
- 4.** Employees are required to wear protective gloves, aprons, shields and other means provided in areas where they may be subject to cuts, corrosive liquids and/or harmful chemicals.
- 5.** Hardhats must be worn in areas subject to falling objects, and at all times while at construction sites.
- 6.** Appropriate footwear must be worn in an area where there is any risk of foot injuries from hot, corrosive, poisonous substances, falling objects, crushing or penetrating action.
- 7.** When necessary employees must use the approved respirators which are provided for regular and emergency use.
- 8.** All safety equipment must be maintained in sanitary condition and ready for use. Report any defective equipment immediately.
- 9.** An eye wash facility is located in the vehicle. If any irritant gets into an employee's eyes, call for medical assistance immediately and flush the eye out with clean water.
- 10.** A shower may be provided for emergencies. Ask your supervisor for more details on use of this facility if available.
- 11.** Food may not be eaten in work areas, or in places where there is any danger of exposure to toxic materials or other health hazards. Ask your supervisor to identify safe eating places.

12. In cases where the noise level exceeds certain levels, ear protection is required.
13. In cases of cleaning toxic or hazardous materials, protective clothing provided must be worn.

Hardhats

At Tim Messer Construction, Inc., hardhats are required [at all times, in designated areas, when appropriate]. hardhats are common in our industry.

There was a time, about one hundred years ago, when no one wore a hardhat. But, over time, the value of hardhats to save lives was firmly proven, so that the entire industry now accepts this safety device as a natural article of clothing, like a football player wearing a helmet during a game.

Sometimes a person fails to wear a hardhat, either through forgetfulness or through underestimating the risk of head injury which can be prevented by wearing one. Remember that all it takes is a carelessly dropped tool or piece of material coming down on your head to cause severe injury or even death. There are a number of workers disabled with various type of head injuries and vision problems because they didn't wear a hardhat.

When you wear a hardhat, wear it right. Keep it squarely on your head with the inside band properly adjusted. See you supervisor if you're having trouble adjusting the hardhat.

Work Environment, General

Work sites must be clean and orderly. Work surfaces must be kept dry or appropriate means taken to assure the surfaces are slip-resistant. Spills must be cleaned up immediately. All combustible scrap, debris and waste must be stored safely and removed promptly. Combustible dust must be cleaned up with a vacuum system to prevent the dust from going into suspension. The accumulated combustible dust must be removed routinely. Metallic or conductive dust must be prevented from entering or accumulating on or around electrical enclosures or equipment.

Waste containers must be covered. Oily and paint soaked rags are combustible and should be discarded in sealable metal containers only. Paint spray booths, dip tanks and paint areas must be cleaned regularly.

All oil and gas fired devices should be equipped with flame failure controls that will prevent flow of fuel if pilots or main burners are not working. Ask your supervisor where

these controls are located.

Make sure all pits and floor openings are either covered or otherwise guarded.

Walkways

All aisles and passageways must be kept clear. Also, aisles and passageways should be clearly marked. Wet surfaces must be covered with non-slip material and all holes properly covered or marked with warning guards.

All spills must be cleaned up immediately, and a caution sign placed on all wet or drying surfaces.

In cases of passageways used by forklifts, trucks or other machinery, use a separate aisle for walking, if available. If no separately marked aisle is available, use extreme caution. Remember, walking in a passageway used by machinery is like walking in the middle of a street used by cars: You may have the right of way, but the heavier vehicle can't always see you and can't always stop in time. The key to moving around in such circumstances is to stop, look and listen and then to move when there is no danger. Make eye contact with the drivers of moving vehicles so that you know that they know you are there.

Equipment must be properly stored so that sharp edges do not protrude into walkways. Changes in elevations must be clearly marked, as must passageways near dangerous operations like welding, machinery operation or painting. If there is a low ceiling, a warning sign must be posted. If the walkway or stairway is more than thirty inches above the floor or ground, it must have a guardrail.

If an employee is aware of any breach of these standards, please inform the workplace supervisor.

Floor and Wall Openings

Be careful when working near floor and wall openings. All floor openings (holes) should be guarded by a cover, guardrail or equivalent barrier on all sides except at the entrance to stairways and ladders. Toe boards must be installed around the edges of a permanent floor opening. Skylights must be able to withstand at least 200 pounds pressure. Glass used in windows, doors, and walls (including glass block) must be able to withstand a human impact, and if required by code, be shatterproof "safety glass." Before beginning work at a new location, inspect it to insure that all floor openings which must remain open, such as floor drains, are covered with grates or similar covers. In roadways and driveways, covers with capacity to support without failure twice the

maximum axle load of the largest vehicle expected to cross over the cover shall be used. In office buildings, fire resistive construction requires that the doors and hallway closures be properly rated and be equipped with self-closing features. Be sure that there are at least two fire emergency exits accessible from your location at all times.

Work Area, General

Fire extinguishers must remain accessible at all times.

Means of egress should be kept unblocked, well-lighted and unlocked during work hours. Excessive combustibles may be not stored in work areas.

Aisles and hallways must be kept clear at all times. Designated employees have been trained to respond to a fire or other emergency. Workplaces are to be kept free of debris, floor storage and electrical cords.

Adequate aisle space is to be maintained. File cabinet drawers should be opened one at a time and closed when work is finished.

Proper lifting techniques are to be used by employees to avoid over exertion and strain when carrying loads. No alcohol or any intoxicating substance may be consumed prior to or during work.

Driving

Drive safely. If vehicles are used during the work day, seat belts and shoulder harnesses are to be worn at all times. Vehicles must be locked when unattended to avoid criminal misconduct. Do not exceed the speed limit. Vehicles must be parked in legal spaces and must not obstruct traffic. Defensive driving must be practiced by all employees. Employees should park their vehicles in well-lighted areas at/or near entrances to avoid criminal misconduct.

Vehicle Maintenance

Work safely when repairing vehicles. Where tires are mounted and/or inflated on drop center wheels, a safe practice procedure must be posted and enforced. Where tires are mounted and/or inflated on wheels with split rims and/or retainer rings, a safe practice procedure must be posted and enforced. Each tire inflation hose must have a clip-on chuck with at least 24 inches of hose between the chuck and an in-line hand valve and gauge. The tire inflation control valve should automatically shut off the air flow when the valve is released. A tire restraining device such as a cage, rack or other effective

means must be used while inflating tires mounted on split rims, or rims using retainer rings.

Employees are strictly forbidden from taking a position directly over or in front of a tire while it's being inflated. Proper lifting techniques must be used by employees to avoid over-exertion when lifting packages.

Cleanliness

All work sites must be clean and orderly. All work surfaces must be kept dry or appropriate means taken to assure that surfaces are slip-resistant. All spill materials or liquids should be cleaned up immediately and combustible scrap, debris and waste stored safely and removed from the work site promptly.

Any accumulations of combustible dust must be routinely removed from elevated surfaces including the overhead structure of buildings. Combustible dust should be cleaned up with a vacuum system to prevent the dust going into suspension. Metallic or conductive dust must be prevented from entering or accumulating on or around electrical enclosures or equipment.

Covered metal waste cans are provided for oily and paint-soaked waste. Use them. All oil and gas fired devices must be equipped with flame failure controls that will prevent flow of fuel if pilots or main burners are not working.

Paint spray booths, dip tanks, etc., must be cleaned regularly. Washing facilities are provided, so wash your hands after handling materials.

Tool Maintenance

Faulty or improperly used hand tools are a safety hazard. All employees shall be responsible for ensuring that tools and equipment (both company and employee-owned) used by them or other employees at their workplace are in good condition. Hand tools such as chisels, punches, etc., which develop mushroom heads during use, must be reconditioned or replaced as necessary. Broken or fractured handles on hammers, axes and similar equipment must be replaced promptly. Worn or bent wrenches should be replaced regularly. Appropriate handles must be used on files and similar tools.

Appropriate safety glasses, face shields, etc., must be worn while using hand tools or equipment which might produce flying materials or be subject to breakage. Eye and face protection must be worn when driving in tempered spuds or nails.

Check your tools often for wear or defect. Jacks must be checked periodically to

assure they are in good operating condition. Tool handles must be wedged tightly into the heads of tools. Tool cutting edges should be kept sharp enough so the tool will move smoothly without binding or skipping. When not in use, tools should be stored in a dry, secure location.

Ladders

Check ladders each and every time before you climb. Ladders should be maintained in good condition: joints between steps and side rails should be tight; hardware and fittings securely attached; and movable parts operating freely without binding or undue play. Non-slip safety feet are provided on each ladder. Ladder rungs and steps should be free of grease and oil. Employees are prohibited from using ladders that are broken, missing steps, rungs, or cleats, or that have broken side rails or other faulty equipment.

It is prohibited to place a ladder in front of doors opening toward the ladder except when the door is blocked open, locked or guarded. It is prohibited to place ladders on boxes, barrels, or other unstable bases to obtain additional height. Face the ladder when ascending or descending.

Be careful when you climb a ladder. Do not use the top step of ordinary stepladders as a step. When portable rung ladders are used to gain access to elevated platforms, roofs, etc., the ladder must always extend at least 3 feet above the elevated surface.

It is required that when portable rung or cleat type ladders are used, the base must be so placed that slipping will not occur, unless it is lashed or otherwise held in place.

All portable metal ladders must be legibly marked with signs reading "CAUTION" - "Do Not Use Around Electrical Equipment." Employees are prohibited from using ladders as guys, braces, skids, gin poles, or for other than their intended purposes. Only adjust extension ladders while standing at a base (not while standing on the ladder or from a position above the ladder). Metal ladders should be inspected for tears and signs of corrosion.

Portable Power Tools

Portable power tools pose a special danger to employees because they are deceptively small and light, yet they can do great bodily harm if used improperly or poorly maintained. These rules apply to all power tools, but are especially important when handling portable saws, drills and power screw drivers.

Check your equipment before you use it. All grinders, saws and similar equipment should be equipped with appropriate safety guards. Power tools should not be used

without the correct shield, guard, or attachment, recommended by the manufacturer.

Portable circular saws must be equipped with guards above and below the base shoe. Circular saw guards should be checked periodically and before each use to assure they are not wedged up, thus leaving the lower portion of the blade unguarded.

All rotating or moving parts of equipment should be guarded to prevent physical contact. All cord-connected, electrically-operated tools and equipment should be effectively grounded or of the approved double insulated type. Effective guards must be in place over belts, pulleys, chains, sprockets, on equipment such as concrete mixers, air compressors, etc. If portable fans are provided, they must be equipped with full guards or screens having openings 1/2 inch or less.

Do not attempt to lift heavy objects without proper equipment. Hoisting equipment will be made available for lifting heavy objects, with hoist ratings and characteristics appropriate for the task.

Power tools are either battery operated or wired. If battery operated, don't underestimate their power. A small electric drill or power screw driver can cause a severe injury if it lands in the wrong place. While not usually a shock hazard, the battery pack contains toxic chemicals and does emit a low voltage electric current. Don't drop or incinerate the battery pack, or a tool with a self-contained power source.

Hard wired equipment can be portable or fixed. Typically used with extension cords, the more powerful hard wired equipment presents a double safety problem: the actual equipment plus its electrical power source. Ground-fault circuit interrupters must be provided on all temporary electrical 15 and 20 ampere circuits used during periods of construction. Pneumatic and hydraulic hoses on power-operated tools should be checked regularly for deterioration or damage.

Combustible Materials

All combustible scrap, debris and waste materials (oily rags, etc.) must be stored in covered metal receptacles and removed from the work site promptly. Proper storage to minimize the risk of fire, including spontaneous combustion must be practiced. Only approved containers and tanks are to be used for the storage and handling of flammable and combustible liquids. All connections on drums and combustible liquid piping, vapor and liquid must be kept tight. All flammable liquids should be kept in closed containers when not in use (e.g., parts-cleaning tanks, pans, etc.).

Bulk drums of flammable liquids must be grounded and bonded to containers during dispensing.

Storage rooms for flammable and combustible liquids must have explosion-proof lights. Storage rooms for flammable and combustible liquids should have mechanical or gravity ventilation. Liquefied petroleum gas must be stored, handled, and used in accordance with safe practices and standards.

"No smoking" signs must be posted on liquefied petroleum gas tanks. Liquefied petroleum storage tanks should be guarded to prevent damage from vehicles. All solvent wastes and flammable liquids should be kept in fire-resistant, covered containers until they are removed from the work site.

Vacuuming should be used whenever possible rather than blowing or sweeping combustible dust. Fire separators should be placed between containers of combustibles or flammables when stacked one upon another to assure their support and stability. Fuel gas cylinders and oxygen cylinders must be separated by distance, fire resistant barriers, etc., while in storage.

Fire extinguishers are selected for the types of materials and placed in areas where they are to be used. These fire extinguishers are classified as follows:

Class A - Ordinary combustible materials fires.

Class B - Flammable liquid, gas or grease fires.

Class C - Energized-electrical equipment fires.

Appropriate fire extinguishers must be mounted within 75 ft. of outside areas containing flammable liquids, and within 10 ft. of any inside storage area for such materials. All extinguishers must be serviced, maintained and tagged at intervals not to exceed one year. Extinguishers should be placed free from obstructions or blockage. All extinguishers must be fully charged and in their designated places unless in use.

Where sprinkler systems are permanently installed, are the nozzle heads arranged so that water will not be sprayed into operating electrical switch boards and equipment? Check to see that heads have not been bent or twisted from their original position.

"NO SMOKING" rules will be enforced in areas involving storage and use of hazardous materials. "NO SMOKING" signs have been posted where appropriate in areas where flammable or combustible materials are used and/or stored. Safety cans must be used for dispensing flammable or combustible liquids at point of use. All spills of flammable or combustible liquids must be cleaned up promptly.

Storage tanks should be adequately vented to prevent the development of excessive vacuum or pressure as a result of filling, emptying, or atmosphere temperature changes. Storage tanks are equipped with emergency venting that will relieve excessive internal pressure caused by fire exposure.

FIRST AID - RESPONSIBILITIES

Project safety representatives are responsible for establishing first aid and medical services for the treatment of occupational injuries and illnesses. In the absence of a safety representative, the RSO, Stephen Ferguson or designated representative is responsible for this activity.

MEDICAL TREATMENT

Medical treatment provided on a project shall be in accordance with protocols established by a licensed physician. Personnel who render medical treatment shall be certified to perform these services and have the sponsorship of a licensed physician or medical professional in accordance with established laws.

FIRST AID TREATMENT

Personnel who provide first-aid services shall have current certifications from recognized agencies such as the American Red Cross, Heart Association, Medic First Aid or equivalent. Under no circumstances shall first-aid trained personnel render medical treatment.

TRANSPORTATION

A representative of Tim Messer Construction, Inc. is required to be present during the transportation and treatment of company personnel.

During emergency situations when an employee requires medical treatment for an occupational injury or illness, the local emergency ambulance shall be used to provide transportation for that employee unless other arrangements have been made. In all other cases a representative of Tim Messer Construction, Inc. will transport personnel to clinics and medical facilities.

MODIFIED WORK (LIGHT DUTY POLICY)

It is the policy of Tim Messer Construction, Inc. to provide modified work to persons who have been injured on the job or become ill because of an occupational exposure. Work provided for employees will be compatible with their work restrictions, and will not

expose the employee to additional harm or injury.

Employees who are injured or become ill must provide the company with a written medical statement of release from their treating physician or other licensed provider. Upon return to work, this release must be submitted to their supervisor or other authorized company representative prior to being assigned to perform any work.

The policy of Tim Messer Construction, Inc. is to not schedule persons on modified duty work status to work overtime. Persons who are permitted to return to work on a modified duty status will be scheduled to work their normal work schedule not including any overtime hours they would have normally worked unless the supervisor or other responsible management person directs otherwise.

NON-OCCUPATIONAL ILLNESSES AND INJURIES

Employees who are injured or become ill at home or during non-work hours must provide Tim Messer Construction, Inc. with a written medical release without restrictions upon returning to work. Employees who have been injured severely or have had a contagious illness must provide Tim Messer Construction, Inc. with written proof that they have recovered from their condition. If an injury or illness is of a serious nature the RSO, Stephen Ferguson and Human Resources must be consulted before a person is permitted to return to work.

RETURN TO WORK POLICY

In all cases employees who have sustained an on-the-job injury or illness must provide written medical proof of their condition and ability to perform their work upon their return to work.

FIRST AID LOG

Any injury or illness that is reported to a first-aid facility or medical facility must be recorded on a First-Aid Log form. This includes non-occupational cases and injuries or illnesses treated that involve vendors, suppliers, Contractors/Subcontractors, client personnel, and any other third party. First-Aid Logs or any portion of a log are not for general distribution. Requests for such information shall be processed by the RSO, Stephen Ferguson.

MEDICATIONS

Employees who are taking over-the-counter and prescription medications must report such usage to their immediate supervisor or the RSO.

First Aid Kits

First-aid kits and required contents are maintained in a serviceable condition. Unit-type kits have all items in the first-aid kit individually wrapped, sealed, and packaged in comparable sized packages. The commercial or cabinet-type kits do not require all items to be individually wrapped and sealed, but only those which must be kept sterile. Items such as scissors, tweezers, tubes of ointments with caps, or rolls of adhesive tape, need not be individually wrapped, sealed, or disposed of after a single use or application. Individual packaging and sealing shall be required only for those items which must be kept sterile in a first-aid kit.

First-aid kits shall contain at least the following items:

10 Package Kit:

- 1 Pkg. Adhesive bandages, 1" (16 per pkg.)
- 1 Pkg. Bandage compress, 4" (1 per pkg.)
- 1 Pkg. Scissors* and tweezers (1 each per pkg.)
- 1 Pkg. Triangular bandage, 40" (1 per pkg.)
- 1 Pkg. Antiseptic soap or pads (3 per pkg.)
- 5 Pkgs. of consulting physician's choice

16 Package Kit:

- 1 Pkg. Absorbent gauze, 24" x 72" (1 per pkg.)
- 1 Pkg. Adhesive bandages, 1" (16 per pkg.)
- 2 Pkgs. Bandage compresses, 4" (1 per pkg.)
- 1 Pkg. Eye dressing (1 per pkg.)
- 1 Pkg. Scissors* and tweezers (1 each per pkg.)
- 2 Pkgs. Triangular bandages, 40" (1 per pkg.)

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1 Pkg. Antiseptic soap or pads (3 per pkg.)

7 Pkgs. of consulting physician's choice

24 Package Kit:

2 Pkgs. Absorbent gauze, 24" x 72" (1 per pkg.)

2 Pkgs. Adhesive bandages, 1" (16 per pkg.)

2 Pkgs. Bandage compresses, 4" (1 per pkg.)

1 Pkg. Eye dressing (1 per pkg.)

1 Pkg. Scissors* and tweezers (1 each per pkg.)

6 Pkgs. Triangular bandages (1 per pkg.)

1 Pkg. Antiseptic soap or pads (3 per pkg.)

9 Pkgs. of consulting physician's choice

36 Package Kit:

4 Pkgs. Absorbent gauze, 24" x 72" (1 per pkg.)

2 Pkgs. Adhesive bandages, 1" (16 per pkg.)

5 Pkgs. Bandage compresses, 4" (1 per pkg.)

2 Pkgs. Eye dressing (1 per pkg.)

1 Pkg. Scissors* and tweezers (1 each per pkg.)

8 Pkgs. Triangular bandages, 40" (1 per pkg.)

1 Pkg. Antiseptic soap or pads (3 per pkg.)

13 Pkgs. of consulting physician's choice

Scissors shall be capable of cutting 2 layers of 15 oz. cotton cloth or its equivalent. The first-aid kits are maintained at the ten, sixteen, twenty-four or thirty-six package

level.

Where the eyes or body of any person may be exposed to injurious chemicals and/or materials, suitable facilities for quick drenching or flushing of the eyes and body are provided, within the work area, for immediate emergency use. A poster shall be fastened and maintained either on or in the cover of each first- aid kit and at or near all phones plainly stating, the phone numbers of available doctors, hospitals, and ambulance services within the district of the work site.

First Aid Station

If a fixed establishment employs more than 200 employees at one central location, First-aid stations shall be located as close as practicable to the highest concentration of personnel.

First-aid stations shall be well marked and available to personnel during all working hours.

One person holding a valid first-aid certificate shall be responsible for the proper use and maintenance of the first-aid station.

First-aid stations shall be equipped with a minimum of two first-aid kits, the size of which shall be dependent upon the number of personnel normally employed at the work site. One first-aid kit may be a permanent wall-mounted kit, but in all cases the station shall be equipped with at least one portable first-aid kit.

When required by the circumstances, the station shall be equipped with two wool blankets and a stretcher in addition to first-aid kits.

A roster, denoting the telephone numbers and addresses of doctors, hospitals and ambulance services available to the work site, shall be posted at or near each first-aid station.

First-aid kits shall be checked and maintained (if necessary) every week.

First-aid stations and/or portable first-aid kits used at Tim Messer Construction, Inc. are located in the vehicle.

Late Night Crime Prevention

All establishments operating between the hours of 11:00 p.m. and 6:00 a.m. should provide crime prevention training to their employees. Crime prevention training shall be

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a part of the accident prevention program. Training will be made available to ensure that the purpose and function of robbery and violence prevention are understood by employees and that the knowledge and skills required for their safety have been provided. The training and training materials outline security policies, safety and security procedures, and personal safety and crime avoidance techniques. Formal instruction through a training seminar or training video presentation will be made available and upon completion the employee shall sign off on the date, time, and place of training. The training documentation will be placed in the employee's personnel file.

The following elements will be covered in the crime prevention training program:

An explanation of the importance of keeping the location clean, neat, and uncluttered thereby making it as unattractive as possible to robbers.

Taking extra precautions after dark, i.e., keep alert, observe lighting and dark corners, spot possible hiding places.

Violence prevention procedures in case of robbery

Chapter 3

General Waste Management/ Spill Prevention/ Response

General Waste Management Program

INTRODUCTION

This section outlines administrative and procedural requirements for construction waste management activities on our construction site projects. Tim Messer Construction, Inc. estimates the waste that will be generated prior to work being performed so that the need for containers and waste removal, if necessary, can be determined. Typically on our projects the same wastes or scrap materials are generated for every project.

DEFINITIONS

Construction, Demolition, and Landclearing (CDL) Waste: Includes all non-hazardous solid wastes resulting from construction, remodeling, alterations, repair, demolition and landclearing. Includes material that is recycled, reused, salvaged or disposed as garbage.

Salvage: Recovery of materials for on-site reuse or donation to a third party.

Reuse: Making use of a material without altering its form. Materials can be reused on-site or reused on other projects off-site. Examples include, but are not limited to the following: Grinding of concrete for use as subbase material. Chipping of landclearing debris for use as mulch.

Recycling: The process of sorting, cleaning, treating, and reconstituting materials for the purpose of using the material in the manufacture of a new product.

Source-Separated CDL Recycling: The process of separating recyclable materials in separate containers as they are generated on the job-site. The separated materials are hauled directly to a recycling facility or transfer station.

Co-mingled CDL Recycling: The process of collecting mixed recyclable materials in one container on-site. The container is taken to a material recovery facility where materials are separated for recycling.

Approved Recycling Facility: Any of the following: A facility that can legally accept CDL waste materials for the purpose of processing the materials into an altered form for the manufacture of a new product.

Material Recovery Facility: A general term used to describe a waste-sorting facility. Mechanical, hand-separation, or a combination of both procedures, are used to recover recyclable materials.

CONSTRUCTION WASTE MANAGEMENT, GENERAL

Waste materials should be properly stored and handled to minimize the potential for a spill or impact to the environment. During outdoor activities, receptacles must be

covered to prevent dispersion of waste materials and to control the potential for run-off. Provide containers for CDL waste that is to be recycled clearly labeled as such with a list of acceptable and unacceptable materials. The list of acceptable materials must be the same as the materials recycled at the receiving material recovery facility or recycling processor.

Provide containers for CDL waste that is disposed in a landfill clearly labeled as such. If possible, include in material purchasing agreements a waste reduction provision requesting that materials and equipment be delivered in packaging made of recyclable material, that they reduce the amount of packaging, that packaging be taken back for reuse or recycling, and to take back all unused product. Insure that subcontractors require the same provisions in their purchase agreements.

Conduct regular visual inspections of dumpsters and recycling bins to remove contaminants.

CDL waste materials that can be salvaged, reused or recycled include, but are not limited to, the following:

Acoustical ceiling tiles

Asphalt

Asphalt shingles

Cardboard packaging

Carpet and carpet pad

Concrete

Drywall

Fluorescent lights and ballasts

Landclearing debris (vegetation, stumpage, dirt)

Metals

Paint (through hazardous waste outlets)

Wood

Plastic film (sheeting, shrink wrap, packaging)

Window glass

Wood

Field office waste, including office paper, aluminum cans, glass, plastic, and office cardboard.

Employees must be instructed on the proper disposal method for wastes. This may include general instruction on disposal of non-hazardous wastes, trash, or scrap materials. If wastes generated are classified as hazardous, employees must be trained to ensure proper disposal. The RSO, Stephen Ferguson, or designated representative will determine what level of HazWoper (hazardous waste operations) training is required.

SOURCE SEPARATION

General: Tim Messer Construction, Inc. encourages proper segregation of waste

materials to ensure opportunities for reuse or recycling. Separate recyclable materials from CDL waste to the maximum extent possible. Separate recyclable materials by type.

Provide containers, clearly labeled, by type of separated materials or provide other storage method for managing recyclable materials until they are removed from Project site.

Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

Stockpile materials away from demolition area. Do not store within drip line of remaining trees.

Store components off the ground and protect from weather.

CO-MINGLED RECYCLING

General: Do not put CDL waste that will be disposed in a landfill into a co-mingled CDL waste recycling container.

REMOVAL OF CONSTRUCTION WASTE MATERIALS

Remove CDL waste materials from project site on a regular basis. Do not allow CDL waste to accumulate on-site.

Transport CDL waste materials off Owner's property and legally dispose of them.

Burning of CDL waste is not permitted unless specifically authorized by the site owner and complies with all laws.

Spill Prevention/ Response

All employees must be aware of the hazards involved when working with chemicals and the remedies that need to be used when a spill does occur. A training program will give instructions on how to handle the chemical being used and first aid to be applied to victims of chemical exposure. First aid and caution signs will be conspicuously posted so as to alert individuals on a constant basis. Charts identifying the chemicals utilized in the workplace, their symptoms and effects must also be posted. The workers must know what the acceptable level of exposure to a chemical is and what safety systems must be in place when working with a chemical. Staff should also be aware of new chemical products which may be available that are less harmful, and they must ensure that facilities are adequately ventilated when using chemicals on the premises.

Any water that is provided to an employee throughout the facility should be clearly identified as to whether it is for drinking, washing or cooking. All restrooms must be kept clean and sanitary.

Employees should be screened before taking positions that may expose them to hazards they are not physically capable of handling. An employee who takes an

assignment which requires physical labor must be trained to lift heavy loads properly so as not to damage themselves physically, or cause a spill.

The following requirements must be met for storage locker/cabinets:

Cabinets will be permitted on one side of a corridor only.

Cabinets must end at least 6 ft from a corridor exit door.

Cabinet ends must be at least 12 in. from the edge of a doorway on the latch side and from the edge of the door leaf when fully opened into a corridor.

The cabinets must not be more than 20 in. deep by 37 in. wide by 72-3/4 in. high.

The cabinets must be all metal construction with positive latches to prevent spillage of contents in the event of an earthquake.

All doors must return automatically to the closed position when not held open manually.

A 45 degree-angle fairing must be provided from the wall to the corridor corner of the cabinet. Fairing must be provided at both ends of cabinet or bank of cabinets. * A 45 degree-angle fairing must be provided at the top of the cabinets from the outside corridor edge of cabinet to the wall.

All cabinets must be anchored to the wall firmly enough to withstand 0.5g of lateral acceleration (or a lateral load equal to 1/2 the total dead weight of the cabinet and its contents) in the event of an earthquake.

Liquids and chemicals are not to be stored in corridor lockers.

Any deviation from the above requirements must be approved by the Responsible Safety Officer.

Hazardous Chemical Exposures

In any company which utilizes chemical substances, a training program on the handling, hazards, storage, exposure risks, symptoms of chemical exposure, spills and first aid needs to be part of any new employees training. There must also be follow-up training sessions as to any new chemical or processes that may be initiated by the company. Follow-up training sessions act as a reinforcement of safety standards that need to be followed on a daily basis.

In a training program, employees will learn acceptable levels of chemical exposure, proper storage and labeling of chemicals, and usage of protective clothing and equipment for handling chemicals. They will also learn about potential fire and toxicity hazards, when not to have a chemical in a confined area, or to store in closed containers, usage of eye wash fountains and safety showers, and the necessary posting of open, and dangerous areas. It is important that an employee recognize the Threshold Limit Values or Permissible Exposure Limits of airborne contaminants and physical agents in the workplace. Employees must be instructed on the proper response procedures for spilled materials. The training should include materials available for use, proper waste disposal, and communication procedures.

A procedural manual or set of instructions must be part of the program, with periodic inspections that clearly indicate whether an employee may be mishandling a chemical or endangering himself or others. Part of the manual or procedures must establish a standard of when and how to deal with chemical spills, neutralizing, and disposing of spills or overflows. These procedures must also be posted in an area that is easily accessible for reference usage.

In the event of a minor chemical spill, in addition to prompt corrective measures, the RSO or designated representative should be notified after the cleanup of the occurrence. In the event of a major spill, or any highly hazardous substance, notification to the above parties shall be made first before any cleanup is attempted.

First aid training and equipment will be routine in any facility where chemicals are used. Employees must know how to handle equipment in emergency situations, what equipment needs to be used and whether the equipment is adequate for the situation. A proper spill kit must be on hand, and contain the appropriate supplies for materials that may be spilled. Supplies must be easily accessible when required, and considerations must be made for both the type and quantity of materials.

Respirators may be used either as protective safety equipment or for emergency usage for spills. Therefore, the employee should recognize that respirators need to be stored in a clean, sanitary and convenient location and inspected on a regular basis. Also what respirators are approved by NIOSH for their particular applications.

With a first aid program an employee will recognize when a problem may be occurring by exposure to a chemical ranging from headaches, nausea, dermatitis problems to other factors of discomfort when they use solvents or chemicals.

In the design of a facility that transports chemicals from storage to vats, the content of pipes and storage containers must be clearly marked. Within that facility design there

must be an emergency shut off system in case of an accident or chemical spill. Each employee will be trained as to these emergency shut-off systems.

Ventilation is another major factor in the design of any facility. Whether by natural means or mechanical, the system must be designed to control dust, fumes, solvents, gases, smoke or vapors which may be generated in the workplace. It is also important that a medical or biological monitoring system be in operation as part of the safety standards. If internal combustion engines are used in the facility, or if there is a chance of leakage or mixture with a chemical that could create a toxic gas, atmospheric gas levels must be monitored. If toxic chemicals are used and stored in the facility they should be located in an isolated area to guarantee safety.

Clean Work Areas

All areas controlled by Tim Messer Construction, Inc. must be kept in orderly and clean condition and used only for activities or operations for which they have been approved. Areas where chemicals may be used or stored must be maintained using good housekeeping best management practices. This includes, but is not limited to, clean and organized storage, labeling, and secondary containment where necessary.

Keep stairs, corridors, and aisles clear. Traffic lanes and loading areas must be kept clear and marked appropriately.

Store materials in work rooms or designated storage areas only. Do not use hallways, fan lofts, or boiler and equipment rooms as storage areas. Chemical substances should be stored in proper containers to minimize the potential for a spill. Whenever possible, chemicals should be kept in closed containers and stored so they are not exposed to stormwater.

Do not allow exits, passageways, or access to equipment to become obstructed by either stored materials or materials and equipment that is being used.

Arrange stored materials safely to prevent tipping, falling, collapsing, rolling, or spreading - that is, any undesired and unsafe motion.

Do not exceed the rated floor capacity of stored material for the area. The load limit and the maximum height to which material may be stacked must be posted.

Place materials such as cartons, boxes, drums, lumber, pipe, and bar stock in racks or in stable piles as appropriate for the type of material.

Store materials that are radioactive, fissile, flammable, explosive, oxidizing,

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corrosive, or pyrophoric only under conditions approved for the specific use by the Responsible Safety Officer.

Segregate and store incompatible materials in separate locations.

Remove items that will not be required for extended periods from work areas and put them in warehouse storage. Call for assistance.

Every work location must be provided with illumination that meets CAL/ OSHA requirements. Evaluation of illumination quality and requirements is made by the Responsible Safety Officer, but the supervisor of an area is responsible for obtaining and maintaining suitable illumination.

Areas without natural lighting and areas where hazardous operations are conducted must be provided with enough automatically activated emergency lighting to permit exit or entry of personnel if the primary lighting fails.

Certain jobs require standard safety apparel and appliances for the protection of the employee. Your supervisor is aware of the requirements and will furnish you with the necessary approved protective appliances. These items shall be worn and effectively maintained as a condition of your continued employment and part of our mutual obligation to comply with the Occupational Safety and Health Act.

Chapter 4

Confined Spaces

INTRODUCTION

The hazards that may be present in a confined space are not easily seen, smelled, heard or felt, but can represent deadly risks. The worker who enters confined spaces may be, or often is, exposed to multiple hazards due primarily to ignorance or negligence in the enforcement of safety regulations. This ignorance and neglect has led to countless deaths by asphyxiation, fire and/or explosion, and by fatal exposure to toxic materials.

A permit-required confined space is one in which dangerous air contaminants may be generated and may not be removed by ventilation. When an employee works in this type of environment, the chance exists that atmospheres present may be oxygen deficient, combustible or toxic. Prevention of injuries to the life and health of workers requires that they be properly trained and well equipped to recognize, understand and control the hazards they could encounter. In the process of identifying a confined space, the supervisor in charge should always assume that a hazard is present.

RESPONSIBILITIES

Employees Who Enter Confined Spaces

1. Appoint an individual(s) to serve as authorized individual(s) to perform the required monitoring and to issue entry permits.
2. Assure that the authorized individual(s) receive all the necessary training to effectively discharge their duties.
3. Assure that all individuals who enter confined spaces receive the required training.
4. Assure that all necessary equipment and supplies to effectively protect the health and safety of the workers are provided and maintained in a good state of repair.
5. Develop departmental policies that will assure that all confined space entries are performed in compliance with this written program and all applicable regulations.
6. Develop departmental policies that will assure that all required records are maintained.

7. Department heads, or designated agents, shall be responsible for ensuring that the confined spaces under their control have been posted.

Responsible Safety Officer

1. Develop a written control plan and perform an annual review to determine necessary revisions.
2. Monitor the compliance of the respective departments with the plan and regulations to include compliance with training, monitoring, permitting, record keeping, etc.
3. Provide guidance and technical assistance to departments in the design and selection of appropriate engineering and work practice controls.
4. Provide guidance and technical assistance to departments in the selection of the most appropriate types and quantities of personal protective equipment.
5. Provide consultation to the departments to assist them in fulfilling their training program.
6. Promote compliance with the CAL-OSHA Standard.
7. Provide a means in which employees can direct suggestions, complaints and concerns regarding the campus Confined Space Entry Program.
8. Identify, log, and classify confined spaces before entry. This information shall be communicated to the entrants.

Employee

1. Participate willingly in all training programs offered by Tim Messer Construction, Inc. and learn as much as possible about the confined space entry protection procedure.
2. Abide by all work rules and apply to the fullest extent possible the safety and health precautions specified by Tim Messer Construction, Inc..
3. Report any problems that are observed, which could compromise health and safety, to the RSO or through the immediate supervisor.

CONFINED SPACE HAZARDS

Types of Confined Spaces

1. Those of such design that restrict the movement of air in such a manner that

ventilation may be inadequate.

2. Enclosed areas with very limited openings for entry and exit. Examples of open-topped confined spaces are pits, degreasers, and certain storage tanks. Gases that are heavier than air (such as butane and propane) can remain in low places of these type spaces where they are difficult to remove. Other hazards may also develop due to the nature of the work being involved or by a residue remaining in the space.
3. Confined spaces may contain an engulfment or entrapment hazard. See the definition section of this document for a more detailed explanation of these terms. Confined spaces, such as trenches, sewers, tanks or silos usually have limited access and are considered the most hazardous. Gases, such as carbon dioxide and propane, that are heavier than air, may lie in recessed areas for hours or even days. Because many of these gases are odorless, the hazard may be overlooked with fatal results. At the opposite end, gases which are lighter than air may be trapped at the top of a space where access is from the bottom.

HAZARDOUS ATMOSPHERES

Flammable Atmosphere

A flammable atmosphere generally arises from an enriched oxygen atmosphere, vaporization of a flammable liquid, chemical reaction, a by-product of work, heavy concentrations of combustible dust, and even desorption (release of entrapped substances) of chemicals from inner linings of confined spaces.

An atmosphere becomes flammable when the ratio of oxygen to combustible material in the air is neither too rich nor too lean for combustion to occur. Combustible gases or vapors will accumulate when there is inadequate ventilation in areas such as confined spaces. Flammable atmospheres may also be formed by chemical reactions. These occur when surfaces are initially exposed to the atmosphere or when chemicals combine to form flammable gases.

Combustible dust concentrations are usually found during loading, unloading, or conveying coal, grain, fertilizers or other combustible materials. The explosion from these concentrations occurs when high amounts of static electricity accumulates at low humidity readings and causes a spark which ignites the combustible mixtures present in the air. Also, desorption of chemicals from the inner linings of surfaces of a tank or vessel may produce a flammable mixture. An example of desorption can occur when propane is emptied from a tank. After the removal, the walls may desorb some remaining gas and create a flammable mixture in the tank.

Toxic Atmospheres

Toxic atmospheres can be created from almost any gas, vapor, or airborne dust. Examples of the source of these substances include:

1. The manufacturing process itself.
2. The product being stored.
3. The operation being performed in the confined space (e.g. welding or brazing certain metals).
4. Leakage of lines within the space.
5. Leakage of substances into the space from the outside.

Certain gases are prevalent in various vessels; one is carbon monoxide (CO). This odorless and colorless gas has approximately the same density as air and is formed from the incomplete combustion of such materials as wood, oil, gas, etc. It has poor warning signals as to its level of intoxication. Higher levels (more than 1,000 ppm) can occur without warning and are almost always fatal. Another prevalently released gas is hydrogen sulfide (H_2S). Hydrogen sulfide may be formed several ways, but the most common way occurs when hydrochloric acid is combined with iron sulfide, as in the cleaning of vessel walls. Another common source of hydrogen sulfide is microbial breakdown of organic material, such as sewage, manure, garbage, etc.

Irritant (Corrosive) Atmospheres

Irritant or corrosive atmospheres can be divided into primary and secondary groups. Primary irritants exert no systemic toxic effects. The adverse effect exerted by them on the respiratory tract is direct irritation to the tissue. Examples of these are hydrochloric acid, sulfuric acid, and ammonia. A secondary irritant produces toxic effects plus surface irritation. Examples of this type are benzene and carbon tetrachloride. Prolonged exposure at high levels of irritant atmospheres may produce a general weakening of the nerve endings in the upper respiratory tract. The danger is that the worker generally is not aware of the onset of distress.

Oxygen-Deficient or Oxygen-Enriched Atmosphere

An oxygen-deficient atmosphere is caused when the oxygen (O_2) level of an atmosphere depreciates below 19.5% by either consumption or displacement. The consumption of O_2 takes place during combustion of flammable substances, such as in welding. Oxygen may also be consumed during chemical reactions, such as the formation of iron oxide (rust). A second factor in an asphyxiating atmosphere is displacement by another gas. One such example of displacement is by "inerting" a tank by placing nitrogen in it. The total displacement of O_2 will cause immediate collapse and

death. Since these gases are colorless and odorless, they pose an immediate hazard unless ventilation and oxygen measurements are carried out. A confined space should never be purged with nitrogen or other gas used in welding as this could lead to an oxygen-deficient atmosphere.

An oxygen-enriched atmosphere contains greater than 23.5% oxygen. The main hazard associated with an oxygen-enriched atmosphere is fire. Combustible materials burn much faster in the presence of an oxygen-enriched environment. Some materials which are generally not considered fire hazards will burn rapidly when the oxygen concentration is increased. A contaminated atmosphere must never be purged with oxygen as this would greatly increase the fire hazard in the space.

DEFINITIONS

Acceptable Entry Condition

Means the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter and work within the space.

Atmosphere

Refers to the gases, vapors, mists, fumes, and dusts within a confined space.

Attendant

Means an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant duties assigned in the employer's permit space program.

Authorized Entrance

Means an employee who is authorized by the employer to enter a permit space.

Combustible Dust

A dust capable of undergoing combustion or burning when subjected to a source of ignition.

Confined Space

Refers to a space that (1) Is large enough and so configured that an employee can bodily enter and perform assigned work; (2) Has limited or restricted means of entry or exit; and (3) Is not designed for continuous employee occupancy.

Emergency

Means any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

Engulfment

Engulfment is the surrounding and effective capture of a person by a liquid or finely (flowing) solid substance that can be aspirated or cause death by filling or plugging the respiratory system or that can exert enough force on the body to

cause death by strangulation, constriction, or crushing.

Entrapment

A condition where an uninjured person is unable to remove themselves, or any body part, from a confined space. Entrapment occurs as a result of the configuration of a confined space and is often associated with converging or convoluted surfaces.

Entry

Entry is the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

Entry Permit

The entry permit is the written or printed document that is provided by the employer to allow and control entry into a permit space.

Entry Supervisor

The entry supervisor (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required.

Flammable or Explosive Limits

When flammable vapors are mixed with air in the proper proportions, the mixture can be ignited. The range of concentrations over which the flash will occur is designated by the Lower Explosive Limit (LEL) and the Upper Explosive Limit (UEL). Flammable limits (explosive limits) are expressed as percent volume of vapor in air.

Hazardous Atmosphere

A hazardous atmosphere may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from one or more of the following causes:

1. Flammable gas, vapor, or mist in excess of 10% of the lower flammable limit.
2. Airborne combustible dust at a concentration that meets or exceeds the lower flammable limit.
3. Atmospheric oxygen concentration below 19.5% or above 23.5%

4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published. Note: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, and impairment of ability or self-rescue, injury or acute illness due to its health effects is not covered by this provision.
5. Any other atmospheric condition that is immediately dangerous to life or health.

Hot Work

Any work involving burning, welding, riveting, or similar fire producing operations as well as work which produces a source of ignition, such as drilling or abrasive blasting.

Immediately Dangerous to Life or Health

Means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individuals' ability to escape unaided from a permit space.

Inerting

Displacement of an area's atmosphere by a non-reactive gas (such as nitrogen) to such an extent that the resulting atmosphere is non-combustible.

Isolation

The process whereby the confined space is removed from service and completely protected against an inadvertent release of material. Examples are blanking off lines, lockout of electrical systems, and disconnecting mechanical linkages.

Non-Permit Required Confined Space

A non-permit confined space means a confined space that does not contain a recognized acute hazard or does not have the potential to contain, any hazard causing death or serious physical harm.

Oxygen Deficiency

An atmosphere where the oxygen concentration is less than 19.5%.

Oxygen Enrichment

An atmosphere where the oxygen concentration is greater than 23.5%.

Permissible Exposure Limit (PEL)

The maximum 8 hours, time weighted average of an airborne contaminant to which an employee may be exposed. At no time shall the exposure level exceed the ceiling concentration for the contaminants as listed in 29 CFR 1910 Subpart Z.

Permit-Required Confined Space

A permit-required confined space has one or more of the following characteristics:

1. Contains or has a potential to contain a hazardous atmosphere;
2. Contains a material that has the potential for engulfing an entrant;
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
4. Contains any other recognized serious safety or health hazard.

Permit System

The permit system is the employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

Purging

The method by which gases, vapors, or other airborne impurities are displaced from a confined space.

Retrieval system

The retrieval system (including a retrieval line, full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

Threshold Limit Value (TLV)

An occupational exposure guide published by the American Conference of Government Industrial Hygienist (ACGIH), extensively used to judge acceptable exposure levels to hazardous substances.

GENERAL SAFETY HAZARDS

1. Mechanical

If the activation of any electrical or mechanical equipment could cause injury to persons in a confined space, each piece of equipment shall be manually isolated and inactivated (locked out) before workers are allowed to enter a confined space. Also, there may be other hazards associated with confined spaces, such as flammable vapors or gases, in which special precautions must be taken. Preventing vapor leaks, flashbacks, and other hazards by closing valves is not

sufficient. All pipes should be physically disconnected or isolation blanks bolted in place. Some tanks or vessels must also be blanked off and a blanket of inert gas placed within the tank to prevent a build-up of flammable vapors.

2. Communications for Permit-Required Confined Spaces

Communication between the worker and personnel outside is of the utmost importance. If a worker becomes unconscious or suddenly feels distressed, an injury may quickly become a fatality without proper communication. Communications should include visual monitoring at a minimum. Frequently, there are situations where visual monitoring is impossible and communication by means of an electronic communication system will be necessary.

3. Entry and Exit

The extent of the time required to enter and exit is of major significance as a physical limitation and is directly related to the potential hazard of the confined space. The extent of precautions taken and the standby equipment needed to maintain a safe work area will be determined by the means of access and rescue. The following should be considered:

1. Type of confined space to be entered
2. Access to the entrance
3. Number and size of openings
4. Barriers within the space
5. Occupancy load
6. Time required to exit confined space

4. Physical Effects

A. Thermal Effects

When working in confined spaces, certain considerations must be taken to prevent conditions such as frostbite, hypothermia (excessive body heat loss), and heat stress. The use of protective clothing for both hot and cold environments will add additional bulk to the worker and must be considered in allowing for movement in the confined space and also for exit time in emergencies.

B. Noise

Noise problems are usually intensified in a confined space because the interior tends to cause sound to reverberate and cause extremely high noise levels. This high noise level can sometimes cause hearing damage to workers and can create problems with communication between workers inside the confined space, and assisting workers outside the confined space. Hearing protection must be provided when the time-weighted sound level pressure exceeds 85 decibels.

C. General

Some physical hazards cannot be eliminated because of the nature of a confined space or the work to be performed. These hazards include such items as scaffolding, surface residues, and structural hazards. These hazards pose an almost unrecognizable threat when compared to threats posed by oxygen deficiency, combustible or lethal gas pockets, engulfment, entrapment, etc. These lesser problems, however, account for more injuries because of oversight. A sample of these problems are slips and falls, reaction of incompatible materials, improper scaffolding, electrical shock, etc. Because of these hazards, careful planning must be given to the relationship between the internal structure, the exit, and the worker.

D. Medical Requirements

Medical requirements of employees who enter a confined space must be taken into consideration due to the increased hazard potential. In this type setting, employees must rely more heavily upon their physical, mental, and sensory attributes, especially under emergency conditions. In areas where the hazard potential is high, a person certified in CPR and First Aid should be in attendance.

E. Training

Training of employees for entering and working in confined spaces is required because of the potential hazards and the use of life-saving equipment. To ensure worker safety, the training program must be especially designed for the type of problems encountered. Instructional areas to be covered in the training program are:

1. Potential dangers of confined space work
2. Emergency exit procedures
3. Use of respirators

4. First Aid and Cardio-Pulmonary Resuscitation
5. Lockout and Tagging procedures
6. Fire Protection
7. Communications
8. Air Quality Monitoring
9. Space Ventilation Procedures
10. Training employees in permitting requirements must be done by a qualified person or someone knowledgeable in all relevant aspects of confined space entry procedures. The qualified person must be proficient in the following areas:
 - a. Types of confined spaces that employees will be entering
 - b. Chemical and physical hazards
 - c. Work practices and techniques
 - d. Testing requirements, permissible exposure limits, etc.
 - e. Safety equipment such as respirators, protective clothing, and other protection such as helmets and shields
 - f. Rescue procedures
 - g. Knowledge of applicable Federal, State, and Local regulations
 - h. Evaluation and test methods

The effectiveness of the training program can be determined by the qualified person to see if safe work practices are being followed and testing the employee for knowledge of the operations and hazards. Training shall be provided an approved source.

