KE&G CONSTRUCTION, INC.

100% Employee Owned

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SAFETY & HEALTH PLAN

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PRESIDENT'S POLICY STATEMENT

It is the belief of KE&G Construction that every employee is entitled to a safe and healthful place in which to work. To this end, every effort will be made in the interest of accident and incident prevention, fire protection, and health preservation. KE&G will provide safe working equipment, necessary personal protective equipment, appropriate training and, in case of injury, emergency first aid, and other required medical services as the situation dictates.

It is the desire of KE&G that all employees recognize the value of practicing and adhering to a sound safety program. Furthermore, the company will exert every effort to abide by all regulations as they pertain to the construction industry, as well as nationally recognized standards such as the Occupational Safety and Health Act (OSHA) and Mine Safety and Health Act (MSHA), in an effort to eliminate injuries to employees who come under this firm's jurisdiction.

Sincerely,

Christopher Albright, *President*

Company Safety Program

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I. INTRODUCTION

The purpose of this manual is to establish administrative controls, written procedures, policies, and an essential guide to providing a safe and healthy working environment for our employees. It is through these policies that we will apply to all job sites and operations. KE&G Construction Management Team requires all employees to become familiar with this program and commit 100% cooperation. By doing so, we will make each job a safe one.

2. SAFETY RESPONSIBILITIES

The following designated management and supervisory personnel assigned to a specific project will be directly responsible for implementing each element of the Company Safety Program.

- Project Manager
- Project Superintendent
- Safety Department
- Project Foreman
- Employees

The specific duties and responsibilities of each member of the safety organization are as follows:

A. Project Manager Duties and Responsibilities:

- Provide means to accomplish program as stated above. Enforce this program and take immediate action with any employee willfully disregarding it.
- Require that all subcontractors abide by this program.
- Encourage safety training for personnel.
- Consult the Safety Manager on all suspected safety violation.

B. Project Superintendent Duties and Responsibilities:

- Be completely responsible for all on-site safety.
- Make available all necessary personal protective equipment, job safety materials, and first aid equipment.
- Ensure the Foreman is following and maintaining safe practices throughout the job.
- Inform the Foreman that they are required to direct and instruct employees on proper and safe practices.
- Require all subcontractors to adhere to all safety regulations.
- Review all accidents, incidents, and near misses with the Foremen and Safety Manager.
- Immediately notify the Safety Manager in the event of an accident/incident or injury and submit the incident report to the Safety Manager no later than 24 hours after the accident/incident or injury occurs.
- Be responsible for conducting weekly safety meetings.
- Have copies of federal and state regulations available at the job site.
- Be familiar with the laws about safety.
- Ensure Compliance on every job.

C. Safety Department Duties and Responsibilities:

- Manages the development, implementation, and evaluation of a comprehensive Safety Program
- Work closely with all company personnel to ensure full compliance with policies and procedures, including timely and proper accident reporting and investigations.
- Review all accidents/incidents and injuries with the Superintendents and Foremen and recommend corrective action.
- Make available all personal protective equipment, job safety materials, and first aid equipment.
- Consult with the Superintendent and Foreman to ensure that safe practices are followed and maintained throughout the job.
- File reports on time. See that corrective action is taken immediately.
- Maintain a higher level of knowledge regarding laws about safety.
- Make regular visits to job sites to conduct safety inspections, ensure adequate documentation of audits and file reports when required.
- Develops and presents all safety-related training for managers, supervisors, and employees.
- Meet, as required, with government and insurance representatives and safety inspectors to assure compliance with all applicable federal and state safety standards.

D. Project Foreman Duties and Responsibilities:

- See that the entire safety program is carried out at the work level.
- See that the employees commit no unsafe practices.
- Make every attempt to eliminate dangerous conditions.
- Determine whether the necessary protective equipment is on hand and used correctly.
- Instruct all employees in safety procedures and job safety requirements and ensure compliance.
- Discuss safety through personal contact with employees on all operations.
- Participate in weekly safety meetings involving all personnel and subcontractors.
- See that all injuries are treated properly and reported immediately.
- Investigate all accidents/incidents, injuries, and near misses and ensure appropriate corrective action is taken.
- Be familiar with all laws about safety.