CONFINED SPACE IDENTIFICATION AND WARNING

All permit-required confined spaces located inside buildings shall be identified and posted with appropriate signs to discourage the entry of unauthorized individuals. Where possible, they shall be secured to prevent unauthorized entry. The RSO shall identify, classify, and log the location of confined spaces. A copy of the log shall be provided to the rescue service and to departments that have employees who enter

confined spaces. Contractors that enter confined spaces shall be provided with a list of the confined spaces in the building or areas in which they will be working. If a location is encountered that appears to meet the definition of a confined space, and it is not posted as such nor does it appear on the log, contact the RSO.

PERMIT RETENTION AND RECORD KEEPING

Individual departments should maintain a copy of these forms. Any records kept by the RSO shall be retained for the time period specified below. The following records shall be maintained:

1. Training. Information to include the date, location, instructor, content of course, name, and signature of trainee, etc. 3 years
2. Permits and pre-entry check lists. 3 years
3. Equipment calibration and maintenance log. 3 years
4. Confined space log. Indefinitely

EQUIPMENT

The RSO will provide and maintain at least one multi-channel gas detectors for use by Tim Messer Construction, Inc. personnel. These units shall be calibrated per manufacturer's requirements. Departments may wish to purchase their own gas detectors or may borrow the detectors from the RSO. In addition, the RSO shall make available a single rescue tripod/winch, lifeline, and body harness for outside rescue.

CONTRACTORS

Contractors who enter confined spaces shall be apprised of this written program and the entry procedure. Tim Messer Construction, Inc. shall inform the contractor of hazards present in the space, Tim Messer Construction, Inc.'s experience, any precautions or procedures. When employees of Tim Messer Construction, Inc. and the contractor enter a confined space together, the entry shall be coordinated to minimize hazards to the employees.

SPECIFIC PROCEDURES AND WORK PRACTICES

The Confined Space Entry procedure does not cover all possible situations or conditions that could be encountered. Additional or different safety features or procedures may be necessary for specific operations.

These procedures must be followed when entering confined spaces such as manholes, vaults, boilers, ductwork, vessels, etc. Its intent is to protect entering personnel against such hazards as oxygen deficiency, combustible gas and vapors, toxic gases and

vapors, mechanical hazards, entrapment, etc.

Confined spaces may be closed on all sides, top and bottom, with entry provided through restricted openings, or may be open completely on one side, top or bottom. Entry is defined as breaking the plane of the confined space with any part of the body.

Permit-required confined spaces are of greater hazard than non-permit required confined space. The entry points to permit-required confined spaces located within a building are marked with red stenciled signs stating: Danger - Permit-Required Confined Space, Do Not Enter.

It is important to realize that a non-permit required confined space may require reclassification based on the type of work to be performed. For example, an underground vault may be classified as non-permit required; however, if an employee will be applying a solvent within this space, it could be upgraded to a permit-required confined space.

WARNING: SMOKING IS NOT PERMITTED IN A CONFINED SPACE OR NEAR THE ENTRANCE TO A CONFINED SPACE AT ANY TIME. THIS IS ESPECIALLY IMPORTANT WHEN THE SPACE IS BEING INITIALLY OPENED AND THE ATMOSPHERE TESTED.

WARNING: ALL ENERGY SOURCES MUST BE LOCKED OUT OR TAGGED OUT BEFORE ENTRY, UNLESS HOT WORK PERMITS HAVE BEEN AUTHORIZED BY THE SUPERVISOR.

- I. Before entering the confined space, the employee should follow these minimum requirements:
 - A. Employees may not enter the confined space without specific training in confined space entry and approval of their supervisor;
 - B. Any conditions making it unsafe to remove an entrance opening cover shall be evaluated and the necessary precautions applied before the cover is removed;
 - C. When an entrance opening cover is removed, the opening will be promptly guarded by a railing, temporary cover or other temporary barrier that will prevent an accidental fall through the opening and will protect each employee working in the space from foreign objects entering the space.
 - D. At this point a check list must be completed. The permit form can be used for permit-required confined spaces will serve as the check list in non-permit required confined spaces.
- II. In addition to the minimum requirements before entry, the following procedures

must be observed for entry into a permit-required confined space:

- A. Before an employee enters the space, the internal atmosphere must be tested with a calibrated direct-reading instrument for oxygen content, flammable gases and vapors and toxic gases and vapors (in that order). Note that some instruments test for multiple gases simultaneously. If the presence of a toxic gas or vapor is suspected in a confined space, other than carbon monoxide or hydrogen sulfide, contact the RSO for advice on air sampling. Hot air and steam shall be ventilated from steam vaults before testing the atmosphere.
 1. If possible, the atmosphere immediately inside the cover (entry point) must be tested without removing the cover. This testing can be accomplished by using the gas meter and the hand-held probe and sampling line attached to the pump. If the cover does not have a sampling port, carefully open the cover a small amount and check the atmosphere immediately inside the cover by lowering the gas meter into the space or inserting the hand-held probe and sampling line attached to the pump;
 2. After testing the atmosphere immediately inside the confined space, carefully remove the cover. Test the atmosphere from the top to bottom and around ductwork and uneven surfaces. This testing can be done by slowly lowering the gas meter by its attached rope or string or using the hand-held probe and sampling line attached to the pump. Do not let the gas meter or end of the tubing submerge in any water that might be present. For horizontal confined spaces and confined spaces that must be entered from the bottom, it will be necessary to use a pole to test the atmosphere;
 3. Avoid leaning over the space or placing your head inside the confined space you are testing.
- B. If the oxygen concentration test indicates an oxygen deficiency (less than 19.5%) or an excess (more than 23.5%), the gas meter should sound an alarm and forced ventilation must be provided. For ventilation of confined spaces, see Appendix I at the back of this procedure. No entry into the confined space will be permitted until follow-up tests after ventilation indicate that the atmosphere is safe.
- C. If the flammability test (combustible gas) indicates a flammable concentrations greater than 10% of the lower explosive limit, the gas meter should sound an alarm and forced ventilation must be provided. No entry shall be permitted until follow-up tests indicate that the atmosphere

is safe.

- D. The gas meters test for carbon monoxide and hydrogen sulfide. Carbon monoxide is produced by internal combustion engines and hydrogen sulfide is often found in sewers. If the gas meter indicates levels of either carbon monoxide that exceed 25 parts per million (ppm) or hydrogen sulfide that exceed 10 ppm, the gas meter should sound an alarm and forced ventilation is required. No entry shall be made until the atmosphere is safe.
- E. After purging, sufficient ventilation shall be supplied to the confined space where needed, making sure that your source of ventilation air is not contaminating the confined space (i.e. carbon monoxide from traffic).
- F. At this point the confined space entry permit must be completed. Each person entering the confined space must sign the confined space entry permit. The confined space entry permit must be posted near the entrance to the confined space. For outdoor entry points during wet or windy weather, the permit may be kept in a nearby safe location such as a department vehicle. It is now acceptable to enter the confined space. Continuous air monitoring must be conducted while the confined space is occupied. A gas meter should be worn by an employee in the confined space.
- G. Pre-entry retesting for air contaminants in the confined space atmosphere must be made after every work break.
- H. If a hazardous atmosphere is detected while individuals are in the space, each employee shall leave the space immediately.
- I. If an attendant outside the confined space orders an evacuation or if the gas meter signals an alarm, all employees must immediately evacuate the confined space. The space shall not be re-entered until the source of the problem has been identified and corrected.
- J. The completed confined space entry permit or check list must be kept in the department files.
- K. Upon completion of a work shift, the gas meter must be returned to its charger. If the next shift will continue the work, a gas meter with a fully charged battery must be obtained. If the gas meter is damaged or malfunctioning, tag the unit as being out of service. Repairs and recalibration must be performed before re-use.
- L. An attendant must be stationed outside the confined space to maintain

voice and/or visual contact with entrants and to recognize the early symptoms of danger in the space. The attendant must be fully familiar with rescue procedures and be able to recognize hazardous conditions. The attendant must not enter the confined space in an emergency. The attendant must order an evacuation of the confined space if a hazardous condition develops or when the workers inside the confined space appear to be in danger;

- M. When applicable, wristlets, life line or full-body harnesses will be provided for each person in the confined space. In some cases, it will not be possible to use these rescue features based on the shape, size or contents of the particular confined space;
- N. A mechanical winch and tripod, approved for rescue, must be provided for top entry permit-required confined spaces. The equipment shall be inspected upon set up. The attendant outside the confined space must be trained in the use of this equipment. In some cases, the winch and tripod cannot be used if they create a hazard.
- O. A portable radio or other device must be used to maintain communication between the attendant and the entrant(s);
- P. The number of employees allowed to enter a permit-required confined space must be kept to a minimum. The supervisor on site, or a designated authorized person, must complete the entry permit and make sure all entrants have signed before entry. The supervisor will cancel the permit at the completion of the job or when conditions substantially change within the confined space such that the permit is no longer valid.

RESCUE PROCEDURES

- A. If an employee is injured, or becomes unconscious in a permit-required confined space, the employee must be retrieved using the rescue tripod and winch or lifeline (if provided). Emergency personnel should be summoned via 911 as soon as possible after it is recognized that a problem exists. In some instances, the notification may have to be delayed until the injured person has been removed from the space.
- B. The attendant must never enter a confined space. If rescue cannot be accomplished outside the confined space by using a tripod/winch or lifeline, then rescue assistance must be summoned immediately by calling 911 or by using portable radios to contact the UT Police dispatcher.

MECHANICAL VENTILATION OF CONFINED SPACES

In many situations, it will be necessary to ventilate a confined space before entry and to maintain forced ventilation while the space is occupied. Forced ventilation is required to remove air contaminants, provide oxygen and to keep the air as clean as possible. The following is a guide to help ventilate confined spaces. Some confined spaces have a single opening, others have multiple opening; or are connected to tunnels, etc.

1. It is best to blow air into the confined space and draw it out simultaneously. This procedure generally requires two or more openings. For ventilation purposes, it is best to open as many of the adjacent entry points as possible.
2. With a confined space that has only a single entry point or when only a single fan is available, air should be blown into the confined space. A flexible hose is helpful in directing the air to the bottom of the confined space.
3. It is important that the fresh air intake not be contaminated. In some cases, a portable gasoline powered generator will be used to power the ventilation fan(s). The generator should be located as far as possible from the fan air intake. Motor vehicles or other internal combustion engines should not be allowed to operate with their exhaust pipes located near the air intakes.
4. When using ventilation, it is important to have a rough idea of the volume of the confined space to be entered. It is also important to know the rating of the ventilation fan. When forced ventilation of a confined space is required, at least three air changes should be provided before re-sampling. Here is an example:

An underground fault is 10 feet wide by 8 feet high by 10 feet long. Multiplying these three dimensions yields 800 cubic feet. The fan to be used is rated for 400 cubic feet per minute.

800 cubic feet = one air change every 2 minutes

400 cubic feet per minute

Thus it will take the fan two minutes to ventilate the confined space. It will take 6 minutes to provide the necessary three air changes.

EQUIPMENT FOR CONFINED SPACE ENTRY

The following is a list of equipment that may be necessary for safe entry into the confined space.

- A. Hard hats, safety shoes, safety glasses and ear protection
- B. Ladder, respirator, lock, key, multiple-lock hasp, tags, lights, fans, barriers and fire extinguisher

Tim Messer Construction, Inc. Injury & Illness Prevention Plan

- C. Portable radios
- D. Harness, lifelines, wristlets, tripod and winch
- E. Permit or checklist

CONFINED SPACE ENTRY PERMIT

NOTE: This form must be completed prior to entry of the confined space and posted near the entry opening. Upon completion of the project or expiration of a permit, a copy must be forwarded to EHSS.

Date of Issue:	Expiration Date:
Time:	Time:
Location of Space:	
Description of Space:	
Purpose of Entry:	
Hazard Assessment:	
Attendant(s):	
Signature of Employees to Enter:	

SAFETY EQUIPMENT/REQUIREMENTS	Y	N	PERSONAL PROTECTIVE EQUIPMENT	Y	N
PIPE LINES PURGES OR FLUSHED			AIR PURIFYING RESPIRATOR - TYPE		
AREA SECURE AND SIGNS POSTED			SAFETY GLASSES OR GOGGLES		
TRIPOD/RETRIEVAL SYSTEM			HARD HAT		
COMMUNICATION EQUIPMENT			CHEMICAL RESISTANT CLOTHING		
GAS DETECTOR			PROTECTIVE BOOTS AND/OR GLOVES		
FIRE EXTINGUISHER			HEARING PROTECTION		
GROUND FAULT CIRCUIT INTERRUPT			CHEST HARNESS AND LIFE LINE		
LIGHTING			OTHER		
LOCKOUT/TAGOUT					
PIPE LINES CAPPED OR BLANKED					
MECHANICAL VENTILATION					

TIME/DATE	%LEL(10%)	%O ₂ (19.5-23.5)	H ₂ S 10ppm	CO 35ppm	INITIALS	INSTRUMENT

SUPERVISOR AUTHORIZING ENTRY (PRINT)	SIGNATURE
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Chapter 5

Electrical Safety

Policy

It is the policy of Tim Messer Construction, Inc. to take every reasonable precaution in the performance of work to protect the health and safety of employees and the public and to minimize the probability of damage to property. The electrical safety requirements contained in this chapter are regulations set forth by Tim Messer Construction, Inc..

Employee Responsibility

All Tim Messer Construction, Inc. personnel are responsible for all aspects of safety within their own groups. The Responsible Safety Officer is responsible for providing information, instruction, and assistance, as appropriate, concerning Tim Messer Construction, Inc. electrical safety requirements and procedures.

Individual employees are responsible for their own and their co-workers' safety. This means:

Become acquainted with all potential hazards in the area in which they work.

Learn and follow the appropriate standards, procedures, and hazard-control methods.

Never undertake a potentially hazardous operation without consulting with appropriate supervision.

Stop any operation you believe to be hazardous.

Notify a supervisor of any condition or behavior that poses a potential hazard.

Wear and use appropriate protective equipment.

Immediately report any occupational injury or illness to the Responsible Safety Officer, any on site Medical Services Department and the appropriate supervisor.

Each employee acting in a supervisory capacity has specific safety responsibilities that include, but are not limited to:

Developing an attitude and awareness of safety in the people supervised and seeing that individual safety responsibilities are fully carried out.

Maintaining a safe work environment and taking corrective action on any potentially hazardous operation or condition.

Ensuring that the personnel he/she directs are knowledgeable and trained in the tasks they are asked to perform.

Ensuring that safe conditions prevail in the area and that everyone is properly informed of the area's safety regulations and procedures.

Ensuring that contract personnel are properly protected by means of instructions, signs, barriers, or other appropriate resources.

Ensuring that no employee assigned to potentially hazardous work appears to be fatigued, ill, emotionally disturbed, or under the influence of alcohol or drugs (prescription, over the counter medicine or otherwise).

Management at every level has the responsibility for maintaining the work environment at a minimal level of risk throughout all areas of control.

Each manager:

Is responsible for being aware of all potentially hazardous activities within the area of responsibility.

May assign responsibility or delegate authority for performance of any function, but - remains accountable to higher management for any oversight or error that leads to injury, illness, or damage to property.

Procedures

It is the policy of Tim Messer Construction, Inc. to follow the fundamental principles of safety, which are described below. A clear understanding of these principles will improve the safety of working with or around electrical equipment.

Practice proper housekeeping and cleanliness. Poor housekeeping is a major factor in many accidents. A cluttered area is likely to be both unsafe and inefficient. Every employee is responsible for keeping a clean area and every supervisor is responsible for ensuring that his or her areas of responsibility remain clean.

Identify hazards and anticipate problems. Think through what might go wrong and what the consequences would be. Do not hesitate to discuss any situation or question with your supervisor and coworkers.

Resist "hurry-up" pressure. Program pressures should not cause you to bypass thoughtful consideration and planned procedures.

Design for safety. Consider safety to be an integral part of the design process. Protective devices, warning signs, and administrative procedures are supplements to good design but can never fully compensate for its absence. Completed designs should include provisions for safe maintenance.

Maintain for safety. Good maintenance is essential to safe operations. Maintenance procedures and schedules for servicing and maintaining equipment and facilities, including documentation of repairs, removals, replacements, and disposals, should be established.

Document your work. An up-to-date set of documentation adequate for operation, maintenance, testing, and safety should be available to anyone working on potentially hazardous equipment. Keep drawings and prints up to date. Dispose of obsolete drawings and be certain that active file drawings have the latest corrections.

Have designs reviewed. All systems and modifications to systems performing a safety function or controlling a potentially hazardous operation must be reviewed and approved at the level of project engineer or above.

Have designs and operation verified. All systems performing safety functions or controlling a potentially hazardous operation must be periodically validated by actual test procedures at least once a year, and both the procedures and actual tests must be documented.

Test equipment safety. Tests should be made when the electrical equipment is de-energized, or, at most, energized with reduced hazard.

Know emergency procedures. All persons working in areas of high hazard (with high-voltage power supplies, capacitor banks, etc.) must be trained in emergency response procedures, including cardiopulmonary resuscitation (CPR) certification.

Working with Energized Equipment

This section contains safety requirements that must be met in constructing electrical

equipment and in working on energized electrical equipment. Special emphasis is placed on problems associated with personnel working on hazardous electrical equipment in an energized condition. Such work is permissible, but only after extensive effort to perform the necessary tasks with the equipment in a securely de-energized condition has proven unsuccessful, or if the equipment is so enclosed and protected that contact with hazardous voltages is essentially impossible.

Safety Glasses

Either safety glasses or a face shield must be worn when working on electrical equipment.

Personal Protective Devices

For work on any energized circuitry with a Class B or Class C hazard, the use of personal protective devices (e.g., face shields, blast jackets, gloves, and insulated floor mats) is encouraged, even if not required.

Elevated Locations

Any person working on electrical equipment on a crane or other elevated location must take necessary precautions to prevent a fall from reaction to electrical shock or other causes. A second person, knowledgeable as a safety watch, must assume the best possible position to assist the worker in case of an accident.

Protective Systems

Equipment must be designed and constructed to provide personnel protection. First-line and backup safeguards should be provided to prevent personnel access to energized circuits. Periodic tests must be established to verify that these protective systems are operative. For all 120 volt, 15 and 20 amp (branch) circuits the are cord/plug connected, Ground Fault Circuit Interrupters (GFCI's) shall be used. this is the primary protection.

Secondary protection benefits may be realized from utilizing an Assured Equipment Grounding Conductor Program (AEGCP). This program provides for initial and periodic verification of ground continuity of all electrical power tool and extension cords. If used, continuity checks are made initially and at three month intervals. Cords that are checked shall have distinguishable taped markings placed within one foot of the male end of the cord. This program is not, however mandatory if GFCI's are faithfully used - which is the company policy.

A written assured equipment grounding conductor program continuously enforced at the

site by one or more designated persons to ensure that equipment grounding conductors for all cord sets, receptacles that are not a part of the permanent wiring of the building or structure, and equipment connected by cord and plug are installed and maintained in good, properly grounded condition.

The following tests shall be performed on all cord sets, receptacles that are not part of the permanent wiring of the building or structure, and cord- and plug-connected equipment required to be grounded.

(1) All equipment grounding conductors shall be tested for continuity and shall be electrically continuous.

(2) Each receptacle and attachment plug shall be tested for correct attachment of the equipment grounding conductor. The equipment grounding conductor shall be connected to its proper terminal.

(3) All required tests shall be performed

(a) Before each use on site,

(b) When there is evidence of damage,

(c) Before equipment is returned to service following any repairs,

(d) At intervals not exceeding 3 months.

The tests required shall be recorded and made available to any authority having jurisdiction.

Safety Practices

Additional safety practices are described below.

Cable Clamping: A suitable mechanical-strain-relief device such as a cord grip, cable clamp, or plug must be used for any wire or cable penetrating an enclosure where external movement or force can exert stress on the internal connection. Grommets, adlets, or similar devices must not be used as strain relief.

Emergency Lighting: There must be an emergency lighting system that activates when normal power fails in Class C conditions.

Flammable and Toxic Material Control: The use of flammable or toxic material must be kept to a minimum. When components with such fluids are used, a catch basin or other approved method must be provided to prevent the spread of these materials should the normal component case fail.

Isolation: All sources of dangerous voltage and current must be isolated by covers and enclosures. Access to lethal circuits must be either via screw-on panels, each containing no less than four screws or bolts, or by interlocked doors. The frame or chassis of the enclosure must be connected to a good electrical ground with a conductor capable of handling any potential fault current.

Lighting: Adequate lighting must be provided for easy visual inspection.

Overload Protection: Overload protection and well marked disconnects must be provided. Local "off" controls must be provided on remote-controlled equipment.

All disconnects and breakers should be clearly labeled as to which loads they control.

Power: All ac and dc power cabling to equipment not having a separate external ground but having wire-to-wire or wire-to-ground voltage of 50 volts or more must carry a ground conductor unless cabling is inside an interlocked enclosure, rack, grounded wire way, or conduit, or feeds a commercial double-insulated or UL-approved device.

This requirement will ensure that loads such as portable test equipment, temporary or experimental, is grounded. UL-approved devices such as coffeepots, timers, etc., used per the manufacturer's original intent are permissible.

Rating: All conductors, switches, resistors, etc., should be operated within their design capabilities. Pulsed equipment must not exceed either the average, the rms, or the peak rating of components. The equipment should be derated as necessary for the environment and the application of the components.

Safety Grounding : Automatic discharge devices must be used on equipment with stored energy of 5 joules or more. Suitable and visible manual grounding devices must also be provided to short-to-ground all dangerous equipment while work is being performed.

Safety Practices, Medium - High Voltage

The following check list must be used as a guide for circuits operating at 300 volts or more or storing more than 5 joules. An enclosure may be a room, a barricaded area, or

an equipment cabinet.

Access: Easily opened doors, panels, etc., must be interlocked so that the act of opening de-energizes the circuit. Automatic discharge of stored-energy devices must be provided. Doors should be key-locked, with the same required key being also used for the locks in the control-circuit-interlock chain. This key must be removable from the door only when the door is closed and locked.

Heat: Heat-generating components, such as resistors, must be mounted so that heat is safely dissipated and does not affect adjacent components.

Isolation: The enclosure must physically prevent contact with live circuits. The enclosure can be constructed of conductive or non-conductive material. If conductive, the material must be electrically interconnected and connected to a good electrical ground. These connections must be adequate to carry all potential fault currents.

Strength: Enclosures must be strong enough to contain flying debris due to component failure.

Temporary Enclosure: Temporary enclosures (less than 6-month duration) not conforming to the normal requirements must be considered Class C hazards.

Ventilation: Ventilation must be adequate to prevent overheating of equipment and to purge toxic fumes produced by a fault.

Visibility: Enclosures large enough to be occupied by personnel must allow exterior observation of equipment and personnel working inside the enclosure.

Warning Indicators: When systems other than conventional facilities represent Class C hazards, the systems should be provided with one of the following two safety measures: (1) A conspicuous visual indicator that is clearly visible from any point where a person might make hazardous contact or entry; and (2) A clearly visible primary circuit breaker or "OFF" control button on the front of the enclosure.

Safety Practices

Because a wide range of power supplies exist, no one set of considerations can be applied to all cases. The following classification scheme may be helpful in assessing power-supply hazards.

Power supplies of 50 volts or less with high current capability too often are not considered a shock hazard, although these voltages are capable of producing fatal

shocks. Since they are not "high voltage," such power sources frequently are not treated with proper respect.

In addition to the obvious shock and burn hazards, there is also the likelihood of injuries incurred in trying to get away from the source of a shock. Cuts or bruises, and even serious and sometimes fatal falls, have resulted from otherwise insignificant shocks.

Power supplies of 300 volts or more, with lethal current capability, have the same hazards to an even greater degree. Because supplies in this category are considered Class C hazards, they must be treated accordingly.

High-voltage supplies that do not have dangerous current capabilities are not serious shock or burn hazards in themselves and are therefore often treated in a casual manner. However, they are frequently used adjacent to lower-voltage lethal circuits, and a minor shock could cause a rebound into such a circuit. Also, an involuntary reaction to a minor shock could cause a serious fall (for example, from a ladder or from experimental apparatus).

The following are additional safety considerations for power supplies.

Primary disconnect. A means of positively disconnecting the input must be provided. This disconnect must be clearly marked and located where the workmen can easily lock or tag it out while servicing the power supply. If provided with a lockout device, the key must not be removable unless the switch or breaker is in the "off" position.

Overload Protection. Overload protection must be provided on the input and should be provided on the output.

More than 300 Volts

To work on systems with voltages greater than 300 volts (CLASS B OR C HAZARD): Open the feeder breaker, roll out if possible, tag out, and lock if in enclosure. If work is on circuits of 600 V or more, positive grounding cables should be attached to all three phases.

Tag should contain who, why, and when information, and it is of vital importance because a person's life may depend on it. "Vital" in this case means that the presence and status of the tag are inviolate, and the tag must not be altered or removed except by the person who attached it.

Less than 300 Volts

To work on systems with voltages less than 300 volts (CLASS A HAZARD): Turn-off and tag the feeder breaker. Tag is inviolate except on projects where established circuit checkout procedure allows a qualified person to remove it and energize circuit after checkout is complete.

Motor Generator Systems

For motor or generator work, primary feeder breaker must be opened, tagged, and locked out if possible.

For generator-load work, motor-start permissive key must be removed by person doing work and restored when work is complete.

High Voltage

To work on high voltage power supplies and enclosures use Class B or Class C hazard procedure specified in the safety requirements.

Access should always be by permissive key that interrupts input power when key is removed from control panel. Grounding of power supply output must occur either automatically when key is removed from control panel or manually before access door can be opened.

Working On or Near Live Circuits

Working on live circuits means actually touching energized parts. Working near live circuits means working close enough to energized parts to pose a risk even though you make be working on de-energized parts. Common tasks where you need to work on or near live circuits include:

- Taking voltage measurements
- Opening and closing disconnects and breakers
- Removing panels and dead fronts
- Opening electric equipment doors for inspection.

For other situations where you might need to work on or near live circuits, Tim Messer Construction, Inc. may institute a written live work permit system which must be authorized by a qualified supervisor.

Live-work permit system (opt.)

A live work permit should, at a minimum, contain this information:

- A description of the circuit and equipment to be worked on and location
- The date and time covered by the permit
- Why live work will be done
- Results of shock hazard analysis and determination of shock protection boundaries
- Results of flash hazard analysis and determination of flash protection boundary
- PPE to be worn and description of safe work practices to be used
- Who will do the work and how unqualified persons will be kept away
- Evidence of completion of job briefing, including description of job-specific hazards.

Proper Personal Protective Equipment

When working on or around live circuits, be sure to wear the right PPE to protect against electric shock and arc flash. Never wear clothing made from synthetic materials, such as acetate, nylon, polyester, or rayon – alone or combined with cotton. Such clothing is dangerous because it can burn and melt into your skin.

The type of PPE worn depends on the type of electric work being done. Once the hazard/risk category has been identified, check requirements for clothing and other PPE when working on or near energized equipment within the flash protection boundary (see NFPA tables). These PPE requirements protect against electric shock and incurable arc-flash burns. They do not protect against physical injuries from arc blasts.

The **minimum** PPE required would be an untreated natural fiber long-sleeve shirt and long pants with safety glasses with side shields (hazard/risk category 0). Higher categories require FR rated clothing (typically 4Cal for 300V & less - category 1) and an Arc Blast faceshield for Category 2 (typically 8Cal clothing for 600V & less). Categories 3 & 4 require even higher rated coveralls with FR rated hood and gloves.

Chapter 6

LOCKOUT/TAGOUT PROCEDURE

POLICY

It is the policy of Tim Messer Construction, Inc. that any individual engaging in the maintenance, repairing, cleaning, servicing, of energy-stored equipment will abide by the procedures outlined in this document and other safety measures outlined in the Tim Messer Construction, Inc. Safety & Health Manual. These procedures are designed to meet or exceed applicable CAL-OSHA standards for safe work practices.

Lockout is a first means of protection; warning tags only supplement the use of locks. Tags alone may be used only when the application of a lock is not practically feasible and with approval of the RSO, Stephen Ferguson or the appropriate supervisor.

PURPOSE

To ensure that all individuals are protected from accidental or unexpected activation of steam, gas, chemical, kinetic, mechanical and/or electrical equipment during maintenance, repairing, cleaning, servicing, or adjusting of prime movers, machinery, or equipment.

DEFINITIONS

LOCKOUT

The practice of using keyed or combination security devices ("locks") to prevent the unwanted activation of steam, gas, chemical, kinetic, mechanical or electrical equipment.

TAGOUT

The practice of using tags in conjunction with locks to increase the visibility and awareness that equipment is not to be energized or activated until such devices are removed. Tagout devices will be of the non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds.

TRYOUT

The practice of attempting to set machinery into motion by starting, switching, pushing, moving, or otherwise engaging power sources for such equipment. There is typically

local rules which may only allow authorized persons to make such attempts. Check first before trying out any equipment yourself.

ACTIVATION/ENERGIZATION

To set machinery into motion by starting, switching, pushing, moving, or otherwise engaging power sources for such equipment. To provide a flow of electricity or complete a circuit that is the main power source for the machinery/equipment.

3.5 HAZARDOUS MOTION

Motion of equipment under mechanical stress or gravity that may abruptly release and cause injury. Hazardous motion may result even after power sources are disconnected. Examples are coiled springs, raised hydraulic equipment, and any sources of potential energy that may cause injury.

RESPONSIBILITIES

- a. Ensure that the lockout/tagout procedures are in compliance with CAL-OSHA requirements.
- b. Provide training to employees affected by lockout/tagout procedures.
- c. Inspect energy control procedures and practices to ensure that general and specific lockout/tagout procedures are being followed.
 - i. Inspections must be carried out by persons other than those employees directly utilizing energy control procedures.
 - ii. Inspections will include a review between the inspector and each authorized employee, of that employee's responsibilities under the energy control procedure being inspected.
 - iii. Certify that periodic inspections have been performed

SUPERVISORS

- a. Ensure that each employee engaging in work requiring locking/tagging out of energy sources understands and adheres to adopted procedures.
- b. Assure that employees have received training in energy control procedures prior to operating the machinery or equipment.
- c. Provide and maintain necessary equipment and resources, including accident

prevention signs, tags, padlocks, seals and/or other similarly effective means.

EMPLOYEES

- a. Adhere to Specific Procedures as outlined in this document for all tasks that require the use of lockout/tagout procedures as defined.
- b. Maintain lockout/tagout supplies in maintenance vehicles.

SPECIFIC PROCEDURES

PREPARATION FOR LOCKOUT/TAGOUT

- a. Make a survey to locate and identify all isolating devices to be certain which switch(es), valve(s), or other energy isolating devices apply to the equipment to be locked or tagged out. More than one energy source (electrical, mechanical, stored energy, or others) may be involved.

SEQUENCE OF LOCKOUT OR TAGOUT SYSTEM PROCEDURE

- a. Notify affected employees that a lockout or tagout system is going to be utilized and the reason therefore. The authorized employee shall know the type and magnitude of energy that the machine or equipment utilizes and shall understand the hazards thereof.
- b. If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open toggle switch, etc.).
- c. Operate the switch, valve, or other energy isolating device(s) so that the equipment is isolated from its energy source(s). Stored energy (such as that in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as repositioning, blocking, bleeding down, etc.
- d. Lockout/Tagout the energy isolating devices with assigned individual lock(s) or tag(s).
- e. After ensuring that no personnel are exposed, and as a check on 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 control(s) to neutral or off position after the test.
- f. The equipment is now locked out or tagged out.

RESTORING MACHINES OR EQUIPMENT TO NORMAL OPERATIONS

- a. After the servicing and/or maintenance is complete and equipment is ready for normal production operations, check the area around the machines or equipment to ensure that

no one is exposed.

- b. After all tools have been removed from the machine or equipment, guards have been reinstalled and employees are in the clear, remove all lockout or tagout devices. Operate the energy isolating devices to restore energy to the machine or equipment.

PROCEDURE INVOLVING MORE THAN ONE PERSON

- a. In the preceding steps, if more than one individual is required to lockout or tagout equipment, each shall place his/her own personal lockout/tagout device on the energy isolating device(s). When an energy isolating device cannot accept multiple locks or tags, a multiple lockout or tagout device (hasp) may be used. If lockout is used, a single lock may be used to lockout the machine or equipment with the key being placed in a lockout box or cabinet which allows the use of multiple locks to secure it. Each employee will then use his/her own lock to secure the box or cabinet. As each person no longer needs to maintain his or her lockout protection, that person will remove his/her lock from the box or cabinet.

TEMPORARY REMOVAL OF LOCKOUT/TAGOUT DEVICES

- a. In situations where lockout/tagout devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment or component thereof, the following sequence of actions will be followed:
- i. Remove non-essential items and ensure that machine or equipment components are operationally intact.
 - ii. Notify affected employees that lockout/tagout devices have been removed and ensure that all employees have been safely positioned or removed from the area.
 - iii. Have employees who applied the lockout/tagout devices remove the lockout/tagout devices.
 - iv. Energize and proceed with testing or positioning.
 - v. Deenergize all systems and reapply energy control measures.

MAINTENANCE REQUIRING UNDISRUPTED ENERGY SUPPLY

- a. Where maintenance, repairing, cleaning, servicing, adjusting, or setting up operations cannot be accomplished with the prime mover or energy source disconnected, such operations may only be performed under the following conditions:
- i. The operating station (e.g. external control panel) where the machine may be activated must at all times be under the control of a qualified operator.

- ii. All participants must be in clear view of the operator or in positive communication with each other.
- iii. All participants must be beyond the reach of machine elements which may move rapidly and present a hazard.
- iv. Where machine configuration or size requires that the operator leave the control station to install tools, and where there are machine elements which may move rapidly, if activated, such elements must be separately locked out.
- v. During repair procedures where mechanical components are being adjusted or replaced, the machine shall be de-energized or disconnected from its power source.

EMPLOYEE TRAINING

Employees of Tim Messer Construction, Inc. will receive annual lockout/tagout training from the RSO, Stephen Ferguson or a designated representative. Note: Training requirements outlined in 29CFR [Specifically 1910.147 (c)(7)(i),(ii), & (iii)].

RECORDKEEPING

INSPECTION RECORDS

- a. The RSO, Stephen Ferguson or a designated representative will supply and instruct employees in the use of LOCKOUT/TAGOUT INSPECTION FORMS.

TRAINING RECORDS

- a. Training records will be maintained by the RSO, Stephen Ferguson or a designated representative. Training records will include an outline of topics covered and a sign in sheet of those employees attending.

REFERENCE

Code of Federal Regulations, Title 29, Part 1910, Section 147.

Tim Messer Construction, Inc. Injury & Illness Prevention Plan

Tim Messer Construction, Inc.
LOCKOUT/TAGOUT INSPECTION FORM

1. Inspection Date: _____

2. Inspector (Printed
Name/Signature): _____ / _____

3. Employee(s) Inspected
(Printed/Signature): _____ / _____

_____ / _____

_____ / _____

_____ / _____

5. Machine/equipment on which the energy control procedure was being utilized:

Item	Yes	No
Does employee have or have access to adequate lockout/tagout devices?		
Has employee tested the effectiveness of his/her lockout/tagout devices?		
Has employee received CPR and lockout/tagout training in the last year?		
Have all procedures been followed?		
Were tagouts legible and clearly displayed?		

6.
Comments/Observations:

Chapter 7

Employee Emergency Action Plan

Organization

Tim Messer Construction, Inc. requires that during every emergency an organized effort be made to protect personnel from further injury and to minimize property damage.

All of Tim Messer Construction, Inc. resources can be made available to respond to an emergency. Each supervisor must know what to do during an emergency in his or her area and must be certain that his or her employees understand their roles.

Emergency Action Plan

A responsible party must be designated by Stephen Ferguson and oriented for each workplace or jobsite. Generally, the Responsible Safety Officer or designated representative is the person in charge of a workplace or jobsite. This person has specific responsibility for the preparation, updating, and implementation of the emergency plan. This responsibility includes recommending personnel to attend indoctrination and training programs.

Specifically, each plan must contain the following information and procedures as appropriate for each workplace.

Emergency Escape Procedures

Floor plans showing evacuation routes, the location of shutoff switches and valves for the utility systems (water, gas, electricity), and the locations of emergency equipment and supplies (including medical) shall be determined prior to the start of work at each at each jobsite or workplace. Indications on the floor plans of areas where specific hazards (i.e., toxic, flammable, and/or radioactive materials) exist. The location and description of special hazards or hazardous devices should be included in the text together with shutdown procedures if applicable.

Emergency Operator Personnel

A list of people with specific duties during an emergency and a description of their duties shall be provided. For example, specific people should be assigned to supervise evacuation and to carry out a rapid search of the area (assuming this can be done

safely).

Accounting For All Employees

Designation of a primary assembly point for evacuees that is well away from the building. An alternate site should also be designated in case the first choice cannot be used.

Reentry procedures

No one shall reenter an evacuated building or area without specific instructions from the RSO or other person in charge.

Rescue Medical Duties

Proceed with first aid or attempt to control the incident only if you can do so safely and have been trained in first aid or the emergency response necessary to control the incident.

Reporting Fires And Other Emergencies

Report the emergency immediately. State what happened, the specific location, whether anyone was injured, and your name and phone number in addition to any other applicable information.

Additional Contacts For More Information

Tim Messer Construction, Inc. has designated personnel at the central office for additional information. If you have any questions, please contact Stephen Ferguson.

Jobsite Alarm Systems

An employee alarm system shall be in accordance with CFR Part 1926.159. The RSO shall determine the particular alarm system to be utilized for each jobsite to alert all employees in the area of an emergency.

Types Of Evacuation

The RSO or designated person shall review each particular jobsite or workplace to determine the type of evacuation to be utilized in emergency circumstances.

Supervisors Responsibilities

During an emergency, the supervisor must:

Ensure that those under his or her supervision are familiar with the plan for the workplace, particularly the recommended exit routes and how to report an emergency.

Render assistance to the person in charge during an emergency, as required.

Maintain familiarity with the shutdown procedures for all equipment used by those under his or her supervision.

Know the location and use of all safety equipment.

Keep employees from reentering an evacuated area until reentry is safe.

No Loitering Policy

Employees not involved in the emergency must stay away from the scene and follow the instructions issued over the public address system or directly from the person in charge. The sounding of a fire bell or other alarm system as designated by the RSO means immediate evacuation by the nearest exit. Employees must not reenter an area that they have evacuated until notified that it is safe to return.

Employee Responsibilities

Employees, other than emergency-response groups, involved in any emergency greater than a minor incident are expected to act as follows:

Comply with all guidelines and procedures as outlined by the RSO or designated person regarding the Emergency Action Plan. In an emergency situation the employee may, if there is threat of further injury or further exposure to the hazard, remove all injured persons if possible and leave the immediate vicinity. If there is no threat of further injury or exposure, the employee should leave seriously injured personnel where they are.

Show the ranking emergency-response officer where the incident occurred, inform him or her of the hazards associated with the area, provide any other information that will help avoid injuries, and do as he or she requests.

Training Requirements

Tim Messer Construction, Inc. shall review the Employee Emergency Action Plan

Tim Messer Construction, Inc. Injury & Illness Prevention Plan

with each applicable employee; initially when the plan is developed, when the employee's responsibilities or designated duties change, and, whenever the plan is changed.

Applicability

Employers with 10 (ten) or fewer employees may communicate the plan orally, and the employer need not maintain a written plan in the workplace.

Chapter 8

Fire Protection Program/ Hot Work

Introduction

Policy and planning for fire safety at Tim Messer Construction, Inc. takes into account the special fire hazards for specific operating areas, the protection of high-value property, and the safety of employees. These ends are met by:

- * Non-combustible or fire-rated materials and construction practices suitable to the assigned uses of buildings and facilities.
- * Alarm systems and automatic extinguishing systems.
- * Availability of suitable hand extinguishers and local hose lines for use before firefighters arrive.
- * Access to professional fire department, always staffed and trained in the control of emergencies that could occur. (The Fire Department makes the initial response to all requests for emergency aid received on the emergency telephone number 911). This chapter covers the fire safety responsibilities of employees and supervisors and sets forth the fire safety rules and procedures.

Fire Department

The Community Fire Department is responsible for protecting people and property from fires, explosions, and other hazards through prevention and expeditious control of such events. In addition, the Fire Department provides first-response rescue and transportation services in medical emergencies.

The Fire Department's inspection staff is responsible for ensuring company-wide compliance with fire safety and protection requirements and for reviewing all plans and procedures for compliance with these requirements; for inspecting and testing automatic fire protection and alarm systems and ensuring their maintenance and repair; for conducting fire safety and protection inspections; and for providing fire prevention recommendations. Other responsibilities may include training employees in fire safety equipment, practices, and procedures.

All these fire protection and response functions are performed in conformance with CAL-OSHA regulations, State law, Tim Messer Construction, Inc. policies, and

nationally recognized standards and guidelines for fire and life safety. The Fire Chief and the Fire Marshall have the authority to enforce applicable requirements of the Uniform Building Code; the Uniform Fire Code; National Fire Protection Association Codes including the Life Safety Code), Standards, and Recommended Practices; and the fire protection provisions of CAL-OSHA Orders.

All employees must immediately report fires, smoke, or potential fire hazards to the Supervisor, Responsible Safety Officer and/or Fire Department (dial 911).

All employees must conduct their operations in such a way as to minimize the possibility of fire. This means applying rules such as keeping combustibles separated from ignition sources, being careful about smoking, and avoiding needless accumulations of combustible materials.

Supervisors are responsible for keeping their operating areas safe from fire. The Responsible Safety Officer and the Fire Department will provide guidance and construction criteria with respect to fire and life safety as well as inspections. The provision and maintenance of fire detection systems and both automatic and manual fire extinguishing equipment is the responsibility of the Responsible Safety Officer. But the supervisor, who best knows the day-to-day nature of his/her operations, is responsible for notifying the Responsible Safety Officer of operations that change the degree of fire risk and will therefore require a change in the planned fire protection provisions.

Supervisor Responsibilities

Supervisors must ensure that their personnel are properly instructed regarding potential fire hazards involved in their work and around their workplaces, the proper precautions to minimize fires, and the procedures in case of fire. The local Fire Department and the Responsible Safety Officer also offer formal courses or training and materials on fire prevention and response for:

- * Fire Safety
- * Fire-Extinguisher Operation
- * Self-Contained Breathing Apparatus
- * Emergency Evacuation

Class A Combustibles

Class A combustibles are common materials such as wood, paper, cloth, rubber,

plastics, etc. Fires in any of these fuels can be extinguished with water as well as other agents specified for Class A fires. They are the most common fuels to be found in non-specialized operating areas of the work place such as offices.

Safe handling of Class A combustibles means:

Disposing of waste daily.

Keeping work area clean and free of fuel paths, which can spread a fire once started.

Keeping combustibles away from accidental ignition sources such as hot plates, soldering irons, or other heat or spark-producing devices.

Keeping all rubbish, trash, or other waste in metal or metal-lined receptacles with tight-fitting covers when in or adjacent to buildings. (Exception: wastebaskets of metal or of other material and design approved for such use, which are emptied each day, need not be covered.)

Using safe ash trays for disposal of smoking materials and making sure that the contents are extinguished and cold to the touch before emptying them into a safe receptacle.

Planning the use of combustibles in any operation so that excessive amounts need not be stored.

Storing paper stock in metal cabinets and rags in metal bins with automatically closing lids.

Making frequent inspections and checks for noncompliance with these rules in order to catch fires in the potential stage.

Class B Combustibles

Class B combustibles are flammable and combustible liquids (including oils, greases, tars, oil-base paints, lacquers) and flammable gases. Flammable aerosols (spray cans) are treated here. Cryogenic and pressurized flammable gases are treated elsewhere in this manual.

The use of water to extinguish Class B fires (by other than trained firefighters) can cause the burning liquid to spread carrying the fire with it. Flammable-liquid fires are usually best extinguished by excluding the air around the burning liquid. Generally, this is accomplished by using one of several approved types of fire-extinguishing agents,

such as the following:

Carbon dioxide

ABC multipurpose dry chemical

Halon 1301 (used in built-in, total-flood systems)

Halon 1211 (used in portable extinguishers)

Fires involving flammable gases are usually controlled by eliminating the source of fuel, i.e., closing a valve.

Technically, flammable and combustible liquids do not burn. However, under appropriate conditions, they generate sufficient quantities of vapors to form ignitable vapor-air mixtures. As a general rule, the lower the flash point of a liquid, the greater the fire and explosion hazard. It should be noted that many flammable and combustible liquids also pose health hazards.

NOTE: The flash point of a liquid is the minimum temperature at which it gives off sufficient vapor to form an ignitable mixture with the air near the surface of the liquid or within the vessel used.

It is the responsibility of the user to ensure that all Class B combustibles are properly identified, labeled, handled, and stored. If assistance is required, contact the Responsible Safety Officer. Safe handling of Class B combustibles means:

Using only approved containers, tanks, equipment, and apparatus for the storage, handling, and use of Class B combustibles.

Making sure that all containers are conspicuously and accurately labeled as to their contents.

Dispensing liquids from tanks, drums, barrels, or similar containers only through approved pumps taking suction from the top or through approved self-closing valves or faucets.

Storing, handling, and using Class B combustibles only in approved locations, where vapors cannot reach any source of ignition, including heating equipment, electrical equipment, oven flame, mechanical or electrical sparks, etc.

Never storing, handling, or using Class B combustibles in or near exists, stairways,

or other areas normally used for egress.

In rooms or buildings, storing flammable liquids in excess of 10 gallons in approved storage cabinets or special rooms approved for the purpose.

Knowing the locations of the nearest portable fire extinguishers rated for Class B fires and how to use them.

Never smoking, welding, cutting, grinding, using an open flame or unsafe electrical appliances or equipment, or otherwise creating heat that could ignite vapors near any Class B combustibles.

Electrical Fires

There are many combustible materials, including electrical equipment, oxidizing chemicals, fast-reacting or explosive compounds, and flammable metals, which present specialized fire safety and extinguishing problems.

Refer to other appropriate chapters of this manual for safe handling advice. If in doubt, request advice from the Responsible Safety Officer.

Welding and Other Permits

As part of the local Fire Department's program to control and reduce fire hazards, a permit system is in effect to cover welding, burning, or other operations with a high fire hazard. Typically, operations that require a permit are:

Welding (arc, oxyacetylene, or heliarc)

Soldering (which requires an open flame)

Use of a torch (for cutting, bending, forming, etc.)

Use of tar pots (for road work or roofing, etc.)

Open fires for any purpose

HOT WORK PERMIT PROGRAM

Hot Work is any construction or maintenance procedure which requires heat or open flame to complete. This includes, but is not limited to: cutting, grinding, brazing, welding,

soldering, thawing pipes, sweating pipes or applying roofing materials with torches. This policy applies to any Tim Messer Construction, Inc. employee or any contractor who is performing new construction, repair, renovations and/or alterations that require hot work. Sparks, in the presence of flammable vapors, may cause immediate fires or explosions.