E. Employee Responsibilities:

- Work according to good safety practices as they are posted, instructed, and discussed.
- **If the job seems unsafe, DO NOT DO IT!**
- Refrain from performing any hazardous activities, which may endanger the worker or co-workers.
- Use all safety devices provided for personal protection and maintain them properly.
- Report any unsafe condition(s), accidents, injuries, and/or action(s) to a Supervisor immediately.
- Assume your share of the responsibility for thoughtless or deliberate acts causing injury to the worker of co-workers. Contribute to the overall effectiveness of the program through active participation and support of any safety improvement.
- Recognize the worker's responsibility to the family to be a safe worker.

3. TRAINING

A. On-Boarding for New Hires

All new KE&G Construction employees will attend On-Boarding safety training that includes all specific company safety policies and procedures. This training will be completed within two weeks of their hire date. In the interim, employees will receive site-specific safety training from the job Superintendent. All required compliance-driven safety training will be followed up with a new hire checklist used to ensure all job task safety training is provided to the employee by the Foreman/Superintendent. The Foreman will continue site-specific training, as dictated by the specific job the employee has been assigned to. The Supervisor will be responsible for returning that form to the Safety Department with two weeks after it has been issued to the employee. This is to ensure the field aspect of safety training has been completed and documented.

B. Company-Wide Safety Training

Every employee will receive regularly scheduled safety training through various delivery methods that include presentations, meetings, and a thorough review of pertinent safety literature as well as opportunities for quest speakers to provide training and specialty training delivered by a third-party vendor. Additionally, weekly Toolbox safety meetings are mandatory and will be held at the beginning of the first shift at each work location.

4. INTERNAL COMPANY COMMUNICATION

A. The Safety Manager and any affected managers, superintendents, and Foreman will review past accidents/incidents, and ways of preventing future accidents will be discussed. Any hazardous situations anticipated for future work will be discussed to identify any potential injuries or accidents/incidents that can occur due to unsafe practices or conditions. Employees will be encouraged at all safety meetings to participate in all discussions and will be urged to make suggestions on improving safety.

B. Minutes of each safety meeting will be kept on file in the Safety Manager's office. The names of employees in attendance will be incorporated into the minutes.

C. All employees are encouraged to identify potential safety hazards on the job and to report those conditions to their supervisors.

D. SDS's can be found in the following locations: Supervisor's trucks and/or tablets, Safety Department, and job site trailers.

5. SAFETY COMMITTEE

The purpose of the KE&G Construction safety committee is to bring employees and management together in a cooperative effort to promote safety and health on our job sites. The safety committee will assist with all safety-related procedures and make recommendations for change.

A. Formation and Membership

1. The Safety Committee will be composed of 8 Field Employees, 4 Superintendents or Project Managers and the Safety Manager. Meetings will be held monthly.
2. An agenda will be given to all members at the meeting commencement The agenda will dictate the order in which the committee business will be conducted during the meeting.
3. Minutes will be printed up after each meeting, and copies will be kept in the Safety Department. These copies will be made available for all employees and will be kept for a minimum of one year.
4. All safety committee members will receive their regular pay while performing safety committee activities. Failure to attend the meetings or participate in committee activities will not result in any disciplinary action but may lead to the replacement of that committee member.

6. ENFORCEMENT AND DISCIPLINE

A. The project superintendent will be responsible for the enforcement of the safety program at the job site.

B. Any employee who disregards the information presented during the initial safety orientation or safety meetings and violates the safety rules and regulations will be subject to disciplinary action up to and including termination.

7. EMPLOYEE PROTECTIVE EQUIPMENT

A. It will be the responsibility of the Supervisor to ensure that all employees have the required personal protective equipment for use on each project.