Smoldering material hidden from sight can suddenly burst into flame long after work has been completed and personnel have left the area. Heat produced by hot work on one side of a wall can actually ignite combustible material on the other side. Due to the high fire potential, most hot work will require a HOT WORK PERMIT.

Supervisors, Project Managers, and Contractors will determine if welding, cutting, soldering and heating must be done as part of the project or work order. Then determine if the hot work can be performed outside the building, if so a permit is not required. If hot work is performed inside of a building then a hot work permit is required. Hot Work Permits will be requested at least 24 hours in advance of needed work.

Hot Work Permits may be issued for a period of two weeks and may be renewed at the end of two weeks if needed. Employees and contractors will comply with all requirements as outlined on the permit form and the RSO, or designated representative will inspect each hot work site to ensure compliance.

Upon completion of hot work the original copy of the Hot Work Permit will be sent to the main office.

Any area of a building (other than a work shop) that is determined to be a "hot work safe area" will require an initial inspection by the RSO, or designated representative to ensure that it meets all criteria. These "hot work safe areas" shall have no fuel loading or very low fuel loading, in addition to other requirements. Examples of this type of area would be a non-occupied cement basement or crawl space under a building.

Hot Work Permit Form

(Hot Work is not permitted unless this form is completed and signed by the Responsible Safety Officer, or designated representative and site owner notified of hot works location.)

Name of person/company performing Hot Work:

Date of Work: _____

Permit No: _____
(Work Order Number)

Location of Work: _____
(be specific including building and room number)

Description of Work:

This permit is valid from am/pm on ____/____/____ to am/pm on ____/____/____

Special Precautions:

The work site has been inspected by me, I have arranged for the fire panel to be isolated and all other necessary precautions taken.

Name: _____

Signed: _____

Date: _____

(Person performing the work)

The fire alarm and panel has been isolated and the work site has been inspected by me, and declared safe for hot-work to proceed.

Name: _____

Signed: _____

Date: _____
(RSO or designated representative)

FIRE WATCH (if required)

Work site and all adjacent areas where sparks may have spread were inspected by me during, and or at least thirty (30) minutes after the work was completed and no fire conditions were noted. The fire panel has been de-isolated.

Name: _____ (Fire Watcher)

Signed: _____

Date: _____

The fire alarms and thermal/smoke detectors must be isolated before hot work commences. This is done by informing the site owner of location of hot works and requesting a fire alarm isolation.

Hot work commenced at am/pm _____

Hot work completed at am/pm _____

PRECAUTIONS CHECKLIST/ GENERAL PRECAUTIONS

Yes No N/A

Are flammable and combustibles removed or protected?

Are available sprinklers, hose streams and extinguishers operable?

Is floor swept clean and wet down where necessary?

Is arc flash shielding in place?

Is ventilation adequate?

Is hot-work equipment in good repair?

Is fire watch required?

Is fire panel isolated? (Checked with Site Owner)

Are smoke/thermal detectors isolated? (Checked with Site Owner)

Are combustible liquid, vapor, gasses removed or protected?

Are combustible floors protected?

Are flammable liquids, dust, lint removed or protected?

Is explosive atmosphere in area eliminated?

Are all wall and floor openings covered?

Is construction non-combustible and without combustible materials?

Are combustibles on the other side of wall or ceiling moved away?

Are fire resistant coverings under works to collect sparks?

Is enclosed equipment cleaned of all combustibles?

Are containers purged of flammable liquids/vapors?

Is Fire Watcher required?

If required, has Fire Watcher been briefed?

Is Fire Watcher trained in use of this equipment and sounding alarm?

Is Fire Watcher supplied with appropriate fire extinguisher?

Spray painting

To obtain additional information or to request a permit for these operations, contact the Responsible Safety Officer or Fire Department on its business line, not the emergency 911 number.

Portable Heaters

The use of these devices, whether privately or company owned, is allowed only where there is no chance of causing injury to personnel or of creating a fire hazard. This provision obviously requires common sense in safely locating such devices and ensuring that they do not operate when they are unattended. These devices may not be used in locations where:

Flammable or explosive vapors or dusts may be present.

Smoking, eating, or drinking are prohibited because toxic or radioactive materials may be present.

The area has been designated as unsafe for such devices.

The following practices should be carried out when operating portable heating appliances:

- * Do not place the appliance on unstable or readily combustible materials.
- * Maintain a clearance of at least 12 inches between the appliance and combustible materials.
- * Ensure that the appliance is approved by either Underwriters Laboratories, Inc., or Factory Mutual Research Corporation.
- * Connect the appliance directly to a proper electrical outlet using only the cord with which it was originally equipped. Do not use extension cords in lieu of permanent wiring.
- * Do not operate appliances during off hours if they are unattended unless they are controlled by a timer installed by an Tim Messer Construction, Inc. electrician. The timer will automatically de-energize the appliance during off hours and energize it not more than 30 minutes before the arrival of personnel. If 24 hour operation is desirable, the proposed operation and arrangement must be reviewed by the local Fire Department and a permit obtained. This permit must be posted near the operating

appliance for the information of off-shift personnel who may be checking the area.

Fire Fighting Equipment

This section describes the fixed and portable equipment that is provided in working areas for fire protection. The fixed equipment may include automatic sprinklers, detectors and alarms, fire doors, etc. The portable equipment consists of fire extinguishers and hoses to be operated by employees before the arrival of the local Fire Department.

Fire Detectors

Several types of automatic fire detectors may be used throughout Tim Messer Construction, Inc., according to particular needs and purposes. All of them will detect fire (by one of several means) and transmit an alarm to the fire station. In the many buildings equipped with evacuation alarm bells, the automatic detectors activate those alarms, as do the manual pull boxes. In some cases, automatic extinguishing systems are activated by automatic detectors. The Fire Department always dispatches firefighters and apparatus to the scene of any automatically actuated alarm.

Sprinkler Systems

Many buildings are provided with automatic sprinkler systems. The sprinkler heads contain a fusible element (most commonly fused at 212 degrees F) which, on melting, opens the head and starts a spray of water. The resulting flow of water in the piping activates an alarm at the fire station, and firefighters are dispatched.

Automatic sprinkler heads can be damaged if they are subjected to mechanical abuse. A protective cage should be installed where such damage is possible. Heat inadvertently applied to the sprinkler head can also activate the sprinkler when no actual fire is present. Normal heat sources should therefore be kept away from sprinkler heads. To avoid decreasing the flow or spread of water or altering the spray pattern, do not allow material or furniture to be located too near the sprinkler head.

Allow at least 18 inches of clearance around sprinkler heads.

Sprinkler system control valves must be kept accessible for Fire Department use. Allow at least 3 feet of clearance (enough for a man to pass through easily) around such valves.

Alarm System

In most buildings, evacuation alarm bells are automatically activated when fire is detected. They can also be activated manually at strategically located pull boxes. The emergency actions of personnel and the evacuation procedures for each building or operating area are usually set forth in the Operational Safety Procedures for each building and posted near the main entrance or fire exit or elevator. Never use the elevator in case of a fire.

Fire Doors

Automatic fire doors and dampers are provided at strategic points to close and block the spread of smoke and fire when these are sensed by automatic detectors. Automatic fire doors must never be blocked or left in disrepair so that they cannot close and latch automatically as intended in the event of a fire.

Self-closing fire doors are those doors designed and installed to close each time after being opened. They too must never be blocked, wedged, or tied open. If such doors must be kept open, the self-closers must be replaced with approved automatic smoke-activated release hold-open devices.

Fire Exits

Exit corridors must not be used for storage. The Life Safety Code, NFPA 101, requires that buildings designed for human occupancy must have continuous and unobstructed exits to permit prompt evacuation of the occupants and allow necessary access for responding emergency personnel. The intent of the Code is to keep exits free from obstructions and clear of combustible materials. Attention to housekeeping, therefore, is very important. "Temporary" storage of furniture, equipment, supplies, or anything else is not permitted in exit ways. Combustibles, including recyclable waste paper, are not permitted in exit ways.

Metal lockers with ends and tops ferried to the walls and that do not interfere with minimum exit width requirements may be installed in exit corridors when approved by the Fire Department and the Responsible Safety Officer. The following requirements must be met for storage locker/cabinets:

Cabinets will be permitted on one side of the corridor only.

Cabinets must end at least 6 ft from the corridor exit door.

Cabinet ends must be at least 12 in. from the edge of the doorway on the latch side and from the edge of the door leaf when fully opened into the corridor.

The cabinets must not be more than 20 in. deep by 37 in. wide by 72-3/4 in. high.

The cabinets must be all metal construction with positive latches to prevent spillage of contents in the event of an earthquake.

All doors must return automatically to the closed position when not held open manually.

A 45 degree-angle fairing must be provided from the wall to the corridor corner of the cabinet. Fairing must be provided at both ends of cabinet or bank of cabinets. * A 45 degree-angle fairing must be provided at the top of the cabinets from the outside corridor edge of cabinet to the wall.

All cabinets must be anchored to the wall firmly enough to withstand 0.5g of lateral acceleration (or a lateral load equal to 1/2 the total dead weight of the cabinet and its contents) in the event of an earthquake.

Liquids and chemicals are not to be stored in corridor lockers.

All cabinets must be kept locked, with one key being retained by the Building Manager.

All cabinets must be labeled with the contents and the name, address, and telephone number of the assigned user.

Any deviation from the above requirements must be approved by the Responsible Safety Officer.

Mechanical Equipment Rooms

Mechanical equipment rooms contain boilers, blowers, compressors, filters, electrical equipment, etc. Such rooms must be separated from other areas of a building by fire-resistant walls and doors. To maintain the integrity of these separations, the fire doors must never be left open.

Fan rooms house ventilation equipment which often includes automatic shut down and dampers activated by interlocking with the building smoke and fire detectors. Fire dampers and other automatic shut-down provisions must not be disabled without Fire Department or Responsible Safety Officer approval (as for temporary maintenance procedures).

Mechanical equipment rooms and fan rooms must not be used for storage of any

kind.

Construction Areas

Construction areas under control of either Tim Messer Construction, Inc. or outside contractors must be maintained in a fire-safe condition and accessible to emergency response forces.

Life Safety Code

The Life Safety Code of the National Fire Protection Association, NFPA 101, requires that emergency lighting be provided for means of egress in certain areas.

The Code states emergency lighting is required in exit corridors in any office-type building where the building is two or more stories in height above the level of exit discharge.

In industrial occupancies such as laboratories and shops, the Code requires emergency lighting in all exit aisles, corridors, and passageways. Emergency lighting may be installed in areas where not required by the Code when such areas present an egress hazard during a power failure.

Several types of emergency lights that satisfy the specifications of the Life Safety Code are:

Battery Type - Only rechargeable batteries may be used. The rating of the battery must be such that it provides power for illumination for one and one-half hours in the event of a failure of normal lighting.

Generator Type - When emergency lighting is provided by an electric generator, a delay of not more than 10 seconds is permitted.

Exit sign lights, when burned out, should be reported to Maintenance for service.

Exit Corridors

Exit corridors must not be used for storage. The Life Safety Code, NFPA 101, requires that buildings designed for human occupancy must have continuous and unobstructed exits to permit prompt evacuation of the occupants and allow necessary access for responding emergency personnel. The intent of the Code is to keep exits free from obstructions and clear of combustible materials. Attention to housekeeping, therefore, is very important. "Temporary" storage of furniture, equipment, supplies, or

anything else is not permitted in exit ways. Combustibles, including recyclable waste paper, are not permitted in exit ways.

Metal lockers with ends and tops ferried to the walls and that do not interfere with minimum exit width requirements may be installed in exit corridors when approved by the Fire Department and the Responsible Safety Officer.

The following requirements must be met for storage locker/cabinets:

Cabinets will be permitted on one side of the corridor only.

Cabinets must end at least 6 ft from the corridor exit door.

Cabinet ends must be at least 12 in. from the edge of the doorway on the latch side and from the edge of the door leaf when fully opened into the corridor.

The cabinets must not be more than 20 in. deep by 37 in. wide by 72-3/4 in. high.

The cabinets must be all metal construction with positive latches to prevent spillage of contents in the event of an earthquake.

All doors must return automatically to the closed position when not held open manually.

A 45 degree-angle fairing must be provided from the wall to the corridor corner of the cabinet. Fairing must be provided at both ends of cabinet or bank of cabinets. * A 45 degree-angle fairing must be provided at the top of the cabinets from the outside corridor edge of cabinet to the wall.

All cabinets must be anchored to the wall firmly enough to withstand 0.5g of lateral acceleration (or a lateral load equal to 1/2 the total dead weight of the cabinet and its contents) in the event of an earthquake.

Liquids and chemicals are not to be stored in corridor lockers.

All cabinets must be kept locked, with one key being retained by the Building Manager.

All cabinets must be labeled with the contents and the name, address, and telephone number of the assigned user.

Any deviation from the above requirements must be approved by Responsible Safety

Officer.

No Smoking

Smoking is forbidden in certain areas for fire safety reasons. Such areas include the following:

Where flammable gases or liquids are stored, handled, or used.

Where significant quantities of combustible materials, such as paper, wood, cardboard, or plastics are stored, handled, or used.

Where liquid- or gaseous-oxygen is stored, handled, or used.

Within 20 ft. of a smoke detector.

In tape and record storage vaults and computer equipment areas .

Areas that are designated as "No Smoking" areas for fire safety reasons are indicated by large rectangular signs consisting of white backgrounds with red letters stating "NO SMOKING."

Chapter 9

Gases/ Welding & Cutting

Introduction

This chapter contains guidelines and requirements for the safe use of flammable and/or compressed gases. It covers the use of flammable-gas piping systems, high-pressure gas cylinders, manifolded cylinders, and compressed air.

Hazards

All gases must be used in a manner that will not endanger personnel or property in routine shop use or experimental operations. Hazards associated with handling and use of flammable and/or high-pressure gases include the following:

- Injuries caused by flying objects accelerated by an explosion or pressure release;
- Almost certain death if a flammable mixture is inhaled and then ignited;
- Asphyxiation;
- Secondary accidents such as falls or electrical shocks;
- Fire caused by ignition of flammable gases;

Relief Valves Required

All systems, system components, and piping subject to over-pressures must be equipped with relief devices.

Operational Safety Procedures

Equipment containing highly toxic gases requires an Operational Safety Procedure (OSP) and must comply with the requirements described in the chapters on chemical safety. If you are in doubt as to the hazards, toxicity, or safe operating practices for any gases, consult the Responsible Safety Officer.

Fire Risk

Fire requires three elements: fuel, oxygen, and ignition. Any experiment or routine

operation that places a flammable gas in the presence of an oxidant (air, oxygen) and an ignition source (spark, flame, high temperature) is extremely dangerous. To reduce the risk of fire, eliminate two of these three elements.

Thus, when using flammable gases, (1) eliminate ignition sources and (2) prevent mixing of fuel with air or oxygen. Contain or vent fuel.

Pyrophoric substances, which are materials that ignite spontaneously when exposed to air, require even more care. Minimize the use of oxygen in high concentration. Materials not normally considered combustible burn violently in high-oxygen atmospheres. Therefore, special precautions must be taken when working with high-oxygen concentrations.

Guidelines

All personnel authorized to work with flammable gases must be familiar with the hazards and emergency measures that might be required in the event of an accident. For safe operation the following safety guidelines must be observed: A piping (schematic) diagram of the apparatus and an operating procedure that includes safety considerations and emergency instructions must be developed, and the installed piping must be inspected to ensure that it is installed as shown on the piping diagram. Only personnel authorized to work on the experiment are allowed in the operations area. Appropriate warning devices and signs, such as "Danger-Hydrogen" and "No Smoking and Open Flames," must be posted on or near the work area and at the doors to the operating area. Flammable gas shutoff valves must be located outside flammable gas operating areas. Good housekeeping practices must be observed; unnecessary combustible material must be kept out of flammable gas operating areas. Only the flammable gas cylinders actually required for the experiment are allowed in the operating area. Extra cylinders must be stored in an approved area outside the building or work area. When two or more cylinders containing flammable gas are used inside a room or other confined area, and are connected to a common manifold, the regulators must be modified. The existing relief valves on the regulator must be replaced with two special relief valves connected to a metal vent line that terminates outside and above the building. Likewise, when the building occupancy is rated H7, as defined in the Uniform Building Code, all flammable gas regulators must have their relief valves vented to a vent line that terminates outside and above the building.

All ignition sources, e.g., welding torches, lit cigarettes, electric arcs, electrostatic charges, and pilot lights, must be kept away from flammable gases at all times.

Ventilation must be provided to prevent entrapment of flammable gases in closed areas. If the gas is lighter than air, overhead ventilation is required. Gases denser than

air must be prevented from entering trenches and manholes where they can collect and form explosive mixtures with air.

Cracking a hydrogen gas cylinder valve before attaching the regulator is not recommended since the gas may be ignited by static charge or friction heating. Closing the valve stops the flame immediately.

Never use a flame to detect flammable gas leaks. Use soapy water or use other approved methods.

If a flammable gas cylinder is discovered with a small leak and the gas has not ignited, the cylinder must be moved carefully to a safe outside area. If the leak is serious or the gas has ignited, evacuate the area and contact the Tim Messer Construction, Inc. Responsible Safety Officer and the local Fire Department immediately.

Oxygen

Oxygen supports combustion but is itself nonflammable. Oxygen lowers the ignition point (in air) of flammable substances and causes them to burn more vigorously. Materials such as oil and grease burn with nearly explosive violence in oxygen, even in minute quantities. Therefore, oxygen cylinders must not be handled with greasy or oily hands or gloves and must not be stored near highly combustible materials such as oil, grease, or reserve acetylene.

Oxygen must never be used to purge lines, to operate pneumatic tools, or to dust clothing - cloth, plastics, etc., saturated with oxygen burn explosively. Accordingly, oxygen cylinders must never be used as hat racks, clothes hangers, etc., since leaky fittings can result in accumulations of gas in the covering material.

Insects in oxygen "pigtails" can ignite spontaneously and may cause sufficient heat and over-pressure to burst the pigtail, valve, or manifold: don't leave pigtails disconnected for more than a few minutes.

Do not use white lead, oil, grease, or any other non-approved joint compound for sealing oxygen-system fittings. Threaded connections in oxygen piping must be sealed with joint compounds or Teflon tape approved for oxygen service. Litharge and water is recommended for service pressures above 300 psig (2.0 MPa). Gaskets must be made of non-combustible materials.

When high pressure oxygen cylinders are stored inside a building, they must be separated from flammable gas cylinders by at least 20 feet or by a fire-resistive partition.

Acetylene

Acetylene is used principally with welding and cutting torches. Commercial acetylene gas is colorless and highly flammable with a distinctive garlic-like odor. Acetylene, in its free state under pressure, may decompose violently - the higher the pressure, the smaller the initial force required to cause an explosion. Therefore, acetylene is stored in acetone, which dissolves 300 times its volume of acetylene. Acetylene cylinders are filled with a porous filler material that holds the acetone. The combination of filler and acetone allows acetylene to be contained in cylinders at moderate pressures without danger of explosive decomposition. Full cylinder pressure is 250 psig at 70 degrees F.

CAUTION: when acetylene is withdrawn from its cylinder too rapidly, the gas cannot come out of solution fast enough, the downstream pressure drops, and liquid acetone is thrown out of the cylinder and may limit the flow of the pressure-reducing regulator.

The following precautions are recommended when working with acetylene:

To prevent flashbacks check valves are required in welding gas lines and at the welding/cutting torch. If the acetylene pressure drops, the oxygen pressure at the torch can push oxygen back up the acetylene line, where it can mix with acetylene and cause a flashback.

Copper must not be used in acetylene piping - copper forms an impact-sensitive copper acetylidide.

NEVER use free acetylene gas outside the cylinder at pressures over 15 psig (30 psia) -- it can decompose violently.

Acetylene cylinders should be used or stored only in an upright position to avoid the possibility of acetone leaking from the cylinder. If an acetylene cylinder has been stored horizontally, the cylinder should be put upright and left in that position for about 30 minutes before being used.

When cylinders are empty of acetylene, valves must be closed to prevent evaporation of the acetone.

Acetylene cylinders may be filled only by the supplier.

Magic Gas

Magic Gas (magic gas II). This particular mixture is denser than air and consists of the following:

Isobutane _____ 23.52%

Methylal (dimethoxy-methane) _____ 4.00% (nominal)

Freon 13-B1 _____ 0.48%

Argon _____ 72.00%

This gas is purchased premixed in Matheson 1F (Fat Boy) cylinders pressurized to 35 psig. The flammable limits of this gas are about 1.8% to 7% in air.

Tim Messer Construction, Inc. safety rules for high pressure cylinders and flammable gases apply to all uses of Magic Gas.

Cylinders

Only cylinders meeting Department of Transportation (DOT) regulations may be used for transporting compressed gases. Each cylinder must bear the required DOT label for the compressed gas contained, except under certain specified conditions set forth in DOT regulations.

It is illegal to remove or to change the prescribed numbers or other markings on cylinders - do not deface, cover, or remove any markings, labels, decals, or tags applied or attached to the cylinder by the supplier. Each cylinder that is in use at Tim Messer Construction, Inc. must carry a legible label or stencil identifying the contents. Do not repaint cylinders unless authorized by the owner.

Compressed-gas containers must not contain gases capable of combining chemically, nor should the gas service be changed without approval by Responsible Safety Officer.

The cylinder-valve outlet connections on cylinders containing gas mixtures are provided by the gas supplier, based on the physical and chemical characteristics of the gases.

Gas mixtures having a flammable component must have a cylinder-valve outlet connection with left-handed threads, even though the gas mixture is nonflammable, unless Responsible Safety Officer has authorized otherwise.

Regulators, gauges, hoses, and other appliances provided for use with a particular gas or group of gases must not be used on cylinders containing gases having different chemical properties unless information obtained from the supplier indicates that this is safe.

Gases must not be mixed at Tim Messer Construction, Inc. sites in commercial DOT cylinders and must not be transferred from one DOT cylinder to another. Gases that are mixed at Tim Messer Construction, Inc. must never be put into a Tim Messer Construction, Inc. - or vendor-owned compressed gas cylinder.

Vendor-owned cylinders must not be used for any purpose other than as a source of vendor-supplied gas. Only the vendor may pressurize these cylinders.

It is illegal to transport a leaking cylinder (charged or partially charged) by common or contract carrier.

Cylinder Handling

Compressed gases should be handled only by experienced and properly instructed personnel. When in doubt about the proper handling of a compressed gas cylinder or its contents, consult the Responsible Safety Officer.

Compressed gas cylinders are dangerous when handled incorrectly. Always assume that a cylinder is pressurized. Handle it carefully. Never throw, bang, tilt, drag, slide, roll, or drop a cylinder from a truck bed or other raised surface. If a cylinder must be lifted manually, at least two people must do the lifting. Because of their shape, smooth surface, and weight, gas cylinders are difficult to move by hand. A truck or an approved cylinder handcart must always be used to move a cylinder. Cylinders must be fastened in metal cradles or skid boxes before they are raised with cranes, forklifts, or hoists. Rope or chain lifting slings alone must not be used. Cylinders, even empty ones, must never be used as rollers for moving materials, as work supports, etc.

If damaged, a cylinder can cause severe injuries, including lung damage from inhalation of toxic contents and physical trauma from explosion. A pressurized gas cylinder can become a dangerous projectile if its valve is broken off.

When a cylinder is not connected to a pressure regulator or a manifold, or is otherwise not in use, it is extremely important that the cylinder valve be kept closed and the safety cap be kept in place -- the cap protects the cylinder valve (do not lift cylinders by their caps). Notify the Responsible Safety Officer, giving details and cylinder serial number, if you believe that a foreign substance may have entered the cylinder or valve.

Cylinders containing compressed gases should not be subjected to a temperature above 125 degrees F. Flames, sparks, molten metal, or slag must never come in contact with any part of a compressed gas cylinder, pressure apparatus, hoses, etc. Do not place cylinders where they might become part of an electric circuit. When cylinders are used in conjunction with electric welding, ensure that the cylinders cannot be accidentally grounded and burned by the electric welding arc.

Cylinders must not be subjected to artificially low temperatures. Many ferrous metals become extremely brittle at low temperatures. The loss of ductility and thermal stress at low temperature may cause a steel cylinder to rupture.

Never attempt to repair, alter, or tamper with cylinders, valves, or safety relief devices.

Working With Gases

Always identify the contents of a gas cylinder before using it. If a cylinder is not clearly labeled, return it to the Responsible Safety Officer.

Before using a cylinder, be sure it is properly supported with two metal chains or the equivalent to prevent it from falling. Contamination of compressed gas cylinders by feedback of process materials must always be prevented by installation of suitable traps or check valves.

Suitable pressure-regulating devices and relief devices must always be used when gas is admitted to systems having pressure limitations lower than the cylinder pressure.

Gas cylinder valves can be "cracked" (opened slightly) momentarily before regulators are attached to blow dirt off the valve seats, but the valve outlet should always be pointed away from people or equipment. (Cracking the valve is not recommended with hydrogen because it can be ignited by static charge or friction.) After the regulator is securely attached to the cylinder valve, fully release (turn counter-clockwise) the pressure-adjusting screw of the regulator before opening the cylinder valve. Open gas cylinder high pressure valves slowly; this gives compression heat time to dissipate and prevents "bumping" the gauges. Never use a wrench on any cylinder-valve hand wheel.

Keep removable keys or handles on valve spindles or stems while cylinders are in service.

Never leave pressure in a system that is not being used. To shut down a system, close the cylinder valve and vent the pressure from the entire system. Equipment must not be disassembled while it is under pressure. Be aware that any valved-off portion of

the system may still be under pressure; bleed the hose, line, or vessel before disassembly to ensure that there is not enough pressure energy stored in the trapped gas or in piping distortion to propel loose objects.

Connections to piping, regulators, and other appliances should always be kept tight to prevent leakage. Where hose is used, it should be kept in good condition.

Manifold pigtails should not be left disconnected for more than a few minutes. Certain insects are attracted to pure gases and will quickly clog these lines.

Never use compressed gas to dust off clothing; this may cause serious injury or create a fire hazard.

About 30 psi gauge pressure (0.2 MPa) must be left in "empty" cylinders to prevent air from entering the cylinder and contaminating it; air contamination in a hydrogen cylinder is extremely dangerous.

Before a regulator is removed from a cylinder, close the cylinder valve and release all pressure from the regulator.

Before returning an empty cylinder, close the valve and replace the cylinder-valve protective cap and outlet cap or plug, if used.

Cylinder Storage

Cylinders not actively in use inside of buildings must be stored outside in areas approved by Responsible Safety Officer and must be fastened - with two metal chains or bars or in a fixture - to prevent them from falling if they are bumped or shaken, as during an earthquake.

When gases of different types are stored at the same location, cylinders must be grouped by types of gas, and the groups must be arranged in accordance with the gases contained, e.g., flammable gases must not be stored near oxygen.

Charged cylinders and empty cylinders should be stored separately in an arrangement that permits removal of "old stock" (cylinders in storage the longest) with minimum handling of other cylinders.

Storage rooms or areas should be dry, cool, well ventilated, and, where practical, fire resistant; must have solid, level floors or storage surfaces; and must be away from traffic. Storage in sub-surface locations should be avoided. Cylinders must not be stored at temperatures above 125 degrees F. or near radiators or other sources of

heat, near sparking devices, or near salt or other corrosive chemicals. If stored outside, cylinders must be protected from continuous direct sunlight, extreme weather, or moisture.

Compressed Air

Compressed air for general shop or laboratory use must be restricted to 30-psig (207-kPa) maximum pressure by restricting nozzles. Compressed air at pressures up to 100-psig (700-kPa) may be used to operate pneumatic tools, certain control instruments, and research equipment with properly designed over-pressure relief devices. Use of air-pressurized research equipment must be approved by the Responsible Safety Officer.

Building compressed air (house air) may be used to dry parts and to help accomplish many other jobs in the shop or laboratory, but always ensure that no one is in line with the air stream and always wear goggles or a face shield.

Compressed air must not be used for breathing unless it has been especially installed for this purpose and such use has been approved by Responsible Safety Officer.

Never apply air pressure to the body or use compressed air to clean clothing. Compressed air injected into the body openings can be fatal. Compressed air used to clean clothing drives particles into the fabric, where they can cause skin irritation and infections. Use a clothes brush.

Compressed air must not be used to transfer liquids from containers of unknown safe working pressure. A pressurized commercial drum of unknown pressure rating is a hazardous device; for example, a 55-gal (200liter) drum pressurized to 14.5 psig (100 kPa) has a force on the drum head of about 3 tons. To transfer liquids use a pump or a siphon with a bulk aspirator. The transfer pressure for commercial-type liquid nitrogen dewars must be less than 14.5 psig. For most laboratory-type liquid nitrogen systems, transfer pressures of less than 5 psig are adequate. Compressed air must never be used for transferring liquid hydrogen or liquid helium.

When an automatic shut-off coupling is not used on air-operated tools, a short metal chain (or its equivalent) should be attached to the hose to prevent it from whipping in case it separates from the tool. When using an air-operated tool, shut off the compressed air and vent the hose before changing nozzles or fittings.

Welding & Cutting

Protecting yourself when performing welding operations depends on your understanding

of the hazards involved and the proper way to control them. Control of welding hazards include avoiding eye injury, respiratory protection, and ventilation of the work area, protective clothing and having safe equipment to use.

Eye hazards include exposure to ultraviolet and infrared light. Welders and their helpers should wear filter glasses with shades ranging from 2 to 14, depending on the type of welding being done, to protect their eyes. Unless a welding arc is behind a screen, not only the welder, but also people nearby may need eye protection. Other workers should be excluded within a 30 foot radius from gas or low powered arc welding, or also be protected with appropriate filter lenses. Heavy welding requires a 100 foot radius. Inert gas welding produces 5 to 30 times as much ultraviolet light as arc welding and requires shielding for even greater distances. Keep in mind that ordinary untreated plastic lenses absorb ultraviolet light very poorly and should not be relied on for protection.

Virtually all welding processes generate gases, fume and dusts. Gases generated include carbon monoxide, carbon dioxide, ozone, and nitrous gases. Other gases may also be formed in the presence of chemicals which may be on the material being welded. For example 1,1,1 Trichloroethane generates phosgene gas when exposed to the heat of welding. Welding and cutting can also generate fumes from cadmium, lead, cyanide, beryllium, arsenic, fluorides, nickel, cyanide, and other materials when can be hazardous if inhaled. Proper respiratory protection should always be worn when cutting or welding. The best type of protection to use can be determined by reading the Material Safety Data Sheet for the material being welded, or the manufacturer of the rod or flux being used.

Mechanical ventilation at the rate of 2,000 cubic feet per minute per welder is required if the area is more crowded than 10,000 cubic feet per welder; has a ceiling height of less than 16 feet; or in confined spaces where structural barriers significantly obstruct cross ventilation. Additional specific ventilation requirements are necessary for fluorine compounds, zinc, lead, beryllium, cadmium, mercury, and for stainless steel that is oxygen cut using either a chemical flux or iron powder or gas shielded arc cutting. Where it is not possible to provide this ventilation, airline respirators, hose masks, or self contained units must be used. Oxygen should never be used for ventilation.

All parts of the body should be protected from radiant energy, sparks, and molten metal splashes. Clothing made from wool, or wool blends, is generally better than cotton. Some cutting operations such as inert-gas metal arc welding will cause exposed cotton clothing to rapidly deteriorate. Leather capes, jackets, leggings, and aprons provide additional protection especially in vertical, or overhead operations. Use of dark clothing will help reduce reflected light.

All welding equipment should be inspected each day prior to use. Report any defects found in regulators, torches or electrical components to a person that is qualified to

make the necessary repairs.

VENTILATION

The fumes produced in a welding operation can be hazardous to the welder or workers in the near vicinity. Reducing the exposure to fumes through an effective local exhaust or area ventilation system is the first line of defense in preventing discomfort or illnesses from toxic welding fumes.

Respirators are another means of reducing exposure. This personal protective equipment should be considered a temporary process until more appropriate measures to control the exposure are in place. However, when the level of the exposure cannot be entirely eliminated by an exhaust ventilation system, some form of respiratory protection will be required when welding is performed. Highly toxic or concentrated welding fumes may require the welder to use a supplied air hood-type respirator, no matter what type of ventilation is in place.

Testing equipment is needed to effectively evaluate the levels of toxicity welding fumes emit. Many toxic fumes are colorless and odorless, and chronic effects of overexposures may not be immediately detectable. Harmful levels of welding fumes cannot be determined by relying on your body's senses. You may see smoke in the air, smell an irritant and not be adversely affected. In order to accurately determine the level of the contaminants present, air quality testing equipment in the way of air sampling pumps are placed in the area and on the welder. This equipment pulls air through a filter for a specified amount of time. The sample is then evaluated at a laboratory to determine the levels of the exposure.

The degree of exposure present determines which type of ventilation system is most appropriate. In field locations, such as construction projects and shipyards, 'sucker' hoses can be set up to pull fumes from the welding zone. Welding booths with local exhaust hoses at each station gives the welder some flexibility and mobility in performing the operation. In situations where the welder must go to the work area (due to size, weight or the unwieldy configuration of the work piece), portable exhaust systems could be an option to consider. In some situations, laboratory-type hoods may be used for ventilation. This type of system creates a high velocity exhaust vacuum within an enclosure. Using Laboratory-type hoods allow only the welder's hands/arms in the enclosure while welding is being performed.

Determining the needed ventilation and/or respiratory protection must be taken very seriously. Systematically evaluate the process, exposures and possible controls to determine which will help ensure providing an employee a safe place to work.

Once protective measures have been determined, it is the responsibility of each welder and their supervisor to make sure they are being used properly. Taking a proactive step

Tim Messer Construction, Inc. Injury & Illness Prevention Plan

in reducing *your* exposure to welding fumes is the professional approach to working as a welder.

Chapter 10

Hand & Power Tools/ Guarding

Grinders

1. Do not use grinding wheels that have chips, cracks or grooves.
2. Do not use the grinding wheel if it wobbles. Tag it "Out of Service."
3. Adjust the tongue guard so that it is no more than 1/4 inch from the grinding wheel.
4. Do not try to stop the wheel with your hand, even if you are wearing gloves.

Drills

1. Do not use dull, cracked or bent drill bits.

Hydraulic/Pneumatic Tools

1. Do not point a compressed air hose at bystanders or use it to clean your clothing.
2. Tag defective or damaged tools "Out of Service" to prevent usage of the tool.
3. Do not use tools that have handles with burrs or cracks.
4. Do not use compressors if their belt guards are missing. Replace belt guards before use.
5. Turn the tool "off" and let it come to a complete stop before leaving it unattended.
6. Disconnect the tool from the air line before making any adjustments or repairs to the tool.

General Hand Tool Safety

1. Tag worn, damaged or defective tools "Out of Service" and do not use them.
2. Do not use a tool if its handle has splinters, burrs, cracks, splits or if the head of the tool is loose.
3. Do not use impact tools such as hammers, chisels, punches or steel stakes that have mushroomed heads.
4. When handing a tool to another person, direct sharp points and cutting edges away from yourself and the other person.
5. When using knives, shears or other cutting tools, cut in a direction away from your body.
6. Do not carry sharp or pointed hand tools such as screwdrivers, scribes, snips, scrapers, chisels or files in your pocket unless the tool or pocket is sheathed.
7. Do not perform "make-shift" repairs to tools.
8. Do not throw tools from one location to another or from one employee to another.
9. Transport hand tools only in tool boxes or tool belts. Do not carry tools in your clothing.

Powder Actuated Tools

1. Wear impact resistant safety goggles or face shields when operating any powder actuated tools.
2. When using powder actuated tools, do not drive fasteners into structural steel without first looking to see if the steel is backed by a steel plate or barricade, and to see if all personnel are away from the direct line of fire.
3. Do not attempt to fasten through a pre-drilled hole unless the powder actuated tool has a hole locator.
4. Keep your head and body behind the powder actuated tool when firing it.
5. Do not fasten steel beams at a distance closer than 1/2 inch from the edge of the steel.
6. Before using powder actuated tools do not alter, bypass, or remove the shield or guard at the muzzle end of the powder actuated tool.
7. Do not load a powder actuated tool until you are ready to fire it.

Company Provided Tools

Tim Messer Construction, Inc. provides hand and powered portable tools that meet accepted safety standards. A damaged or malfunctioning tool must not be used; it must be turned in for servicing and a tool in good condition obtained to complete the job. Employees must use the correct tool for the work to be performed; if they are unfamiliar with the operation of the tool, they must request instruction from their supervisor before starting the job. Supervisors are responsible for ensuring that their subordinates are properly trained in the operation of any tool that they are expected to operate. An employee is not permitted to use a powder-actuated tool unless instructed and licensed by the manufacturer.

Grounding

Tools that are not double-insulated must be effectively grounded and tested. Testing must be accomplished before initial issue, after repairs, and after any incident that could cause damage, such as dropping or exposure to a wet environment.

Grounded tools must always be used with an effectively grounded circuit. Any extension cord used with a grounded tool must be a three-wire, grounded type.

Electric-powered hand tools used on construction sites, on temporary wired circuits, or in wet environments will be used in conjunction with an approved ground fault circuit interrupter (GFCI).

The responsibility for implementing and maintaining this program rests with the individual supervisors involved.

Tool testing equipment will be maintained by the Responsible Safety Officer.

Documentation of tool testing will be maintained by the group owning powered hand tools.

Repairs of defective tools will only be made by qualified electrical personnel.

Machine/Equipment Safety

1. Replace the guards before starting machines, after making adjustments or repairs.
2. Do not remove, alter or bypass any safety guards or devices when operating mechanical equipment such as mechanical power presses, metal working lathes, cutting, notching, riveting or bending and forming machinery.
3. Do not wear loose clothing or jewelry in the machine shop.
4. Long hair must be contained under a hat or hair net, regardless of gender.
5. Read and obey safety warnings posted on or near any machinery.
6. Do not try to stop a workpiece as it goes through any machine. If the machine becomes jammed, disconnect the power before clearing the jam.

Mechanical guarding must encompass both the power transmission parts of all mechanical equipment and the points of operation on production machines.

Guards must be provided where rotational motion, nip points, and cutting, shearing, punching, and forming mechanisms can cause injury to personnel or damage to tools and equipment.

Mechanical guards must be designed or otherwise procured to meet the following specifications:

The guard must provide positive protection equal to that specified in ANSI B15.1.

The guard must be considered a permanent part of the machine or equipment, capable of being easily or quickly removed or replaced.

The guard must not interfere with efficient operation or maintenance of the machine or give discomfort to the operator.

The guard must not weaken the machine structure.

The guard must be designed for a specific job and a specific machine.

The guard must be durable, resistant to fire and corrosion, and easily repaired.

The guard must not present hazards, such as rough edges, splinters, pinch points, shear points, or sharp corners.

Methods of guarding that must be considered include the following:

Enclosing the operation (preferred)

Interlocking devices

Moving barriers

Removal devices

Remote control

Two-handed tripping devices

Electronic safety devices

Machines designed for fixed locations must be securely anchored to the floor or bench to prevent walking or tipping. Employees may operate machinery only when properly trained and authorized to do so. Proper clothing and protective devices must be worn when specified by the supervisor or shop foreman.

Chapter 11

Material Handling

Introduction

Tim Messer Construction, Inc. requires that safety planning and practices for commonplace tasks be as thorough as for operations with unusual hazards. Commonplace tasks make up the greater part of the daily activities of most employees and, not unexpectedly, offer more potential sources of accidents with injuries and property damage. Every operation or work assignment begins and ends with handling of materials. Whether the material is a sheet of paper (paper cuts are painful) or a cylinder of toxic gas, accident risks can be reduced with thorough planning. Identifying obvious and hidden hazards should be the first step in planning work methods and job practices. Thorough planning should include all the steps associated with good management from job conception through crew and equipment decommissioning.

Most of the material presented in this chapter is related to the commonplace and obvious. Nevertheless, a majority of the incidents leading to injury, occupational illness, and property damage stem from failure to observe the principles associated with safe materials handling and storage.

A less obvious hazard is potential failure of used or excessive motorized handling or lifting equipment. The Responsible Safety Officer must be notified whenever it is desired to acquire a crane, forklift truck, or other motorized handling or lifting equipment.

Lifting and Moving

Lifting and moving of objects must be done by mechanical devices rather than by manual effort whenever this is practical. The equipment used must be appropriate for the lifting or moving task. Lifting and moving devices must be operated only by personnel trained and authorized to operate them. Employees must not be required to lift heavy or bulky objects that overtax their physical condition or capability.

Manual Lifting Rules

Manual lifting and handling of material must be done by methods that ensure the safety of both the employee and the material. It is Tim Messer Construction, Inc. policy that employees whose work assignments require heavy lifting be properly trained and physically qualified, by medical examination if deemed necessary.

The following are rules for manual lifting:

Inspect the load to be lifted for sharp edges, slivers, and wet or greasy spots.

Wear gloves when lifting or handling objects with sharp or splintered edges. These gloves must be free of oil, grease, or other agents that may cause a poor grip.

Inspect the route over which the load is to be carried. It should be in plain view and free of obstructions or spillage that could cause tripping or slipping.

Consider the distance the load is to be carried. Recognize the fact your gripping power may weaken over long distances.

Size up the load and make a preliminary "heft" to be sure the load is easily within your lifting capacity. If it is not, get help.

If team lifting is required, personnel should be similar in size and physique. One person should act as leader and give the commands to lift, lower, etc.

Two persons carrying a long piece of pipe or lumber should carry it on the same shoulder and walk in step. Shoulder pads should be used to prevent cutting shoulders and help reduce fatigue.

To lift an object off the ground, the following are manual lifting steps:

Make sure of good footing and set your feet about 10 to 15 inches apart. It may help to set one foot forward of the other.

Assume a knee-bend or squatting position, keeping your back straight and upright. Get a firm grip and lift the object by straightening your knees - not your back.

Carry the load close to your body (not on extended arms). To turn or change your position, shift your feet - don't twist your back.

The steps for setting an object on the ground are the same as above, but in reverse.

Mechanical Lifting

Mechanical devices must be used for lifting and moving objects that are too heavy or bulky for safe manual handling by employees. Employees who have not been trained must not operate power-driven mechanical devices to lift or move objects of any weight.

Heavy objects that require special handling or rigging must be moved only by riggers or under the guidance of employees specifically trained and certified to move heavy objects.

Inspections

Each mechanical lifting or moving device must be inspected periodically. Each lifting device must also be inspected before lifting a load near its rated capacity. Defective equipment must be repaired before it is used. The rated load capacity of lifting equipment must not be exceeded.

Material moving equipment must be driven forward going up a ramp and driven backward going down a ramp.

Traffic must not be allowed to pass under a raised load.

The floor-loading limit must be checked before mobile lifting equipment enters an area. Passengers must not be carried on lifting equipment unless it is specifically equipped to carry passengers.

Load Path Safety

Loads moved with any material handling equipment must not pass over any personnel. The load path must be selected and controlled to eliminate the possibility of injury to employees should the material handling equipment fail.

Equipment worked on while supported by material handling equipment must have a redundant supporting system capable of supporting all loads that could be imposed by failure of the mechanical handling equipment. A suspended load must never be left unattended but must be lowered to the working surface and the material handling equipment secured before leaving the load unattended.

Truck Loading

All objects loaded on trucks must be secured to the truck to prevent any shifting of the load in transit. The wheels of trucks being loaded or unloaded at a loading dock must be chocked to prevent movement.

Clean Work Areas

All areas controlled by Tim Messer Construction, Inc. must be kept in orderly and clean condition and used only for activities or operations for which they have been

approved. The following specific rules must also be followed:

Keep stairs, corridors, and aisles clear. Traffic lanes and loading areas must be kept clear and marked appropriately.

Store materials in work rooms or designated storage areas only. Do not use hallways, fan lofts, or boiler and equipment rooms as storage areas.

Do not allow exits, passageways, or access to equipment to become obstructed by either stored materials or materials and equipment that is being used.

Arrange stored materials safely to prevent tipping, falling, collapsing, rolling, or spreading - that is, any undesired and unsafe motion.

Do not exceed the rated floor capacity of stored material for the area. The load limit and the maximum height to which material may be stacked must be posted.

Place materials such as cartons, boxes, drums, lumber, pipe, and bar stock in racks or in stable piles as appropriate for the type of material.

Store materials that are radioactive, fissile, flammable, explosive, oxidizing, corrosive, or pyrophoric only under conditions approved for the specific use by the Responsible Safety Officer.

Segregate and store incompatible materials in separate locations.

Remove items that will not be required for extended periods from work areas and put them in warehouse storage. Call for assistance.

Temporary equipment required for special projects or support activities must be installed so that it will not constitute a hazard. A minimum clearance of 36 inches must be maintained around electrical power panels. Wiring and cables must be installed in a safe and orderly manner, preferably in cable trays. Machinery and possible contact points with electrical power must have appropriate guarding. The controls for temporary equipment must be located to prevent inadvertent actuation or awkward manipulation. When heat-producing equipment must be installed, avoid accidental ignition of combustible materials or touching of surfaces above 60 degrees C (140 F). Every work location must be provided with illumination that meets CAL-OSHA requirements. Evaluation of illumination quality and requirements is made by the Responsible Safety Officer, but the supervisor of an area is responsible for obtaining and maintaining suitable illumination.

Areas without natural lighting and areas where hazardous operations are conducted must be provided with enough automatically activated emergency lighting to permit exit or entry of personnel if the primary lighting fails.

Forklift Operators

The Responsible Safety Officer must be notified whenever it is desired to acquire a crane from excess sources.

CAL-OSHA Standards for Forklifts

Forklift users must familiarize themselves with and comply with CAL-OSHA Standard 29 CFR 1910.178 and ANSI B56.1.

Modifications and additions must not be performed by the customer or user without manufacturer's prior authorization or qualified engineering analysis. Where such authorization is granted, capacity, operation and maintenance instruction plates, tags, or decals must be changed accordingly.

If the forklift truck is equipped with front end attachments other than factory installed attachments, the user must ensure that the truck is marked with a card or plate that identifies the current attachments, shows the approximate weight of the truck with current attachments and shows the lifting capacity of the truck with current attachments at maximum lift elevation with load laterally centered.

The user must see that all nameplates and caution and instruction markings are in place and legible.

The user must consider that changes in load dimension may affect truck capacities.

Forklift Maintenance

Because forklift trucks may become hazardous if maintenance is neglected or incomplete, procedures for maintenance must comply with ANSI B56.1 Section 7 and CAL-OSHA Standard 29 CFR 1919.178 (g).

Forklift Extension

Maximum efficiency, reliability, and safety require that the use of fork extensions be guided by principles of proper application, design, fabrication, use, inspection, and maintenance. The user must notify the Responsible Safety Officer before purchasing extensions or having them fabricated.

Fork extensions are only appropriate for occasional use. When longer forks are needed on a regular basis, the truck should be equipped with standard forks of a longer length.

Routine on-the-job inspections of the fork extension must be made by the fork lift operator before each use unless, in the judgment of the supervisor, less frequent inspections are reasonable because of his or her knowledge of its use since the last inspection. Extensions must be inspected for evidence of bending, overload, excess corrosion, cracks, and any other deterioration likely to affect their safe use.