B. Hard hats and high visibility vests or authorized appropriate safety clothing will always be worn on job sites. Safety toed boots, safety glasses, including over-glasses for employees who wear prescription glasses will always be in good condition and worn at all times. Work gloves will be worn as needed.

C. Earplugs will be made available as needed.

D. The requirements for installation and operation of hand tools and portable power tools will be based on established OSHA standards.

E. Night or low visibility conditions will not be conducted without proper lighting and lumens required to safely conduct work. Portable light plants will be used when it is not practical to use stationary floodlights. All night lighting structures will be properly grounded.

8. PERSONAL HYGIENE

A. Portable restrooms will be provided at each job site. Handwashing stations will be provided outside those areas or sanitizing stations will be on Supervisor truck.

B. Potable drinking water will be available to all personnel. Water will be served from 5-gallon containers with gravity fed faucets. These water containers will always be covered to ensure proper sanitary conditions.

9. SIGNAGE AND PROTECTION FOR THE PUBLIC

A. The public will be protected from physical harm insofar as possible using warning signs, signals, and traffic control devices.

B. Construction and warning signs will be located as directed by the owner's representative and in a manner that is compliant with federal, state, and city safety regulations.

C. The public will not be allowed near an excavation or in areas where heavy equipment is being operated.

10. FIRST AID AND MEDICAL TREATMENT

A. Emergency first aid treatment is available at all job sites and all First Aid kits will meet the ANSI requirements and will be inspected monthly. One or more qualified individuals with AHA cards certifying first aid and CPR training will be assigned to each job site. When an employee is injured, or in case of fire, explosion or chemical spills, activation of the emergency response system will be made by calling 911. For areas not supported by 911, appropriate numbers will be provided.

B. During the initial safety orientation, all employees will be furnished the information regarding the specific location where first aid treatment may be obtained.

C. An emergency action plan will be provided, job specifically, with information including location of job, closest medical facility, access and roadways to the facility and emergency coordination in case EMS is called to job site.

C. The Safety Manager will maintain accurate records regarding first aid treatment provided to employees.

11. ACCIDENT/INCIDENT INVESTIGATION AND REPORTING

A. The most immediate Supervisor and Safety Manager will investigate all accidents/incidents depending on the severity. If an accident/incident is caused through personal negligence of any employee, that employee will be given an opportunity to explain his/her actions. If the explanation is unsatisfactory, that employee may be subject to dismissal. Incident debriefs will be held for employees who are involved in a specific accident/incident to discuss and determine measures to prevent a recurrence of the accident/incident or one of a similar nature.

B. All necessary reports will be prepared for processing. An investigation of the accident/incident and the circumstances causing such will be conducted by the Safety Manager in conjunction with the Project Superintendent.

C. The Project Superintendent will submit the necessary reports to the Safety Manager within 24 hours of the accident.

D. All accident/incident reports will be reviewed by the Project Superintendent and will require his signature. The Safety Manager will also review these reports.

E. Accident/incident reporting will be based upon the specific requirements of the government. Appropriate accident/incident reports will be provided on the following but not limited to:

- Disabling injury
- Permanent impairment
- Death
- Injury to public persons and/or employees
- Damage to Government Property
- Fire Damage
- Damage to private property
- Damage to contractor equipment

12. SPECIFIC JOB HAZARDS

A. Daily pre-task planning will include daily Job Hazard Analysis to identify potential hazards that may be encountered throughout the workday. Task plans can frequently change throughout the day, and the daily task planning will be updated as needed.

B. Additionally, after any employee injury, a critique of the incident will be discussed at the next weekly toolbox safety meeting.

C. All tools and equipment will be inspected prior to being placed into use and daily thereafter. Defective tools and equipment will be taken out of service, replaced, or repaired, and re-inspected before being returned to service.