All fork extensions must be proof load tested to establish or verify their rated capacities, whether they were supplied commercially or fabricated at Tim Messer Construction, Inc.. A load equal to the rated capacity of the pair at a particular load center multiplied by 1.15, must be placed on each fork extension pair and fork assembly and supported for a period of five minutes without any significant deformation. Rated capacity must be determined at significant load centers, including the midpoint of the extension and at the tip. Once determined, the rated capacity and load center information must be shown by stamping or tagging the extensions in a protected location of low stress. The proof load test must be witnessed by a mechanical engineer or designer.

Whenever evidence of deterioration is detected or whenever the extensions have been overloaded, magnetic particle inspection must be performed.

Chapter 12

Hearing Conservation Program

Introduction

This chapter contains information on the effects, evaluation, and control of noise. For assistance in evaluating a noise problem, contact the Responsible Safety Officer.

Danger of Noise

Exposing the ear to high levels of noise may cause hearing loss. This loss can be temporary or permanent. Temporary hearing loss or auditory fatigue occurs after a few minutes exposure to an intense noise but is recoverable following a period of time away from the noise. If the noise exposure is repeated, there may be only a partial hearing recovery and the loss becomes permanent. Typically, significant hearing losses occur first in the frequency range of 3,000 to 6,000 hertz (Hz). Losses in this frequency range are not critical to speech perception, and the individual usually is completely unaware of this initial symptom. With longer exposures, the hearing loss spreads to lower frequencies, which will affect speech perception. Workers' Compensation laws regard hearing losses in the speech frequency range of 500 to 3,000 Hz as being compensable.

The evaluation of hearing loss due to noise is complicated by the fact that hearing acuity normally decreases with increasing age. Further, the losses associated with age are quite similar to those caused by excessive noise since the hearing for high frequency sounds is most affected in both instances. Hearing impairment may also result from infections, tumors, and degenerative diseases.

ACGIH Standards

CAL-OSHA has prescribed the limits established by the American Conference of Governmental Industrial Hygienists as a standard for occupational noise exposure. Both the sound pressure level of the noise and the total duration of the noise exposure are considered to determine if these limits are exceeded. The sound pressure levels are expressed as dBA or decibels A-weighted. A-weighting filters are used when measuring sound levels to more accurately predict the response of the human ear to different frequencies.

When the daily noise exposure is composed of two or more periods of noise of different levels, their combined effect must be considered rather than the individual

effect of each.

Permissible Noise Exposure

Duration per day (hours) vs. Sound level dBA (slow response)

8 Hours - 90 dBA

6 Hours - 92 dBA

4 Hours - 95 dBA

3 Hours - 97 dBA

2 Hours - 100 dBA

1.5 Hours - 102 dBA

1 Hour - 105 dBA

.5 Hour - 110 dBA

.25 Hour or less - 115 dBA

Levels in excess of the permissible exposure limit as outlined in this section require use of the appropriate personal protective equipment- (hearing protection).

Reducing Noise Exposure

Noise exposure can be reduced by using engineering controls, administrative procedures, or personal protective devices.

Engineering Controls

Reduction of noise production at the source:

Proper design of new machines

Modification of present machines

Proper repair and upkeep of equipment

Use of appropriate mufflers

Use of vibration dampeners on machines

Reduction of noise transmission:

Increase distance between noise and personnel exposed

Construction of barriers between noise source and personnel

Sound treatment of ceilings and walls

Administrative Procedures:

Job schedule changes

Personnel rotation

Personnel Protective Devices:

Ear plugs

Earmuffs

Federal and state occupational safety and health regulations require that whenever employees are exposed to excessive noise levels, feasible engineering or administrative controls must be used to reduce these levels. When these control measures cannot be completely accomplished and/or while such controls are being initiated, personnel must be protected from the effects of excessive noise levels. Such protection can, in most cases, be provided by wearing suitable protective hearing devices.

The appropriate Medical Services provider and/or the supervisor of the Department will supply ear plugs for employees upon request or before going into a high noise area. There is a need for medical supervision when ear plugs are used because their effectiveness depends on proper fitting. Only approved plugs should be used. Ear plugs should be cleaned daily to prevent ear infections.

Protection greater than that provided by a single device can be obtained by wearing ear plugs under an earmuff. While the reduction provided by wearing both devices simultaneously is considerably less than the sum of the individual attenuations, it is still greater than when either device is worn separately.

Chapter 13

Personal Protective Equipment

Introduction

Tim Messer Construction, Inc. will provide suitable equipment to protect employees from hazards in the workplace. The Responsible Safety Officer will advise on what protective equipment is required for the task, but the supervisor of the operation must obtain this equipment and see that it is used.

Personal protective equipment shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazard due to processes or environment. Activities involving specialized operations may present hazards that are difficult or impossible to completely eliminate, or adequately safeguard against, by using engineering controls. When a hazard still exists after all practical engineering control measures have been taken, personnel must be provided with adequate protection through the use of personal protective equipment. The type of personal protective equipment required for any hazardous operation depends upon the nature and severity of the hazards involved. The Supervisor shall conduct a Hazard Assessment so that proper PPE can be selected.

The Hazard Assessment shall be documented in writing and shall include, at a minimum, identification of the area(s) assessed, the date of the assessment, the name of the person(s) conducting the assessment, identification of the hazards present (*or likely to be present*), and identification of the specific PPE required to be used to mitigate the hazard(s). The Hazard Assessment shall be maintained on file. Additional assessments shall be conducted whenever new hazards become present, or become likely to be present. Ultimately, it is the responsibility of the supervisor to ensure a safe work environment, and provide proper personal safety protection, for their employees.

Based on the results of the supervisor's hazard assessment, the supervisor shall select the type of PPE to be utilized. The rationale for the PPE selection shall be communicated to the employees by the supervisor and the supervisor shall ensure that the selected PPE is furnished to the employee and is properly used by the employees. Tim Messer Construction, Inc. will be responsible for the adequacy, maintenance, and sanitation of any PPE provided or owned by employees for any reason. Regardless of origin, no PPE considered for use shall be defective or damaged.

The supervisor will ensure that all employees are properly trained in the following:

When PPE is necessary

What PPE is necessary

How to properly don, doff, adjust and wear PPE

The limitations of the PPE, and

The proper care, maintenance, useful life and disposal of the PPE

The supervisor shall certify in writing that each employee has been properly trained in the above and that each employee has demonstrated an understanding of the training discussed above and the ability to use the selected PPE, before being allowed to perform work requiring the use of PPE. Employees shall be provided retraining as the supervisor deems necessary to ensure compliance with 29 CFR 1910.132.

When the supervisor has reason to believe that any affected employee who has already been trained does not have the understanding and skill required to properly use PPE, the supervisor shall provide additional training to each such employee. Other circumstances where retraining is necessary include, but are not limited to, situations where the workplace render previous training obsolete; or changes in the types of PPE to be used, render previous training obsolete.

PPE equipment will not be used as a substitute for the elimination of hazardous conditions, but as a supplemental safety measure that is required when engineering controls cannot successfully eliminate or satisfactorily control the hazard. Supervisory personnel shall ensure that the PPE is being used correctly. Equipment must be maintained in reliable condition at all times. The RSO Stephen Ferguson, or designated person will be responsible for ensuring that all contractor personnel, including subcontractors, comply with 29 CFR 1910.132. PPE worn in areas where chemicals or asbestos contaminants have been encountered shall not be taken to the wearer's residence for cleaning, care or maintenance without first being decontaminated.

Protection Issued

Protective clothing is not a substitute for adequate engineering controls. Protective clothing will be issued to employees who work with hazardous material for the purpose of protecting their health and safety.

The Responsible Safety Officer is available for consultation as needed.

Protective Shoes

Tim Messer Construction, Inc. encourages the wearing of safety shoes. For certain types of work the wearing of safety shoes is required by Company policy or by federal regulations. Examples are when employees are exposed to foot injuries from hot,

corrosive, or poisonous substances; in shops, in equipment handling, or in construction jobs where there is a danger of falling objects; or in abnormally wet locations.

Protective Gloves

Tim Messer Construction, Inc. provides proper hand protection to employees exposed to known hand hazards. The supervisor must obtain the suitable hand protection and ensure that it is used. The individual should maintain a supply of special or infrequently used hand protection.

Assistance in selecting the proper hand protection may be obtained by consulting the Responsible Safety Officer.

Head Protection

Tim Messer Construction, Inc. provides appropriate head protection devices for employees to protect them from head or other injuries that could result from their working environment. Some head protection devices are available from stock. The supervisor must also maintain sufficient supply of head protection devices for visitors in the area.

Eye Protection

Tim Messer Construction, Inc. provides appropriate eye protection devices for employees assigned to tasks in which an eye-injury hazard exists. The supervisor of the operation is responsible for determining the need for suitable eye-protection devices and for ensuring that the employees use them.

The Responsible Safety Officer will assist the supervisor and/or employee in defining eye-hazard operations and in selecting appropriate eye protection. A supervisor is available to issue, repair, adjust, fit, or dispose-of personal safety glasses and also for consultation regarding occupational eye protection. The standard sign:

CAUTION, EYE HAZARD AREA, DO NOT ENTER WITHOUT EYE PROTECTION,

must be posted in every area where eye protection is mandatory. All employees who work in such an area must wear the eye protection issued to them. Every visitor to the area must also be provided with suitable eye protection.

Chapter 14

Respiratory Protection Program

Introduction

The Respiratory Protection Program has been established to protect the health of workers who wear respirators and assure compliance with State and Federal law. Every worker who uses a negative pressure cartridge or canister respirator must be included in the program. Medical monitoring, training, fit testing, maintenance and quality assurance components are basic parts of this program.

Any operation that generates harmful airborne levels of dusts, fumes, sprays, mists, fogs, smokes, vapors, or gases or that may involve oxygen-deficient atmospheres requires the use of effective safety controls. This must be accomplished, as much as feasible, by accepted engineering control measures (*for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials*). When effective engineering controls are not feasible, or while they are being instituted, appropriate respiratory protection must be used in accordance with Tim Messer Construction, Inc.'s requirements as prescribed by CAL-OSHA & ANSI Standard Practices for Respiratory Protection. Every worker who uses a negative pressure cartridge or canister respirator must be included in the program. Workers using other types of respirators may be required to comply with some program requirements.

Lightweight single use respirators may sometimes be worn in situations where respiratory protection is required, such as to control exposure to airborne particles. However, workers must be fit tested with the make and model of respirator they will wear, instructed in its use, and meet the other maintenance and quality assurance components requirements of this program.

Responsibilities

To ensure that the respiratory protection program is conducted in accordance with CAL-OSHA & ANSI, certain responsibilities are required of each employee, supervisor, Responsible Safety Officer, and the employer medical services provider. An employee has the responsibility to use provided respiratory protection in accordance with this program. Male employees must remain clean shaven where an issued respirator touches their face; this is to assure proper fit of the respirator under conditions of use.

Employees are also responsible for:

Wearing the respirator in accordance with the instructions and training received.

Maintaining and storing the respirator in good condition.

Returning the respirator at the end of the required use for overhaul, cleaning, and disinfection.

Supervisors are responsible for:

Identifying those employees who may need to use respiratory protection (*The Responsible Safety Officer will provide assistance upon request in this determination*).

Note: Users of lightweight single-use respirators are not required to be included in this program if they work in situations where overexposure to chemical substances is not going to occur and respirator misuse is not likely. These exposures are generally described as nuisance situations where the worker is more comfortable with some respiratory protection. Workers may also use lightweight single-use respirators to control exposure to a non-occupational condition such as an allergy without being included in the program.

Ensuring that their employees have been properly trained and fitted.

Ensuring that their employees use the respirators as required.

Surveillance of the work area. Before the start of any project, as part of the Hazard Analysis, a careful determination shall be made as to present, or potential airborne hazards to which employees may be exposed.

The Responsible Safety Officer is responsible for:

Providing respiratory equipment.

Maintaining the equipment in good condition.

Fitting employees with proper respirators and providing training for their use.

Evaluating employee exposures and work conditions, including inspection of respirator use.

Procedure

Respiratory protection devices will be chosen after considering the following factors:

- Health of the worker and ability to wear a respirator
- Nature of the hazard, e.g. toxicity, chemical and physical properties
- Extent of the hazard (*concentration*) and time of exposure
- Work requirements and conditions
- Characteristics and limitations of available respirators

Medical monitoring

Tim Messer Construction, Inc. must make employees available and pay for medical monitoring. Tim Messer Construction, Inc. may contract with a local health care provider. Medical status for workers who use respirators shall be reviewed annually.

Persons must not be assigned to tasks requiring the use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. The Examining Physician responsible for the employee's care will determine what diagnostic method is necessary to determine whether medical conditions exist which would prohibit or limit respirator use. Pulmonary function tests, including forced vital capacity (FVC) and forced expiratory volume at one second (FEV1.0), and a medical questionnaire may be given to employees. The Respiratory Medical Evaluation Form may be used by the Examining Physician to evaluate any person, except asbestos workers, who may use a respirator.

Asbestos workers must be asked to fill out a Respirator Program Medical Evaluation Form for Asbestos Workers. Asbestos workers are individuals who routinely work in areas where exposure might exceed the CAL-OSHA action level for asbestos. Presently, the action level means an airborne concentration of asbestos, tremolite, anthophyllite, actinolite, or a combination of these minerals of 0.1 fibers/cc of air as calculated on an 8-hour time weighted average. However, if an employee requests a respirator because of a belief that exposure to asbestos will exceed the action level for asbestos, then the employee must meet all requirements of the program for asbestos.

Medical certification

Pertinent health factors, conditions on the job site, and the employee's health status will be considered by the Examining Physician. The Examining Physician will certify whether the employee is capable of wearing a respirator and describe any physical limitation.

Fit testing

Fit testing must be done whenever something happens which could affect the fit of a

respirator such as when an employee's facial characteristics change or the respirator design changes. Fit testing is required annually for workers exposed to benzene and semi-annually for workers exposed to asbestos, arsenic, lead, and acrylonitrile. Workmen with facial hair in the respirator area will not be issued respirators requiring a fit test because it cannot be determined that the respirator will fit under conditions of use. Fit testing shall include face-to-seal fit, wearing in normal air for a long familiarity period, and testing in a test atmosphere. Fit testing will be done after the employee's annual medical evaluation, if one is required.

Monitoring of Air Contaminants

Air contaminant levels during routine operations will be monitored by Tim Messer Construction, Inc. before the type of respiratory protection is selected. Existing operations undergoing a change that might significantly alter the concentration of air contaminants should be evaluated by Tim Messer Construction, Inc. to determine if another method of protection is appropriate.

Categories of respiratory hazard

Oxygen deficient atmospheres require the use of an independent respirable atmosphere. Employees who work in areas where "emergency use only" SCBA pressure-demand respirators are available shall be trained in SCBA use, but medical monitoring is not required.

Immediately dangerous conditions are defined as: Conditions that pose an immediate threat to life or health and/or conditions that pose an immediate threat of severe exposure to contaminants that are likely to have delayed adverse affects on health.

The Confined Space Entry Program must be followed. An attendant must be present in a safe location at the entrance to oxygen deficient or immediately dangerous areas in order to maintain communication and to provide proper rescue equipment in case of emergency.

Selection of Respirators

Once a respiratory hazard is identified, the RSO or designated personnel will select the proper respiratory

protection based on the nature of the hazard.

Selection will be made in compliance of

CAL-OSHA Respiratory Protection Standard.

Only NIOSH/MSHA approved respirators will be

assigned to personnel.

Respirators will be selected based on the exposure hazard. Any choice of respirator will be based on American National Standard Practices for Respiratory Protection Z88.2.

Particulate Respirator Protection

To select the correct respirator for protection against particulates, the following conditions must be known:

The identity and concentration of the particulates in the workplace air

The CAL-OSHA or MSHA permissible exposure limit (*PEL*), the NIOSH recommended exposure limit (*REL*), or other occupational exposure limit for the contaminant

The hazard ratio (*HR*) (*i.e., the airborne particulate concentration divided by the exposure limit*)

The APF for the class of respirator (*the APF should be greater than the HR*)

The immediately dangerous to life or health (*IDLH*) concentration, including oxygen deficiency [NIOSH 1994]

Any service life information available for combination cartridges or canisters

Multiplying the occupational exposure limit by the APF for a respirator gives the maximum workplace concentration in which that respirator can be used. For example, if the commonly accepted APF for a half-mask respirator is 10 and the PEL is 5 mg/m³, then 50 mg/m³ is the highest workplace concentration in which a half-mask respirator can be used against that contaminant. If the workplace concentration is greater than 50 mg/m³, a more protective respirator (*with a higher APF*) should be used. In no case should an air-purifying respirator be used in IDLH concentrations.

Any required air quality monitoring of the workplace will be done by Tim Messer Construction, Inc., which will maintain records. Monitoring results will also be provided to affected individuals.

Respirator Distribution

Whenever possible, reusable respirators should be assigned to individual workers for their exclusive use. Permanently assigned respirators must be durably marked with the

name of that person and the date issued. When disposable respirators are issued, the same models that were fit tested must be kept in stock.

Tim Messer Construction, Inc. will issue a respirator from its stock when an employee is first fit tested or when a new type of respirator is issued on a subsequent fit. Tim Messer Construction, Inc. shall maintain a stock of replacement respirators and/or cartridges and issue them to the employee as necessary.

Those who issue canisters-cartridges must see that they are properly labeled and colored before they are put into service. The labels and colors must be maintained until they are disposed.

If it is necessary to replace a reusable respirator because of loss or damage, the newly issued respirator must be fit tested before it is used. This is to ensure that the respirator is not defective.

Training

Employees who will use respirators will be given training on a yearly basis. Training may be performed after fit testing is done or other arrangements may be made. Tim Messer Construction, Inc. will maintain records of training. Training certificates shall include at a minimum, employee name, date of training, and type of training. In areas where job tasks and materials change, Tim Messer Construction, Inc. must be contacted to provide an updated training.

Inspection

Each respirator must be inspected routinely before and after each use by the employee using it. Respirators for emergency use must be inspected after each use, or at least once each month, by the employees to whom they are assigned. Inspections of emergency respirators should be done according to manufacturers' instructions.

Cleaning and Disinfecting

Respirators issued for exclusive use must be cleaned and disinfected after eight hours of use, or as necessary to ensure protection for the wearer. Respirators used by more than one person and emergency respirators must be cleaned and disinfected after each use. During cleaning, an inspection shall be made, and any worn or deteriorated parts or components shall be repaired or replaced. Respirators for emergency use (such as SCBA's) shall be inspected at least once a month, and after every use.

Maintenance

Employees shall arrange for replacement or repairs by experienced persons with parts designed for the respirator. Do not attempt to replace components or make adjustments or make repairs beyond the manufacturer's recommendations. Self-contained breathing apparatus or air line respirators must be returned to a professional repair service or the manufacturer when it is required for repair or testing.

Storage

After inspection, cleaning and necessary repair, store respirators to protect them against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals.

Program Evaluation

Tim Messer Construction, Inc. will evaluate this program through periodic and random inspections to assure that respirators are properly used, cleaned and maintained. Periodically, Tim Messer Construction, Inc. will survey to determine whether anyone is using a respirator who is not included within the program. Program evaluation reports will be kept by the RSO, Stephen Ferguson.

Record keeping

Tim Messer Construction, Inc. will maintain the following records:

Operations requiring respiratory protection, specific respiratory protection used, and names of employees who wear the respirators. Number and types of respirators in use. These records must be maintained for 30 years.

A record of employee training programs. Records will be maintained for five years past the date of employment of that employee.

Fit tests performed on employees. The records will be maintained for 30 years.

Records on respirator inspection and maintenance activities. These records will be maintained for five years

The Examining Physician will maintain medical records according to State law.

Tim Messer Construction, Inc. will maintain asbestos exposure measurements for thirty years. Monitoring records will include the following information.

Date of any measurements, operations involving exposure, sample and analytic measure, number, duration and results, and type of respiratory protection worn.

Tim Messer Construction, Inc. Injury & Illness Prevention Plan

Records shall include the name, social security number and exposure of employees whose exposures are represented.

Chapter 15

Employee Environmental Protection

Protective Clothing

Workers in the normal course of their duties are required to perform work in adverse weather conditions. Precautions and continuing measure shall be taken by each worker to minimize health risks and discomfort from working in these conditions.

Hot Weather

Employees who work in outdoor places of employment or on job tasks in other areas at those times when the environmental risk factors for heat illness are present, are at risk for developing heat illnesses if they do not protect themselves appropriately. The objective of this program is employee awareness regarding heat illness symptoms, ways to prevent illness, and what to do if symptoms occur.

POLICY

It is the policy of Tim Messer Construction, Inc. that any employee participating in job tasks when environmental risk factors for heat illness are present will comply with the procedures in this document.

PURPOSE

To ensure that all employees of Tim Messer Construction, Inc. are protected from heat illness while working on job tasks where environmental risk factors for heat illness are present and to establish the minimum requirements for working in this environment.

DEFINITIONS

The term "acclimatization" means temporary adaptation 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 about two hours per day in the heat.

"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

personnel protective equipment worn by employees.

The term “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.

“Personal risk factors for heat illness” means factors such as an individual’s age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body’s water retention or other physiological responses to heat.

“Preventative recovery period” means a period of time to recover from the heat in order to prevent heat illness.

The term “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.

RESPONSIBILITIES

The RSO. or designated representative is responsible for:

Assisting with providing training to all potentially impacted employees and their supervisors on the risks and prevention of heat illness, including how to recognize symptoms and respond when they appear.

Directors, Managers, and Supervisors are responsible for:

Identifying all employees who are required to work outdoors where potential heat illness could occur and identifying the supervisor of the employees.

Assuring that adequate water and shade are available at a job site when the environmental risk factors for heat illness are present.

Ensuring that all affected employees have received proper training on heat illness prevention.

Ensuring that the requirements in this document are followed.

Contacting EMS to request emergency medical services in the event medical assistance is required.

Affected employees are responsible for:

Complying with the provisions of this Heat Illness Prevention Program, as described in this document and in the training sessions they attend.

Ensuring they have drinking water available at all times when the environmental risk factors for heat illness are present.

Ensuring they have access to a shaded area to prevent or recover from heat related symptoms.

Reporting heat related illness symptoms to your supervisor.

BASIC REQUIREMENTS

The following basic requirements apply to all employees while working where environmental risk factors for heat illness are present.

All employees shall be identified who are required to work where environmental factors for heat illness are present.

Training shall be provided for all potentially impacted employees working where environmental risk factors for heat illness are present and their supervisors. Training information shall include but not be limited to the topics listed in the training section of this written program. All potentially impacted employees and supervisors who supervise these employees must be trained on the risks and prevention of heat illness, including how to recognize symptoms and respond when they appear.

Drinking water in the quantity of 1 quart per hour shall be available at all times for each employee for the duration of the entire shift while working outdoors in the heat. Supervisors shall remind employees to drink frequently and this topic will be addressed at tailgate meetings.

Employees shall have access to a shaded area to prevent or recover from heat illness symptoms and where they can take their rest breaks. The importance of taking rest breaks and recognizing when a preventative recovery period is needed allowing employees to cool shall be addressed at tailgate meetings.

In the event an employee feels discomfort from the heat, a preventative recovery period is needed to allow the employee to cool down and prevent the onset of heat illness.

Supervisors and employees shall carry radios or other means of communication to ensure that emergency services can be called. Verification that the radios or other means of communication are functional at the worksite shall be carried out prior to each shift.

TRAINING

Training shall be provided for employees working on job tasks where environmental risk factors for heat illness are present, and training for their respective supervisors.

All employees working on job tasks where environmental risk factors for heat illness are present shall receive instruction before being assigned to work tasks. Training topics shall include the following:

Environmental and personal risk factors for heat illness.

Procedures for identifying, evaluating, and controlling exposures to the environmental and personal risk factors for heat illness.

Employees who experience excessive sweating require frequent consumption of small quantities of water, up to 4 cups per hour when working in extreme conditions of heat.

Importance of acclimatization.

Different types, signs, and symptoms of heat illness.

Importance of immediately reporting symptoms or signs of heat illness in themselves or in coworkers to their supervisor.

Procedures for responding to symptoms of possible heat illness, including how emergency medical services will be contacted and provided, should they become necessary.

SUPERVISORS OF AFFECTED EMPLOYEES

Supervisors or their designees shall receive training on the following topics prior to being assigned to supervise outdoor employees:

Information as detailed above in employee training requirements.

Procedures the supervisor shall follow to implement the provisions of this program.

Procedures the supervisor shall follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures.

Cold Weather

Workers should prepare for cold weather by wearing several layers of clothing. This allows the worker to remove or add layers as necessary throughout the work shift as temperature, and the worker's heat changes. Coffees, teas, and other hot drinks may help the worker maintain body temperature. Under no circumstances shall any alcoholic beverages be used. Hoods, facemasks, insulated boots, gloves and glove liners should all be considered in extreme weather conditions. Certain combinations of temperature, wind, and jobsite location may make it impractical to work. In those extreme cases, workers should check with their supervisor, or the responsible safety officer, Stephen Ferguson for direction.

Wet or Inclement Weather

Workers exposed to rain, sleet, snow, or other wet conditions shall wear protective, waterproof clothing. Careful assessment of the jobsite under inclement weather conditions must be made. Slips and falls may happen in the general jobsite area of work, in addition to slips from ladders, scaffold, or other work surfaces. Any electrically-operated tools shall not be used in wet conditions due to the risk of electrical shock.

Windy Conditions

Some workers in windy conditions are at great risk. Handling large, lightweight materials, working on ladders, or elevated work surfaces, and working with small lightweight materials are all examples of job duties which pose special hazards in windy conditions. Therefore, each jobsite and work assignments shall be assessed for dangers from high winds.

Chapter 16

Ladders

Ladders

Ladders must be in good condition, made of suitable material, of proper length, and of the correct type for the use intended. Ladders shall not be altered, modified, or attached to other ladders to extend their reach. Damaged ladders must never be used; they should be repaired by a qualified person or destroyed. Ladders used near electrical equipment must be made of a nonconducting material (fiberglass or equivalent). For construction activities, ladders must be class 1 rated (heavy Duty) or higher.

A portable ladder must not be used in a horizontal position as a platform or runway or by more than one person at a time, unless designed for such use. A portable ladder must not be placed in front of doors that open toward the ladder, unless locked or blocked to prevent use. Never set ladders on boxes, barrels, or other unstable bases. Ladders must not be used as guys, braces, or skids. The height of a stepladder should be sufficient to reach the work station without using the top or next to the top steps. Bracing on the back legs of stepladders must not be used for climbing.

The proper angle (75-1/2 degrees) for a portable straight ladder can be obtained by placing the base of the ladder a distance from the vertical wall equal to one quarter of the vertical distance from base to top of ladder's resting point. Ladders must be ascended or descended facing the ladder with both hands free to grasp the ladder. Tools must be carried in a tool belt or sling or raised with a hand line attached at the top of the ladder. Extension ladders should be tied at or near the top to prevent side slip. In some cases where ground conditions are slippery or unstable, the bottom of the ladder shall also be secured by some means. Ladders used to gain access to another level needs to extend at least three feet above the landing area.

Remember to always "Look up, and Live" by checking the area for any exposed electrical devices or powerlines. Never use a ladder when any part of your body or materials will be within three feet (3ft.) of any exposed electrical devices or insulated powerlines 300 Volts or below, and ten feet (10ft.) for any other uninsulated powerlines or any powerlines or electrical devices from 300 Volts to 50,000 Volts. Higher voltages may require greater distances - check with the local utility for recommended clearances.

Some Ladder Do's and Don'ts

General

1. Read and follow the manufacturer's instructions label affixed to the ladder if you are unsure how to use the ladder.
2. Do not use ladders that have loose rungs, cracked or split side rails, missing rubber foot pads, or are otherwise visibly damaged.
3. Keep ladder rungs clean of grease. Remove buildup of material such as dirt or mud.
4. When performing work from a ladder, face the ladder and do not lean backward or sideways from the ladder.
5. Do not stand on the top two rungs of any ladder.
6. Do not stand on a ladder that wobbles, or that leans to the left or right.
7. Do not try to "walk" a ladder by rocking it. Climb down the ladder, and then move it.
8. Allow only one person on the ladder at a time, unless the ladder is designed for such use.
9. Do not allow your center of gravity (usually your belt buckle) outside of the two siderails. Leaning any farther may cause the ladder to slide or tip sideways.
10. Only use ladders with sufficient load rating for the anticipated weight of the worker, tools, and materials (minimum of class 1).
11. Maintain a three-point contact by keeping both hands and one foot or both feet and one hand on the ladder at all times when climbing up or down.
12. Do not carry items in your hands while climbing up or down a ladder.
13. Do not climb up or down an extension ladder that is not secured unless another person is holding the bottom of the ladder.
14. If you are afraid of heights - DO NOT climb a ladder!

Chapter 17

Scaffolds

PROCEDURE

1. GENERAL: This procedure applies to all scaffold and aerial platform/lift operations for Tim Messer Construction, Inc..

2. CAPACITY: Taking into account the CAL-OSHA rules that must apply and the engineering/manufacturing requirements of our scaffolds, the following rules apply.

NOTE: The manufacturer's safety requirements for particular scaffold assemblies are to be followed over and above any CAL-OSHA regulation.

1. Each scaffold and scaffold component used will support, without failure, its own weight and at least four times the maximum intended load applied or transmitted to it.

2. When non-adjustable suspension scaffolds are used, each suspension rope, including connecting hardware, will support, without failure, at least six times the maximum intended load applied or transmitted to that rope.

3. Capacity - each scaffold and scaffold component shall be capable of supporting, without failure, its own weight and at least four times the maximum intended load applied or transmitted to it.

SUPPORTED SCAFFOLDS

1. Direct connections to roofs and floors, and counterweights used to balance adjustable suspension scaffolds, shall be capable of resisting at least 4 times the tipping moment imposed by the scaffold operating at the rated load of the hoist, or 1.5 (minimum) times the tipping moment imposed by the scaffold operating at the stall load of the hoist, whichever is greater.

2. Each suspension rope, including connecting hardware, used on non-adjustable suspension scaffolds shall be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope.

3. Each suspension rope, including connecting hardware, used on adjustable suspension scaffolds shall be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope with the scaffold operating at

either the rated load of the hoist, or 2 (minimum) times the stall load of the hoist, whichever is greater.

4. The stall load of any scaffold hoist shall not exceed 3 times its rated load.

PLATFORM CONSTRUCTION

This section documents the procedures and safety requirements to construct scaffold platforms. The following safety rules apply for scaffold construction:

1. Each scaffold plank will be installed so that the space between adjacent planks and the space between the platform and uprights is no more than one inch wide. If, in certain situations, it is required to make this space wider, the demonstration of this situation(s) will be in the appendix to this plan.
2. Except for outrigger scaffolds (3 inches) and plastering and lathing operations (18 inches), the front edge of all platforms will not be more than 14 inches from the face of the work, unless we have a guardrail or personal fall arrest system in place that meets regulations.
3. [1926.451(b)] Scaffold platform construction.
 1. Each platform on all working levels of scaffolds shall be fully planked or decked between the front uprights and the guardrail supports as follows:
 1. Each platform unit (e.g., scaffold plank, fabricated plank, or fabricated platform) shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 1 inch wide, except where Tim Messer Construction, Inc. can demonstrate that a wider space is necessary (for example, to fit around uprights when side brackets are used to extend the width of the platform).
 2. Where Tim Messer Construction, Inc. makes the demonstration provided for in paragraph (b)(1)(i) of this section, the platform shall be planked or decked as fully as possible and the remaining open space between the platform and the uprights shall not exceed 9 ½ inches.

Exception to paragraph (b)(1): The requirement in paragraph (b)(1) to provide full planking or decking does not apply to platforms used solely as walkways or solely by employees performing platform erection or dismantling. In these situations, only the planking that Tim Messer Construction, Inc. establishes is necessary to provide

safe working conditions is required.

2. Except as provided in paragraphs (b)(2)(i) and (b)(2)(ii) of this section, each scaffold platform and walkway shall be at least 18 inches wide.

1. Each ladder jack scaffold, top plate bracket scaffold, roof bracket scaffold, and pump jack scaffold shall be at least 12 inches wide. There is no minimum width required for boatwains' chairs.

2. Where scaffolds must be used in areas that the employer can demonstrate are so narrow that platforms and walkways cannot be at least 18 inches wide, such platforms and walkways shall be as wide as feasible, and employees on those platforms and walkways shall be protected from fall hazards by the use of guardrails and/or personal fall arrest systems.

3. Except as provided in paragraphs (b)(3)(i) and (ii) of this section, the front edge of all platforms shall not be more than 14 inches from the face of the work, unless guardrails are erected along the front edge and/or personal fall arrest systems are used in accordance with paragraph (g) of this section to protect employees from falling.

1. The maximum distance from the face for outrigger scaffolds shall be 3 inches (8 cm);

2. The maximum distance from the face for plastering and lathing operations shall be 18 inches.

4. Each end of a platform, unless cleated or otherwise restrained by hooks or other equivalent means, shall extend over the centerline of its support at least 6 inches.

5. Each end of a platform 10 feet or less in length shall not extend over its support more than 12 inches unless the platform is designed and installed so that the cantilever portion of the platform is able to support employees and/or materials without tipping, or has guardrails which block employee access to the cantilevered end.

1. Each platform greater than 10 feet in length shall not extend over its support more than 18 inches unless it is designed and installed so that the cantilevered portion of the platform is able to support employees without tipping, or has guardrails which block employee access to the cantilevered end.

2. On scaffolds where scaffold planks are abutted to create a long

platform, each abutted end shall rest on a separate support surface. This provision does not include the use of common support members, such as "T" sections, to support abutting planks, or hook on platforms designed to rest on common supports.

6. On platforms where scaffolds are overlapped to create a long platform, the overlap shall occur only over supports, and shall not be less than 12 inches unless the platforms are nailed together or otherwise restrained to prevent movement.

7. At all points on the scaffold where the platform changes direction, such as turning a corner, any platform that rests on a bearer at an angle other than a right angle shall be laid first, and platforms which rest at right angles over the same bearer shall be laid second, on top of the first platform.

8. Wood platforms shall not be covered with opaque finishes, except that platform edges may be covered or marked for identification. Platforms may be coated periodically with wood preservatives, fire retardant finishes, and slip resistant finishes; however, the coating may not obscure the top or bottom wood surfaces.

9. Scaffold components manufactured by different manufacturers shall not be intermixed unless the components fit together without force and the scaffolds' structural integrity is maintained by the user. Scaffold components manufactured by different manufacturers shall not be modified in order to intermix them unless a competent person determines the resulting scaffold is structurally sound.

10. Scaffold components made of dissimilar metals shall not be used unless a competent person has determined that galvanic action will not reduce the strength of any component to a level below that required by paragraph (a)(1) of this section.]

SUPPORTED SCAFFOLDS

1. Supported scaffolds with a height to base width of more than three to one (3:1) must be restrained from tipping by guying, tying, bracing, or equivalent means.

2. Supported scaffold poles, legs, posts, frames, and uprights will always bear on base plates and mud sills or other adequate firm foundations.

3. [1926.451(c)] Criteria for supported scaffolds.

1. Supported scaffolds with a height to base width (including outrigger supports, if used) ratio of more than three to one (3:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means, as follows:

1. Guys, ties, and braces shall be installed at locations where horizontal members support both inner and outer legs.

2. Guys, ties, and braces shall be installed according to the scaffold manufacturer's recommendations or at the closest horizontal member to the 3:1 height and be repeated vertically at locations of horizontal members every 20 feet or less thereafter for scaffolds 3 feet wide or less, and every 26 feet or less thereafter for scaffolds greater than 3 feet wide. The top guy, tie or brace of completed scaffolds shall be placed no further than the 3:1 height from the top. Such guys, ties and braces shall be installed at each end of the scaffold and at horizontal intervals not to exceed 30 feet (measured from one end [not both] towards the other).

3. Ties, guys, braces, or outriggers shall be used to prevent the tipping of supported scaffolds in all circumstances where an eccentric load, such as a cantilevered work platform, is applied or is transmitted to the scaffold.

2. Supported scaffold poles, legs, posts, frames, and uprights shall bear on base plates and mud sills or other adequate firm foundation.

1. Footings shall be level, sound, rigid, and capable of supporting the loaded scaffold without settling or displacement.

2. Unstable objects shall not be used to support scaffolds or platform units.

3. Unstable objects shall not be used as working platforms.

4. Front-end loaders and similar pieces of equipment shall not be used to support scaffold platforms unless they have been specifically designed by the manufacturer for such use.

5. Fork-lifts shall not be used to support scaffold platforms unless the entire platform is attached to the fork and the fork-lift is not moved horizontally while the platform is occupied.

3. Supported scaffold poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement.]

FALL PROTECTION

1. All workers shall be physically protected from falling from a scaffold platform where the fall distance is 7.5 ft. or greater. Physical protection includes guardrails,

Personal Fall Protection Systems (including a minimum 5,000# attachment point overhead), fall restraint- where the worker is tied off to where he/she cannot fall over the platform edge.

2. In addition, when building, or taking down scaffolds greater than 7.5 ft. in platform height, fall protection must be considered by the onsite Competent Person. This requirement will be judged on a case-by-case basis. The RSO shall be contacted and apprised of the situation if the Competent Person determines fall protection cannot be used (for instance if it's unfeasible, or causes a greater danger to the worker(s)).

3. Narrow scaffolds (30 inches or less in width) typically have manufacturer's requirements for fall protection at 6ft. or less. Check with the manufacturer of the scaffold you're using for fall protection height requirements.

FALLING OBJECT PROTECTION

1. All workers shall wear hardhats when working on, assembling, or dismantling scaffolds. This is our primary protection from falling objects. Additionally, we shall:

1. Install guardrail systems with openings small enough to prevent passage of potential falling objects.

2. Prevent tools, materials, or equipment that inadvertently fall from our scaffolds from striking any person(s) by barricading the area below the scaffold.

3. [1926.451(h)] Falling object protection.

1. In addition to wearing hardhats each worker on a scaffold shall be provided with additional protection from falling hand tools, debris, and other small objects through the installation of toeboards, screens, or guardrail systems, or through the erection of debris nets, catch platforms, or canopy structures that contain or deflect the falling objects. When falling objects are too large, heavy or massive to be contained or deflected by any of the above-listed measures, Tim Messer Construction, Inc. shall place such potential falling objects away from the edge of the surface from which they could fall and shall secure those materials as necessary to prevent their falling.

2. Where there is a danger of tools, materials, or equipment falling from a scaffold and striking employees below, the following provisions apply:

1. The area below the scaffold to which objects can fall shall be

barricaded, and employees shall not be permitted to enter the hazard area; or

2. A toeboard shall be erected along the edge of the platforms more than 7.5 feet above lower levels for a distance sufficient to protect employees below, except on float (ship) scaffolds where an edging of $\frac{3}{4} \times 1\frac{1}{2}$ inch wood or equivalent may be used in lieu of toeboards;

3. Where tools, materials, or equipment are piled to a height higher than the top edge of the toeboard, paneling or screening extending from the toeboard or platform to the top of the guardrail shall be erected for a distance sufficient to protect employees below; or

4. A guardrail system shall be installed with openings small enough to prevent passage of potential falling objects; or

5. A canopy structure, debris net, or catch platform strong enough to withstand the impact forces of the potential falling objects shall be erected over the employees below.

3. Canopies, when used for falling object protection, shall comply with the following criteria:

1. Capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or horizontal direction at any point along the toeboard (toeboards built in accordance with Appendix A to this subpart will be deemed to meet this requirement); and

2. At least three and one-half inches high from the top edge of the toeboard to the level of the walking/working surface. Toeboards shall be securely fastened in place at the outermost edge of the platform and have not more than $\frac{1}{4}$ inch clearance above the walking/working surface. Toeboards shall be solid or with openings not over one inch in the greatest dimension.]

Aerial Lifts

Manlifts and scissor lifts are two pieces of equipment that many workers can't imagine working without. This equipment, if used correctly, provides quick and safe access to work areas that at one time could only be reached from scaffolding or a crane's manbasket. These lifts, collectively called Aerial Work Platforms, are important tools. But as with any tool, there are right and wrong ways to use them safely.

The most important tip to remember before operating any aerial lift platform, is *always read and follow* the manufacturer's safety and operation manual! This information must be kept on the rig, and can usually be found in a PVC tube that's tied to the machine's frame or rails.

Safe Operating Procedures for Both Manlifts and Scissor Lifts:

- Only trained and authorized people should operate the lift. A qualified instructor must make sure that every operator reads and\or understands the equipment's safety and operating instructions. This includes all of the warning decals and labels mounted on the machine.
- Always check for overhead obstructions before driving or elevating the platform.
- Refuel tanks only when the unit is turned off. If battery powered, the batteries should be charged only in a well ventilated area, away from any open flame.
- Prior to each shift a safety inspection should be completed by the operator; this includes both a visual inspection and a function test. If a problem is found, get the lift repaired.
- Elevate the platform only when it is on a firm, level surface. Although many lifts look like a rough terrain piece of equipment, they are not. Their large tires do allow the equipment to access somewhat difficult areas, but once in position they are designed to be out of level only 5° while in operation. This amounts to 10 inches in a 10 foot wheel span. In addition, the lift must have an tilt alarm that activates when the machine is more than 5° out of level.

Scissor lifts are efficient one-direction lifts. They provide a solid surface to work from, but always remember:

- Guardrail, midrails and toeboards must be in place. The toe board can be omitted at the door.
- The platform must be equipped with a mechanical parking brake that will hold the unit securely on any slope it is capable of climbing. The brake should be tested periodically.
- Never use the lift's rails, planks across the rails, or a ladder, to gain additional height.

Unique hazards for manlifts: Manlifts can move in more than a single direction, increasing the risk of mishaps, so it's important to remember the following:

Tim Messer Construction, Inc. Injury & Illness Prevention Plan

- When ever working out of a manlift, a full body harness must be worn, and properly attached to the basket. A sudden jolt has thrown people from manlifts, before they could react.
- Always maintain a safe distance from debris piles, drop-offs, floor openings, etc.
- Never drive the manlift when it is elevated above the limit the manufacturer considers safe. Each piece of equipment will state what the maximum extension can be while being driven.

Chapter 18

Fall Protection

Company Policy

Injuries from falls are a leading occupational injury. It is the intent of Tim Messer Construction, Inc. to provide maximum protection to its staff in the prevention of falls. Known fall hazards will be identified, inspected and fall protection provided to ensure the safety of personnel. Engineering controls, administrative procedures and the use of personal protective equipment will be utilized. The Fall Protection Standard must be followed where personnel can possibly fall six feet or more, but does not apply "*when personnel are making an inspection, investigation, or assessment of workplace conditions prior to the actual start of construction work or after all construction work has been completed.*" This exemption does not apply when inspections are carried out six feet or less from an unprotected edge. Under CAL/OSHA's interpretation, work conducted within six feet of an unprotected edge (i.e. roof line) must comply with the Fall Protection Standard.

Training

Training in fall protection must be obtained prior to working where potential for a fall exists. This training will be conducted by an authorized training resource. Training will consist of learning to identify fall hazards, minimize fall hazards, and the function, use, inspection, and maintenance of personal fall arrest systems (PFAS) and other restraint equipment. Trainees will also be taught how to identify and inspect anchor points, substantial members of the building structure, or securely rigged lines, which will safely suspend the worker in case of fall. Only attendees of the fall hazard training classes will be allowed to conduct work where potential for a fall exists. Training shall be provided by Tim Messer Construction, Inc. to all affected workers before they are exposed to fall hazards. Retraining shall occur when any of the following are noted:

- Deficiencies in training
- Workplace changes
- Fall Protection Systems or equipment changes that render previous training obsolete.

Workers who complete fall protection training will have written training certification showing at a minimum the following:

Employee's Name, Date of training

Signature of trainer and Date

Employer Date when determined adequate training was performed

The RSO, Stephen Ferguson will maintain written records of employee training.

Applicable Federal Regulations

The policies in the Tim Messer Construction, Inc. Fall Protection Program are derived from CAL-OSHA standards as found in 29 CFR 1910: Occupational Safety and Health Standards and in 29 CFR 1926: Safety and Health Regulations for Construction. Any questions or comments about the interpretation of the CAL-OSHA standards or the company policy should be directed to the job superintendent, project manager, or the Responsible Safety Officer, Stephen Ferguson.

All jobsites with a potential for falls shall be inspected for fall hazards. Tim Messer Construction, Inc.'s RSO, or another competent person will evaluate each potential fall hazard, and for any fall protection plan(s). Engineering controls (*handrails, etc.*) will be constructed where possible, and safe work practices and personal protective equipment will be used. Fall hazards include, but are not limited to, unprotected sides and edges of roofs, excavations, overhead construction and maintenance, roof work, floor holes, wall openings, and all other walking or working surfaces where personnel can possibly fall six feet or more to a lower level. At Tim Messer Construction, Inc., fall hazards specifically include work on building roofs, transferring materials through the floor opening of an air handling room, maintenance work conducted where a fall of six feet or more from the floor is possible (*this does not apply to work on scaffolds or ladders*), including work on overhead cranes, lighting, or rafters. Protection from falling hazards must be provided. The placement of toe boards and the use of hard hats will be strictly enforced. Equipment shall not be stored within six feet of an unprotected edge.

ENGINEERING CONTROLS

The first step in minimizing work hazards is to determine if engineering controls can eliminate or lessen the hazard of the job. Engineering controls of fall hazards consist of guardrails, toe boards, covers, and other rails or barriers that prevent falls. Tim Messer Construction, Inc. will provide engineering controls where possible to minimize fall hazards. Personnel should alert Tim Messer Construction, Inc.'s RSO or supervisor to potential fall hazards not already identified and controlled. Additionally anchor points(if necessary) will be installed at locations where personal fall arrest systems(PFAS) will be used.

ADMINISTRATIVE PROCEDURES (Work Practices)

In all cases, safe work practices must be followed where potential for a fall exists. Evaluate the work and potential hazards. Prepare for hazards. Contact Tim Messer Construction, Inc.'s RSO or supervisor for implementation of engineering controls. Personnel must work in pairs at all times while conducting work where a potential for a fall exists. All work conducted within six feet of an unprotected edge where a fall exists must wear fall protection equipment. Only properly maintained and inspected equipment shall be used for fall protection. Equipment must be in compliance with the CAL-OSHA Fall Protection Standard. Workers shall inspect all equipment before use; if any equipment exhibits signs of wear, it must immediately be removed from service. Equipment must be maintained, and stored where it will not be subject to wear. In case of emergency, follow Tim Messer Construction, Inc.'s Emergency Procedures.

Body harnesses must be worn, lanyard attached to harness securely with locking snap hook, lifeline (if used) attached securely to lanyard, deceleration device attached correctly and securely to lifeline and lanyard, and lifeline or lanyard must be securely connected, by locking snap hook, to the anchor point before any work shall be conducted. Inspections are exempted from this requirement per CAL-OSHA guidelines. However CAL-OSHA does require fall protection when inspections occur two feet or less from an unprotected edge or side.

Inclement weather, including but not limited to snow, ice, high winds or rain, pose even greater hazards during work where a potential for a fall exists, i.e. roof work. Personnel shall take additional precautions during such weather. Personnel should contact their supervisor to review additional precautions before beginning affected work. Work shall not be conducted on roofs during lightning storms.