D. When required, a qualified signalman will be provided by the Project Superintendent/Foreman to signal equipment operators of personnel working nearby, and for the protection of ground personnel.

E. All persons on job sites will be furnished with and required to wear hard hats, safety glasses, high visibility vests, and gloves (if they are applicable for the job) meeting the ANSI standard. If employees are wearing prescription eyewear, they must meet the ANSI standard as stamped on the frame. If the glasses do not meet this standard, employees will be furnished with safety glasses fitting over their prescription eyewear. Additionally, employees are responsible for providing their own steel-toed or composite safety shoe meeting the ANSI and ASTM.

F. Construction operations will be organized so that work crews are dispersed in such a manner that operation of one work crew will not present a hazard to members of other work crews.

G. All obstructions or hazards that may cause interference with construction operations will be removed prior to the commencement of work.

H. If required, burning operations will be kept under strict control and will not be left unattended. Suitable fire protection equipment will be provided for all burning operations. If a permit is required, the permit shall be obtained before burning operations.

13. PREVENTION OF FALLS

A. Approved barricades will be furnished and installed as required to provide adequate protection from injury due to falls from six feet or more; danger signs will be placed at hazardous locations throughout the job site.

C. Site specific fall protection plans, in accordance with current safety standards, will be developed, constructed, and inspected by a qualified person and utilized in areas where it is necessary for employees to work above ground level.

D. Fall Protection will be inventoried and assigned individually. In some cases, Supervisors will be provided with additional fall protection equipment, i.e. body harness, SRL's, Shock Absorbing lanyards or any other identified equipment that may be required, depending on the assigned tasks. The Safety Department will be responsible for annual inspections and inventorying of all equipment. Employees will receive training, during annual inspection, to assist in the identification of damaged equipment and the necessity to identify and take out of service if it is unsafe.

E Individuals authorized to be in the work area will be required to wear all appropriate personal protective equipment and will be accompanied by a company employee and will be specifically warned of equipment movements.

14. SUBCONTRACTOR MANAGEMENT PLAN

The Project Manager will be responsible for ensuring contract information and job expectations have been communicated to the sub-contractor prior to the start of work including the establishment of effective channels of communication. This includes communication with sub-contractor's foremen, employees and others affected by the sub-contractor's work. Regular meeting times will be scheduled with the sub-contractor to ensure project requirements are up to date and that the line of communication is still effective. The use of daily reports and subcontractor performance assessments will be completed to safeguard adherence to contract requirements and safety regulations. These efforts will help KE&G determine the safe production and quality of deliverables from each of its subcontractors and will assist with the development of long-term business relationships. KE&G's selection of a subcontractor will take other factors into consideration but may not be based solely on a company's safety performance. However, historical factors including any OSHA/MSHA citations/fines, as well as workers' compensation history including EMOD/TRIR's can affect the decision to hire. If a problem is identified, the contractor will be offered a chance to explain their corrective actions and lessons learned before final determination is made.

C. Any subcontractor engaged in work will abide by all safety requirements outlined in this manual and will be required to conform to the same contract requirements in the performance of their work for KE&G. All subcontractors shall submit their company's Safety Program or comply with KE&G Safety Manual where our procedures are deemed more stringent. In addition, subcontractors are responsible for conducting daily inspections of their job site and taking immediate corrective action if hazards are identified.

15. FIRE AND SAFETY

A. KE&G will comply with all Federal, State, and Fire Marshall Regulations about safety equipment, personnel, and fire safety.

B. KE&G will ensure that proper "Fire Watches" are posted as conditions and controls dictate.

C. Smoking will be permitted in designated areas and at least 100 feet from flammable materials.

16. EQUIPMENT INSPECTION AND TESTS

A. Daily inspection for compliance with safety measures will be made by the equipment operators, maintenance mechanic, and the job site Foreman. Inspections will be conducted and recorded at the job site prior to operation to ensure that all equipment is in a safe operating condition.

B. The Project Superintendent shall be responsible for ensuring all equipment operators have completed and documented required physical examinations, testing prior to commencing work.

C. Weekly inspections are required for eyewash stations including documenting the inspection.

17. HOUSEKEEPING

A. It is the goal of KE&G to maintain good housekeeping operations and keep Jobsite offices, grounds and work areas always clean of rubbish and trash. Waste receptacles and portable toilet facilities will be placed throughout the job site for safety and convenience.

1. Housekeeping is the first law of accident/incident prevention on construction projects and shall be the concern of all supervisors.
2. Rubbish, debris, and waste materials constitute a fire hazard as well as potential tripping and falling hazards and should be removed daily from the work area.
3. Special attention must be given to the hazard of protruding nails. All stripped form lumber shall be safely stacked after nails have been removed or bent down.
4. Trash cans are to be located at all job sites and water coolers for disposal of used paper cups.
5. All stairways, ladders, ramps, platforms, walkways, and work areas shall be kept clear and clean of rough and loose material and trash.
6. All materials and flammable products will be kept at a minimum of 6 feet back from the outer edge of a building.
7. Common foot traffic areas on worksites kept clear of obstruction or trip/fall hazards.
8. All trucks are equipped with spill kits.
9. KE&G does not typically handle hazardous materials, but when we do employees will be properly instructed on handling procedures.
10. Eyewash and Shower stations will be available to employees who may be exposed to chemical and biological hazards.
10. KE&G recycles all salvage materials. These materials include metals, concrete and asphalt. They are returned to the crush site for recycling.
11. Vermin is controlled by the utilization of trash containers. If the trash containers are not enough to prohibit an excessive amount of vermin, then a pest control company will be contracted for removal.

18. FIRE PROTECTION AND PREVENTION

A. Initial and Annual fire extinguisher training will be provided and documented for affected employees.

B. Approved fire extinguishers will be inspected monthly and annually in accordance with NFPA requirement. They will be maintained and placed in the equipment, maintenance, and fuel service areas.

C. Gasoline or any other liquid that has a flashpoint of 100 degrees and above will not be used instead of approved cleaning fluids.

D. Fuel storage and dispensing tanks will be properly marked as to their contents. "No Smoking within 50 ft." signs will be posted in plain view at each tank. All fuel tanks, including moveable tanks on the skids, will be kept grounded when not being moved. Safety cans meeting OSHA 29 CFR Part 1926.152 safety standards will be used for hand transporting of flammable fuels or combustibles.

19. CONSTRUCTION EQUIPMENT

A. No construction equipment will be placed in operation until it is inspected by a competent person, training in its use is provided by a competent person and authorized approval to operate equipment has been documented.

B. Specialized Equipment such as Powered Industrial Trucks (PIT's)/Telehandlers and elevated platforms require specialized training including classroom and practical evaluation, specific to the job. Each employee qualified to operate a (PIT) can only do so when the following has been completed:

1) <u>Powered Industrial Trucks</u>

Classroom training is required prior to any new hire operation of equipment or for any employee who has exceeded the 3-year practical training requirement or when unsafe operation of the equipment has been observed.

Practical training is required for any employee who has been authorized to operate powered industrial vehicles. This training is required per piece of equipment unless equipment is similar in nature. Training will be required ever 3 years as outlined in 29 CFR 1910.178.

2) <u>Aerial Lift/Manlift</u>

All KE&G employees are required to successfully complete aerial lift operator training including classroom and hands-on practical evaluation prior to operating equipment. All authorized KE&G employees will be re-evaluated every three years. Safe Operation guidelines such as fall protection requirements and inspections are addressed during training.

D. All equipment, i.e. powered industrial trucks, aerial lifts, rigging, cables, operating mechanisms, tracks, tires, etc., have the requirement to be inspected daily by the operator/user of such equipment. Equipment shall be operated in such a manner that it does not endanger the safety of others.