SAFETY MONITORS

Safety monitors shall be employed where no other alternate methods have been implemented, or as part of an overall fall protection program. The safety monitor shall be a competent person, able to properly assess fall hazards that exist in the type of work being performed. The safety monitor shall:

- Be within sight, and at the same working level as the workers being monitored.
- Be close enough for oral communication.
- Warn monitored workers if they are unaware of a fall hazard, or is acting in an unsafe manner.
- Be able to recognize fall hazards.
- Not have other duties which would take attention away from the monitoring duties.

PERSONAL PROTECTIVE EQUIPMENT

The use of personal protective equipment to minimize fall hazards shall be strictly enforced. The optimal solution is to use engineering controls, but if engineering controls do not eliminate the hazard, work practices and personal protective equipment must be used. The use of personal fall arrest systems (PFAS) are the allowed personal protective equipment for fall hazards at Tim Messer Construction, Inc.. A PFAS consists of a full-body harness, lanyard, and anchor point. A second option is to use a full-body harness, lanyard, lifeline, anchor point, and deceleration (grabbing) device. Only full-body harnesses shall be used, the use of a body belt is prohibited. Non-locking snap hooks are unacceptable for personal fall arrest systems.

Requirements (from CAL-OSHA 1926.502) of a personal fall arrest system (PFAS) include:

- D-rings and snap hooks shall have a minimum tensile strength of 5000 pounds. A proof test of 3600 pounds is required.
- Lanyards and lifelines shall have a minimum breaking strength of 5000 pounds.
- Lanyards shall not exceed six feet in length.
- Self-retracting lifelines and lanyards shall have a strength of at least 3000 pounds and limit free fall to two feet or less.
- Anchor points for fall arrest systems shall be capable of supporting at least 5000 pounds per employee when the system is designed, installed (temporarily or permanently), and used under the supervision of a qualified person.
- Personal fall arrest systems shall limit the maximum arresting forces to 1800 pounds with a full body harness.
- The maximum free fall distance is six feet for systems.
- The maximum deceleration distance is 3.5 feet.
- Personal fall arrest systems shall have sufficient strength to withstand twice the potential impact energy of the falling employee.
- Impacted components shall be removed from service.
- Prompt rescue shall be provided for personnel who have fallen.
- Personal fall arrest systems shall be inspected prior to each use.
- Lifelines subject to cutting or abrasion shall be a minimum of 7/8 inch wire core manila rope. All other lifeline applications shall use a minimum of 3/4 inch manila rope or its equivalent.

Any other personal protective equipment deemed necessary for the task under the Personal Protective Equipment Standard must be worn. This includes but is not limited to hardhats, gloves, safety glasses, and steel toed boots. Hard hats must be worn within an area beneath elevated work where objects could fall from a height and strike a

worker.

EQUIPMENT INSPECTIONS

Equipment inspections will be conducted by personnel prior to use. If, upon inspection, a piece of equipment shows any of the following signs of wear it must immediately be removed from service. Consult an approved state vendor for intensive maintenance or inspection of equipment.

- Cuts or frayed edges
- Abrasions
- Mildew or mold
- Undue stretching
- Chemical burns
- Dryness
- Corrosion or charring
- Broken stitches
- Inner fiber fuzziness
- Rivets that are loose or distorted
- Substances that have penetrated and hardened in the fibers
- Deformed thimbles or enlarged buckle tongue holes or grommets
- Damaged or distorted snap hooks or faulty springs
- Cracks or distortions in fall protection hardware

DEFINITIONS

Anchor point-A secure point of attachment for lifelines, lanyards or deceleration (grabbing) devices.

Body belt-A strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration (grabbing) device. Body belts are prohibited at Tim Messer Construction, Inc.

Body harness-An interconnected set of straps that may be secured about a person in a manner that distributes the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with a means for attaching the harness to other components of a personal fall arrest system.

Connector-A device that is used to connect parts of a personal fall arrest system together (i.e. D-rings, and snap hooks).

Deceleration device-Any mechanism, such as a rope, grabbing device, ripstitch lanyard, specially woven lanyard or automatic self-retracting lifeline/lanyard, which

serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limits the energy imposed on an employee during fall arrest.

Deceleration distance-The additional vertical distance a falling person travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which a deceleration device begins to operate.

Guard rail-A barrier erected to prevent personnel from falling to lower levels.

Hole-A void or gap in a floor, roof, or other walking/working surface.

Lanyard-A flexible line of rope or strap that generally has a connector at each end for connecting the body harness to a deceleration device, lifeline or anchor point.

Lifeline-A component consisting of a flexible line for connection to an anchor point at one end to hang vertically and that serves as a means for connecting other components of a personal fall arrest system to the anchor point.

Opening-A gap or void in a wall or partition through which personnel can fall to a lower level.

Personal fall arrest system (PFAS)-A system including but not limited to an anchor point, connectors, and a body harness used to arrest a worker in a fall from a working level.

Rope grab (grabbing device)-A deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest a fall.

Self-retracting lifeline/lanyard-A deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under minimal tension during normal movement and which, after onset of a fall, automatically locks the drum and arrests the fall (usually within two feet or less).

Snap hook-A connector consisting of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released automatically closes to retain the object. Only locking snap hooks are permitted at Tim Messer Construction, Inc..

Toe board-A low protective barrier that prevents material and equipment from falling to lower levels and which protects personnel from falling.

Unprotected sides and edges-Any side or edge of a walking/working surface where

there is no wall or guardrail system at least 1 meter high (i.e. roof lines).

Walking/working surface-Any surface, whether horizontal or vertical, on which personnel walk or work, including but not limited to floors, roofs, or ramps. It does not include ladders or vehicles on which personnel must be located to perform their work duties.

Components of a Fall Protection System

There are three components to a personal fall protection system. These are A) anchor point, B) belt and/or harness, and C) connecting device. Each component is explained below:

- A) Anchor Point - An anchor point is a secure point of attachment for lifelines, lanyards or deceleration devices and is independent from the means supporting the worker. Examples of CAL-OSHA approved anchor points are eye bolts, bolt holes, or any other structures capable of supporting 5000 pounds per attached person.
- B) Belt or Harness - Fall protection safety belts and harnesses are the second component of a personal fall protection system. A qualified person must evaluate the type of falling hazards and choose the appropriate belt or harness. Safety belts are only allowed for positioning devices after January 1, 1998. Therefore, a full body harness will be used by employees. The type of anchor point and available connecting devices will also be a factor in choosing a belt or harness.
- C) Connecting Device - Lanyards, rope grabs, and deceleration devices are all examples of connecting devices. As with belt and harnesses, the proper choice of a connecting device is dictated by the other system components and the jobsite requirements.

Categories of Fall Protection

CAL-OSHA requires that a personal fall protection device be used when an employee is working at an unprotected elevation 6 ft. and above and are at risk of a fall, or need both hands free to work. Three categories of fall protection systems have been identified based on the different situations faced by the employee. Personal fall protection equipment is designed for use with one or more of the categories of fall protection. Do not ever use fall protection safety equipment for a purpose it was not designed for. Severe injury or death could result from the improper use of fall protection equipment. It is important that all employees understand the nature of the falling

hazards facing them. The three categories of fall protection systems are:

- 1) Fall Arrest - Fall arrest safety equipment protects against accidental falls while at or moving between work areas.
- 2) Positioning - Positioning equipment primarily secures the worker so that both hands are free to work. A positioning device can be used as a fall protection if only it is attached such that the worker would be limited to only a 2 ft. free fall.
- 3) Climbing Protection - Climbing protection equipment provides fall protection while ascending or descending a structure.

Fall Protection Policies

Note: Instructions in the use and inspection of fall protection safety equipment provided herein are meant to supplement the manufacturer's safety instructions. Employees are required to read and obtain a full understanding of the manufacturer's instructions in addition to this safety plan. In the event of a contradiction between the manufacturer's instruction and this safety plan, the manufacturer's instructions take precedence. Bring any contradictions to the attention of the Responsible Safety Officer, Stephen Ferguson as soon as possible. All Personal Fall Protection System equipment shall be ANSI and AST rated equipment.

Site Safety Issues

The lead inspector is a competent person and is responsible for evaluating the safety implications of any deficiency identified in the site safety inspection. If any structure is deemed unsafe to climb by the lead inspector, the responsible safety officer, Stephen Ferguson and the project manager should be immediately notified. **Do Not** climb any structure deemed unsafe by the lead inspector. If the unsafe condition is not corrected prior to leaving the site, the tower should be posted with a sign reading "**Safety Hazard: Do Not Climb**".

Proper Use of Fall Protection Equipment

Tim Messer Construction, Inc. has determined that a full body harness with D-ring in the center of the back (for fall arrest protection), a D-ring in the center of the chest (for use with ladder safety climb devices), and two (2) D-rings at the waist (for positioning and/or fall protection) will be used. A 6 ft. or shorter lanyard with integral deceleration device (for fall protection) and a 6 ft. or shorter lanyard (for positioning and/or fall protection) will be used for connecting devices. Note only self-locking hooks or self-locking carbines will be used in fall protection safety equipment. It has been determined

by Tim Messer Construction, Inc. that this equipment best meets the requirements of the type of work to be performed by its employees.

Ascending or Descending a Structure

Tim Messer Construction, Inc. requires its employees to make use of safe climb devices when they are present on the structure to be climbed and the job superintendent deems the system safe for use. Climbing protection is provided by connecting a safe climb device to the front chest ring. The safe climb device will vary depending on what type of system the structure has (safety rail or safety cable).

Any other attachment (lanyard) to the front chest D-ring increasing the distance between the climber and the climbing device will not be allowed. The distance between the safety cable/rail and the climber may not exceed nine inches (9 in.). The system is designed with specific compatible components and no other devices or equipment may be used. Under the right circumstances up to 4 people may be connected to a safety climb cable at one time, but not more than one person in between the cable guides (approx. every 25 ft.). The limiting factor is the strength of the ladder and the top bracket. The number of people (1 to 4) allowed on the system will depend on the design of the ladder and the top bracket. All climbers shall exercise good judgment and maintain a safe distance from those above or below them.

Positioning for Work or Inspection Activities

Fall protection while at or moving between work areas is provided by connecting a lanyard with integral deceleration device to the D-ring in the center of the back of the harness. The other end of the lanyard strap will be connected to an anchor point. The lanyard will have a maximum length of 6 ft. When no anchor point is readily available for use with a snap-lock hook, than the lanyard can be wrapped around a member and connected back to itself. This may only be done if the lanyard has a locking hook and has been specifically designed for this application.

When performing work or inspection activities at a specific area only, not moving around, and the use of the back D-ring and lanyard is not feasible, then the rope lanyard connected to the waist D-rings (positioning device) must be used. A positioning device must be rigged so that a climber can never free fall more than 2 ft. Never connect both locking hooks to the same D-ring. Never wrap a rope lanyard around sharp edges. Tie off of a rope lanyard around an "H" or "I" beam can significantly reduce its strength due to the cutting action of the beam edges. Minimizing the potential fall distance reduces the possible force a lanyard would be subject to. Therefore, unless the rope lanyard is adequately protected and the potential free fall distance is limited to 2 ft., a nylon webbing strap lanyard or a wire core lanyard should be used.

Special Circumstances

Tim Messer Construction, Inc. recognizes that, due to the unique nature of the work performed, there will be times when exceptions to the above policies will have to be made. Approval for any exceptions to the fall protection policies can be granted by the project manager, or the job superintendent after consulting with the project manager. Before any exception will be made a competent person knowledgeable in fall protection will be consulted. ***Under no circumstances will any safety equipment ever be altered.***

Personal Fall Protection Safety Equipment

Check In/Out Procedures

Every employee of Tim Messer Construction, Inc. that is required to periodically work at elevations will be provided with all necessary fall protection safety equipment. This equipment will be assigned to the employee for the duration of his/her employment and shall be returned upon termination of that employment. It is the employees' responsibility to report any damaged safety equipment so that it can be replaced.

Safety Equipment Inspection and Maintenance Procedures

General Inspection

Before each use carefully inspect the harness and associated equipment for signs of wear and deterioration, or evidence of impact loading per the manufacturer's inspections. Visually inspect for loose threads, pulled rivets, burns, cuts, abrasions, or evidence of chemical or physical deterioration that may have weakened the material or assembly. Inspect all hardware for malfunctions or cracks. ***Immediately destroy any component that does not pass inspection.***

Harness Inspection Procedure

- 1) Tongue and billet end - Inspect the tongue and billet end first. They are subject to the most wear as a result of repeated opening and closing. If your harness is equipped with grommets be sure to check that none are loose or distorted.
- 2) Stitching and webbing - Stitching should be checked for broken, burned, cut or pulled stitches. Broken strands of webbing appear as tufts on the surface. To inspect, hold the harness with your hands 6-8 inches apart. Bend the webbing in an inverted "U" fashion which will cause surface tension, exposing

problem areas. Inspect the entire length of webbing. Damage caused by cuts, abrasions, corrosives, heat or chemicals should be apparent.

3) D-rings - All D-rings should be checked for distortion. D-ring attachment points should be checked for unusual wear or damaged fibers. Badly pitted D-rings may indicate chemical corrosion, and the equipment should be destroyed and replaced immediately.

4) Stitching or rivets at hardware points - For stitched attachment points, check that stitching is not broken, burned, cut or pulled. For riveted attachment points, check all rivets for tightness, especially those at D-ring wear pads. Badly pitted rivets indicate chemical corrosion, and the equipment should be destroyed and replaced immediately.

5) Tongue buckles - All tongue buckles should be checked for distortion, sharp edges and cracks. The tongue should move freely and overlap the frame. Rollers should not be distorted and should roll freely.

6) Friction buckles - All friction buckles should be checked for sharp edges, cracks, distortion and to see that outer bars and center bars are straight. Especially check corners and attachment points for wear and cracks.

7) ***Destroy and replace all worn or damaged fall protection safety equipment.*** If excessive wear, deterioration or mechanical malfunction is observed, replace the harness immediately. ***Never work with worn or damaged fall protection safety equipment. Using damaged or worn equipment can cause serious injury or death.***

8) The inspector is the most important part of any inspection procedure. Check all equipment thoroughly and follow all safety procedures and guidelines. Do not take any shortcuts.

Safety Equipment Maintenance

1) Clean and maintain equipment in accordance with the manufacturers' recommended practice. Wash nylon harnesses only in warm water and mild cleanser. Avoid harsh chemicals agents such as degreasing compounds, turpentine, paint thinner, gasoline, and other solvents.

2) Allow nylon objects to dry naturally. Do not use heat to speed up the process. Inspect and lubricate (light motor oil or equivalent) snap hooks after cleaning to make sure they operate properly and close securely.

Fall Arrestor Systems Required

When workers are required to work from surfaces that are 6 foot or greater above an adjacent safe workplace (surface) and are unprotected by railings, warning line systems, or safety net systems, the following procedures and guidelines must be applied:

Before selecting personnel for work at elevated work stations, supervisors must consider the worker's physical condition, such as medical problems, fear of heights, coordination, etc. All employees who engage in work involving fall arrest systems must be thoroughly trained and understand the selection, usage, and operational characteristics of such systems as well as the state and federal regulations governing such, as found in: The Code of Federal Regulations 29 - Part 1926, Subpart M - Fall Protection.

Approved fall-arrestor systems are required for work at heights of 6 or more feet. A fall-arrestor system consists of a full body-harness & a lanyard made of synthetic fibers, with a minimum break strength of 5000 lbs. Lifelines/lanyards (self-retracting type) shall limit free fall distance to 2 feet or less. When the lifeline/lanyard does not limit free fall distance to 2 feet or less, ripstitch lanyards, and tearing and deforming lanyards shall be applied to the lifeline/lanyard in the fully extended position.

Anchorage points used for attachment of personal fall arrest systems shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5000 lbs.

The attachment point of a body harness shall be located in the center of the wearer's back near shoulder level, or above the wearer's head.

Personal fall arrest systems components subjected to impact loading shall be removed from service until inspected and determined by a competent person to be suitable for reuse.

Personal fall arrest systems and their components shall be inspected prior to each use for wear, damage, etc. and removed from service if found defective.

Personal fall arrest systems shall not be attached to guardrail systems, nor shall they be attached to hoists.

Lifelines/lanyards shall be designed, installed, and used under the supervision of a qualified person.

The responsible safety officer will advise, on request, regarding usage and procedures.

It is the responsibility of the supervisor to plan the intended work sufficiently to ensure that job planning and proper precautions have been taken.

Guardrail Systems / Safety Net Systems

Where lifelines/lanyards are not used as a means of fall protection at working levels 6 feet or more above lower levels, guardrail systems and [or] safety net systems shall be utilized as outlined in: CFR 29, 1926 Subpart M.

The Responsible Safety Officer will advise, on request, regarding usage and procedures.

Personnel Platforms

Work may be performed from a crane-suspended platform where another procedure is not possible because of structure design or work site conditions.

Personnel platforms must be designed by a qualified engineer and reviewed by the Responsible Safety Officer. The suspension system must minimize tipping.

The platform itself must be capable of supporting without failure its own weight and at least 5 times the maximum intended load based on the ultimate strength of the members. The design must conform to 29 CFR 1926.550(g).

Load lines shall be capable of supporting without failure at least 7 times the maximum intended load. Where rotation resistant rope is used, the lines shall be capable of supporting without failure at least 10 times the maximum intended load.

Chapter 19

Concrete/ Masonry Work

Working with Concrete/ Cement Products

At Tim Messer Construction, Inc. cement and concrete work is our job. But you should be aware that without proper protection cement and concrete dust can cause lung damage. You can even get an allergic reaction from skin contact with cement. Without protection, cement and concrete can be bad news. Different cements have different ingredients. Many of them contain substances that can be hazardous, like silica, lime, gypsum, nickel, cobalt, and chromium compounds.

Potential Illnesses

Breathing too much cement dust could result in: Chronic bronchitis, Silicosis—from the crystalline silica (quartz) used in many cements, and even in some cases, cancer—from the small amounts of chromium compounds found in some cements.

Symptoms of silicosis: Acute silicosis can occur after a few weeks of very high exposure (for example, in sandblasters). Symptoms are shortness of breath, coughing, fever, and weight loss. Chronic silicosis is rarely seen in workers with less than ten years of exposure. It permanently damages your lungs. Silicosis also increases your chance of getting tuberculosis.

Getting cement dust or wet cement on your skin can cause burns, rashes, and other kinds of skin irritation. Lime, found in most cements, is often the cause. Some workers slowly become allergic to cement if they have skin contact with it over a long period of time. Cement dust and wet cement can also irritate your eyes.

Working with Hazardous Materials

So, how can you find out the ingredients in the particular cement you're using? Look at the bag and check the label. You may find a list of ingredients, a safety warning, or both.

Read the Material Safety Data Sheet (MSDS) for the product. MSDS's are required by law. They'll tell you the ingredients and possible health hazards. Everyone working on the site has a right to see MSDS's.

When you work with cement you often use other chemicals too—form oils, curing

agents, bond breakers, and retardants. Remember to check their MSDS's.

Drilling & Sawcutting Concrete

When concrete is cut, drilled, or broken up, the dust has all the same hazards as the dust from new cement. The only difference is that, since it isn't a new product, there will be no label or MSDS to check. So play it safe.

Working Around Concrete Dust

You can protect yourself from breathing cement and concrete dust by staying out of dusty areas if you can. You should try to wet down the work to keep dust out of the air, if possible. In enclosed areas, or areas with limited ventilation, your RSO may require using power tools with HEPA filters when you're cutting or drilling concrete. You may also need to use a special HEPA vacuum to clean up dust, not dry sweeping.

Wear a respirator with HEPA cartridges if there's a lot of dust in the air.
(Respirators are covered in more detail under PPE)

Working Around Wet Concrete/ Cement

The most important thing you can do to protect your skin and eyes from cement is avoidance. Don't get wet or dry cement on your skin or in your eyes. If you do, immediately wash it off with a lot of water. Wear goggles, or safety glasses with side shields, to protect you from splashes. In certain cases a face shield in addition to safety glasses may be required to keep concrete from splashing onto your face. Wear boots and other protective clothing if necessary. Wear gloves. Use a type which are impermeable—the cement can't get through them. Leather or cloth work gloves won't protect you.

Placement of Concrete/ Masonry

As far as practical, all planned routes for hoisting and moving concrete buckets shall have no workers under the load. No workers shall be allowed to work directly under the concrete bucket when it is being raised or lowered.

All workers involved in concrete placement by pumping operations shall be protected by at least hardhats and face shields over safety glasses.

Concrete/ Masonry Tools

All power tools shall be used as designed by the manufacturer, All tools shall have

safety switches, guards, fail-safe connectors, etc. in good working order, and shall not be tampered with, defeated, or altered in any way. When working on any powered equipment, use proper lockout-tagout procedures.

Bull float handles shall be non-conductive when working around any electrical powerlines. The minimum approach clearance by the tool's handle, or any part of the worker's body is three feet (3 ft.) for insulated conductors under 300 Volts, ten feet (10 ft.) for any uninsulated conductors, and conductors over 300 Volts up to 50,000 Volts. Higher voltages will require greater clearance distances - check with the local electrical utility.

Formwork

Formwork shall be designed, fabricated, erected, supported, braced and maintained so that it will be capable of supporting without failure all vertical and lateral loads that may reasonably be anticipated to be applied to the formwork. Formwork which is designed, fabricated, erected, supported, braced and maintained in conformance with the CAL-OSHA CFR Part 1926, Subpart Q - Appendix will be deemed to meet the CAL-OSHA requirements

Drawings or plans, including all revisions, for the jack layout, formwork (including shoring equipment), working decks, and scaffolds, shall be available at the jobsite.

All Shoring equipment (including equipment used in reshoring operations) shall be inspected prior to erection to determine that the equipment meets the requirements specified in the formwork drawings.

Shoring equipment found to be damaged such that its strength is reduced to less than that required by 1926.703(a)(1) shall not be used for shoring.

Erected shoring equipment shall be inspected immediately prior to, during, and immediately after concrete placement.

Shoring equipment that is found to be damaged or weakened after erection, such that its strength is reduced to less than that required by 1926.703(a)(1), shall be immediately reinforced. The sills for shoring shall be sound, rigid, and capable of carrying the maximum intended load. All base plates, shore heads, extension devices, and adjustment screws shall be in firm contact, and secured when necessary, with the foundation and the form.

Eccentric loads on shore heads and similar members shall be prohibited unless these members have been designed for such loading. Whenever single post shores are used one on top of another (tiered), the employer shall comply with the following specific requirements in addition to the general requirements for formwork:

The design of the shoring shall be prepared by a qualified designer and the erected shoring shall be inspected by an engineer qualified in structural design.

Reinforcing steel.

Rebar is a common impalement hazard. When Tim Messer Construction, Inc. installs the rebar, we will protect any exposed ends from possible impalement by ourselves or any other workers. Where others have installed rebar, and have not protected any exposed ends, we shall avoid working in those areas until the rebar ends have been protected.

Reinforcing steel for walls, piers, columns, and similar vertical structures shall be adequately supported to prevent overturning and to prevent collapse. We also need to take measures to prevent unrolled wire mesh from recoiling. Such measures may include, but are not limited to, securing each end of the roll or turning over the roll.

Removal of formwork

Forms and shores (except those used for slabs on grade and slip forms) shall not be removed until the employer determines that the concrete has gained sufficient strength to support its weight and superimposed loads. Such determination shall be based on compliance with one of the following:

The plans and specifications stipulate conditions for removal of forms and shores, and such conditions have been followed, or

The concrete has been properly tested with an appropriate ASTM standard test method designed to indicate the concrete compressive strength, and the test results indicate that the concrete has gained sufficient strength to support its weight and superimposed loads.

Reshoring shall not be removed until the concrete being supported has attained adequate strength to support its weight and all loads in place upon it.

Limited Access Zone - Masonry Work

A limited access zone shall be established whenever a masonry wall is being constructed. The limited access zone shall be established prior to the start of construction of the wall.

The limited access zone shall be equal to the height of the wall to reconstructed plus four feet, and shall run the entire length of the wall, and this zone shall be placed on the

side of the wall which will be unscaffolded.

The limited access zone shall be restricted to entry by employees actively engaged in constructing the wall. No other employees shall be permitted to enter the zone. The limited access zone shall remain in place until the wall is adequately supported to prevent overturning and to prevent collapse unless the height of wall is over eight feet, in which case, the limited access zone shall remain in place until the requirements of paragraph (b) of this section have been met.

All masonry walls over eight feet in height shall be adequately braced to prevent overturning and to prevent collapse unless the wall is adequately supported so that it will not overturn or collapse. The bracing shall remain in place until permanent supporting elements of the structure are in place.

Chapter 20

Excavations

Prior to Starting Work

Excavation work whether it be pit excavations, or trenching is required to be assessed first by a competent person. The RSO, Stephen Ferguson has on file who is qualified and designated as competent persons for excavation. Unlike some other types of works, excavation work relies to a great extent on having almost continuous supervision by a competent person at all stages of progress. Before starting work, a competent person must make a hazard assessment, or Excavation Safety Plan of the area to be worked. This includes the following:

Understand the nature of the area to be worked. Areas to be worked have normal characteristics that require action, and may have unusual characteristics that may require additional precautions when working, such as:

Underground utilities: Before any work is performed, a complete location survey of underground utilities shall be performed. Typically, most states have a "one call" system which coordinates all utilities in a given area. This notwithstanding, it's the competent person's responsibility to determine that all utilities have either marked or confirmed there are no underground lines present before any excavation work starts. Any underground utilities exposed by our work shall be protected from physical damage and hazardous contact with workers.

Vibration sources: Heavy traffic, heavy equipment working in close proximity, or other sources need to be assessed for their affect on an excavation. In most cases, heavy vibration will require a more shallow slope of excavation walls, or shielding or shoring where they would otherwise not be used (such as less than 5ft. in depth).

Close proximity of heavy or dynamic loads: Excavations adjacent to or in streets where there are heavy vehicular traffic such as tractor trailer rigs will usually require substantial shoring to counter the increased transient loads on the excavation edges or walls.

Hazardous atmospheres: The area to be worked shall be checked for the likelihood of dangerous gases, or insufficient oxygen levels. These conditions can occur when excavations are made in landfills, or where hazardous

substances are or were stored nearby. Any excavations in which hazardous gases or insufficient oxygen levels exist, or are likely to exist shall have gas monitoring performed before any workers are allowed into the excavation. In most cases, areas with these characteristics may be rendered safe either by the configuration of the excavation (sloped walls, shallow pit or trench), or by mechanical ventilation. Excavations in which the competent person determines is configured to present a confined space hazard, and is in an area with hazardous gases or insufficient oxygen levels may have to resort to confined space procedures and controls to perform work in the excavation.

Worker or pedestrian controls: The excavation perimeter needs to be assessed for possible accidental egress to the excavation edges. Footpaths, sidewalks, or shortcuts likely to be used, or areas where hedges or other growths may conceal the excavation until its too late, may all have to be either barricaded or warning tape placed to prevent unauthorized or accidental egress.

Worker protection in excavations: A determination shall be made by the competent person to determine which method of worker protection shall be employed. Any equipment required shall be onsite and used before any workers enter an excavation. The present controls involve sloping excavation walls, trench boxes (shielding) or shoring excavation walls. These controls are itemized later in this section.

Worker protection outside excavations: Workers exposed to vehicular traffic shall wear warning vests at all times. Workers exposed to traffic at night shall either have sufficient ambient light to illuminate the workers, or shall have reflective, or illuminated warning vests.

After starting work

The competent person's role after excavation starts is to monitor the work's progress for any change in conditions that may affect the worker's safety. At a minimum, daily inspections shall be made to determine if existing worker protection controls are sufficient. If any dangerous conditions exist, the competent person is required to have the workers immediately exit the excavation, and reassess the methods or controls used. Some of the items that a competent person should look for are:

Water accumulation: Water accumulation and saturation is a leading cause of trench collapse. Accumulated water weakens the base of the excavation, allowing the upper portions of the trench wall to push into the saturated, muddy level, sliding large sections into the excavation. Water should always be immediately pumped out, and trenches protected from rains, etc. Water that

accumulated into an excavation when unattended shall be pumped out, and will likely cause a reassessment of the excavation by the competent person to determine if other or additional worker protection is warranted.

Worker egress: Workers are required to have immediate egress from the excavation. Ladders, ramps or other such means shall be placed in and along an excavation to allow the workers to exit the excavation without traveling more than twenty five (25) ft. along the excavation wall.

Worker/ pedestrian crossing: Any situations which require workers or pedestrians to cross excavations will be provided with fabricated walkways at least three (3) ft. wide, with handrails on both sides capable of supporting a 200 lb. outward and downward force. The walkways shall be capable of supporting four (4) times the anticipated load.

Worker overhead protection: Not all danger to workers is in the excavation. Careful assessment and precautions shall be made by the competent person to prohibit workers working under loads of digging equipment, or other suspended loads. All spoils, materials, and tools shall be kept back at least two (2) ft. from the excavations edge to prevent them from falling onto workers in the excavation.

Excavation and Shoring

All Excavations shall be closely inspected by Stephen Ferguson, or another Competent Person designated by the RSO. Inspections shall be made at the initial hazard assessment of the work to be performed, at the start of the excavation, at the beginning of each work shift, and at any time there occurs a hazard-increasing event.

Excavations less than five (5) feet in depth may require some form of personnel protection, depending on site conditions. The Competent Person shall make this determination, and any excavation determined to be in unstable soil that could collapse shall employ protective measures.

However, all other excavations that are five (5) or more feet in depth must have some form of personnel protection. This protection shall be by the employment of sloping or benching the excavation walls, by shoring the excavation walls, or by means of a trench shield (box) to protect the workers. Excavations in stable rock do not require protection. Care must be taken, however, to classify the soil type when employing sloping, benching or shoring methods.

CAL-OSHA has four (4) classifications of soil types that will be followed by Tim

Messer Construction, Inc. that is shown in 29 CFR 1926, Subpart P; however, the following is a guideline of our company policy. The following are the CAL-OSHA classifications of soil type with a brief explanation of each type.

Stable Rock - is the most stable soil type, which may be excavated with vertical walls. However, this rock must be free of defects such as cracks, fissures, seeping water, or other defects. Rock with these defects will usually classify as Type B Soils.

Type A Soils - is the next most stable soil which is best described as "perfect". In essence, this soil can no defects such as cracks, fissures, seeping water, vibration sources nearby, and cannot have been previously disturbed. This soil must also be cohesive, with an unconfined compressive strength of at least 3,000psf. In short, this type of soil is rare, and will have to be rigorously tested by visual and manual methods in order to classify any soils type A.

Type C Soils - is the least stable soil which may be best described as "junk": there is no worse. Non-cohesive granular soils having an unconfined compressive strength of 1,000 psf or less, sand, gravel, loose backfill, and even submerged soils are all considered Type C Soil. However, CAL-OSHA requires that all soils are to be considered Type C with regard to worker protection requirements unless and until a determination is made by a Competent Person that it is another type.

Type B Soils - tend to fill in the gap between Types A & C. Typically, Type B Soils are cohesive (although some hard, granular soils may test out as granular Type B) with an unconfined compressive strength between 1,000 and 3,000 psf. Unstable rock (with cracks, fissures, seeping water and other defects), good soils that may be Type A, but having one or more defects, and formerly Type C soils that have been upgraded to Type B after classifying are examples of Type B Soils.

Therefore the protective methods described below for sloping, benching, and shoring is highly dependent on the soil types you're working in. Typically, since trench shields (boxes) do not prevent a cave-in per se (they only protect the worker inside the box from being crushed), the type of soil is not relevant.

Excavations greater than 20 feet in depth shall be reviewed first by a registered professional engineer. The engineering report should contain detailed data to Stephen Ferguson, or designated representative for alternative effective shoring and sloping systems. This data shall include soil evaluations, slope stability, and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used. When sheet piling is to be used, full loading due to ground water table must be assumed unless prevented by weep holes and drains or other means. Additional stringers, uprights, and bracing must be provided to allow for any necessary

temporary removal of individual supports.

Sloping. The sides or walls of an excavation may be sloped, if this provides sufficient protection. The degree of sloping is dependent on the type of soil and the depth of excavation, but essentially the firmer the soil, the steeper the slope angle may be. Soil strengths, and classifications are shown in 29 CFR 1926, Subpart P, and Appendix B. Specific sloping requirements and values are shown in 29 CFR 1926, Subpart P, and Appendix B.

Shoring. The sides or walls of an excavation may be shored, if this provides sufficient protection. Shoring walls may consist of vertical beams placed intermittently, or full wall sheathing, depending on soil strength. All materials shall be used shall while in good repair and maintenance; if damaged, they must be inspected. Specific shoring requirements and values are shown in 29 CFR 1926, Subpart P, and Appendix C.

Trench shield (box). Workers may be protected by the use of trench shields, if this provides sufficient protection. Shielding protects the workers if the walls of an excavation collapses up against the box. All materials shall be used shall while in good repair and maintenance; if damaged, they must be inspected. The nature of shielding, therefore requires worker egress over the top of the shielding, and under no circumstances shall any worker exit the shielded area. Workers shall not be in the shield's footprint when installing or removing the shield(s). Shielding shall be of sufficient height and location to prevent the trench walls from collapsing over the top of the shields, and to resist calculated trench forces. Trench wall above the trench box may be sloped back to allow for a minimum required 18 inches of exposure of the trench box. Specific shielding requirements and values are shown in 29 CFR 1926, Subpart P, and Appendix D.

Excavated material, tools, and equipment must be located at least two feet back from the edge of excavations of 5 ft. or greater depth. Excavations 4 ft. or greater in depth shall be tested for hazardous gases if the excavation is in a suspect area (such as proximate to underground fuel storage, landfills, chemical plants etc.).

A ladder (*or ramp, or other means*) projecting 3 ft. above the upper landing surface to be reached must be provided for emergency exit. Travel distance to the ladder must not exceed 25 ft., therefore, the section of trench where workers are present shall have ladders spaced not more than 50 ft. apart.

Supervision. Excavation work must always be under the immediate supervision of a competent person designated by Stephen Ferguson with authority and qualifications to modify the shoring system or work methods as necessary to provide greater safety.

Chapter 21

Safety Training

Safety Training

Tim Messer Construction, Inc. policy and federal law require that Tim Messer Construction, Inc. staff, participating guests, and visitors receive appropriate health and safety training. Managers are responsible for ensuring that employees and guests under their supervision receive this training so they are fully informed about possible occupational health hazards and know how to work safely.

Training must include Tim Messer Construction, Inc.'s health and safety orientation for new employees plus any additional training specific to the nature of hazards on the job; employees must complete this training before they can work unsupervised. All new employees must attend the new employee orientation within the first month of employment.

CAL-OSHA and other federal regulations spell out several specific health and safety training requirements for special hazards. These include, but are not limited to, radiation safety, hazard communication for exposure to hazardous substances, asbestos exposure, respirator use, hearing conservation, laser safety, confined space hazards, and certification for using material in moving equipment such as forklifts and overhead cranes. Employees who do hazardous work, such as working with high-voltage power supplies, or who are members of building emergency teams are required to have CPR and First Aid certification.

Managers should identify training needs for the job classifications for which they are responsible. Please refer to specific chapters in this manual for further information on training requirements. Consult with the Responsible Safety Officer about other training needs and requirements.

Training not provided by Responsible Safety Officer, such as on-the-job training, is the responsibility of line management. This includes information on procedural changes or system modifications that impact safety. Responsible Safety Officer provides several health and safety training courses, technical assistance on training needs, and resources to help supervisors fulfill their training responsibilities.

Educational resources such as fact sheets, hazard summaries, and other written materials, as well as videos or slide shows, are available from Responsible Safety Officer. Supervisors can get a catalog from Responsible Safety Officer describing audio-visual materials that may be used to supplement safety training programs.

Tim Messer Construction, Inc. Injury & Illness Prevention Plan

ALL health and safety training must be documented. Supervisors must note the participants' names and employee numbers, topics discussed, instructor(s), and date. Supervisors are responsible for maintaining training records. A copy of this information should be sent to the Responsible Safety Officer training/education coordinator for inclusion in Tim Messer Construction, Inc.'s training data base.

Chapter 22

Asbestos/ Cadmium-Chromium/ Lead Exposure Control/ Management

Asbestos Management

Tim Messer Construction, Inc.. is subject to the OSHA asbestos regulations because we have employees. Regardless of whether or not we work in an asbestos-containing building, we also have specific responsibilities to protect our employees from asbestos hazards which may be present at any site where they work. Some of our workers may clean-up dust and debris after work that involved disturbance or removal of VAT, asbestos-containing mastics, thermal system insulation, surfacing material, or other asbestos-containing materials. Our employees' clean-up work is classified as Class IV construction activity under the OSHA Asbestos Standards, if the work is the result of Class I, II, or III construction activity.

Tim Messer Construction, Inc.. has responsibilities to take specific actions to protect the health and safety of these workers whenever they are engaged in such activity, even though the work which resulted in the dust and debris was performed by other workers. Our obligations include the following items in all cases. Stephen Ferguson will assign a competent person which must supervise all Class IV jobs involving contact with and clean-up of asbestos-containing materials. A competent person is an employee who has received specialized training to identify asbestos hazards, to select the best control strategy, and to take prompt action to correct or eliminate problems. The competent person who supervises Class IV work must receive training equivalent to EPA's 16 hours of operations and maintenance training and annual refresher training. Training must focus on the locations of suspect materials, work practices, job assessment, and methods of control.

An exposure assessment must be conducted to determine whether or not airborne asbestos fibers in excess of the permissible exposure limits may be present. Air monitoring will be required unless a negative exposure assessment is obtained.

Custodial workers who do asbestos construction clean-up work must receive annual asbestos hazard awareness training. Smoking is not allowed in the work area. Wet methods or wetting agents (unless not feasible) and appropriate work practices must be followed. HEPA vacuums must be used. Prompt clean-up and disposal of debris in leak-proof containers is required.

The following work practices are prohibited: use of high speed abrasive disk saws

without HEPA filtered exhausts or point-of-cut ventilator, use of compressed air without capture device, dry sweeping/shoveling or other dry clean-up, and employee rotation to circumvent permissible exposure limits.

Medical surveillance is required for all workers doing Class IV work who are exposed to asbestos above the PEL's for 30 or more days per year. The 30-day requirement excludes days in which less than one hour is spent in Class III work when required work practices are followed.

In addition to these requirements (applicable to all Class IV work) Tim Messer Construction, Inc.. may have additional requirements for Class IV work (listed in the next section of this report) depending on whether or not an exposure assessment indicates the likelihood that airborne asbestos fiber concentrations will be above or below the permissible exposure limits.

Additional Guidance for Class IV work where the PEL is likely to be exceeded

For workers who clean-up any job where the exposure assessment indicates the possibility that airborne asbestos fibers may exceed the permissible exposure limits of 0.1 fibers per cubic centimeter of air over an 8 hour period or 1 fiber per cubic centimeter of air averaged over a 30 minute period (as time-weighted averages):

Periodic exposure monitoring: Employee exposure monitoring (which represents full-shift exposures) must be conducted at the work area to determine accurately the airborne asbestos fiber concentrations. Monitoring may be discontinued if it shows asbestos fiber concentrations less than the permissible exposure limits (PELs).

Respirators: Negative-pressure air purifying respirators (quarter- or half-face types) or higher levels are required. Protective clothing: we must provide appropriate protective work clothing and equipment at no cost to the employee. Decontamination procedures: Work clothing must be HEPA vacuumed and equipment decontaminated on a plastic dropcloth; if Class IV clean-up takes place in a regulated area, the clean-up must comply with the hygiene required in a higher classification of asbestos work.

A regulated area must be established. It must be demarcated in any manner that minimizes the number of persons in the area and protects persons outside the area from exposure to airborne asbestos. Signs must be provided and displayed. Medical surveillance is required for all workers doing Class IV work who are exposed to asbestos above the PELs for 30 or more days per year. The 30-day requirement excludes days in which less than one hour is spent in Class III work when required work practices are followed.

Our employees may be exposed to asbestos hazards under circumstances covered by the OSHA General Industry Asbestos Standard. This involves work that is not related to construction activities defined by the four classes of asbestos construction work described in 29 CFR 1926.1101. The General Industry Asbestos Standard is found in 29 CFR 1910.1001. Routine housekeeping activities during which employees contact or work in close proximity to accessible asbestos is an important example of work covered by the General Industry Standard. Accessible asbestos is any known or presumed asbestos containing material that is not sealed or enclosed or maintained in an intact condition that makes release of airborne asbestos fibers unlikely. The following summarizes the requirements of the General Industry Standard:

Tim Messer Construction, Inc.. will provide the affected workers with asbestos awareness training each year. The course must cover the health effects of asbestos exposure, the hazards of smoking and asbestos, use of respirators, locations of asbestos materials and signs of their damage, and who to tell and what to do if such materials are dislodged or become non-intact.

Cadmium Exposure Control

In its elemental form, cadmium is either a blue-white metal or a grayish-white powder found in lead, copper, and zinc sulfide ores, but most cadmium compounds are highly colored from brown to yellow and red. Cadmium's uses vary from an electrode component in alkaline batteries to a stabilizer in plastics. OSHA estimates that approximately 70,000 employees in the construction industry are potentially exposed to cadmium. Cadmium may be found where work involves construction, alterations, and repairs. The activities include, but are not limited to, wrecking, demolishing, and salvaging structures where cadmium or cadmium-containing materials are present; cutting, brazing, grinding, or welding on surfaces that are painted with cadmium-containing paints; and transporting, storing, and disposing of cadmium or cadmium-containing materials on the site or location where construction activities are performed.

Requirements Where Cadmium may be Present

Respiratory Protection

Where applicable, the employer must provide respirators at no cost to employees and ensure that they are used in compliance with the standard. Powered air-purifying respirators must be provided to employees who request them and where this respirator will provide adequate protection. Employers must ensure that employees use respirators in regulated areas and that respirators are properly fitted and used. Employees required to wear respirators must have limited medical exams prior to being assigned to an area where respiratory protection is required unless they have had a

comparable exam within the preceding 12 months. Employees must be allowed to leave a regulated area to readjust face pieces and to change filters or to wash their faces to avoid skin irritation.

Protective Work Clothing and Equipment

Employers must provide protective clothing and equipment—such as coveralls, shoe covers, head coverings, and goggles—for employees exposed above the PEL and for employees with skin and eye irritation from cadmium exposure. The employer must ensure that contaminated clothing and equipment are placed in closed containers in change rooms prior to cleaning, laundering, maintaining, or discarding. The employer must provide clean and dry personal protective clothing and equipment at least weekly, or more often, as necessary to maintain effectiveness. The employer must notify those who launder or clean these items of the potential hazards of cadmium exposure.

Housekeeping

Employers must maintain all surfaces as free as practicable of accumulations of cadmium and clean up spills promptly. Compressed air may be used to clean up accumulations of cadmium if it does not disperse cadmium into the air; vacuuming using a high-efficiency particulate air filter is preferable. The employer also must ensure that waste, scrap, debris, bags, containers, equipment, and clothing contaminated with cadmium and consigned for disposal be collected and disposed of in sealed impermeable bags or other closed impermeable containers. These bags and containers must be labeled according to the provisions of the rule, and disposed of according to applicable federal, state, and local regulations.

Hygiene Facilities and Practices

The employer must provide facilities for showering and handwashing, change rooms, and lunch rooms for employees exposed above the TWA PEL. Change rooms must be equipped with separate storage facilities for street clothes and personal protective clothing/equipment and must be designed to prevent dispersing cadmium and contaminating the employee's street clothes. The lunch area should be readily accessible to employees. The level of cadmium in lunch areas must be below the action level of 2.5 µg/m³. Before entering the lunch area, employees must clean or remove their protective clothing by HEPA vacuuming or some other removal method that does not disperse cadmium into the air. Also, employees exposed to cadmium above the PEL must shower at the end of the work shift and must wash their hands and faces prior to eating, drinking, smoking, chewing tobacco or gum, or applying cosmetics.

Exposure Monitoring

There are four significant exposure monitoring provisions of the cadmium standard for construction:

- (1) prior to performing any construction work where employees may be exposed to cadmium, the employer must determine—through a designated competent person—whether cadmium is present in the workplace, and whether there is a possibility that an employee may be exposed to cadmium at or above the action level.
- (2) if the employee periodically performs tasks that may expose him or her to a higher concentration of airborne cadmium, the employer must monitor the employee while performing those tasks.
- (3) no minimum frequency for monitoring is required under the construction industry's cadmium standard (e. g., the changing nature of job and work conditions often limit the value of periodic monitoring on a fixed schedule).
- (4) the employer shall notify each affected employee, in writing, of the results and shall post the results in an appropriate location accessible to affected employees, no later than 5 working days after receiving the results of any monitoring that is performed.

Regulated Areas

Whenever an employee is or can reasonably be expected to be exposed to cadmium in excess of the PEL, the employer is required to establish a regulated area alerting employees to the hazards.

Regulated areas must:

- * Be set apart from the rest of the workplace in a way that establishes and alerts employees to the boundaries of the area;
- * Be entered ONLY by authorized persons;
- * Be entered ONLY by persons using proper respirators; and,
- * Be accessible to employees who refrain from eating, drinking, smoking, chewing tobacco or gum and applying cosmetics in such areas. Employees must not carry, store, or use products associated with such activities in these areas.

Warning signs bearing the following information must be posted at all approaches to regulated areas:

DANGER...CADMIUM...CANCER HAZARD...CAN CAUSE LUNG AND KIDNEY

**DISEASE...AUTHORIZED PERSONNEL ONLY...RESPIRATORS
REQUIRED IN THIS AREA.**

OSHA requires that employers consider establishing regulated areas whenever the following construction activities are conducted:

- * Electrical grounding with cadmium welding;
- * Cutting, brazing, burning, grinding, or welding on surfaces that are painted with cadmium-containing paints;
- * Electrical work using cadmium-coated conduits;
- * Using cadmium-containing paints;
- * Cutting and welding cadmium-plated steel;
- * Brazing or welding with cadmium alloys;
- * Fusing of reinforced steel by cadmium welding;
- * Maintaining or retrofitting cadmium-coated equipment; and
- * Wrecking and demolishing where cadmium is present.

Methods of Compliance

Employers must implement engineering and work practice controls to reduce and maintain worker exposure to cadmium at or below the PEL. Engineering controls might include installing equipment, (e. g., source point capture) or modifying a process, (e. g., enclosure) to control employee exposure levels. Work practice controls include practices such as not eating, drinking, or applying cosmetics in regulated areas.

Some of the provisions that employers must adhere to include, but are not limited to, not using high-speed abrasive disc saws and similar abrasive power equipment unless such equipment has the appropriate engineering controls to minimize emissions and to meet the PEL. Materials containing cadmium shall not be applied by spray methods, if exposures are above the PEL, unless employees are protected with certain specified respirators and measures are taken to limit overspray and prevent contamination of adjacent areas.

Medical Surveillance

All construction employees are automatically covered by the medical surveillance provisions if, for 30 days or more per year, they perform any of the tasks, operations, or jobs for which employers are required to establish regulated areas (see section on Regulated Areas for a listing of these construction activities).

Employers also must provide medical surveillance to all employees who might have been exposed to cadmium by the same employer prior to the effective date of the

standard in any of the tasks, operations, and jobs previously listed under Regulated Areas. Otherwise, the current employer must demonstrate that the employee did not, in the years prior to the effective date of the standard, work for the employer in those tasks for an aggregated total of more than 12 months prior to the effective date of this standard. If biological monitoring results are abnormal, employers must, among other things, reassess employee exposures within 30 days.