E. Riding on loads, hooks, hammers, buckets, trucks, moving equipment, or material hoists is strictly prohibited.

F. All equipment operators are required to wear seat belts when operating or moving all company equipment and vehicles as required by **OSHA 29 CFR Part 1926.602.**

G. All equipment left unattended at night, adjacent to a highway in regular use, or adjacent to construction areas where work is in progress, shall have appropriate lights or reflectors, or barricades equipped with lights or reflectors, to identify the location of the equipment.

20. EMERGENCY INFORMATION

- Ambulance Emergency – Dial 911
- Hospital – Assigned by project location – 911
- Police - Assigned by project location – 911
- Fire – Assigned by project location – 911
- KE&G Sierra Vista Office –1601 Paseo San Luis, Suite 202., Sierra Vista, AZ (520-458-9594)
- KE&G Tucson Office – 3949 E. Irvington Rd., Tucson, AZ (520-748-0188)
- KE&G Safety Manager – 3949 E. Irvington Road, Tucson, AZ (520-468-9257) (Mobile)

21. MODIFICATIONS AND REVISIONS

A. This Safety Plan/Program will be reviewed annually.
B. Changes to this Safety Plan/Program will be made as necessary, to ensure compliance with changing regulations and to maintain a safe workplace.

22. PENALTIES

A. KE&G employees are subject to the following penalties for safety violations occurring within two years.

- 1st violation – Written Warning
- 2nd violation – 1 day off without pay
- 3rd violation – 2 days off without pay
- 4th violation – Termination

**Note: KE&G reserves the right to terminate immediately depending on the severity of the violation.*

B. KE&G Subcontractors are subject to the following penalties for safety violations, either employee or work area per job and occurring within six months:

- 1st violation – Written Warning
- 2nd violation - $50.00 fine
- 3rd violation - $100.00 fine
- 4th violation - $1,000 fine and possible removal from the work area or job site.

Substance Abuse

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I. SCOPE

Neither the Federal Drug Free Workplace Act of 1988 nor the Arizona Medical Marijuana Act (Arizona Revised Statute 36-2851, *et seq.*) restricts the right of employers to maintain a drug and alcohol- free workplace or affects the ability of employers to have workplace policies restricting the use of marijuana by employees or prospective employees, to the extent that such use could impact workplace safety and/or work efficiency. Therefore, KE&G Construction is committed to providing a drug free workplace for our employees. KE&G requires all employees, identified as working on company time or premises, or employees operating company owned equipment outside of working hours, or working in a defined Safety Sensitive position; adhere to our Drug Free Workplace Policy. The term "Drug Free Workplace" includes the use of alcohol, illegal drugs, Marijuana, or another controlled substance that has not been prescribed by a doctor.

Additionally, evidence of possession, use of or being in a condition where your ability to work safely is limited in any way by the "previous" use of a substance identified above can be a workplace violation and subject you to immediate disciplinary action, up to and including termination.

II. DEFINITIONS

Alcohol means any beverage that contains ethyl alcohol (ethanol), including but not limited to beer, wine, and distilled spirits.

Company premises or facilities means all property of KE&G Construction including, but not limited to the facilities and surrounding areas on KE&G Construction owned or leased property, job sites, parking lots, and storage areas. The term also includes KE&G Construction owned or leased vehicles and equipment wherever located.

Contraband means any article, the possession of which on KE&G Construction premises or while performing services for KE&G Construction, causes an employee to be in violation of KE&G Construction work rules or any applicable law. Contraband includes illegal drugs, drug paraphernalia, marijuana products, and alcoholic beverages.

Controlled Substances means all substances regulated under the Federal Controlled Substances Act, 21 U.S.C. § 812.

Drug testing means the scientific analysis of urine, blood, breath, saliva, sweat, hair, tissue, and other specimens of the human body for the purpose of detecting a drug or alcohol.

Illegal drug means any drug which is not legally obtainable; any drug which is legally obtainable but has not been legally obtained; any prescribed drug not legally obtained; any prescribed drug not being used for the prescribed purpose; any over-the-counter drug being used at a dosage level other than recommended by the manufacturer or being used for a purpose other than intended by the manufacturer; and any drug being used for a purpose not in accordance with bona fide medical therapy. Examples of illegal drugs are cocaine, heroin, methamphetamine, ecstasy, phencyclidine (PCP), opiates (including codeine, morphine, and acetyl morphine) and so-called designer drugs and look-alike drugs.

Legal drug means any prescribed drug or over-the-counter drug that has been legally obtained and is being used in accordance with the purpose for which it was prescribed or manufactured.

Random Testing is a selection process where affected employees are selected for unannounced controlled substances testing using a scientifically valid random selection process that ensures each employee has an equal chance of being selected for testing.

Reasonable Suspicion means a belief that an individual is using or has used controlled substances or alcohol in violation of the company's policy drawn from specific objective and articulable facts. The facts include:

- Observable phenomena such as the physical symptoms or manifestations of being under the influence of a controlled substance or alcohol while at work on duty or the direct observation of controlled substance or alcohol use while at work or on duty.
- A report of controlled substance or alcohol use while at work or on duty, provided by reliable and credible sources and which has been independently corroborated.
- Evidence that an individual has tampered with a controlled substance or alcohol test during the individual's employment with the company.

Reasonable suspicion may also be based on objective facts leading a prudent person to conclude that an employee is unable to satisfactorily perform his or her job duties due to drug or alcohol impairment. Such inability to perform may include, but not be limited to, decreases in the quality or quantity of the employee's productivity, judgment, reasoning, concentration, and psychomotor control, and marked change in behavior. It can also include accidents, deviations from safe working practices, and erratic conduct indicative of impairment. An employee may be requested to take a drug and/or alcohol test if management or supervisors have reasonable cause to believe that the employee's faculties are impaired while at work due to drug or alcohol use. An employee who refuses to consent to an alcohol and/or drug test may be terminated.

Safety Sensitive Assignments that by their nature could pose a significant risk of causing or contributing to a Work-Related Incident, especially those assignments where an employee has the responsibility for his/her own safety or other people's safety. These assignments include the operation of motor vehicles, construction, mining, milling, or manufacturing operations and managing or supervising other employees performing such activities. The job titles frequently associated with these assignments include, but are not limited to Carpenters, Cement Finishers, Equipment Operators, Truck Drivers, Foremen/Supervisor, Helpers, Iron Workers, Laborers, Mechanics, Managers, and Superintendents. The company reserves the right to determine which assignments are safety sensitive.

Under the influence means a condition in which a person is impaired by a drug or by alcohol in any detectable manner. The symptoms of influence are not confined to those consistent with misbehavior, or too obvious impairment of physical or mental ability, such as slurred speech or difficulty in maintaining balance. A determination of being under the influence can be established by professional opinion and/or a scientifically valid test such as urinalysis or blood analysis, and in some cases, by the opinion of a layperson. The Company reserves the right to take into account any and all impairment factors when deciding in good faith whether evidence exists that an employee is under the influence of a drug or alcohol.

III. PRESCRIPTION DRUGS

An employee whose medical therapy requires or involves the use of a legal drug that may impair coordination, judgment or thought processes, must report such use to his or her Supervisor before the performance of KE&G Construction business. The Supervisor will contact the Safety Manager for guidance.

The undisclosed use of any legal drug that may impair coordination, judgment or thought processes, by any employee while performing KE&G Construction business or while on KE&G Construction premises and/or job site locations is prohibited. However, an employee may continue to work using a legal prescription; if management has been made aware of and has made the determination that such use will not pose a threat to the safety and the using employee's job performance will not be affected.