Employers must temporarily remove employees from jobs with exposure to cadmium at or above the action level on each occasion that a physician determines in a written medical opinion that the employee should be removed from cadmium exposure or in cases where the employee's biological monitoring results are so high as to require mandatory medical removal. The physician may determine the need for medical removal based on biological monitoring results, evidence of illness, inability to wear a respirator, signs or symptoms of cadmium-related dysfunction or disease, or any other reason deemed medically sufficient. When the removal is due to the employee's inability to wear a respirator, the removal need only be from jobs with exposure to cadmium above the PEL.

Where an employee temporarily is medically removed from a job for reasons related to cadmium exposure, the employer must remove the employee from any job where exposure is at or above the action level and must provide medical removal benefits such as normal earnings, seniority, and employee rights for a maximum of 18 months.

Cadmium Hazard Communication

Employers in the construction industry must communicate to employees the hazards of occupational exposure to cadmium. In a multi-employer workplace, however, an employer who produces, uses, or stores cadmium in a manner that may expose the employees of other employers to cadmium is required to notify the other employers of the potential hazard in accordance with the provisions outlined in the hazard communication standard for construction in 29 CFR 1926.59.

The cadmium standard requires regulated areas to be posted with appropriate warning signs. Because the nature of construction work and the hazards often associated with it often change dramatically in the course of completing a project, regulated areas also may need to be established on a temporary basis. Therefore, using warning signs is especially important because employees who are regularly scheduled to work in or near these areas need to be warned about exposure to cadmium at or above the PEL.

Recordkeeping

Recordkeeping provisions in the cadmium standard for construction require employers

to establish and keep an accurate record of all air monitoring for cadmium in the workplace. The employer must maintain this record for at least 30 years in accordance with the requirements for access to employee exposure and medical records (29 CFR 1910.20). In addition, under the cadmium standard, employers must provide a copy of the employee's air monitoring results to an industry trade association and to the employee's union or a comparable organization that is competent to maintain such records and is reasonably accessible to employers and employees in the industry.

The employer also must establish and maintain an accurate record for each employee covered by the medical surveillance provisions of the cadmium standard [29 CFR 1926.1127 (l)(1)(i)]. The employer must maintain these records for the duration of employment plus 30 years in accordance with 29 CFR 1910.20. The cadmium standard also requires that the employer, at the employee's request, provide a copy of the employee's medical record or update, as appropriate, to a medical doctor or union specified by the employee.

Lead

Most lead over-exposures in the construction industry are found in the trades such as plumbing, welding and painting. In building construction, lead is frequently used for roofs, cornices, tank linings and electrical conduits. In plumbing, an alloy of lead/tin had been used extensively for soldering tin-plate and pipe joints. Use of lead solders in plumbing systems is now prohibited by law. Lead-based paint had also been used extensively for residential and commercial applications but has been banned for residential use by the Consumer Product Safety Commission. Lead-based paint may still be used on metal structures (bridges, railways, beams, etc.) to prevent corrosion, although substitute coatings are now available.

Significant lead exposures can arise during stripping or demolition of structures containing lead-based paint. The types of work with the greatest potential for lead exposure include iron work, demolition, painting, plumbing, electrical, lead-based paint abatement, heating/air conditioning and carpentry/renovation activities.

This chapter covers Tim Messer Construction, Inc.'s policy regarding procedures and operations involving the use, maintenance, and disturbance of lead-containing materials. This document was developed to assure that lead and lead-containing materials are properly maintained and handled. The procedures outlined in this policy will promote the safe management of lead and lead-containing materials. They will also help assure compliance with regulations applicable to lead.

Scope

Occupationally, these exposures may include:

- Demolition or salvage of structures where lead-containing materials may be present.
- Removal or encapsulation of materials containing lead (e.g. lead paint abatement).
- New construction, alteration, repair or renovation of items containing lead.
- Installation of materials containing lead.
- Lead contamination or emergency cleanup.
- Maintenance operations involving the disturbance of lead or lead-containing materials.
- Firing range operations.

Unless working in a relatively new building (built since 1980), all paint should be treated as lead containing unless sampling shows otherwise.

Disturbance is defined as scraping, washing, limited wet sanding, grinding, welding, drilling, small surface cutting for installation of equipment, repainting activities, cleaning activities, and minor surface modifications.

Summary

The following actions will be taken in order to comply with the OSHA Lead Standards (29 CFR 1910.1025 and 1926.62) and DHEC/EPA regulations:

Contractors performing lead abatement must be licensed by the appropriate State Department Of Health and Environmental Control (DHEC).

- Prior to the performance of any demolition or renovation activities, materials must be assessed for the presence of lead.
- Representative and periodic air monitoring will be conducted for all employees with airborne (fume, dust) lead exposure.
- Employees with 8-hour time-weighted average (TWA) exposures over 30 µg/m³ (Action Limit) for thirty days per year will be enrolled in a lead medical surveillance program.
- All employees with potential exposure to lead must receive training.
- Employees with lead exposure in excess of the Permissible Exposure Limit (PEL) of 50 µg/m³ as an 8-hour TWA will be provided appropriate protective clothing and respiratory protection.
- Engineering controls will be implemented, if feasible, to reduce lead exposures below the PEL.

- A written compliance plan will be implemented if airborne concentrations of lead exceed 50 µg/m³ as an 8-hour TWA.
- Surfaces will be maintained as free as possible from accumulation of lead dust.
- Signs will be posted outside areas where employees' lead exposures exceed the PEL.
- Certain work practices such as open flame burning, dry sanding and dry scraping of lead-containing substances are not permitted.
- Specific containment procedures are stipulated to control emissions from interior and exterior lead abatement sites.
- Surfaces in lead abatement sites must be cleaned.
- Lead-containing wastes may be handled by Tim Messer Construction, Inc. employees, and will be transported and disposed per DOT and EPA/DHEC regulations.
- Specific surface lead dust testing will be performed in residential properties following lead abatement to verify adequate cleanup.

Health Hazards

Health effects from lead exposure continue to be a concern both at the workplace and in the home. Since the ban on lead in gasoline, lead levels detected in areas near roadways have decreased dramatically; however, lead based paint used in buildings and housing prior to 1980 continue to serve as significant sources of exposure.

Lead poisoning can result from a single high level (acute) exposure or through a number of smaller repetitive (chronic) exposures. Most adults are exposed to lead through occupational sources, while children and infants are exposed primarily through surface dust and soil. Floors, chewable surfaces and soil contaminated with lead serve as primary exposure sources for children.

Lead has no beneficial effect on humans. Once it has been ingested into the body, lead is distributed in the bloodstream to red blood cells, soft tissues and bone. Lead in the body is eliminated very slowly, mainly by the kidneys and digestive tract. Irreversible kidney damage may have already developed by the time high blood lead levels are identified and treated, making avoidance to exposure and medical surveillance extremely important.

Acute lead poisoning symptoms usually include abdominal pain as in a gall bladder attack or appendicitis. Other non-specific complaints include irritability, fatigue, weakness and muscle pain. In rare instances, damage to the brain and central nervous system also may occur. Chronic lead poisoning may result after lead has accumulated

over time in the body and has been deposited mostly in the bone.

Stored lead in the bone may be released to the blood stream to produce health effects such as defective hemoglobin synthesis, nervous system abnormalities, hypertension, effects in the reproductive system (including impotency) and damage to a developing fetus.

The measurement of blood lead level is the most reliable method of evaluating lead exposure. It indicates the amount of lead in the bloodstream, which is often a measure of recent exposure to lead. The present "level of concern" in children is ten micrograms of lead per deciliter of blood (10 µg/dl). The level of concern for adult workers, as established by OSHA, is 40 µg/dl.

Training

All Tim Messer Construction, Inc. employees involved in the disturbance of lead-containing materials or lead based paint as part of regular work activities must have at least a lead awareness training class. Tim Messer Construction, Inc. may provide an introductory level lead awareness class for employees involved in non-abatement activities. Tim Messer Construction, Inc. may also choose to cover lead hazards during their Worker Right to Know training. Typical job classifications needing awareness training would include painters, carpenters, welders, electricians, plumbers and general maintenance personnel. Employees involved in lead abatement activities must receive more extensive EPA approved lead abatement worker and/or supervisor level training.

Medical Surveillance

All Tim Messer Construction, Inc. employees involved in the disturbance of lead-containing materials, working with lead compounds (glazes, solders, etc.), or lead based paint as part of regular work activities must be involved in Tim Messer Construction, Inc.'s Occupational Medicine Program. Employees will have blood lead levels checked initially, then at least annually thereafter. Blood lead levels should also be checked at the termination of employment. The ultimate frequency of blood screening will be dictated by the amount of lead related work each affected employee performs and on advice from the Occupational Medicine physician.

Tim Messer Construction, Inc. will fit test employees with proper respirators, provide respirator training and assist with the required paperwork. Occupational Medicine will perform all necessary medical tests and evaluations. The Occupational Medicine physician should include a written respirator approval as part of the medical surveillance.

Lead-Based Paint Defined

The definition of lead based paint as follows:

- 0.5% by weight as analyzed by a chemical laboratory, or
- 1.0 milligrams per square centimeter (mg/cm²) as measured by an X-ray fluorescence analyzer (XRF).

Sampling Any painted surfaces (including stained and varnished) in buildings constructed prior to 1980 must be sampled before any significant disturbance takes place. Any other materials (i.e. window glazing, putties, plumbing) that are suspected to contain lead must also be sampled before significant disturbance takes place.

To conduct a thorough investigation, each different surface should be sampled separately (examples include doors, windows, moldings, walls, ceilings, etc.). The primary lead paint sampling methods include:

Spot chemical testing: Spot chemical testing involves a process where a small amount of solution is placed on a sampling surface, and if lead is present, a colorimetric change will take place. This method involves a certain amount of paint destruction in order to test a complete cross section of paints and has proven to be the least reliable of the three listed methods.

X-Ray Fluorescence (XRF) XRF analysis is a direct field reading instrument that will provide immediate results - for example a Niton XRF spectrum analyzer. The Niton uses a non-destructive analysis method which automatically adjusts for the substrate. As with the other analyses, different surfaces should be sampled separately.

Because XRF instruments use a radioactive source to measure lead content, special precautions need to be taken. Equipment operators must receive special training. At the present time, there is no correlation between results from laboratory analysis and XRF measurement.

Laboratory Testing Laboratory analysis provides the most reliable information but it can take as long as three weeks to receive results. The steps listed below should be followed when collecting bulk samples:

All paint samples should be collected in a new plastic sample bag. Samples should be labeled with a sample number, the surface sampled, and the sample location.

For proper laboratory analysis, approximately 5 grams of paint chips must be collected. (For reference, a nickel weighs approximately 5 grams.)

Samples must represent a cross section of materials down to the substrate. Care should be taken to collect as little substrate as possible. (For example, a paint sample on a wood door should contain paint down to the bare wood surface, but should not contain a significant amount of the wood itself.)

Personal Protective Equipment (PPE) Personal protective equipment (PPE) is required when disturbing lead-containing materials. This equipment would include but not be limited to:

- Disposable or cleanable work gloves
- Coveralls (Tyvek or similar) with foot covering
- Goggles or face shields
- Properly fitted half-face respirators with HEPA cartridges

Once removed, any disposable materials must be gathered and disposed of as lead waste. Specific requirements are outlined in the waste disposal section.

Work procedures not previously monitored will require personal air sampling to determine airborne lead levels and the adequacy of respiratory protection. Air samples will be collected, then forwarded to an accredited laboratory for analysis. Employees should be trained in the use, fitting and limitations of their PPE as per OSHA's Personal Protective Equipment Standard (29CRF 1910.132-138).

Hygiene Facilities

Personal hygiene is critical in the control of lead exposure for employees working with lead containing materials. Hygiene facilities with soap, water and disposable towels must be provided for employees. If jobs are extensive or large in scope, or if the paint being disturbed has a high lead content, the waste water should be gathered and placed in drums for further analysis. Collection could take place until a correlation between the lead content of waste water, lead levels in paint and the activities performed could be established. Smoking, chewing tobacco, gum or food will not be allowed in the work area.

Employees must wash hands and face thoroughly before all breaks and at the end of the work shift.

Operations and Maintenance Activities

In many instances, routine painting and repair jobs will disturb materials that contain lead. Lead-containing paint and window glazing are just two types of materials that may be encountered. NIOSH has concluded that significant exposures can occur during work to repaint lead-containing materials or to repair windows that have leaded glazing.

A small amount of care can significantly decrease the potential for exposure to lead during maintenance activities that involve the disturbance of lead-containing materials.

The guidelines in this section should be used when the primary purpose of the work

is not to remove lead-containing materials, but to conduct a repair or maintenance activity. As an example, these guidelines would be used when scraping loose paint in preparation for a repainting job, but would not be appropriate in an instance where all paint from a surface (loose and intact) would be removed.

The following procedures should be employed for operations and maintenance activities where prior sampling has confirmed the presence of lead. Employees conducting these types of activities must have attended a lead awareness training session concerning the potential hazards of working with lead and proper use of personal protective equipment.

Interior Work

- a. Notify all occupants where work involving lead will take place.
- b. Conduct work involving lead-containing materials at times when the area is unoccupied.
- c. Place 6-mil polyethylene sheeting a minimum of 6 feet horizontally out in all directions from the work area to cover any immovable objects.
- d. Personal protective equipment (PPE) must be used, and at a minimum should include a half-face respirator with HEPA cartridges, disposable clothing and gloves. Shoe covers may be necessary to avoid tracking lead dust and waste outside the immediate work area.
- e. HEPA vacuums, disposable towels and wash-up facilities must be available to employees at the work site. Clean-up materials should be kept away from the immediate work area, but must be close enough to allow quick clean-up of employees and equipment. All reusable equipment (HEPA vacuums, scrapers, screw drivers, etc.) must be properly cleaned, using wet methods, at the end of each day's work and before leaving the job site.
- f. The work area itself must be demarcated and barricaded using disposable danger tape and "Lead Danger" warning signs bearing the following legend: "Warning: Lead Work Area - Poison - No Smoking or Eating".
- g. Using a HEPA vacuum, vacuum any accumulated dust from the work area prior to beginning the maintenance activity. Do not sweep or brush potential lead containing dust.
- h. Use care to minimize the production of dust from scraping or sanding. Use either wet sanding/scraping or HEPA filtration fitted equipment.
- i. At break periods or when finished, workers must immediately proceed to assigned

clean-up areas to decontaminate. The decontamination areas must be within the barricaded areas and must have polyethylene drop cloths or plastic tarpaulins as a floor. Upon completion of clean-up, discarded PPE will be gathered into 4-6 mil plastic bags or into drums for proper disposal. Waste PPE should be kept separate from paint chips, dusts and debris to allow appropriate disposal. Specific waste characterization and disposal information is outlined in the waste disposal section.

j. When activities are complete, clean up any debris using HEPA vacuums. Working surfaces and the immediate work area should then be wet wiped using disposable towels and a detergent solution. Gather and containerize paint chips, dust, and debris as lead-containing waste. Remove surface polyethylene and final clean the area again using wet methods and HEPA vacuuming. All used towels must be gathered and disposed of as contaminated waste. Surface polyethylene can then be HEPA vacuumed, rolled inwards and disposed of as general (non-hazardous) waste.

k. Waste generated in preparation activities (paint chips, glazing, etc.) should be collected and deposited in an appropriate container.

l. Monitoring (both area and personal) by Tim Messer Construction, Inc. may be necessary until exposure potentials can be determined.

Exterior Work

a. Notify the building supervisor and occupants where work involving lead will take place.

b. Building occupants should be notified to close windows and doors within 25 feet of the work area.

c. Pre-clean paint chips, dust and debris from existing surfaces (using HEPA vacuums and wet cleaning methods) before the job begins. Place plastic catch sheeting or tarpaulins to collect debris on the ground, floor or platform directly below the work area and at least 6 feet out in all directions from the working surfaces. When working on elevated surfaces, an additional 6 feet of catch sheeting is required per floor above the first to a maximum of 25 feet. Individual catch sheets or tarpaulins should be overlapped a minimum of 18 inches and secured to each other. Prepping should not take place on windy days. Catch sheets or tarps should be weighted or secured to the ground.

d. All windows, doors and other openings in the work area shall be sealed using polyethylene on the inside. Care should be taken not to disturb interior surfaces which may also contain lead. Barrier tape will be used to isolate the work area in such a way that no member of the public can get within 10 ft. of the work area. (This requirement may need to be adjusted for work on elevated surfaces.) The work area itself must be demarcated and barricaded using disposable danger tape and "Lead Danger" warning

signs bearing the following legend: Warning: Lead Work Area - Poison - No Smoking or Eating".

- e. Personal protective equipment (PPE) must be used, and at a minimum should include a 1/2 face respirator with HEPA cartridges, disposable clothing and gloves.
- f. HEPA vacuums, disposable towels and wash-up facilities must be available to employees at the work site. Clean-up materials should be kept away from the immediate work area, but must be close enough to allow quick clean-up of employees and equipment. All reusable equipment (HEPA vacuums, scrapers, screw drivers, etc.) must be properly cleaned at the end of each day's work and before leaving the job site.
- g. When preparation activities are completed, working surfaces and the immediate work area should be wet wiped using disposable towels and a detergent solution. All used towels must be gathered and disposed of as contaminated waste. Surface polyethylene will then be HEPA vacuumed, wet wiped, and then rolled inwards and disposed of as general waste.
- h. At break periods or when finished, workers must immediately proceed to assigned clean-up areas to decontaminate. The decontamination areas must be within the barricaded areas and must have polyethylene drop cloths or plastic tarpaulins as a floor. Upon completion of clean-up, discarded PPE will be gathered into 4-6 mil plastic bags or into drums for proper disposal. Waste PPE should be kept separate from paint chips, dust and debris to allow appropriate disposal (see the waste disposal section).
- i. Waste generated in preparation activities (paint chips, glazing, etc.) should be collected and deposited in an appropriate container. Specific waste characterization and disposal information is outlined in the waste disposal section.
- j. Monitoring (both area and personal) by Tim Messer Construction, Inc. may be necessary until exposure potentials can be determined.

Lead Removal Methods

Acceptable Methods

The removal methods listed below are acceptable for operations and maintenance or abatement activities by personnel that have had the proper training, medical surveillance, and have completed the appropriate work area set-up outlined earlier.

Operations and Maintenance Removal Methods:

- Manual scrapers and wire brushes

- Limited manual sanding (preferably wet sanding) with accompanied ventilation (e.g. HEPA vacuum)

Abatement Removal Methods:

- Chemical formulations (preferably methylene chloride-free solutions)
- Heat guns not exceeding 700 degrees Fahrenheit
- Manual scraping with the aid of chemical solvents (preferably not containing methylene chloride)
- Paste formulations containing potassium or sodium hydroxide
- Mechanized sanding equipment with dedicated HEPA filtered exhaust systems

Prohibited methods: The following list of removal methods for either operations and maintenance or abatement activities are prohibited and will not be allowed.

- Use of a heat gun generating temperatures exceeding 700 degrees Fahrenheit
- Open flame torching
- Dry abrasive blasting using sand, grit or any other particulate
- Mechanized sanding without HEPA filtered collection systems

Routine Cleaning of Lead-Painted Surfaces

The following items apply to personnel involved in sweeping or wall cleaning in areas where paint chips or dusts are present. This would primarily apply to custodial personnel and any other University employees cleaning areas potentially contaminated with lead paint or dust.

- a. Employees should attend a lead awareness training class or be trained on the hazards of lead as part of their Worker Right to Know training.
- b. Report peeling paint or paint in poor condition to area coordinators or building contacts. Coordinators or contacts should then contact the appropriate personnel (Zone Maintenance, University Facilities, Housing Maintenance, etc.).
- c. Assume paint is lead-containing unless testing shows otherwise.
- d. Cleaning of lead painted surfaces should be performed using HEPA vacuums dedicated for lead, followed by wet methods (i.e. use wet towels, sponges or cloths). To specifically clean lead dusts from surfaces, a detergent such as Spic and Span is recommended.

e. Disposable gloves must be worn during cleaning. Respirators are not considered necessary for small cleaning jobs. Larger cleaning jobs may require respirators; contact Tim Messer Construction, Inc.'s RSO for assistance with respirators. HEPA vacuums should be used whenever possible to minimize exposure.

Gloves, sponges, disposable towels and other non-cleanable materials used in the cleaning of lead painted or contaminated surfaces must be placed in plastic bags, labeled as "HAZARDOUS WASTE PAINT MATERIALS" and dated.

Welding and cutting of metal surfaces

All painted metal surfaces (I-beams, pipes, etc.) shall be assumed to be lead-containing unless sampling or a manufacturer's specifications show otherwise. Industrial coatings often contain other hazardous ingredients in addition to or in place of lead. These might include, but are not limited to, chromium, cadmium and mercury.

When welding and/or cutting lead painted surfaces, powered air purifying respirators (PAPR's) with HEPA filters are required. PAPR's are recommended for all welding and cutting operations unless ventilation is in place to control contaminants. If welding or cutting is done in an occupied building, proper exhaust ventilation must be supplied. Similar guidelines apply to soldering of sheet metal, tubing, piping, or sewer piping involving lead solder or other lead containing materials.

Training

Individuals performing certain lead-related functions may receive accredited initial and annual training. These functions include:

- Lead Paint Abatement Worker
- Lead Paint Abatement Contractor
- Lead Paint Abatement Supervisor
- Lead Abatement (Residential) Project Designer
- Lead Paint Inspector
- Lead Paint Risk Assessor

Disposal of Waste Materials

Unless otherwise determined, Tim Messer Construction, Inc. is responsible for the proper disposal of hazardous waste at sites. Lead paint chips, dust and debris will generally be classified as hazardous waste. Because of hazardous waste costs, efforts should be made to minimize the generation of lead contaminated waste.

Paint chips, dusts and contents from HEPA vacuums (including HEPA filters) should be collected and containerized to allow for testing and handling as a possible hazardous waste. Demolition materials painted with lead based paint will be disposed of as regular demolition waste.

Some items contaminated as part of the abatement process may be cleaned and classified as non-hazardous waste.

Polyethylene used to protect items may be cleaned using HEPA vacuuming and wet wiping, then disposed of as non-hazardous waste. All non-hazardous waste can be put in unlabeled bags and/or placed in dumpsters. .

Summary

The Guidelines for Working with Lead-Containing Materials applies to any work where Tim Messer Construction, Inc. personnel may be exposed to lead or lead-containing materials. Activities covered by this guideline include (but are not limited to) demolition, renovation, encapsulation, maintenance operations, paint-prepping and firing range clean-up.

All Tim Messer Construction, Inc. employees involved in the disturbance of lead-containing materials and lead based paint as part of regular work activities must have at least a lead awareness training class. Tim Messer Construction, Inc. employees exposed to lead above the action level (A.L.) of 30 µg/m³ must have medical surveillance.

Tim Messer Construction, Inc. will conduct necessary sampling, monitoring and inspections to ensure compliance with regulations as well as to protect employee health and safety. Any questions concerning lead or items specified in the guideline should be directed to the RSO.

Substance Identification

- Substance: Pure lead (Pb) is a heavy metal at room temperature and pressure and is a basic chemical element. It can combine with various other substances to form numerous lead compounds.
 - Compounds Covered by the Standard: The word "lead" when used in this standard means elemental lead, all inorganic lead compounds and a class of organic lead compounds called lead soaps. This standard does not apply to other organic lead compounds.
 - Uses: Exposure to lead occurs in at least 120 different occupations, including primary and secondary lead smelting, lead storage battery manufacturing, lead pigment manufacturing and use, solder manufacturing and use, shipbuilding and ship repairing,

auto manufacturing, and printing.

- Permissible Exposure: The Permissible Exposure Limit (PEL) set by the standard is 50 micrograms of lead per cubic meter of air (50 µg/m³), averaged over an 8-hour workday.
 - Action Level: The standard establishes an action level of 30 micrograms per cubic meter of air (30 µg/m³), time weighted average, based on an 8-hour work-day. The action level initiates several requirements of the standard, such as exposure monitoring, medical surveillance, and training and education.

Health Hazard Data

A. Ways in which lead enters your body.

When absorbed into your body in certain doses lead is a toxic substance. The object of the lead standard is to prevent absorption of harmful quantities of lead. The standard is intended to protect you not only from the immediate toxic effects of lead, but also from the serious toxic effects that may not become apparent until years of exposure have passed.

Lead can be absorbed into your body by inhalation (breathing) and ingestion (eating). Lead (except for certain organic lead compounds not covered by the standard, such as tetraethyl lead) is not absorbed through your skin. When lead is scattered in the air as a dust, fume or mist it can be inhaled and absorbed through your lungs and upper respiratory tract. Inhalation of airborne lead is generally the most important source of occupational lead absorption. You can also absorb lead through your digestive system if lead gets into your mouth and is swallowed. If you handle food, cigarettes, chewing tobacco, or make-up which have lead on them or handle them with hands contaminated with lead, this will contribute to ingestion.

A significant portion of the lead that you inhale or ingest gets into your blood stream. Once in your blood stream, lead is circulated throughout your body and stored in various organs and body tissues. Some of this lead is quickly filtered out of your body and excreted, but some remains in the blood and other tissues. As exposure to lead continues, the amount stored in your body will increase if you are absorbing more lead than your body is excreting. Even though you may not be aware of any immediate symptoms of disease, this lead stored in your tissues can be slowly causing irreversible damage, first to individual cells, then to your organs and whole body systems.

B. Effects of overexposure to lead

(1) Short term (acute) overexposure.

Lead is a potent, systemic poison that serves no known useful function once

absorbed by your body. Taken in large enough doses, lead can kill you in a matter of days. A condition affecting the brain called acute encephalopathy may arise which develops quickly to seizures, coma, and death from cardiorespiratory arrest. A short term dose of lead can lead to acute encephalopathy. Short term occupational exposures of this magnitude are highly unusual, but not impossible. Similar forms of encephalopathy may, however, arise from extended, chronic exposure to lower doses of lead. There is no sharp dividing line between rapidly developing acute effects of lead, and chronic effects which take longer to acquire. Lead adversely affects numerous body systems, and causes forms of health impairment and disease which arise after periods of exposure as short as days or as long as several years.

(2) Long-term (chronic) overexposure.

Chronic overexposure to lead may result in severe damage to your blood-forming, nervous, urinary and reproductive systems. Some common symptoms of chronic overexposure include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, pallor, excessive tiredness, weakness, insomnia, headache, nervous irritability, muscle and joint pain or soreness, fine tremors, numbness, dizziness, hyperactivity and colic. In lead colic there may be severe abdominal pain.

Damage to the central nervous system in general and the brain (encephalopathy) in particular is one of the most severe forms of lead poisoning. The most severe, often fatal, form of encephalopathy may be preceded by vomiting, a feeling of dullness progressing to drowsiness and stupor, poor memory, restlessness, irritability, tremor, and convulsions. It may arise suddenly with the onset of seizures, followed by coma, and death. There is a tendency for muscular weakness to develop at the same time. This weakness may progress to paralysis often observed as a characteristic "wrist drop" or "foot drop" and is a manifestation of a disease to the nervous system called peripheral neuropathy.

Chronic overexposure to lead also results in kidney disease with few, if any, symptoms appearing until extensive and most likely permanent kidney damage has occurred. Routine laboratory tests reveal the presence of this kidney disease only after about two-thirds of kidney function is lost. When overt symptoms of urinary dysfunction arise, it is often too late to correct or prevent worsening conditions, and progression to kidney dialysis or death is possible.

Chronic overexposure to lead impairs the reproductive systems of both men and women. Overexposure to lead may result in decreased sex drive, impotence and sterility in men. Lead can alter the structure of sperm cells raising the risk of birth defects. There is evidence of miscarriage and stillbirth in women whose husbands were exposed to lead or who were exposed to lead themselves. Lead exposure also may result in decreased fertility, and abnormal menstrual cycles in women. The course of pregnancy

may be adversely affected by exposure to lead since lead crosses the placental barrier and poses risks to developing fetuses. Children born of parents either one of whom were exposed to excess lead levels are more likely to have birth defects, mental retardation, behavioral disorders or die during the first year of childhood.

Overexposure to lead also disrupts the blood-forming system resulting in decreased hemoglobin (the substance in the blood that carries oxygen to the cells) and ultimately anemia. Anemia is characterized by weakness, pallor and fatigability as a result of decreased oxygen carrying capacity in the blood.

(3) Health protection goals of the standard.

Prevention of adverse health effects for most workers from exposure to lead throughout a working lifetime requires that worker blood lead (PbB) levels be maintained at or below forty micrograms per one hundred grams of whole blood (40 $\mu\text{g}/100\text{g}$). The blood lead levels of workers (both male and female workers) who intend to have children should be maintained below 30 $\mu\text{g}/100\text{g}$ to minimize adverse reproductive health effects to the parents and to the developing fetus.

The measurement of your blood lead level is the most useful indicator of the amount of lead being absorbed by your body. Blood lead levels (PbB) are most often reported in units of milligrams (mg) or micrograms (ug) of lead (1 mg=1000 ug) per 100 grams (100g), 100 milliliters (100 ml) or deciliter (dl) of blood. These three units are essentially the same. Sometime PbB's are expressed in the form of mg% or ug%. This is a shorthand notation for 100g, 100 ml, or dl. PbB measurements show the amount of lead circulating in your blood stream, but do not give any information about the amount of lead stored in your various tissues.

PbB measurements merely show current absorption of lead, not the effect that lead is having on your body or the effects that past lead exposure may have already caused. Past research into lead-related diseases, however, has focused heavily on associations between PbBs and various diseases. As a result, your PbB is an important indicator of the likelihood that you will gradually acquire a lead-related health impairment or disease.

Once your blood lead level climbs above 40 $\mu\text{g}/100\text{g}$, your risk of disease increases. There is a wide variability of individual response to lead, thus it is difficult to say that a particular PbB in a given person will cause a particular effect. Studies have associated fatal encephalopathy with PbBs as low as 150 $\mu\text{g}/100\text{g}$. Other studies have shown other forms of diseases in some workers with PbBs well below 80 $\mu\text{g}/100\text{g}$. Your PbB is a crucial indicator of the risks to your health, but one other factor is also extremely important. This factor is the length of time you have had elevated PbBs. The longer you have an elevated PbB, the greater the risk that large quantities of lead are being gradually stored in your organs and tissues (body burden). The greater your overall body burden, the greater the chances of substantial permanent damage.

The best way to prevent all forms of lead-related impairments and diseases-both short term and long term- is to maintain your PbB below 40 µg/100g. The provisions of the standard are designed with this end in mind. Your employer has prime responsibility to assure that the provisions of the standard are complied with both by the company and by individual workers. You as a worker, however, also have a responsibility to assist your employer in complying with the standard. You can play a key role in protecting your own health by learning about the lead hazards and their control, learning what the standard requires, following the standard where it governs your own actions, and seeing that your employer complies with provisions governing his actions.

(4) Reporting signs and symptoms of health problems.

You should immediately notify your employer if you develop signs or symptoms associated with lead poisoning or if you desire medical advice concerning the effects of current or past exposure to lead on your ability to have a healthy child. You should also notify your employer if you have difficulty breathing during a respirator fit test or while wearing a respirator. In each of these cases your employer must make available to you appropriate medical examinations or consultations. These must be provided at no cost to you and at a reasonable time and place.

The standard contains a procedure whereby you can obtain a second opinion by a physician of your choice if the employer selected the initial physician. [56 FR 24686, May 31, 1991]

Chapter 23

Traffic and Transportation Control

Traffic Control Measures

Any workers of Tim Messer Construction, Inc. performing traffic control shall, at a minimum, be familiar with the applicable sections of ANSI Standards D6.1-1971- Manual on Uniform Traffic Control Devices for Streets and Highways. In lieu of this standard, all flaggers, or workers erecting, moving, and maintaining traffic control devices shall perform all work in accordance with applicable sections of the State DOT traffic control regulations. All flaggers required by State DOT to be certified shall be certified before starting any work. Hand signaling by flagmen shall be by use of red flags at least eighteen inches square, or sign paddles, or at night by the use of red lights.

Warning Vest

Workers exposed to vehicular traffic, including flagmen shall be protected by the use of red or orange warning vests, reflectorized type if used at night.

Official Vehicle Use

Tim Messer Construction, Inc. requires that an operator hold a valid driver's license for the class of vehicle that he/she is authorized to operate. Persons intending to operate forklifts are required to successfully complete the appropriate course as outlined in this manual.

Responsibility

Each Division Director and Department Head is responsible for restricting the use of Company-furnished vehicles to official Company business only. They are also responsible for limiting use of such vehicles to properly authorized personnel. Use of an official vehicle for an employee's personal convenience or benefit constitutes misuse and is prohibited. Employees who misuse Company vehicles are subject to disciplinary action and financial responsibility for any accident.

All drivers of Company vehicles are responsible for reporting any damage or deficiency to management. Repairs, adjustments, and maintenance can only be accomplished if the driver adequately documents and reports these items. Failure to report unsafe vehicle conditions can result in an accident.

Safety Belts

Employees operating or riding in company-furnished vehicles, or personal vehicles on official company business, are required to wear safety belts at all times. The driver should instruct the passengers to fasten their safety belts before operating the vehicle.

Accidents

Any accident involving Company vehicles (including private, rented, or leased vehicles used on official Company business) must be reported to the driver's supervisor. If the driver is unable to make a report, another employee who knows the details of the accident must make the report.

It is Tim Messer Construction, Inc.'s policy that employees should not admit to responsibility for vehicle accidents occurring while on official business. It is important that such admissions, when appropriate, be reserved for the company and its insurance carrier. The law requires that each driver involved in a vehicle accident must show his/her license on request by the other party. Be sure to obtain adequate information on the drivers involved as well as on the owner of the vehicles. Names, addresses, driver's license numbers, vehicle descriptions, and registration information are essential. In addition, a description of damages is needed for completion of accident reports. If the accident is investigated by off-site police agencies, request that a copy of the police report be sent to Tim Messer Construction, Inc., or obtain the name and department of the investigating officer.

In case of collision with an unattended vehicle (or other property), the driver of the moving vehicle is required by law to notify the other party and to exchange information pertaining to the collision. If unable to locate the other party, leave a note in, or attached to, the vehicle (or other property) giving the driver's name, address, and vehicle license number.

The driver of any Tim Messer Construction, Inc. vehicle involved in an accident must also complete a Company Motor Vehicle Accident Report and submit it to his/her supervisor within one work day of the accident.

The supervisor should interview the driver and complete the supervisor's portion of the report. The completed form and vehicle must be taken to the Administration Office so that damages may be estimated and repairs scheduled.

Forms for obtaining appropriate information about an accident are carried in the vehicle or may be obtained from Administration. The Responsible Safety Officer will

receive copies of all accident reports and will prepare any required CAL-OSHA reports.

Trucks/ Heavy Equipment Policy

Only authorized employees shall be able to operate the vehicle and/ or the articulating mounted equipment.

Definitions

Authorized – An employee of Tim Messer Construction, Inc. who has the education, training and certification to operate the equipment specified.

Caution – A potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It should be used to identify unsafe practices

Danger – Immediately hazardous situation which, if not avoided, will result in serious injury or death

Warning – A potentially hazardous situation which, if not avoided, could result in serious injury or death.

In order to become an authorized operator of the truck or equipment, the employee must...

Have the necessary training, including actual operation of the mounted equipment. The training must include at least a 30-minute discussion on the contents of this policy, the location and understanding of the controls, decals and manuals found on the vehicle and a practical demonstration of knowledge actually using the lift.

Certification will be provided to the authorized employee and should be kept on their person at all times, when operating the articulating mounted equipment.

Understand the written instructions supplied by the manufacturer.

User/Operator Responsibility

It is the responsibility of the user / operator to read and understand the safety and user's manual for vehicles or equipment before operating the equipment. Any questions or concerns can be referred to the RSO or an authorized representative. Safety policies and procedures protect the individual operator, the Company and the people around you.

User's Manual

As required, a copy of the user's manual must be kept in the vehicle at all times as a

reference guide. The manual shall be placed in the compartment closest to the base controls for the aerial platform, or articulated equipment, rear compartment at the passenger's side. Know and follow the established safety rules and regulations for the work environment

Equipment Required:

The vehicles should have the following equipment and material on board at all times:

User's Manual (1)

Chock blocks (2)

Fire Extinguisher (ABC) (1)

Traffic cones (2)

First Aid Kit (1)

The user / operator of the vehicle shall wear appropriate clothing. Loose fitting clothing, hair and the like must be restrained to prevent accidental introduction into electrical or mechanical equipment.

Safety Check – Daily

As required, the operator of the vehicle for that particular day shall conduct a safety / "circle check" of the vehicle to determine hazards, identify damage and leaks and report same to the RSO.

The "daily check" shall include but is not limited to...

a visual inspection of the vehicle exterior, including;

broken, damaged, loose or missing parts

tire bulges, cuts and pressure

oil and hydraulic leaks

weld integrity, such as cracks and rust

lighting (beam, directional and safety)

all required decals and stickers on or around the articulating boom (they must be in place, legible and understandable)

The inspection form and the identified deficiencies shall be provided to the RSO as soon as possible for corrective action. If no problems have been identified by the user / operator, a copy of the inspection form does not have to be forwarded.

Fall Protection for Aerial Lifts or Buckets

The use of fall protection shall be required when the user / operator enters the bucket truck and begins to elevate, regardless of height. The minimum level of fall protection for the bucket truck is a full body harness and lanyard. The fall protection device must be properly fastened and comfortably snug. Safety Belts are not permitted.

Additional fall protection and safety requirements include...

Personnel shall not place any item into the bucket for the purpose of increasing work height (the use of ladders, step stools and similar items is improper)

When using the articulating aerial boom on a permitted incline, the bucket shall be located on the upgrade side, in a stable position.

If the user / operator is working with their hands above their head, or there is a potential for something to fall from above, the use of head protection (hard hats) is required. In other situations hardhats may still be required as determined by company policy and/ or the RSO.

If the user / operator is working in an area where persons shall pass beneath or in close proximity to the truck, then the user / operator shall adequately guard or restrict the area to prevent personal injury in the following ways...

Caution tape, barricades or rope shall serve the purpose outlined above - traffic cones alone are not permissible

Employees working below the articulating boom must be aware of the overhead hazards and shall wear the appropriate head protection, as required.

Additional Safety Equipment

Portable Radio: If the user / operator is operating alone, he/she shall carry a portable radio for emergency situations.

If working off hours, the user / operator must be in direct contact with the RSO.

Safety Glasses, Goggles or Face Shields may be required.

The Personal Protective Equipment section of the Safety Manual identifies when these devices are necessary.

Equipment and tools used on the work site must be compatible with the environment

Vehicle Placement and Operation

Prior to starting the vehicle...

Walk around to verify safe operation

Remove cone from the front or rear of the vehicle depending on whether you are backing or heading in a forward direction.

Whenever possible (in accordance with vehicle safety policy) a “spotter” shall be used when the vehicle is being set into reverse.

Work Site Safety

Identify the most level grade from which to operate

the slope should not exceed 5 degrees unless the equipment is rated for steeper grades

Set Emergency Brake

Position both wheel chocks place on both sides of the tire

Engage Power Source

Set barricades and cones around the vehicle

If the operator will be working in a pedestrian area, then barricades, “Caution” tape or fencing shall be utilized. Cones are not permitted.

Verify proper portable radio operation

Discuss work with personnel on the ground. They should be made aware of the potential hazards and the risk of injury caused by falling objects such as tree limbs.

Put on the required Fall Protection Equipment – remember additional Personal Protection may be necessary

Maintain proper distance from electrical power lines

Do not operate the equipment if...

wind gusts exceed 30 mph, or if there is or could be an electrical storm.

Verify that the area under and around the work site is free of passers-by.

Check out overhead clearances, building design, fixtures and set-up.

Traffic Safety and Cone Placement

Planning for traffic control is necessary on a case by case basis. Work that takes place either on or near the roadway creates a potentially hazardous situation, which shall require the use of traffic controls. It is the responsibility of the person in charge or their designee to establish and maintain safe and efficient controls.

All necessary traffic control devices shall be installed before work begins and must be maintained during the entire work period.

Traffic control devices (i.e. barricades, cones etc.) provide drivers with sufficient advanced warning, and provide proper protection for the motorists and our employees. In addition, they advise motorists of proper travel path.

When parked, a cone shall be placed at the rear of the vehicle when the truck will be backed up or out of spot, at the front of the vehicle when the truck will be driven forward.

Special Hazards

DANGER – No equipment, insulated or not, provides any electrical protection to the occupant of the platform if there is “phase to phase” or “phase to ground” contact. Such contact will cause serious injury or death.

DANGER – User / Operators are not permitted to use the lift to gain access to another level. Once in the bucket, you are required to remain until the platform is placed firmly back on the ground.

WARNING - Under no circumstances can modifications be made to the equipment without the expressed written consent of the manufacturer.

Chapter 24

Demolition/ Blasting/ Explosives

Demolition

A written engineering survey of the structure before commencing demolition work is a requirement by Tim Messer Construction, Inc. An engineering survey needs to be performed to determine if there are areas where premature or inadvertent collapse may occur, including any adjacent structures that employees may be exposed to. While this survey is being done, the presence of hazardous materials (asbestos, lead, PCBs, etc.) needs to be noted. When hazardous materials are present they will need to be included and addressed in the work scheduling before the demo work can begin. This knowledge of the structure's weak points, presence of hazardous materials, contents of equipment within the structure, fire protective measures, etc. is essential for providing a safe work environment for your employees. Tim Messer Construction, Inc. must have in writing evidence that this survey has been performed.

The following are highlights of some of the more important regulations for demolition work found under Subpart T- entitled 'Demolition' of the Code of Federal Regulations. Subpart 1926.850 is entitled 'Preparatory Operations' and outline what work should be performed before actually starting a demoliton project. First a competent person has to make an engineering survey. This survey can be performed by an outside engineer. The survey shall assess the condition of the floors, walls, and the structural framing to determine if any unplanned collapses can occur. This survey should assess what loads the floors can carry, especially if mechanical equipment is to be used for demolition. The demolition site shall also be analized for any flammable, explosive, or otherwise hazardous materials, gases, or chemicals. Any of these materials found shall be cleaned and/or purged prior to the start of demoliton. Also adjacent structures should be checked for possible damage from demolition operations. As part of this survey, or at least in the work schedule, the plan shall be for demolition to start at the top level, and work down each level in turn to the bottom level. Preparatory work such as cutting floor openings for disposal are excluded from this regulation. The regulations specifically call for the contractor to have '...in writing, evidence that such a survey has been performed'.

Also, before any work starts, any walls or floors damaged by fire, flood, explosion, or similar cause shall be braced or shored. And while it may seem obvious, all outside utilities such as gas, electric, steam, water, sewer, and the like are required to be either disconnected or controlled from outside the building line before work starts. Any utilities

required for demolition shall be protected. Tim Messer Construction, Inc. also requires as a part of preparatory work to remove any glass that's broken, or likely to break beforehand. Each window or other wall openings 6 ft. above the adjacent elevation or more shall have a guardrail placed at approximately 42 in.

Another preparatory item is the construction of canopies at all egress points to multi-story structures. All canopies shall extend at least 8 ft. out from the building's face and be at least 2 ft. wider than the entrance. Canopies shall have 150 psi strength. And finally, a competent person must be onsite at the start of work, and throughout the project's duration making inspections frequently to ensure that no hazardous conditions exist, or are unaddressed.

One of the more frequent subjects in the Demolition Subpart is the use of floor openings for the disposal of debris. All floors used in demolition operations need to be of sufficient strength or shored. Openings cut into floors for disposal cannot exceed 25% of the total floor's area, unless the lateral floor supports remain. Any openings that are unused for disposal shall be either covered over or guarded in accordance with Subpart M - Fall Protection. All other openings used for disposal shall either have enclosed chutes or guardrails. If guardrails are used for floor openings, they shall be of the standard configuration (as in Subpart M) and be located at least 6 ft. from the opening's edge. These guardrails shall also have signs warning of the hazards of falling materials. If mechanical equipment, such as skid-steerer loaders are used for disposing materials through the floor openings, guardrails are not required, however 6 in. high curbs or stop logs are required around the edge to prevent the loader from falling into the floor opening. When walls are being demolished, any floor opening within 10 ft. are to be planked over if workers are working underneath. If a control zone is setup below to keep any workers out of the area, the floor openings would not have to be covered.

Subpart 1926.851 entitled 'Stairs, Passageways and Ladders' has some special requirements for stairs and ladder use during demolition. Access ways to be used for workers shall be designated, and all other access ways, stairwells and such shall be completely blocked off. Stairs, ladders, and passageways due to the nature of the work being performed shall be inspected regularly for debris buildup, and cleaned periodically. Stairwells being used shall have either sufficient natural or artificial lighting. Stairwells cannot be used to gain access to the floors being worked on, rather they are to be 'completely and substantially covered over' at least two floor below the actual work. Workers will then have to leave the stairwell and gain access to the working floors by other means such as ladders, etc.

Tim Messer Construction, Inc. requires first that any materials falling outside the building be protected. This may be a controlled access zone or barricading depending on the situation. In any case the area needs to be effective at preventing persons from

entering an area where materials may fall. All chutes need to be sufficiently strong to take the anticipated loads and shock. Open chutes are allowed at less than 45 degrees from horizontal, otherwise fully enclosed chutes are required. Fully enclosed chutes may have openings on each floor, but they must be able to be closed when not in use, and the openings may not be greater than 4 ft. vertically. When chutes pass through floor openings, the area around the floor opening shall be covered. If workers are dumping materials by hand, a 42 in. high standard guardrail shall be placed at the chute's opening. If wheelbarrows, or other mechanical means are used for dumping into the chute, then a 4 in. by 6 in. high curb shall be placed at the chute's opening. A gate placed at the chute's end for loading trucks shall be manned by a competent person who shall control the truck's movements.

Subpart 1926.853 entitled 'Removal of Materials Through Floor Openings' addresses the actual demolition process. Care must be taken to not allow sections of wall or floor to fall onto lower structures that are inadequate to accept the shock loading, or the carrying capacity of the structure. When walls are being removed, no more than 1 story of unbraced wall shall remain at any time, unless it was designed for self-support at a greater height. In any case, all walls shall be left in a stable condition at the end of each work shift. When working downward, structural elements of a building may be removed only when the story above has been completed. In the case of structural steel, the "skeleton" may be left in place while the masonry is removed. Care should be taken to remove all masonry debris from the steel as work progresses downward to avoid hazards from falling debris. Earth retaining walls shall not be removed until the earth has been shored or otherwise braced. And walls that debris will pile against shall be properly braced.

Floor removal is covered separately under Subpart 1926.854 entitled 'Manual Removal of Floors'. The Subpart focuses on the removal of floor beams or arches. When the flooring is removed, and only the floor beams remain, workers shall use planked walkways. These walkways are to be at least 18 in. wide and made of full undressed 2 in. thick lumber, or of an equivalent strength metal. Planks used for walkways shall have stringers placed underneath, and when placed, shall extend over the end bearing points by at least 1 ft. Workers should not walk on the exposed beams. Planks may be placed next to a floor beam being demolished to work from. Floor beams or arches being removed shall have a clear barricaded area below, with no workers for at least 20 ft. to the work's edge, and have no unnecessary materials in the controlled area below.

Tim Messer Construction, Inc. requires that no workers shall be permitted in any area affected by clamping or wrecking ball operations. And only those workers necessary shall even be permitted into the area when no mechanical work is being performed. The weight of the wrecking ball may not exceed either 50% of the crane's rated load , or 25% of the line's breaking strength, whichever is less. The wrecking ball shall be on a

locking, swivel hook and be used with the shortest boom and loadline lengths possible. Prior to pulling down any exterior walls, all cornices or other ornamental work shall be removed to prevent free-falling away from the wall as it is pulled down. Care must also be taken when pulling over sections of wall to ensure that all structural steel or similar attachments have been disconnected.

Blasting

Blasting is a very specialized field that requires a "competent" person to be on-site and actively involved at all times. For regulatory and safety reasons, the following are minimum requirements that must be met, when any blasting materials and associated equipment is on site.

All blasting shall be performed by a competent, licensed person working for a fully insured and bonded blasting contractor. Blasting must be approved, by permit, by the authority having jurisdiction (local fire department). When blasting must be performed in congested areas, or in close proximity to a facility, highway, road or structure, or any other installation that could be damaged, the blaster shall take all of the appropriate precautions as it pertains to confinement, delaying, initiation, loading of each blast with "approved" mats or other acceptable "best management practices" to control the throw of fragments, for the protection of the employees, or other persons or property within the area.

Delivery and issuance of explosives shall be made to and from authorized, qualified personnel and placed into approved containers or magazines. The use of black powder is prohibited.

Unless otherwise permitted by the Authority Having Jurisdiction, blasting shall only be conducted between sun up and sun down. Only authorized, competent, qualified person(s) shall handle blasting equipment, materials and explosives. Precautions shall be taken to prevent accidental discharge of electric blasting caps from current induced by cell phones, dust storms, errant power, lightning, radar and radio transmissions, or other sources of electricity. The use of ignition sources, not related to actual blasting shall be prohibited. Fires, firearms, flames, heat producing equipment, matches, open flames and smoking within 50' is strictly forbidden. No person under the influence of alcohol, drugs, medication or other substances that produce drowsiness shall not be permitted to work with blasting equipment and explosives. All blasting materials and explosives shall be kept in "approved" containers and/or Class II magazines, as required.

All explosives and blasting agents shall be accounted for at all times, with appropriate documentation of same. No blasting agents, explosives or other related material can be

Tim Messer Construction, Inc. Injury & Illness Prevention Plan

abandoned. Explosives, blasting agents, and blasting supplies that are obviously deteriorated or damaged shall not be used. Empty boxes, paper and filter packing materials, which previously contained high explosives, shall not be used again for any purpose, but shall be destroyed by a means permitted by the authority having jurisdiction. Employees authorized and qualified to prepare explosive charges, or conduct blasting operations shall use every reasonable precaution including, but not limited to audible and visual warning signals, and barricades and/or flags.

Chapter 25

Hazard Warnings

Introduction

Every reasonable method to warn employees of hazards and dangers and to inform them of the actions required must be utilized. Signs, characteristic lights, and audible alarms as additional safeguards for built-in mechanical and physical protection must be used. To ensure uniform response by personnel, the warning signs and devices must be of the same type for similar hazards. Obtaining and installing the warning systems is the responsibility of the group needing them.

Contents and Configuration

Signs must conform to the colors, symbols, lettering size, and proportions as specified by Tim Messer Construction, Inc., except that radiation signs must conform to the requirements stated in 10 CFR 20. Every warning sign must include the following components:

An approved heading that indicates the relative hazard.

A statement of the type of hazard.

A statement of what to do or not to do in the area.

Chapter 26

Structural Steel/ Cranes/ Rigging

Steel Erection Standards

Tim Messer Construction, Inc. will perform all structural steel erection in accordance with the current CAL-OSHA standards which were made effective March 18, 2002. This revision to the old standard introduces significant changes to the steel erection standard. Highlights of these new regulations follows first. More detailed explanations follows afterward.

Highlights of New Standard

The Controlling Contractor shall be responsible for:

- * Providing suitable access roads, laydown, and crane operating areas.
- * Providing written proof that the structural concrete and structural masonry walls are of sufficient strength to allow steel erection to start.
- * Obtaining the Structural Engineer of Record's approval for any anchor bolt modifications.
- * Establishing and enforcing lifting zones clear of all personnel except erectors
- * Accepting and taking custody of any fall protection systems turned over by the steel erector after their completion of the erection work.

The Steel Erector shall be responsible for:

- * Preplanning Hoisting Operations
- * Site-Specific Erection Plan
- * Pre-Shift crane Inspections
- * Methodical Erection Methods (detailed in regulation)
- * Fall Protection for all workers 15' to 30' or greater than 2 stories
- * Special exemption for Fall Protection for Connectors to 30'
- * Training Requirements
 - * Connector training
 - * Controlled Decking Zone training
 - * Fall hazard training
 - * Multi-lift training

The detailer Shall be responsible for:

- * Column requirements
 - * Four bolt bases
 - * Splice points
 - * Accommodations for guardrails
 - * Beam requirements
 - * Splice cradles/ seats
 - * Two bolt connections
- * Joist requirements
 - * Bolted end
 - * Stabilizer plates
 - * Bolted bridging
- * Decking requirements
 - * Turned down edges of angles

The Controlling Contractor

The controlling Contractor (which is usually the General Contractor, but may be the Construction Manager, Site Owner, or even Tim Messer Construction, Inc. is responsible by the CAL-OSHA Structural Steel Standards for several items. It is possible that these items may (through contractual agreement) be reassigned, but an interpretation from CAL-OSHA has not been made at this time.

- * Providing suitable access roads, laydown, and crane operating areas. This requirement, of course will be subject to interpretation on every site. However, the areas should be inspected for; adequate soil or rock compaction (perhaps certified by a materials testing lab); for adequately sized access roads into and through the site for all equipment and vehicles; proper drainage and level grade for crane setup area; accessible and adequately sized space for material storage and safe operation of our lifting equipment. This may in some cases, be required to be verified in writing.
- * Providing written proof that the structural concrete and structural masonry walls are of sufficient strength to allow steel erection to start. Extra concrete test cylinders may need to be used to break on the third (3rd) day (or other agreed to day) to test for 75% of the intended minimum compressive design strength. The Test Results from the testing company should accompany a Written Notification and Authorization form [to be issued by the Controlling Contractor] to Tim Messer Construction, Inc.

stating that all structural concrete footings, masonry footings, piers and walls has passed 75% strength tests and that any repairs, replacements and modifications to the anchor bolts have been approved by the structural engineer of records.

(In the event that the concrete strength test is not achieved on the third day after concrete samples have been obtained, testing will resume on the seventh day.) Commencement of steel erection to begin after proper documentation has been issued.

* Obtaining the Structural Engineer of Record's approval for any anchor bolt modifications. This can become a potentially time-consuming process, in that some anchor bolt modifications occur frequently. To help with this, pre-planning with the Structural Engineer of Record by Tim Messer Construction, Inc. is recommended to discuss typical scenarios and solutions. Establishing authorized solutions, such as bending anchor bolts, enlarging column plates, etc. will help project flow. However, any modifications shall still be submitted to the Engineer for countersignature, and kept in the project file onsite.

* Establishing and enforcing lifting zones clear of all personnel except erectors. Every effort should be made by the Controlling Contractor to minimize exposure of personnel to any overhead loads. Tim Messer Construction, Inc. should submit a lift plan outlining the areas needed for the light path(s). The only workers allowed in this area should connectors and riggers.

* Accepting and taking custody of any fall protection systems turned over by the steel erector after their completion of the erection work. This should be done formally in writing. If the Controlling Contractors does not want to assume liability, it's recommended that the fall protection systems (typically the wire rope guardrails) be removed from the site.

The Steel Erector shall be responsible for:

- * Preplanning Hoisting Operations. Pre-planning of overhead hoisting operations: All hoisting operations in steel erection shall be preplanned and submitted. All hazards that are associated with hoisting and rigging shall be discussed with all workers including, but not limited to:
 - 1) General
 - a) Visual inspections
 - b) Minimum checklist should include:
 - i) All control mechanisms for maladjustments;

- ii) Control and drive mechanism for excessive wear of components and contamination by lubricants, water or other foreign matter;
 - iii) Safety devices, including but not limited to boom angle indicators, boom stops, boom kick out devices, anti-two block devices, and load moment indicators where required;
 - iv) Air, hydraulic, and other pressurized lines for deterioration or leakage, particularly those which flex in normal operation;
 - v) Hooks and latches for deformation, chemical damage, cracks, or wear;
 - vi) Wire rope reeving for compliance with hoisting equipment manufacturer's specifications;
 - vii) Electrical apparatus for malfunction, signs of excessive deterioration, dirt, or moisture accumulation;
 - viii) Hydraulic system for proper fluid level;
 - ix) Tires for proper inflation and condition;
 - x) Ground conditions around the hoisting equipment for proper support, including ground setting under and around outriggers, ground water accumulation, or similar conditions;
 - xi) The hoisting equipment for level position; and
 - xii) The hoisting equipment for level position after each move and setup.
 - xiii) Working under loads
 - xiv) Routes for suspended loads to eliminate workers under the load
 - xv) Provisions while working under loads
 - xvi) Multiple lift rigging procedure
 - xvii) Criteria for making multiple lifts
 - xviii) Components of multiple lift rigging assembly
 - xix) Load capacities
 - xx) MLRA shall be rigged with members
 - xxi) Setting of members
 - xxii) Controlled load lowering
- * Site-Specific Erection Plan. Due to the conditions specific to the site, alternate methods that provide protection to be developed by a qualified person and be available at the work site. Include and identify crane's swing radius, load weights and distance from the centerline of crane to lifting hook
 - * Pre-Shift crane Inspections Shall include identification and qualification of the competent person for rigging operations. tabulated data for the crane to be used, including all weights and jib length to be used, the crane's lifting capacity and working radius capacities. In addition, a complete

annual 3rd party inspection report for the last 12 months. This inspection report to include at least, Inspection deficiency report, crane inspection evaluation report and certificate of unit test.

- * Methodical Erection Methods which are detailed in the regulation, however, include but is not limited to the following details.

(a) General

1. Loads shall not be released from hoisting line until the members are secured with at least 2 bolts per connection, drawn up wrench-tight or the equivalent as specified by the project structural engineer of record.
2. A competent person shall determine if more than 2 bolts are necessary to ensure the stability of cantilevered members.

(b) Diagonal Bracing

Solid web structural members used as diagonal bracing shall be secured by at least 1 bolt per connection drawn up wrench-tight or the equivalent as specified by the project structural engineer of record.

(c) Double Connections

1. When 2 structural members on opposite sides of a column web are connected sharing common connection holes, at least 1 bolt with its wrench-tight nut shall remain connected to the first member unless a shop-attached or equivalent device is supplied with the member to secure the first member and prevent the column from being displaced.
2. If a seat or equivalent device is used, it shall be adequately bolted or welded to both a supporting member and the first member before the nuts on the shared bolts are removed to make the double connection.

(d) Column Splices

Each column splice shall be designed to resist a minimum eccentric gravity load of 300lbs located 18" from the extreme outer face of the column each direction at the top of the column shaft.

(e) Perimeter Columns

1. Perimeter columns must extend a minimum of 48" above the finished floor.
2. These columns must have holes or other devices to permit installation of perimeter safety cables. 1926.760(a)(2)

Column Anchorage 1926.755

(a) General Requirements

1. Minimum anchorage rods shall be 4.

2. Each column anchor rod assembly, including the column-to-base plate weld and the column foundation, shall be designed to resist a minimum eccentric gravity load of 300lbs located 18" from the extreme outer face of the column each direction at the top of the column shaft.
3. Columns shall be set on level finished floors, pre-grouted leveling plates, leveling nuts, or shim packs which are adequate to transfer the construction loads.
4. All columns shall be evaluated by a competent person to determine whether guying or bracing is needed. If needed, they shall be installed.

(b) Repairs, replacements or field modification of anchor rods

1. Anchor rods shall not be repaired, replaced or field-modified without the approval of the project structural engineer of record.
2. Prior to the erection of a column, the controlling contractor shall provide written notification to the steel erector if there has been any repair, replacement or modification of the anchor rods of that column.

(a) General

1. Except as provided in paragraph (a)(2) of this section, where steel joists are used and columns are not framed in at least two directions with solid web structural steel members, a steel joist shall be field-bolted at the column to provide lateral stability to the column during erection. For the installation of this joist: (i)(ii)(iii)
2. Where constructability does not allow a steel joist to be installed at the column:
3. (i)(A)(B)(C)(D), (ii) Where steel joists at or near columns span 60 feet (18.3 m) or less, the joist shall be designed with sufficient strength to allow one employee to release the hoisting cable without the need for erection bridging.
4. Where steel joists at or near columns span more than 60 feet (18.3 m), the joists shall be set in tandem with all bridging installed unless an alternative method of erection, which provides equivalent stability to the steel joist, is designed by a qualified person and is included in the site-specific erection plan.
5. A steel joist or steel joist girder shall not be placed on any support structure unless such structure is stabilized.
6. When steel joist(s) are landed on a structure, they shall be secured to prevent unintentional displacement prior to installation.
7. No modification that affects the strength of a steel joist or steel joist girder shall be made without the approval of the project structural engineer of record.
8. Field-bolted joists. (i)(ii)

9. Steel joists and steel joist girders shall not be used as anchorage points for a fall arrest system unless written approval to do so is obtained from a qualified person.
 10. A bridging terminus point shall be established before bridging is installed.
(See Appendix C to this subpart.)
 - (b) Attachment of steel joists and steel joist girders. (1)(2)(3)(4).
 - (c) Erection of steel joists. (1)(2)(3)(4)(5)
 - (d) Erection bridging.
 1. Where the span of the steel joist is equal to or greater than the span shown in Tables A and B, the following shall apply: (i)(ii)(iii)
 2. Where the span of the steel joist is over 60 feet (18.3 m) through 100 feet (30.5 m), the following shall apply: (i)(ii)(iii)(iv)
 3. Where the span of the steel joist is over 100' (30.5m) through 144' (43.9m), the following shall apply: (i)(ii)(iii)
 4. For steel members spanning over 144' (43.9), the erection methods used shall be in accordance with § 1926.756.
 5. Where any steel joist specified in paragraphs (c)(2) and (d)(1), (d)(2), and (d)(3) of this section is a bottom chord bearing joist, a row of bolted diagonal bridging shall be provided near the support(s). This bridging shall be installed and anchored before the hoisting cable(s) is released
 6. When bolted diagonal erection bridging is required by this section, the following shall apply: (i)(ii)(iii)(iv)(v)
- (f) Landing and placing loads.
1. During the construction period, the employer placing a load on steel joists shall ensure that the load is distributed so as not to exceed the carrying capacity of any steel joist.
 2. Except for paragraph (e)(4) of this section, no construction loads are allowed on the steel joists until all bridging is installed and anchored and all joist-bearing ends are attached.
 3. The weight of a bundle of joist bridging shall not exceed a total of 1,000 pounds (454 kg). A bundle of joist bridging shall be placed on a minimum of three steel joists that are secured at one end. The edge of the bridging bundle shall be positioned within 1 foot (.30 m) of the secured end.
 4. No bundle of decking may be placed on steel joists until all bridging has been installed and anchored and all joist bearing ends attached, unless all of the following conditions are met: (i)(ii)(iii)(iv)(v)(vi)
 5. The edge of the construction load shall be placed with 1' (.30m) of the bearing surface of the joist end.
- * Every attempt shall be made to provide fall protection at 6 feet or greater,

however, in certain cases the following may be used - check with your RSO first.

Fall Protection for all workers 15' to 30' or greater than 2 stories shall be enforced. However, trained connectors and workers working in a CDZ must use a fall protection system above 30 ft., and when working from 15 ft. to 30 ft., must wear a personal fall arrest system, and have the ability to properly tie off at any point. Static lines may be placed from column-to-column to provide a tie-off point, and Perimeter cables must be installed immediately after metal decking is in place. Tim Messer Construction, Inc. shall maintain the perimeter cables until steel erection activities have been completed at which point the guardrail system shall be turned over to the Controlling Contractor to be used by other trades.

- * Controlled Decking Zone (CDZ). A controlled decking zone may be established in the area of the structure over 15 and up to 30' above a lower level where metal decking is initially being installed and forms the leading edge of a work area. This CDZ shall not exceed 90 ft. in either direction, and access shall be limited to only those workers involved in CDZ operations. Authorized CDZ workers working above 30 ft. shall be protected from falling by conventional fall protection methods. Authorized CDZ workers working from 15 ft. to 30 ft. shall wear a personal fall arrest system, and have the ability to properly tie off at any point. In addition, a barrier shall be placed preventing unauthorized workers from entering the CDZ. All decking shall be fastened before allowing other workers onto the decking.
- * Training Requirements. Training personnel. Training required by this section shall be provided by a qualified person(s).
- * Fall hazard training. The employer shall provide a training program for all employees exposed to fall hazards. The program shall include training and instruction in the following areas:
 - The recognition and identification of fall hazards in the work area;
 - The use and operation of guardrail systems (including perimeter safety cable systems), personal fall arrest systems, positioning device systems, fall restraint systems, safety net systems, and other protection to be used;
 - The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used;
 - The procedures to be followed to prevent falls to lower levels and through or into holes and openings in walking/working surfaces and walls; and the fall protection requirements of the CAL-OSHA

Standards

- * Special training programs. In addition to the training required in paragraphs (a) and (b) of this section, the employer shall provide special training to employees engaged in the following activities:
 - * Multiple lift rigging procedures
 - * Connector procedures. The employer shall ensure that each connector has been provided training

Controlled Decking Zone Procedures. Where CDZs are being used, the employer shall assure that each employee has been provided training

INTRODUCTION

This section covers all cranes and derricks used in construction with several exceptions. The exceptions include tow trucks used to lift vehicles and clear wrecks, dedicated drilling rigs, tree trimming and removal work, gin poles for erecting communications towers, helicopter cranes, articulating "knuckle-boom" trucks (when used to transfer materials from a crane truck to the ground) and cranes used in railroad operations (which are covered by the Federal Railway Administration).

GROUND CONDITIONS

Tim Messer Construction, Inc. must ensure that the ground conditions are safe to support crane use, inform the equipment users and operators of the location of any ground hazards (e.g., voids, tanks, utilities) and talk with the operator or assembly director about what must be done to assure safe ground conditions. Equipment must not be assembled or used unless ground conditions are firm, drained, and graded to a sufficient extent so that, in conjunction (if necessary) with the use of supporting materials, the equipment manufacturer's specifications for adequate support and degree of level of the equipment are met.

ASSEMBLY/DISASSEMBLY

Manufacturers' procedures and prohibitions for assembly and disassembly must be complied with, unless Tim Messer Construction, Inc. can show that its procedures are safer (with the exception of the use of synthetic slings where the manufacturers' procedures must be used). Assembly/ disassembly must be directed by a competent and qualified person also known as the A/D (assembly/ disassembly) director. The RSO, Stephen Ferguson will designate the A/D director. The A/D director must review the procedures before starting work and make sure that the crew members understand the tasks, the hazards and positions/locations to avoid.

Crew members must inform the operator before they go out of his/her view into an area where they could be hurt by movement of the equipment or load, and the operator cannot move the equipment or load until the crew members communicate that it is safe to do so. Employees are not allowed under the boom or jib when pins are being removed unless Tim Messer Construction, Inc. demonstrates it is necessary and implements special procedures. Hazards that must be addressed include:

- ground conditions;
- blocking material and location;
- loads on assist cranes;
- rigging attachment points;
- supports for components when pins are removed;
- center of gravity identification;
- minimizing snagging of ropes on the boom or pins;
- supports for counterweights;
- testing of the boom brake;
- backward stability of the components; and
- wind speed/weather.

Manufacturers' limitations or those of a registered professional engineer on support of cantilevered booms must be followed. Component weights must be readily available. Components and their configuration must follow manufacturers' recommendations or those of a registered professional engineer. The crane must be inspected post-assembly. Shipping materials (pins, etc.) must be removed and stored to prevent a falling hazard. Pile driving equipment must not have a jib attached during operation.

Outriggers and stabilizers must be fully extended or deployed as per the load chart. Outriggers must remove the weight from the wheels. Floats, where used, must be attached to the outriggers. Specific requirements exist for blocking outriggers and stabilizers and for locomotive cranes.

Rigging used during assembly/disassembly must be done by a qualified rigger. The RSO, Stephen Ferguson will designate who the qualified riggers are on the project. Synthetic slings must be protected from sharp edges, etc., and according to the manufacturer's recommendations. During dismantling, none of the pins can be removed when parts are in tension or not fully supported. If an employer does not follow manufacturers' recommendations, it must use procedures that are developed by a qualified person and are as safe.

POWER LINE SAFETY

Before assembly or disassembly of a crane, Tim Messer Construction, Inc. must

determine if it could come within 20 feet of a power line. If it is determined that any part of the equipment, load line or load could get closer than 20 feet to a power line then at least one of the following measures must be taken:

- 1) Ensure the power lines have been de-energized and visibly grounded
- 2) Ensure no part of the equipment, load line or load gets closer than 20 feet to the power line
- 3) Determine the line's voltage and minimum approach distance permitted in Table A.

If the line is not de-energized, Tim Messer Construction, Inc. must:

- conduct a meeting with the assembly/disassembly crew to review measures to prevent encroachment;
- use only nonconductive tag lines, such as polypropylene; and
- use either a dedicated spotter, a proximity alarm, a range control warning device, an automatic limit device or an elevated warning line/barrier in view of the operator.

Cranes cannot be assembled/disassembled below an energized power line or within the minimum distances referenced in Table A of a power line. If Table A is used, the owner/utility must provide the voltage to Tim Messer Construction, Inc. within two days of a request.

Power lines must be assumed to be energized until they are confirmed to be de-energized and visibly grounded. Warnings about electrocution hazards must be posted conspicuously in the cab (in view of the operator) and outside the cab (except for overhead gantry and tower cranes).

The work zone shall be identified by demarcating boundaries such as flag and range limiting devices, or defining the work zone as 360 degrees around the equipment up to the maximum working radius. The hazard assessment must determine if any part of the equipment could get closer than 20 feet to a power line. [4] If the line is not de-energized, a meeting must also be held with the RSO or designated representative and the crew before operations begin to review the location of the lines and procedures to prevent encroachment. Measures similar to those required during assembly/disassembly must be taken to prevent encroachment, but an insulating link between the load line and load is also an option.

Operators and crew members must be trained:

- on the procedures to follow in the event of a contact;
- that power lines must be presumed to be energized until confirmed and visibly grounded;

- that power lines are presumed un-insulated until otherwise confirmed by the owner or a qualified person;
- on the limits of insulating links and other devices (e.g. proximity alarms); and
- on proper grounding procedures and their limitations.
-
- Spotters must also get applicable training.

The minimum clearance distances are specified in Table A as:

Voltage (kV)	Minimum clearance distance (ft)
Up to 50	10
>50 to 200	15
> 200 to 350	20
>350 to 500	25*
>500 to 750	35*
>750 to 1,000	45*
> 1,000	determined by the utility/owner

* According to 1926.1409, for power lines over 350 to 1,000 kV, the minimum distance is presumed to be 50 feet. Over 1,000 kV, the utility/owner or a registered engineer must establish the minimum distance.

Over 350 to 1,000 kV, the minimum distance is presumed to be 50 feet. Over 1,000 kV, the utility/owner or a registered engineer must establish it.

If work has to operate closer than the Table A values, then the following precautions must be taken:

- Tim Messer Construction, Inc. must show that Table A is infeasible and that it is infeasible to de-energize and ground or relocate the line;
- Safe distances must be determined by the owner/operator of the line or a registered professional engineer who is a qualified person;
 - A planning meeting must be held;
 - Automatic reenergizing devices must be inoperative;
 - A dedicated spotter must be assigned;
 - An elevated warning line/barricade or an insulating link must be installed between the line and the load (additional provisions kick in one to three years after the effective date);
 - Non-conductive rigging must be used;
 - A range of motion limiting device must be used;
 - Non-conductive tag lines must be used;
 - Barricades at least 10 feet from the equipment (where feasible) must be

established;

- Equipment must be properly grounded;
- Workers must be kept from touching the line above the insulating link;
- The owner and user must meet with the equipment operator and other workers to review procedures;
- One person must be identified who will implement the plan and can stop work if necessary; and
- Documentation of these procedures must be immediately available on site.

Equipment traveling under or near a power line must (a) have a lowered boom/mast and support system, (b) obey minimum clearance distances set in Table T, (c) reduce speeds to minimize breaching, (d) use a dedicated spotter if closer than 20 feet, (e) illuminate or identify the power lines at night and (f) identify and use a safe path of travel.

Table T – Minimum Clearance Distances While Traveling with No Load

Up to 0.75 kV	4 ft
>0.75 to 50 kV	6 ft
>50 to 345 kV	10 ft
>345 to 750 kV	16 ft
>750 to 1,000 kV	20 ft
> 1,000 kV	established by owner or registered professional engineer/qualified person

INSPECTIONS

Inspections by a qualified person are required after modifications, after repairs or adjustments and after assembly. Before each shift, visual inspections by a competent person are required. The inspection must consist of observation for apparent deficiencies. Some inspection items shall include:

- the control mechanisms for maladjustments;
- the control and drive mechanisms for excessive wear or contaminants;
- pressurized lines for deterioration or leakage;
- hydraulic system for proper fluid level;
- hooks and latches for damage or wear;
- wire rope reeving for compliance with manufacturer's specifications;
- wire rope, electrical apparatus, tires for proper inflation and condition;
- ground conditions;
- equipment level position (before each shift and after each move and setup);
- operator cab windows for defects; and
- rail systems for equipment running on rails.

If any deficiencies are found, the competent person must determine if they present a safety hazard. If so, equipment must be taken out of service until the deficiency is corrected. Another inspection must be made and documented with results, name and signature of the inspector.

Equipment must be inspected monthly by a competent person and documented. Documentation must include the following: items checked, results of inspection, and name and signature of the inspector. Documentation must be retained for 3 months. (Documented monthly inspection not required if the daily inspection is documented and records are retained for 3 months)

More in-depth annual inspections by a qualified person are also required. Some disassembly may be required for this inspection. Annual inspections must also be documented with records kept for at least 12 months. Severe conditions also trigger inspections by a qualified person. A qualified person must also inspect any equipment that has been idle for three months or longer. Any manufacturer's recommendations for more frequent inspections must be followed. The RSO will keep these records.

WIRE ROPE

Wire rope must be visually inspected by a competent person before and during each shift. Apparent deficiencies are categorized in three categories: I – significant distortions or corrosion, II – visible broken wires and III – core failures. Special attention must be paid to terminal ends, reverse bends, pick up points, etc. Deficiencies found must be corrected or localized or the wire rope replaced before use. The wire rope must be tagged out until it is replaced. Monthly and more in-depth annual inspections of wire rope by a qualified person are also required.

SAFETY DEVICES

Safety devices are required to be on all equipment and must be in proper working order before operations begin. If any of the devices are not in proper working order the equipment must be taken out of service and operations must not resume until the device is working properly again.

All cranes (except for floating ones) must have:

- an operational crane level indicator;
- boom stops;
- jib stops (except for derricks);
- locking foot pedal brakes;

- integral holding device/check valve on hydraulic outrigger/stabilizer jacks;
- rail clamps and stops (if equipment is on rails); and
- a functional horn.

Equipment must be stopped and work must not begin unless all safety devices are in working order.

OPERATIONAL AIDS

The following operational aids must be in working order and are required on all equipment (with some exceptions based on age and type of crane):

- Category I (must be repaired within seven days after deficiency occurs) – boom hoist limiting device, luffing jib limiting device, anti two-blocking device.
- Category II (must be repaired within 30 days after deficiency occurs) – boom angle or radius indicator, jib angle indicator, boom length indicator, load weighing device, outrigger/stabilizer position sensor/monitor, hoist drum rotation indicator.

OPERATION

Employers must comply with all manufacturers' procedures applicable to the operational functions of equipment, including its use with attachments, must be complied with. [9] If they are unavailable, they must develop and comply with their own procedures. Procedures for operations must be developed by a qualified person; procedures for capacity must be developed and signed by a registered professional engineer. These procedures must be readily available to the operator in the cab. If not (e.g., electric failure), operations must cease. The operator shall have access to procedures applicable to the operation of the equipment. Procedures include rated capacities (load charts), recommended operating speeds, special hazard warnings, instructions and operator's manual.

Operators are not allowed to be distracted by other activities, such as use of cell phones. They cannot leave the controls with a suspended load. Out of service equipment must be tagged-out and not operated until tags are removed by an authorized person.

The operator must verify that the controls are working and that all personnel are in the clear before starting the engine. A competent person must determine if equipment must be secured when a local storm warning is issued. If any repairs or adjustments are made, notifications must be made in writing. Safety devices and operational aids are not a substitute for professional judgment by the operator.

A competent person must verify that rope is being reseated properly on the drum, if slack rope requires it. A competent person must also adjust the equipment or operations for wind, ice and snow conditions. Equipment must not be operated in excess of its rated capacity, and operators cannot be made to do so. Operators have to verify that the load is within the equipment's capacity by calculation, use of a load weighing device or other means. The boom and equipment must not contact any obstructions. Loads cannot be pulled or dragged sideways. For wheel-mounted equipment, loads cannot be lifted over the front area (unless permitted by the manufacturer). Brakes must be tested each time a load that is 90 percent or more of the maximum line pull is lifted.

Operators cannot travel with a load if prohibited by the manufacturer. Traveling with a load must be supervised by a competent person who first determines if it is necessary. Rotation of the load during travel must be controlled. Operators must obey stop signals, no matter who gives them. Cranes (except tower cranes) must not be operated without the counterweights recommended by the manufacturer in place.

STOPPING WORK

Whenever there is a safety concern, the operator must have the authority to stop work and/ or refuse to handle loads until a qualified person has determined that safety has been assured.

SIGNALS

A signal person is required when the operator is not in full view of the load area or load travel, when the travel view is obstructed or whenever the operator or load handler determines it is necessary due to site specific concerns. Signal persons can use hand signals, voice, audible signals or "new signals." Non-standard hand signals must be agreed upon ahead of time. New signals must be equally effective and comply with a national consensus standard. Signals must be appropriate to the conditions and the ability to transmit them must be maintained at all times. Operations must stop if interference interrupts transmission.

Only one person can give signals at a time, except when a safety problem requires an emergency stop. All signal directions must be given from the operator's perspective. If one signal person is signaling for more than one crane/derrick, they must be able to identify the one to which they are signaling. Signaling devices must be tested before operations and use dedicated channels. Operators must be able to receive signals hands-free. Voice signals must be coordinated and include three elements in this order: (1) function, direction; (2) distance and/or speed; (3) function, stop command. Communication must be in a common language. Hand signal charts must be posted near the operation or on the vehicle.

FALL PROTECTION

New equipment (manufactured one year after the effective date) with lattice booms must have walkways at least 12 inches wide if the boom is six feet or higher. Walkways on booms are not permitted to have guardrails or handrails if they could be snagged by the ropes or bars or if they are removable. New equipment must also provide for safe access and egress from the ground and have slip-resistant walking/stepping surfaces. Personal Fall Arrest Systems (PFAS) must meet the fall prevention standard. PFAS must be used when moving around on non-lattice booms, on non-horizontal lattice booms and on horizontal lattice booms 15 or more feet high and on assembly/disassembly work at that height except in the cab, on the deck or at or near draw-works (when running). Fall restraint systems must withstand twice the maximum load under reasonably anticipated conditions. PFAS can be anchored to the hook or load line after review by a qualified person if the operator has knowledge and no load is being suspended. Training is required.

WORK AREA CONTROL

Employees must be trained and protected from entering the swing radius zone of the equipment. They must inform the operator if they are moving out of his/her view, and the operator must not rotate the equipment until communication establishes that it is clear. When on a site with multiple cranes, a system to prevent cranes from colliding with each other must be established.

KEEPING CLEAR OF THE LOAD

Operators must use routes that minimize exposure to hoisted loads. No employees are allowed under a non-moving suspended load unless they are hooking, unhooking or guiding the load; initially attaching the load to a structure or component; or operating a concrete hopper or bucket. When hooking, unhooking or guiding a load, a qualified rigger must prevent unintentional displacement and use self-closing latches (except J hooks are allowed for wood trusses). When landing a load, only essential personnel are allowed in the fall zone and only when necessary to guide, monitor and/or detach/attach a load.

OPERATOR QUALIFICATIONS

Employers must make sure that equipment operators are qualified by training or experience and certified to operate the equipment. Operators can become certified through testing by a nationally recognized accrediting agency or through an audit by their employer. They may be qualified by the U.S. military. They can also be licensed by

a government entity. Certification/ licensing is through a written and practical test. Certification through a nationally accredited testing agency is portable and good for five years. Certifications by Tim Messer Construction, Inc. or the military are not portable but are also valid for up to five years. Operators-in-training, who are not yet certified, must be continuously monitored, except for short breaks, by a certified operator (who has passed at least the written test). As necessary, tests may be administered verbally or in other languages. Certification is only good for a specific piece of equipment and a certain maximum capacity.

This requirement has a four-year phase-in period. Within 4 years of November 8th 2010, employers must ensure operators be qualified/certified by one of the following methods:

1. Certification by an accredited crane operator testing organization.
2. Qualification by an audited employer program.
3. Qualification by the U.S. military.
4. Licensing by a government entity.

SIGNAL PERSON QUALIFICATIONS

A signal person's qualifications must be evaluated by either a third party qualified evaluator or by Tim Messer Construction, Inc.'s qualified evaluator. Evaluations by an employer's evaluator are not portable, while third party evaluations are. Documentation must be available on site and specify the type of signaling for which signal persons are qualified (e.g. hand signals, etc.). Evaluations must include both a written/oral test and a practical test.

QUALIFICATIONS OF MAINTENANCE & REPAIR PERSONNEL

Maintenance, inspection and repair personnel, if "qualified persons," can only operate equipment as needed to do their work or under the direct supervision of an operator.

TRAINING

Tim Messer Construction, Inc. must provide the following training:

- Training on overhead power lines;
- Training for signal persons;
- Training for operators;
- Training for Competent and Qualified Persons;
- Training on avoidance of crush/pinch points; and
- Training on tag-out and start-up procedures.

Training must be provided at no cost to employees and must include an evaluation. Refresher training may be required.

HOISTING PERSONNEL

Except for steel erection, use of a crane to hoist personnel is only allowed when other means are more hazardous or not possible (due to structural design or worksite conditions). The equipment must be set up properly. The total load must not exceed 50 percent of capacity. When stationary, all brakes must be engaged. Equipment must have properly functioning devices, that is, boom angle indicators, hoist limiting devices, anti two-block devices and controlled load lowering devices. Equipment must not be operated if these devices are not working. A personnel platform cannot be directly attached to a luffing jib.

The personnel platform system must be designed by a qualified person. The personnel platform must be kept within ten degrees of level and designed to minimize tipping. The platform must support its own weight and five times the maximum load and meet other structural requirements (e.g., guardrails, welds, grab rails, access gates/doors, headroom, and overhead protection). Its rated capacity must be conspicuously posted. Trial lifts must be made to each planned location before each shift, after equipment is moved and if the lift route is changed. A competent person must determine if the trial lift is done safely and conduct an inspection before and after the trial and proof lifts. Any deficiencies found during the trial must be corrected before personnel are

hoisted. A proof test must be done prior to any hoisting (but can be the same as the trial lift).

Hoisting must be in a slow, controlled, cautious manner with no sudden movements. All body parts must be kept inside. Employees cannot stand on the guardrails or toe board or pull the platform out of plumb. The platform must be secured to the structure before it is exited or entered. Controls on the platform must be operated by a qualified person. The operator must remain at the controls while the platform is occupied (if controls are not in the platform) or must be on site and in view of the equipment. If wind speeds exceed 20 mph or other dangerous weather conditions are present, a qualified person must determine if it is safe to lift or stop a lift in progress. Employees being hoisted must be in direct communication with the operator or signal person.

The hoist must have a personal fall arrest system. No lifts can be made on other load lines while hoisting personnel, except factory-produced, boom-mounted personnel platforms with a winch. Hoisting cannot normally occur while equipment is traveling, except under specific conditions and never for derricks.

A pre-lift meeting of the operator, signal person employees to be hoisted and the person responsible must be held.

Hoisting personnel is generally prohibited near power lines. Special requirements exist for hoisting personnel in drill shafts, in pile driving operations, to and from a marine worksite and for storage-tank, shaft and chimney operations. For some of these operations, boatswain chairs are allowed.

MULTIPLE-CRANE/DERRICK LIFTS

Multiple crane lifts must be planned by a qualified person and directed by a person who is both qualified and competent or a competent person assisted by a qualified person. The lift director must meet and review the plan with those involved with the lift.

DESIGN, CONSTRUCTION AND TESTING

Equipment that will lift more than 2,000 pounds must meet ASME B30.5 - 1968 or 2004 or meet prototype testing in BS EN 14439:2006 or BS EN 13000:2004. All equipment must have information in the cab on rated capacity, load capacities, a work area chart indicating the areas where no load is to be handled, etc. Load hooks and related equipment must be of sufficient weight. Hooks and balls must be marked with rated capacity and weight. Hooks generally cannot be used without latches which close at the throat and keep slings in while the rigging is slack. Posted warnings must be kept legible. A fire extinguisher must be accessible on the equipment. Cabs must have proper ventilation to maintain visibility and have doors that will not open inadvertently while operating or traveling, safety glass windows in front and both sides, guarded belts and gears, insulated/guarded exhaust pipes, protected hydraulic/pneumatic lines and exhaust directed away from the cab. Friction mechanisms must be sufficient for the loads.

If they have not modified the equipment, employers can rely on documentation that the manufacturer designed and built the equipment to meet this standard.

EQUIPMENT MODIFICATIONS

The manufacturer must approve all modifications/additions in writing. If the manufacturer refuses or is unavailable or unresponsive, a registered professional engineer who is a qualified person approves them. The registered professional engineer must be qualified with respect to the equipment involved, and must ensure the original safety factor of the equipment is not reduced.

Rigging

Planning for safe rigging and lifting must begin at the design stage, and lifting procedures must be developed for assembly and installation. The lifting procedure should be developed and discussed with the rigging crew supervisor.

Responsibility for all rigging jobs is shared between the rigging crew and the customer. The customer is responsible for defining and requesting the move, for providing technical information on relevant characteristics of the apparatus, including special lifting fixtures when required, for providing suggestions on rigging and moving, and for assigning someone to represent them both in planning and while the job is being carried out. The riggers are responsible for final rigging and for carrying out whatever moves have been designated. Before any movement takes place, however, each representative must approve the rigging and other procedures associated with the intended move. Each must respect the responsibility and authority of the other to prevent or terminate any action he or she judges to be unsafe or otherwise improper.

The supervisor must make certain that personnel know how to move objects safely by hand or with mechanical devices in the operations normal to the area and must permit only those employees who are formally qualified by training and certification to operate a fork truck, crane, or hoist. The supervisor must enforce the use of safe lifting techniques and maintain lifting equipment in good mechanical condition.

Employees are required to observe all established safety regulations relating to safe lifting techniques.

The Responsible Safety Officer provides training programs followed by certification for employees who have demonstrated the ability to operate fork trucks of up to 4-ton capacity and for incidental crane operations that require no special rigging.

Slings, Guy Lines, Load lines

1. Do not overload slings.
2. Do not drag slings along the ground or floor.
3. Inspect cables and slings frequently. Before inspecting, clean surface dirt from the sling to reveal any hidden nicks, gouges, or other damage. If, during inspection, or at any other time you notice that a sling is defective, remove it from service and label it as "Defective Sling, Do Not Use" and give it to your superintendent for repair or destruction.
4. Never jerk the load, jerking can overload the equipment.

5. When wrapping around sharp corners or picking heavy loads with corners, \ use softeners or other pads.
6. When slings are not in use, pick them up and store them.
7. Check slings to make sure that the length marked on them corresponds to the actual length. If the sling is longer than marked, it may have been overloaded.
8. Do not use a sling in good condition beyond it's rated capacity. Allow for an extra safety factor for a sling in only fair condition. Do not use a sling in poor condition. Nylon web slings should be removed from service if they are burned by heat, acids, or caustics, if the stitches are broken or worn, if fittings are distorted, if the webbing is snagged, punctured, or torn, or cut, or if any other defect that might affect the strength of the sling is observed. Wire rope slings should be removed from service if any of the following is observed.
 - a. Six randomly distributed broken wires in one rope lay, or three broken wires in one strand of rope lay.
 - b. Wear or scraping of one-third of the original diameter of outside, individual wires.
 - c. Kinking, crushing, bird caging, or any other damage resulting in the distortion of the wire rope structure.
 - d. Evidence of heating or electric arc damage.
 - e. End attachments that are cracked, deformed, or worn to the point where the rated capacity is reduced.
 - f. Corrosion that is of such severity or extent as to reduce the rated load capacity or the rope end attachment.
9. Do not make temporary repairs on a sling, turn it over to your superintendent for repair or destruction.
10. When guy lines or load lines are unrigged or taken down, they should be inspected. Defective or damaged rope or cable should be destroyed to prevent further use.
11. Lines for hoists or cranes should be long enough that at least two full wraps will be left on the drum at any point in their operation.
12. Guy lines should be flagged at all locations where they cross paths used by foot or vehicle traffic.

13. Before you make the first pick with a particular rigging, be sure to have your superintendent inspect all parts of the rigging.

Ropes

1. Turn in old, worn or damaged rope to your superintendent for replacement or removal from service. Damaged rope should be cut into short lengths to keep it from being used again.
2. On wire rope, use the number of clamps specified in the following table:

Rope Diameter in Inches	Number of Clamps per Eye	Rope Diameter in Inches	Number of Clamps per Eye
3/16	2	1 1/8	5
1/4	2	1 1/4	5
5/16	2	1 3/8	6
3/8	2	1 1/2	6
7/16	2	1 5/8	6
1/2	3	1 3/4	7
5/8	3	2	8
3/4	4	2 1/8	8
7/8	4	2 1/4	8
1	4		

Attach a wire rope clamp as follows:

- a. Place the u-bolt on the "dead" or short side of the rope, and the saddle on the "live" or long side. Remember the phrase "Never saddle a dead horse".
 - b. Attach the clamp farthest from the eye first. Tighten it.
 - c. Place the clamp nearest the eye next. Don't tighten it.
 - d. Place any other clamps in position loosely.
 - e. Minimum spacing of clamps is six times the rope diameter.
 - f. Place a light load on the rope to stretch it and equalize tension.
 - g. Tighten all clamps. Be careful not to tighten the clamps so much that they unduly distort the rope.
3. Do not use manila rope close to welding operations or other sources of heat. If rope has been exposed to high heat, check its condition carefully before using it again.

Tim Messer Construction, Inc. Injury & Illness Prevention Plan

4. Keep manila rope as dry and clean as possible. Protect it from acid, fumes, and chemicals. Inspect the center strands frequently from rotting or other damage.
5. Avoid overloading and shock loading.
6. Protect the rope from sharp edges and sharp bends with softeners or other padding. Protect rope from chafing and kinks.
7. Coil or uncoil wire rope by rolling and unrolling it as if it were a roll of tape; this helps prevent twisting and kinking of the rope.
8. Any repairs made to ropes or sling assemblies must be tested to at least 2 times their planned rating. Testing shall be made with known weights, and a written record of proof loading shall be maintained by the RSO.

Chapter 27

Hazardous Waste Operations and Emergency Response

The type and character of our construction activities are such that our employees may be exposed to leaks or spills of hazardous materials, typically petroleum-based liquids. Any applicable cleanup activities shall be in accordance with the following section. Any questions regarding cleanup procedures shall be directed to the Responsible Safety Officer, Stephen Ferguson.

Definitions

"Buddy system" means a system of organizing employees into work groups in such a manner that each employee of the work group is designated to be observed by at least one other employee in the work group. The purpose of the buddy system is to provide rapid assistance to employees in the event of an emergency.

"Clean-up operation" means an operation where hazardous substances are removed, contained, incinerated, neutralized stabilized, cleared-up, or in any other manner processed or handled with the ultimate goal of making the site safer for people or the environment.

"Decontamination" means the removal of hazardous substances from employees and their equipment to the extent necessary to preclude the occurrence of foreseeable adverse health effects.

"Emergency response" or "responding to emergencies" means a response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result, in an uncontrolled release of a hazardous substance. Responses to incidental releases of hazardous substances where the substance can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area, or by maintenance personnel are not considered to be emergency responses. Responses to releases of hazardous substances where there is no potential safety or health hazard (i.e., fire, explosion, or chemical exposure) are not considered to be emergency responses.

"Facility" means (A) any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly owned treatment works), well, pit, pond, lagoon, impoundment, ditch, storage container, motor vehicle, rolling stock, or aircraft, or (B) any site or area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located; but does not include any consumer product in consumer use or any water-borne vessel.

"Hazardous materials response (HAZMAT) team" means an organized group of employees, designated by the employer, who are expected to perform work to handle and control actual or potential leaks or spills of hazardous substances requiring possible

close approach to the substance. The team members perform responses to releases or potential releases of hazardous substances for the purpose of control or stabilization of the incident. A HAZMAT team is not a fire brigade nor is a typical fire brigade a HAZMAT team. A HAZMAT team, however, may be a separate component of a fire brigade or fire department.

"Hazardous substance" means any substance designated or listed under (A) through (D) of this definition, exposure to which results or may result in adverse effects on the health or safety of employees:

- [A] Any substance defined under section 101(14) of CERCLA;
- [B] Any biologic agent and other disease causing agent which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any person, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations in such persons or their offspring.
- [C] Any substance listed by the U.S. Department of Transportation as hazardous materials under 49 CFR 172.101 ; and
- [D] Hazardous waste as herein defined.

"Hazardous waste" means -

- [A] A waste or combination of wastes as defined in 40 CFR 261.3, or
- [B] Those substances defined as hazardous wastes in 49 CFR 171.8.

"Hazardous waste operation" means any operation conducted within the scope of this standard.

"Hazardous waste site" or "Site" means any facility or location within the scope of this standard at which hazardous waste operations take place.

"Health hazard" means a chemical, mixture of chemicals or a pathogen for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes. It also includes stress due to temperature extremes. Further definition of the terms used above can be found in Appendix A to 29 CFR 1910.1200.

"IDLH" or "Immediately dangerous to life or health" means an atmospheric concentration of any toxic, corrosive or asphyxiant substance that poses an immediate threat to life or would interfere with an individual's ability to escape from a dangerous atmosphere.

"Oxygen deficiency" means that concentration of oxygen by volume below which atmosphere supplying respiratory protection must be provided. It exists in atmospheres where the percentage of oxygen by volume is less than 19.5 percent oxygen.

"Permissible exposure limit" means the exposure, inhalation or dermal permissible exposure limit specified in 29 CFR Part 1910, Subparts G and Z.

"Published exposure level" means the exposure limits published in "NIOSH Recommendations for Occupational Health Standards" dated 1986, which is incorporated by reference as specified in Sec. 1910.6, or if none is specified, the exposure limits published in the standards specified by the American Conference of Governmental Industrial Hygienists in their publication "Threshold Limit Values and Biological Exposure Indices for 1987 - 88" dated 1987, which is incorporated by reference as specified in Sec. 1910.6.

"Post emergency response" means that portion of an emergency response performed after the immediate threat of a release has been stabilized or eliminated and clean-up of the site has begun. If post emergency response is performed by an employer's own employees who were part of the initial emergency response, it is considered to be part of the initial response and not post emergency response. However, if a group of an employer's own employees, separate from the group providing initial response, performs the clean-up operation, then the separate group of employees would be considered to be performing post-emergency response and subject to paragraph (q)(11) of this section.

"Qualified person" means a person with specific training, knowledge and experience in the area for which the person has the responsibility and the authority to control. "Site safety and health supervisor (or official" means the individual located on a hazardous waste site who is responsible to the employer and has the authority and knowledge necessary to implement the site safety and health plan and verify compliance with applicable safety and health requirements.

"Small quantity generator" means a generator of hazardous wastes who in any calendar month generates no more than 1,000 kilograms (2,205) pounds of hazardous waste in that month.

"Uncontrolled hazardous waste site" means an area identified as an uncontrolled hazardous waste site by a governmental body, whether Federal, state, local or other where an accumulation of hazardous substances creates a threat to the health and safety of individuals or the environment or both. Some sites are found on public lands such as those created by former municipal, county or state landfills where illegal or poorly managed waste disposal has taken place. Other sites are found on private property, often belonging to generators or former generators of hazardous substance wastes. Examples of such sites include, but are not limited to, surface impoundments, landfills, dumps, and tank or drum farms. Normal operations at TSD sites are not covered by this definition.

Employers shall develop and implement a written safety and health program for their employees involved in hazardous waste operations. The program shall be designed to identify, evaluate, and control safety and health hazards, and provide for emergency

response for hazardous waste operations. The written safety and health program shall incorporate the following: An organizational structure; A comprehensive workplan; A site-specific safety and health plan which need not repeat the employer's standard operating procedures required. The safety and health training program; The medical surveillance program; The employer's standard operating procedures for safety and health; and Any necessary interface between general program and site specific activities.

Site Excavation

Site excavations created during initial site preparation or during hazardous waste operations shall be shored or sloped as appropriate to prevent accidental collapse in accordance with Subpart P of 29 CFR Part 1926.

Contractors and Subcontractors.

An employer who retains contractor or sub-contractor services for work in hazardous waste operations shall inform those contractors, sub-contractors, or their representatives of the site emergency response procedures and any potential fire, explosion, health, safety or other hazards of the hazardous waste operation that have been identified by the employer's information program.

Program Availability

The written safety and health program shall be made available to any contractor or subcontractor or their representative who will be involved with the hazardous waste operation; to employees; to employee designated representatives; to OSHA personnel, and to personnel of other Federal, state, or local agencies with regulatory authority over the site.

Organizational structure Part of the Site Program.

The organizational structure part of the program shall establish the specific chain of command and specify the overall responsibilities of supervisors and employees. It shall include, at a minimum, the following elements: (A) A general supervisor who has the responsibility and authority to direct all hazardous waste operations. (B) A site safety and health supervisor who has the responsibility and authority to develop and implement the site safety and health plan and verify compliance. (C) All other personnel needed for hazardous waste site operations and emergency response and their general functions and responsibilities.

The lines of Authority, Responsibility, and Communication

The organizational structure shall be reviewed and updated as necessary to reflect the current status of waste site operations. The comprehensive workplan part of the program shall address the tasks and objectives of the site operations and the logistics and resources required to reach those tasks and objectives. The comprehensive

workplan shall define anticipated clean-up activities as well as normal operating procedures which need not repeat the employer's procedures available elsewhere. The comprehensive workplan shall define work tasks and objectives and identify the methods for accomplishing those tasks and objectives. The comprehensive workplan shall establish personnel requirements for implementing the plan. The comprehensive workplan shall provide for the implementation of the training required. The comprehensive workplan shall provide for the implementation of the required informational programs required. The comprehensive workplan shall provide for the implementation of the medical surveillance program.

Site-specific Safety and Health Plan Part of the Program

General. The site safety and health plan, which must be kept on site, shall address the safety and health hazards of each phase of site operation and include the requirements and procedures for employee protection.

Elements

The site safety and health plan, as a minimum, shall address the following: (A) A safety and health risk or hazard analysis for each site task and operation found in the workplan. (B) Employee training assignments to assure compliance with paragraph (e) of this section. (C) Personal protective equipment to be used by employees for each of the site tasks and operations being conducted as required by the personal protective equipment program in paragraph (g)(5) of this section. (D) Medical surveillance requirements in accordance with the program in paragraph (f) of this section. (E) Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment to be used. (F) Site control measures in accordance with the site control program required.

Decontamination Procedures

An emergency response plan meeting the requirements for safe and effective responses to emergencies, including the necessary PPE and other equipment.

Confined Space Entry Procedures

A spill containment program meeting the requirements.

Pre-entry Briefing.

The site specific safety and health plan shall provide for pre-entry briefings to be held prior to initiating any site activity, and at such other times as necessary to ensure that employees are apprised of the site safety and health plan and that this plan is being followed. The information and data obtained from site characterization and analysis work required in paragraph (c) of this section shall be used to prepare and update the site safety and health plan. (iv) Effectiveness of site safety and health plan. Inspections

shall be conducted by the site safety and health supervisor or, in the absence of that individual, another individual who is knowledgeable in occupational safety and health, acting on behalf of the employer as necessary to determine the effectiveness of the site safety and health plan. Any deficiencies in the effectiveness of the site safety and health plan shall be corrected by the employer.

Site Characterization and Analysis

General. Hazardous waste sites shall be evaluated in accordance with this paragraph to identify specific site hazards and to determine the appropriate safety and health control procedures needed to protect employees from the identified hazards.

Preliminary Evaluation

A preliminary evaluation of a site's characteristics shall be performed prior to site entry by a qualified person in order to aid in the selection of appropriate employee protection methods prior to site entry. Immediately after initial site entry, a more detailed evaluation of the site's specific characteristics shall be performed by a qualified person in order to further identify existing site hazards and to further aid in the selection of the appropriate engineering controls and personal protective equipment for the tasks to be performed.

Hazard Identification

All suspected conditions that may pose inhalation or skin absorption hazards that are immediately dangerous to life or health (IDLH) or other conditions that may cause death or serious harm shall be identified during the preliminary survey and evaluated during the detailed survey. Examples of such hazards include, but are not limited to, confined space entry, potentially explosive or flammable situations, visible vapor clouds, or areas where biological indicators such as dead animals or vegetation are located.

Required Information

The following information to the extent available shall be obtained by the employer prior to allowing employees to enter a site:

- (i) Location and approximate size of the site.
- (ii) Description of the response activity and/or the job task to be performed.
- (iii) Duration of the planned employee activity.
- (iv) Site topography and accessibility by air and roads.
- (v) Safety and health hazards expected at the site.
- (vi) Pathways for hazardous substance dispersion.
- (vii) Present status and capabilities of emergency response teams that would provide assistance to on-site employees at the time of an emergency.
- (viii) Hazardous substances and health hazards involved or expected at the site and their chemical and physical properties.

Personal Protective Equipment (PPE)

PPE shall be provided and used during initial site entry in accordance with the following requirements: Based upon the results of the preliminary site evaluation, an ensemble of PPE shall be selected and used during initial site entry which will provide protection to a level of exposure below permissible exposure limits and published exposure levels for known or suspected hazardous substances and health hazards and which will provide protection against the known and suspected hazards identified during the preliminary site evaluation. If there is no permissible exposure limit or published exposure level, the employer may use other published studies and information as a guide to appropriate personal protective equipment. If positive-pressure self-contained breathing apparatus is not used as part of the entry ensemble, and if respiratory protection is warranted by the potential hazards identified during the preliminary site evaluation, an escape self-contained breathing apparatus of at least five minute's duration shall be carried by employees during initial site entry. If the preliminary site evaluation does not produce sufficient information to identify the hazards or suspected hazards of the site an ensemble providing equivalent to Level B PPE shall be provided as minimum protection, and direct reading instruments shall be used as appropriate for identifying IDLH conditions. Once the hazards of the site have been identified, the appropriate PPE shall be selected and used.

Monitoring

The following monitoring shall be conducted during initial site entry when the site evaluation produces information which shows the potential for ionizing radiation or IDLH conditions, or when the site information is not sufficient reasonably to eliminate these possible conditions:

- (i) Monitoring with direct reading instruments for hazardous levels of ionizing radiation.
- (ii) Monitoring the air with appropriate direct reading test equipment for (i.e., combustible gas meters, detector tubes) for IDLH and other conditions that may cause death or serious harm (combustible or explosive atmospheres, oxygen deficiency, toxic substances.)
- (iii) Visually observing for signs of actual or potential IDLH or other dangerous conditions.
- (iv) An ongoing air monitoring program in accordance with paragraph (h) of this section shall be implemented after site characterization has determined the site is safe for the start-up of operations.

Risk Identification

Once the presence and concentrations of specific hazardous substances and health hazards have been established, the risks associated with these substances shall be identified. Employees who will be working on the site shall be informed of any risks that have been identified. In situations covered by the Hazard Communication Standard, 29

CFR 1910.1200, training required by that standard need not be duplicated. Risks to consider include, but are not limited to:

- [a] Exposures exceeding the permissible exposure limits and published exposure levels.
- [b] IDLH Concentrations.
- [c] Potential Skin Absorption and Irritation Sources.
- [d] Potential Eye Irritation Sources.
- [e] Explosion Sensitivity and Flammability Ranges.
- [f] Oxygen deficiency

Employee Notification

Any information concerning the chemical, physical, and toxicologic properties of each substance known or expected to be present on site that is available to the employer and relevant to the duties an employee is expected to perform shall be made available to the affected employees prior to the commencement of their work activities. The employer may utilize information developed for the hazard communication standard for this purpose.

Site Control

General. Appropriate site control procedures shall be implemented to control employee exposure to hazardous substances before clean-up work begins. Site control program. A site control program for protecting employees which is part of the employer's site safety and health program required shall be developed during the planning stages of a hazardous waste clean-up operation and modified as necessary as new information becomes available. Elements of the site control program. The site control program shall, as a minimum, include: A site map; site work zones; the use of a "buddy system"; site communications including alerting means for emergencies; the standard operating procedures or safe work practices; and, identification of the nearest medical assistance. Where these requirements are covered elsewhere they need not be repeated.

Training

General. All employees working on site (such as but not limited to equipment operators, general laborers and others) exposed to hazardous substances, health hazards, or safety hazards and their supervisors and management responsible for the site shall receive training meeting the requirements of this paragraph before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances, safety, or health hazards, and they shall receive review training as specified in this paragraph. Employees shall not be permitted to participate in or supervise field activities until they have been trained to a level required by their job function and responsibility.

Elements to be covered. The training shall thoroughly cover the following:

- (i) Names of personnel and alternates responsible for site safety and health;
- (ii) Safety, health and other hazards present on the site;
- (iii) Use of PPE;
- (iv) Work practices by which the employee can minimize risks from hazards;
- (v) Safe use of engineering controls and equipment on the site;
- (vi) Medical surveillance requirements including recognition of symptoms and signs which might indicate over exposure to hazards;

Initial Training

General site workers (such as equipment operators, general laborers and supervisory personnel) engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances and health hazards shall receive a minimum of 40 hours of instruction off the site, and a minimum of three days actual field experience under the direct supervision of a trained experienced supervisor. (ii) Workers on site only occasionally for a specific limited task (such as, but not limited to, ground water monitoring, land surveying, or geophysical surveying) and who are unlikely to be exposed over permissible exposure limits and published exposure limits shall receive a minimum of 24 hours of instruction off the site, and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor. Workers regularly on site who work in areas which have been monitored and fully characterized indicating that exposures are under permissible exposure limits and published exposure limits where respirators are not necessary, and the characterization indicates that there are no health hazards or the possibility of an emergency developing, shall receive a minimum of 24 hours of instruction off the site, and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor. Workers with 24 hours of training who are covered, and who become general site workers or who are required to wear respirators, shall have the additional 16 hours and two days of training necessary to total the training specified.

Management and Supervisor Training

On-site management and supervisors directly responsible for or who supervise employees engaged in hazardous waste operations shall receive 40 hours initial and three days of supervised field experience and at least eight additional hours of specialized training at the time of job assignment on such topics as, but no limited to, the employer's safety and health program, personal protective equipment program, spill containment program, and health hazard monitoring procedure and techniques.

Qualifications for Trainers

Trainers shall be qualified to instruct employees about the subject matter that is being presented in training. Such trainers shall have satisfactorily completed a training

program for teaching the subjects they are expected to teach, or they shall have the academic credentials and instructional experience necessary for teaching the subjects. Instructors shall demonstrate competent instructional skills and knowledge of the applicable subject matter.

Training Certification

Employees and supervisors that have received and successfully completed the training and field experience shall be certified by their instructor or the head instructor and trained supervisor as having completed the necessary training. A written certificate shall be given to each person so certified. Any person who has not been so certified or who does not meet the requirements shall be prohibited from engaging in hazardous waste operations.

Chapter 28

Sanitation

Potable Water

Potable water shall be provided in all places of employment, for drinking, and in some cases cooking, washing of foods, washing of cooking or eating utensils, washing of food preparation or processing premises, and personal service rooms.

Portable drinking water dispensers shall be designed, constructed, and serviced so that sanitary conditions are maintained, shall be capable of being closed, and shall be equipped with a tap and labeled as such.

When single service cups are supplied, both a sanitary container for unused cups and a receptacle for used cups shall be provided.

Open containers such as barrels, pails, or tanks for drinking water from which the water must be dipped or poured, whether or not they are fitted with a cover, are prohibited.

A common drinking cup and other common utensils are prohibited.

Toilet Facilities

Except as otherwise indicated in this section, toilet facilities are provided in all places of employment. The number of facilities to be provided shall be based on the number of employees. Where toilet rooms will be occupied by no more than one person at a time, that can be locked from the inside, and contain at least one water closet, then separate toilet rooms for each sex in this case need not be provided.

Where toilet facilities will not be used by women, urinals may be provided instead of water closets.

This requirement does not apply to mobile crews or to normally unattended work locations so long as employees working at these locations have transportation immediately available to nearby toilet facilities which meet the other requirements of this section.

The sewage disposal method shall not endanger the health of employees.

Toilet paper with holder shall be provided for every water closet.

The requirements of this subsection do not apply to mobile crews or to normally unattended work locations.

Food and Beverages on Premises

This section shall apply only where employees are permitted to consume food or beverages, or both, on the premises.

Eating and drinking areas. No employee shall be allowed to consume food or beverages neither in a toilet room nor in any area exposed to a toxic material.

Waste disposal containers. Receptacles, constructed of smooth, corrosion resistant, easily cleanable, or disposable materials, shall be provided and used for the disposal of waste food. The number, size, and location of such receptacles shall encourage their use and not result in overfilling. They shall be emptied not less frequently than once each working day, unless unused, and shall be maintained in a clean and sanitary condition. Receptacles shall be provided with a solid tight-fitting cover unless sanitary conditions can be maintained without use of a cover.

Sanitary storage. No food or beverages shall be stored in toilet rooms or in an area exposed to a toxic material.

Food handling. All employee food service facilities and operations shall be carried out in accordance with sound hygienic principles. In all places of employment where all or part of the food service is provided, the food dispensed shall be wholesome, free from spoilage, and shall be processed, prepared, handled, and stored in such a manner as to be protected against contamination.

Chapter 29

Bloodborne Pathogen Program

Purpose

This program is for all employees of Tim Messer Construction, Inc. who may possibly be exposed to blood or body fluids in the conduct of their job. This infection control plan complies with CAL-OSHA requirement, 29 CFR 1910.1030, Blood Borne Pathogens. The plan includes requirements for personal protective equipment, housekeeping, training, and a procedure for reporting exposures.

Responsibilities

The RSO, Stephen Ferguson will handle the Bloodborne Pathogen Program and maintain records of any training and/ or inspections required.

Definitions

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

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

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

Hazards

Unprotected exposure to body fluids presents the possible risk of infection from a number of bloodborne pathogens notably Hepatitis and HIV.

Hazard Control

Engineering Controls - prevention of exposure to bloodborne pathogens engineering controls include proper storage facilities and containers and disinfectant equipment.

Administrative Controls - prevention of exposure to bloodborne pathogen administrative controls include universal precautions, assignment of PPE, employee training, use of spill kits specifically designed for blood and body fluids and waste disposal procedures.

Reporting and Record Keeping

Any reports required by CAL-OSHA will be maintained by the RSO or designee. All reports (Training Certificates, Notice of HBV Vaccinations, exposure reports) will be maintained for 30 years. Occupationally contracted HBV or HIV will be recorded on the CAL-OSHA 300 Log of Occupational Injuries and Illnesses as an illness. Exposures to blood-borne pathogens from contact with sharps will be recorded on the CAL-OSHA 200 Log of Occupational Injuries and Illnesses if treatment such as gamma globulin, hepatitis B immune globulin or hepatitis B vaccine is prescribed by a Physician.

Training

All personnel assigned duties as first responders, or custodial Employees (if deemed at risk of exposure in the cleaning of rest rooms, etc.) will receive initial and annual training by a qualified medical practitioner on the Bloodborne Pathogen Program. Additionally, personnel trained in First Aid shall be offered this annual training. All new and current affected Employees will be trained initially and annually thereafter. The content of the training program will include:

Site Policy

Types and transmission of Blood-Borne Pathogens

General Safety Rules

Universal Precautions

Use of Personal Protective Equipment

Medical or iv drug use Waste Disposal Procedures

Post Exposure Treatment and Procedures

HBV Vaccinations

Documentation of training shall be done by the RSO, or designated representative.

All Employees not affected by this Program will receive an overview of the program requirements during scheduled department Safety Meetings with documentation by Safety Meeting Minutes Form.

Hepatitis-B Virus (HBV) Vaccinations

Those workers required to provide first aid or emergency response duties on a routine basis will be offered Hepatitis-B Virus (HBV) Vaccinations at Tim Messer Construction, Inc.'s expense. Employees that transfer to a job or their job is reclassified to include exposure to blood-borne pathogens will be offered HBV Vaccinations within 10 working days of the transfer or reclassification.

The choice for HBV vaccination is not mandatory. If an affected Employee chooses not to have the vaccination at the initial offering, they will have the opportunity to be vaccinated when they are ready. Tim Messer Construction, Inc. (through the RSO) will document the offer, acceptance or declination, and vaccination dates.

Post Exposure Treatment and Notification Procedures

Should an affected Employee or an Employee acting as a "Good Samaritan" be occupationally exposed to HIV/HAV/HBV the affected Employee will report the exposure to the RSO. Tim Messer Construction, Inc.] will provide for the Employee to be tested for HIV/HAV/HBV at Tim Messer Construction, Inc.'s expense. Following the initial blood test at time of exposure, seronegative Employees will be retested at 6 weeks, 12 weeks and 6 months to determine if transmission has occurred. During this period, the Employee will follow the recommendations provided by the Physician or the U. S. Public Health Service.

An "occupational exposure" is defined as blood or body fluid contact from an injured or ill Employee to an open wound, or mucous membrane of the affected Employee, or an injury by a contaminated sharp object. Following the report of exposure, the RSO will contact the exposure source and request that person be tested for HIV/HAV/HBV at Tim Messer Construction, Inc.'s expense. The request is not mandatory and if refused will not effect that Employee's future employment. The source individual's blood is tested as soon as possible and after consent is obtained to determine HBV and HIV infectivity. (Hepatitis B surface Antigen, Hepatitis C Antibody and HIV Screen)

The exposed employee's blood shall be collected as soon as feasible and tested for HBV (Hepatitis Bs Antibody, Hepatitis C Antibody) and HIV serological status after consent is obtained (Employee Consent for HIV Antibody Testing).

During all phases of Post Exposure, the confidentiality of the affected Employee and

exposure source will be maintained on a "need to know basis". The results of any HIV/HAV/HBV tests conducted will be provided to the exposed and source Employees within 5 business days of receipt.

General Procedures

Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in work areas where there is a potential for exposure to any health hazard. Food and drink must not be stored in refrigerators, freezers, or cabinets where blood or other potentially infectious material is stored or in other areas of possible contamination.

Gloves must be made of appropriate disposable material, usually intact latex or vinyl. They must be used in the following circumstances:

When the employee has cuts, abraded skin, chapped hands, dermatitis, or similar conditions.

When examining abraded or non-intact skin of a patient with active bleeding.

While handling blood or blood products or other body secretions.

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

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

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

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

Medical Wastes

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

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

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

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

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

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

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

Reusable glassware must be decontaminated in sodium hypo chlorite (household bleach) solution (1:9) prior to rinsing and acid washing. The glassware must then be sterilized in an autoclave.

Cuts

If an employee has a needle stick, cut, or mucous membrane exposure to another persons body fluids he/she must report the incident immediately.

Blood Exposure

All employees exposed to human blood and blood products must report to the [Program Coordinator] for information and possible inclusion in the Hepatitis B Immunization Program.

Infection Control Plan

The purpose of the Infection Control Plan is to protect the health and safety of the persons directly involved in handling the materials, workers and the general public by ensuring the safe handling, storage, use, processing, and disposal of infectious medical waste. This plan complies with CAL-OSHA requirement proposed for 29 CFR

1910.1030, Bloodborne Pathogens.

Universal precautions: Refers to a system of infectious disease control which assumes that every direct contact with body fluids is infectious and requires every employee exposed to be protected as though such body fluids were infected with blood-borne pathogens. All infectious/medical material must be handled according to Universal Precautions (CAL-OSHA Instruction CPL 2-2.44A).

The following universal precautions must be taken.

1. Gloves must be made of appropriate disposable material, usually intact latex or vinyl. They must be used:
 - a. when the employee has cuts, abraded skin, chapped hands, dermatitis, or the like.
 - b. when examining abraded or non-intact skin of a victim with active bleeding.
 - c. while handling blood or blood products or other body secretions.
2. Gowns, aprons, or lab coats must be worn when splashes of body fluid on skin or clothing are possible.
3. Mask and eye protection are required when contact of mucosal membranes (eyes, mouth or nose) with body fluids is likely to occur (e.g. splashes or aerosolization).
4. Resuscitation equipment, pocket masks, resuscitation bags, or other ventilation equipment must be provided to eliminate the need for direct mouth to mouth contact.

Waste Disposal Plan

1. Medical/Infectious waste must be segregated from other waste at the point of origin.
2. Medical/Infectious waste, except for sharps (e.g. razor blades, broken glass, needles, etc.) capable of puncturing or cutting must be contained in double disposable red bags conspicuously labeled with the words, "INFECTIOUS WASTE -- BIOHAZARD."
3. Infectious sharps must be contained for disposal in leak-proof, rigid puncture resistant containers.
4. Infectious waste thus contained as described in procedures 2 and 3 above must be placed in reusable or disposable leak-proof bins or barrels which must be conspicuously labeled with the words, "INFECTIOUS WASTE -- BIOHAZARD." These waste barrels

are be picked up regularly by an outside company licensed to handle infectious wastes.

5. Spills/Disinfectants: a solution of sodium hypo chlorite (household bleach) diluted 1:9 with water must be used to disinfect, following initial cleanup of a spill with a chemical germicide approved as a hospital disinfectant. Spills must be cleaned up immediately.

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

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

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

9. Reusable glassware must be decontaminated in sodium hyper chlorite (household bleach) solution (1:9) prior to rinsing and acid washing. Then the glassware must be sterilized in an autoclave.

Personal Protective Equipment for Worker Protection

Gowns, aprons, or lab coats must be worn when splashes of body fluid on skin or clothing are possible. Mask and eye protection are required when contact of mucosal membranes (eyes, mouth or nose) with body fluids is likely to occur (e.g. splashes or aerosolization). Resuscitation equipment, pocket masks, resuscitation bags, or other ventilation equipment must be provided to eliminate the need for direct mouth to mouth contact.

Universal precautions are intended to supplement rather than replace recommendation for routine infection control, such as hand washing and using gloves to prevent gross microbial contamination of hands (e.g., contact with urine or feces).

Blood-Borne Pathogen Control Universal Precautions and General Safety Rules

Tim Messer Construction, Inc. will not perform invasive medical treatment or provide intravenous medication. Therefore, the exposure to Blood-Borne Pathogens, as defined in item # 3 below, is determined to be from routine and emergency first aid treatment of common workplace injuries. The following Universal Precautions and General Safety Rules have been established to prevent the spread of viral and bacterial organisms (namely HIV/HAV/HBV). In all cases, the Universal Precautions and General Safety

Rules should be followed.

1. Before and immediately after providing patient care, wash exposed areas (hands, arms, etc.) with antibacterial soap.
2. Don and use the required personal protective equipment for the medical care given.
3. Treat all human body fluids and items soiled with human body fluids (blood, blood products, semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, amniotic fluid, concentrated HIV/HAV/HBV, and saliva (in dental settings) as if contaminated with HIV/HAV/HBV. (Note: Feces, urine, nasal secretions, sputum, sweat, tears, or vomitus need not be treated as contaminated unless they contain visible blood)
4. No smoking, eating, drinking or storage of food products are permitted in treatment areas.
5. To avoid special handling, all clothing contaminated with human body fluid will be presoaked (sprayed on the affected areas) with the antibacterial/viral solution before being sent to the laundry. (Note: Gloves and eye protection should be worn when handling contaminated clothing until presoaked for 10 minutes)
6. Any spills of body fluid will be presoaked (sprayed on the affected area) with antibacterial/viral solution for 10 minutes before being removed. (Note: Gloves and eye protection should be worn when handling spills of body fluids)
7. Medical Wastes (those soiled with covered human body fluids) will be treated following the Medical Wastes Treatment and Disposal Procedures before being discarded as ordinary wastes.
8. Any suspected exposure to HIV/HAV/HBV by human body fluid contact (via broken skin, human bites, needle sticks, etc.) should be reported to your Supervisor immediately.



Safety Policy Statement

It is the policy of Tim Messer Construction, Inc. that accident prevention shall be considered of primary importance in all phases of operation and administration. It is the intention of Tim Messer Construction, Inc.'s management to provide safe and healthy working conditions and to establish and insist upon safe practices at all times by all employees.

The prevention of accidents is an objective affecting all levels of our company and its operations. It is, therefore, a basic requirement that each supervisor make the safety of all employees an integral part of his or her regular management function. It is equally the duty of each employee to accept and follow established safety regulations and procedures.

Every effort will be made to provide adequate training to employees. However, if an employee is ever in doubt about how to do a job or task safely, it is his or her duty to ask a qualified person for assistance. Employees are expected to assist management in accident prevention activities. Unsafe conditions must be reported immediately. Fellow employees that need help should be assisted. Everyone is responsible for the housekeeping duties that pertain to their jobs.

Every injury that occurs on the job, even a slight cut or strain, must be reported to management and/or the Responsible Safety Officer as soon as possible.

Under no circumstances, except emergency trips to the hospital, should an employee leave the work site without reporting an injury. When you have an accident, everyone is hurt. Please work safely. Safety is everyone's business.

Sincerely,

Site Specific Safety Program

Tim Messer Construction, Inc. is a company that is committed to protecting employees, clients and the general public on all our projects. This premise is a Company value of great importance. Our goal is ZERO incidents. The following guiding principals will evidence this philosophy and our future success:

Senior management is responsible to support and monitor the safety, health and risk management process.

Supervision shall possess the skills and commensurate with project responsibilities.

All employees must comply with safety, health, and risk management requirements. We will work towards continuous improvement.

We will foster a culture that aligns safety, health and risk management with the other business objectives.

The emphasis will be on the Safety, Health and Risk Management. Planning Process and reduction of incidents will be our measure of our success.

ABOUT THIS PROGRAM

This is a Site Specific Safety Plan (SSSP) that Tim Messer Construction, Inc. implements and maintains as part of our everyday procedures.

The SSSP comprises the following elements: Please note that some of the following items are located in the Company Illness and Injury Prevention Plan and may not be specifically included herein.

1. Responsibility/Key Personnel
2. Identification of Competent Persons
3. Description/ Scope of Work To Be Performed
4. Hazard/Risk/Exposure Assessment
5. Fall Protection Hazards/ Control
6. Control Measures
7. Periodic Inspections
8. Compliance
9. Written Progressive Disciplinary Program
10. Hazard Correction
11. Training and Instruction
12. Project Site Orientation
13. Employee Communication System
14. Record Keeping

15. Accident/ Exposure Investigation
16. Emergency Action Plan
17. Site-specific Medical Emergency Plan

1. RESPONSIBILITY / IDENTIFICATION OF KEY LINE PERSONNEL

Responsible Safety Officer (RSO) for this project: is Stephen Ferguson

Construction Supervisor: _____

On-site Supervisor: _____

The above noted personnel have the authority for implementing the provisions of this program. All supervisors are responsible for implementing and maintaining the SSSP Program in their work areas and for answering worker questions about the SSSP Program. A copy of this SSSP Program is available from each supervisor.

2. IDENTIFICATION OF COMPETENT PERSON(S)

3. DESCRIPTION/ SCOPE OF WORK TO BE PERFORMED

4. HAZARD/RISK/EXPOSURE ASSESSMENT

The major safety hazards/risks and exposures have been assessed as follows:

5. FALL PROTECTION HAZARDS/ CONTROL

Tim Messer Construction, Inc. site staff will identify and provide countermeasures for any fall hazards. In particular, protection from falls will be provided for any scaffolds erected 10 ft. or higher during erection, alteration, or dismantling in addition to working on the scaffold at any time.

If the Competent Person determines fall protection cannot be provided during erection, or dismantling for feasibility/ constructability reasons, other reasonable efforts shall be made to ensure the least risk for workers such as; using experienced crews, utilizing a Safety Monitor, and/ or fall restraint methods.

Workers on scaffolds shall have guardrails in place as the primary means of fall protection, and shall either work from behind the guardrails, or use personal fall arrest/ restraint systems when a guardrail section is removed to receive materials.

Tim Messer Construction, Inc. workers required to work below the scaffold shall be protected from falling objects by the use of head protection. All other workers onsite should be kept clear of the working area underneath the scaffold, and the entire Limited Access Zone.

Overhand bricklaying will be allowed only where necessary. Workers along the roof edge will be protected by use of the scaffold as a catch platform, fall arrest or restraint systems, or a safety monitor/ warning line system if other, safer methods are unfeasible.

6. CONTROL MEASURES

Tim Messer Construction, Inc. site staff will monitor the hazards/risks and exposures in accordance with this Safety Plan. The plan addresses the various hazards/risks and exposures, and the checklists and will bring any concerns or violations to the attention of the staff for correction. Unsafe or unhealthy work conditions; practices or procedures shall be corrected in a timely manner based on the severity of the hazard.

Protective equipment (PPE) may include (based on the hazard):

- * Eye protection
- * Safety boots
- * Hearing protection
- * Gloves
- * First aid kit
- * Fire extinguishers

- * Fall protection
- * Hard hats

Personnel will be trained in the proper use and application of PPE.

7. PERIODIC INSPECTIONS

Periodic inspections will be performed according to the following schedule:

- * When we initially establish our SSSP Program
- * Daily
- * When required by local regulators
- * When new substances, processes, procedures or equipment, which present potential new hazards, are introduced into our workplace
- * When new previously unidentified hazards are recognized
- * When occupational injuries and illnesses occur
- * When we hire and/or reassign permanent or intermittent workers to process, operations, or tasks for which a hazard evaluation has not been previously conducted; and
- * Whenever workplace conditions warrant an inspection

Periodic inspection consist of identification and evaluation of work place hazards

8. COMPLIANCE REQUIREMENTS

Management is responsible for ensuring that all safety and health polices and procedures are clearly communicated and understood by all employees. Managers and supervisors are expected to enforce the rules fairly and uniformly. All employees are responsible for using safe work practices, for following all directives, policies and procedures, and for assisting in maintaining a safe work environment.

Our system of ensuring that all workers comply with the rules and maintain a safe work environment includes:

- * Informing workers of the provisions of our SSSP Program
- * Evaluating the safety performances of all workers
- * Recognizing employees who perform safe and healthful practices
- * Providing training to workers whose safety performance is deficient
- * Disciplining workers for failure to comply with safe and healthful practices.

9. WRITTEN PROGRESSIVE DISCIPLINARY PROGRAM

Non-compliance with Site Specific Safety Plan will result in disciplinary action provided for in the corporate discipline program.

10. HAZARD CORRECTION

Unsafe or unhealthy work conditions; practices or procedures shall be corrected in a timely manner based on the severity of the hazards. Hazards shall be corrected according to the following procedures:

- * When observed or discovered
- * When an imminent hazard exists which cannot be immediately abated without endangering employee(s) and/or property, we will remove all exposed workers from the area except those necessary to correct the existing condition.
- * Workers necessary to correct the hazardous condition shall be provided with the necessary protection; and

All such actions taken and dates they are completed shall be documented on the appropriate forms.

11. INSTRUCTION

Workplace safety and health practices for all locations include, but are not limited to, the following:

- * Explanation of the SSSP Program, Contractor's/Client's Safety Program, emergency action plan and fire prevention plan, and measures for reporting any unsafe conditions, work Practices, injuries and when additional instruction is needed
- * Ensure proper Use of appropriate clothing, including gloves, footwear, and personal protective equipment
- * Daily Safety Planner System
- * Required information about chemical hazards to which employees could be exposed and other hazard communication program information
- * Availability of toilet, hand washing and drinking water facilities for impacted employees
- * Provisions for medical services and first aid including emergency procedures
- * In addition, we provide specific instructions to all workers regarding hazards unique to their job assignment, to the extent that such information was not already covered in other training.

12. PROJECT SITE ORIENTATION

We orientate our workers about the following subjects as applicable:

- * The employer's Code of Safe Practices
- * Good housekeeping, fire prevention, safe practices for operating any construction equipment
- * Safe working procedures for cleaning, repairing, servicing and adjusting equipment and machinery
- * Safe access to all working areas
- * Proper use of all power tools
- * Guarding use of fixed rotating cutting equipment
- * Materials handling
- * Driver safety
- * Traffic safety
- * Slips, falls, and back injuries
- * Working aloft
- * Ladder safety
- * Ergonomic hazards, including lifting techniques and working on ladders or stooped posture for prolonged periods at one time
- * Personal protective equipment
- * Respiratory equipment
- * Hazards communication
- * Client requirements
- * Job site physical hazards, such as heat stress, noise, and ionizing and non-ionizing radiation
- * Personal hygiene/ Blood borne pathogens and other biological hazards.

13. EMPLOYEE COMMUNICATION SYSTEM

We recognize that open, two-way communication between management and staff on health and safety issues is essential to an injury-free, productive workforce.

The following system of communication is designed to facilitate a continuous flow of safety and health information between management and staff in a form that is readily understandable and consists of the following items:

- * Site Specific Safety Plan (SSSP)
- * Workplace safety and health training programs

- * Regular required weekly safety meetings
- * Effective communication of safety and health concerns between workers and supervisors
- * Posted or distributed safety information
- * New worker orientation, required for all new employees.

14. RECORD KEEPING

We have taken the following steps to implement and maintain the following records to document our SSSP Program:

- * Records of hazard assessment inspections, including the person(s) or persons conducting the inspection, the unsafe conditions and work practices that have been identified and the action taken to correct the identified unsafe conditions and work practices, are recorded on a hazard assessment and correction form; and
- * Documentation of safety and health training for each worker, including the worker's name or other identifier, training dates, type(s) of training, and training providers are recorded in a worker training and instruction form.

Inspection records and training documentation will be maintained as required by contract specifications and/or local regulations.

15. ACCIDENT/EXPOSURE INVESTIGATIONS

Procedures for investigating workplace accidents and hazardous substances exposures include:

- * Responding to the accident scene as soon as possible
- * Reporting to Project Manager
- * Reporting immediately to the appropriate Client point-of-contact
- * Interviewing injured workers and witnesses
- * Examining the workers for factors associated with the accident/exposure
- * Determining the cause of the accident/exposure
- * Taking corrective action to prevent the accident/exposure from reoccurring and Recording the findings and corrective actions taken.

16. EMERGENCY ACTION PLAN

In the event an evacuation of the work site is necessary, it will be announced and all

staff and visitors are to leave the area immediately and assemble at a the pre-determined emergency meeting location.

The Supervisor (or acting supervisor) shall contact the Project Manager, any time an emergency action plan has been enacted. The on-site Client Representative will also be contacted immediately.

17. SITE SPECIFIC MEDICAL EMERGENCY PLAN

In the event serious injury or illness occurs to a Tim Messer Construction, Inc. employee, he/she is to be taken immediately to:

For minor injuries such as simple cuts, sprains, etc. The employee will be taken to the nearest required medical treatment facility. If in doubt, assume the worst and transport the employee to: the nearest Emergency Medical Center. The on-site Client Representative shall be notified as soon as possible. In cases of serious injury or illness, the employee is to be sent immediately to the nearest hospital, by ambulance if necessary.

If the injury is the result of an accident on site then an Accident Report Form is to be filled out and submitted to the on-site Client representative.

Tim Messer Construction, Inc. employees MUST report all injuries or illnesses, as soon as possible, to the on-site supervisor.

Chapter 31

Drug Free Workplace Program

In a commitment to safeguard the health of our employees, and to provide a safe working environment for everyone, a Drug-Free Workplace Program has been established by Tim Messer Construction, Inc.. This program is implemented pursuant to the Drug-Free Workplace Program requirements, the applicable rules of the agency for Health Care Administration, the Department of Labor and Employment Security and the U.S. Department of Transportation Regulations.

1. General Policy:

a. Tim Messer Construction, Inc. prohibits its employees from illegally or improperly using, possessing, selling, manufacturing, or distributing drugs on its property, or while its employees are at work. It is also Tim Messer Construction, Inc. policy to report to work or to work under the influence of drugs. It is a condition of employment to refrain from using illegal drugs or alcohol on the job, or abusing legal drugs on or off the job such that it affects the job. If an injured worker refuses to submit to a test for drugs or alcohol authorized under the program and addendum thereto, he may forfeit his eligibility for medical and indemnity benefits. The drug use prohibitions and the testing procedures provided for under this Program may involve the following drugs or metabolites:

Alcohol
Phencyclidine (PCP)
Benzodiazophines (Valium)
Amphetamines (Desoxyn)
Methaqualone Methadone (Dolophine)
Cannabinoids (marijuana)
Opiates (opium)
Propoxyphene (Darvocet)
Cocaine (coke, crack)
Barbiturates (Phenobarbital)

b. To ensure that drugs and alcohol do not enter or affect the workplace, Tim Messer Construction, Inc. the right to conduct reasonable searches of all vehicles, containers, lockers, or other items on Tim Messer Construction, Inc. property or Tim Messer Construction, Inc. worksites in furtherance of this program. Individuals may be requested to display personal property for visual inspection upon the Tim Messer

Construction, Inc.'s request. All personal property searches will take place only in the employee's presence. All searches under this program will occur with the utmost discretion and consideration for the employees involved. Searches for the purposes described herein will be conducted when Tim Messer Construction, Inc. has reasonable suspicion that the employee has violated Tim Messer Construction, Inc.'s Drug-Free Workplace Program, and that evidence of such misconduct may be found during the search.

2. Job Applicant Drug Testing:

- a. All applicants will be tested for the presence of drugs prior to hiring.
- b. Any job applicant who refuses to submit to drug testing, refuses to sign the consent form, fails to appear for testing, tampers with the test, or fails to pass the pre-employment confirmatory drug test will not be hired and, unless otherwise required by law, will be ineligible for hire for a period of at least two (2) years.

3. Employee Drug Testing:

- a. Reasonable Suspicion Testing: All employees will be tested when there is a reasonable suspicion that the employee is using or has used drugs in violation of the program.
- b. Random Testing: To the extent allowed by law, employees in safety sensitive or special risk positions will be required to submit to drug testing on a random basis. Those positions designated as safety-sensitive are described on a list maintained on file in the Human Resources Department.
- c. Routine Fitness for Duty Testing: Employees will be subject to drug testing if the test is conducted as part of a routinely scheduled employee fitness-for-duty medical examination applicable to all similarly situated employees.
- d. Return to Duty Testing: Any employee who does not pass a test (and has not been fired) may not return to work until meeting the Return to Duty requirements established by this program.
- e. Follow-up Testing: All employees who have entered drug rehabilitation programs while employed by Tim Messer Construction, Inc. may be subject to periodic follow-up tests as may be required.
- f. Position Change Testing: To the extent allowed by law, employees moving from a non-safety sensitive/special risk position to one designated as safety-sensitive or special risk, as a result of a formal personnel action, shall be required to successfully pass a drug test within 48 hours of receiving notification that they have been selected to fill the safety sensitive position.
- g. Additional Testing: Additional testing may also be conducted as required by applicable state or federal laws, or regulations or as deemed necessary by Tim Messer Construction, Inc..

4. Disciplinary Action:

- a. Any employee using, selling, purchasing, possessing, distributing, or dispensing drugs on duty or on Tim Messer Construction, Inc. property, reporting to work or working under the influence of drugs, or having a positive drug test result, except first time violations found through Random Testing, will be subject to dismissal.
- b. In the case of a first-time violation of Tim Messer Construction, Inc.'s policy, based on Random Testing only, an employee may be offered an opportunity to enter into an approved and supervised rehabilitation program as an alternative to dismissal.
- c. Any employee who refuses to submit to a drug test will be dismissed from employment or otherwise disciplined by Tim Messer Construction, Inc..
- d. An employee injured while at work who refuses to submit to a drug test, or has a positive confirmation test, may be dismissed from employment or otherwise disciplined by Tim Messer Construction, Inc. and may forfeit his eligibility for all Tim Messer Construction, Inc. workers' compensation medical and indemnity benefits.
- e. Failure to consent to a reasonable search of vehicles, containers, lockers, or other items on Tim Messer Construction, Inc. property, will be grounds for dismissal or reason for denial to Tim Messer Construction, Inc. premises.

5. Confidentiality

- a. All information, interviews, reports, statement memoranda, and drug test results, written or otherwise, received by Tim Messer Construction, Inc. through a drug testing program are confidential communications and may not be used or received in evidence, obtained in discovery, or disclosed in any public or private proceeding, except as may otherwise be provided by statute or regulation. Similarly, Medical Review Officers, laboratories, employee assistance programs, drug and alcohol rehabilitation programs, and their agents and employees who receive or have access to information concerning drug test results obtained pursuant to this program shall keep all such information confidential except as provided above, or when its release is authorized pursuant to a written consent form, Signed voluntarily by the person tested.
- b. Information on drug test results shall not be released or used in any criminal proceeding against the employee or job applicant. Information released contrary to this section shall be inadmissible as evidence in any such criminal proceeding.

6. Affect of Other Medication

Each employee or job applicant may provide any information he or she considers relevant to a drug test including identification of currently or recently used prescription or non-prescription medication or other relevant information. The employee or applicant may provide this information both before and after testing to the Medical Review Officer. The information provided shall be confidential. Employees and job applicants may consult the Medical Review Officer for technical information regarding prescription and non-prescription medication.

7. Explanation of Test Results

An employee or job applicant who receives a positive confirmed test result may contest or explain the result to the Medical Review Officer within five (5) working days after receiving written notification of the test result. If an employee's or job applicant's explanation or challenge is unsatisfactory to the Medical Review Officer, the Medical Review Officer will report a positive test result back to Tim Messer Construction, Inc.. The employee or job applicant may contest the drug result. An employee or job applicant is responsible for notifying the laboratory in the event he/she initiates any administrative or civil action, in order to ensure that the laboratory retains the specimen. Employees covered by a collective bargaining agreement or a "last chance agreement" may challenge actions taken under this program if such challenge(s) is authorized by their collective bargaining agreement, or the last chance agreement as applicable.

8. Employee Assistance Programs

In the case of a first-time violation of Tim Messer Construction, Inc.'s policy, based on Random Testing only, an employee may be offered an opportunity to enter into an approved and supervised rehabilitation program as an alternative to dismissal. A partial listing of local EAP and/or Drug Rehabilitation Program providers are as follows:

Please see the list of EAP providers within Fresno County. The list is on hand at our office. Contact Stephen Ferguson for further information. (559) 855-3100.

Over-The Counter And Prescription Drugs Which Could Alter Or Affect The Outcome Of A Drug Test

The following is a list of over-the-counter or prescription drugs which could alter or affect a test result. Due to the large number of obscure brand names and the constant marketing of new products, this list cannot be and is not intended to be all inclusive:

ALCOHOL

All liquid medications containing ethyl alcohol (ethanol). Please read the label for alcohol content. As an example, Vick's Nyquil is 25% (50 proof) ethyl alcohol, Comtrex is 20% (40 proof), Contac Severe Cold Formula Night Strength is 25% (50 proof) and Listerine is 26.9% (54 proof).

AMPHETAMINES

Obetrol, Biphetamine, Desoxyn, Dexedrine, Didrex

CANNABINOIDS

Marinol (Dronabinol, THC)

COCAINE

Cocaine HCl topical solution (Roxanne)

PHENCYCLIDINE

Not legal by prescription.

METHAQUALONE

Not legal by prescription.

OPIATES

Paregoric, Parepectolin, Donnagel PG, Morphine, Tylenol with Codeine, Empirin with Codeine, APAP with Codeine, Aspirin with Codeine, Robitussin AC, Guiatus AC, Novahistine DH, Novahistine Expectorant, Dilaudid (Hydromorphone), M-S Contin and Roxanol (morphine sulfate), Percodan, Vicodin, etc.

BARBITURATES

Phenobarbital, Tuinal, Amytal, Nembutal, Seconal, Lotusate, Fiorinal, Fioricer, Esgic, Butisol, Mebaral, Burabarbital, Butabital, Phrenilin, Triad, etc.

BENZODIAZEPHINES

Ativan, Azene, Clonopin, Dalmane, Diazepam, Librium, Xanax, Serax, Tranxene, Valium, Verstran, Halcion, Paxipam, Restoril, Centrax.

METHADONE

Dolophine, Methadose

PROPOXYPHENE

Darvocet, Darvon N, Dolene, etc.

DRUG-FREE WORKPLACE PROGRAM

Job Applicant Acknowledgment of Receipt and Understanding

I hereby acknowledge that I have received and read the Notice to Applicants and Employees about Tim Messer Construction, Inc.'s Drug-free Workplace policy, a summary of the drugs which may alter or affect a drug test and a list of local Employee Assistance Programs and drug and alcohol treatment programs. I have had an opportunity to have all aspects of this material fully explained. I understand that the full text of the Drug-free Workplace policy is available upon request.

I HEREBY ACKNOWLEDGE RECEIPT OF "THE NOTICE TO APPLICANTS AND EMPLOYEES ABOUT TIM MESSER CONSTRUCTION, INC.'S DRUG-FREE WORKPLACE PROGRAM", DRUG AND ALCOHOL TREATMENT PROGRAMS AND EMPLOYEE ASSISTANCE PROGRAMS", AND A LISTING OF THE OVER-THE-COUNTER AND PRESCRIPTION DRUGS WHICH COULD ALTER OR AFFECT THE OUTCOME OF A DRUG TEST. I ALSO UNDERSTAND THAT THE DRUG-FREE WORKPLACE POLICY AND RELATED DOCUMENTS ARE NOT INTENDED TO CONSTITUTE A CONTRACT BETWEEN TIM MESSER CONSTRUCTION, INC. AND ME. THE UNDERSIGNED FURTHER STATES THAT HE OR SHE HAS READ THE FOREGOING ACKNOWLEDGMENT AND KNOWS THE CONTENTS THEREOF AND SIGNS THE SAME OF HIS OR HER OWN FREE WILL.

Employee

NAME: _____

SIGNATURE _____ Date: _____

Employer Representative:

NAME: _____

SIGNATURE _____ Date: _____