Medical and Recreational Marijuana

Valid cardholders under the Arizona Medical Marijuana Act ("AMMA") will not be discriminated against in violation of AMMA. However, AMMA does not give any employee the right to use, possess, or be under the influence of marijuana in the workplace. Further, recreational marijuana users have no protections under AMMA. Smoking, consuming, ingesting, possessing, or being under the influence of marijuana during work hours, while operating any vehicle on behalf of the Company, while present on Company premises, or while working at a customer location off-site is strictly prohibited.

Employees in Safety-Sensitive Positions may not be protected by AMMA. In other words, AMMA cardholders are not eligible for Safety-Sensitive Positions, and any AMMA cardholder employee (or other individual who chooses to use recreational marijuana) in a Safety-Sensitive Position may be required to transfer to a non-Safety-Sensitive Position (if available and the employee is qualified for such position), be subject to disciplinary action, or terminated at the Company's discretion.

Additionally, because the Company may receive Federal funding, it must comply with the Drug Free Workplace Act of 1988, which prohibits any employee from using, possessing, or being impaired in the workplace (in or on Company premises or while conducting Company business) by any substance considered unlawful under the Controlled Substances Act. While Arizona voters passed a ballot initiative to make recreational marijuana legal pursuant to state law, it remains an illegal drug under Federal law.

IV. DRUG TESTING POLICY

A. Pre-Employment Drug Testing:

All applicants who are offered a job with KE&G will be required to complete a drug screen as part of their job offer. If the applicant has a positive test result, and the essential function of their job will be in a safety sensitive position, they will be denied employment with the company, unless the applicant makes a request to be considered for a non-safety sensitive position that is both available and for which the applicant is otherwise qualified to perform all essential functions.

B. Random Drug Screens:

Employees subject to random testing will be included in a random selection pool and will be selected for testing by the company using a valid random selection process that ensures each employee in the selection pool has an equal chance of being selected each time a selection is conducted. A percentage of those covered employees within the

business unit will be randomly selected for controlled substance testing quarterly. Random testing will be conducted in a confidential and unannounced manner.

A job wide test shall be considered a form of Random Testing, in which each business unit employee, i.e., 100% of the unit, is required to participate in the controlled substance testing.

Refusal to submit to testing will be considered refusal to test and may be considered grounds for termination.

C. **Reasonable Suspicion:**

Employees will be required to participate in controlled substance and/or alcohol testing if there is reasonable suspicion that the employee may have used a controlled substance or alcohol as documented by unusual behavior.

The decision to require an employee to submit to reasonable suspicion testing shall be based on specific, current observations that can be verbalized, including but not limited to the employee's appearance, behavior, conduct, speech, or body odors by co-workers, supervisors, and/or a designated company representative who has completed reasonable suspicion training.

The employee's conduct giving rise to a reasonable suspicion test being initiated should be observed and documented by at least two co-workers, supervisors, and/or designated company representatives who have completed reasonable suspicion training.

In the event such designated company representatives are not immediately available, the designated company representative can, with the assistance of a Safety Representative, Superintendent or Supervisor, document the conduct giving rise to an initiate a Reasonable Suspicion Test.

Documentation of the employees' appearance, behavior, conduct, speech, or body odor shall be documented on the KE&G Observation Form. The documentation should occur prior to the employee submitting to a Controlled Substance and/or Alcohol test.

Refusal to submit to testing will be considered refusal to test and may be considered grounds for termination.

D. **Post-Accident Drug Testing**:

Substance abuse testing is part of an investigation process, testing should never be considered or applied as discipline. Testing will be conducted under the following conditions:

Employees are required to submit to testing as soon as possible, preferably within twenty-four (24) hours of reporting an incident or accident that resulted in an injury to the employee, others, or damage to property.

Refusal to submit to testing will be considered refusal to test and may be considered grounds for termination.

V. EMPLOYEE ASSISTANCE

An employee who voluntarily admits a problem and requests assistance with an alcohol or drug rehabilitation program prior to KE&G identifying alcohol or drug problem on the job will be granted a leave of absence (without pay if earned or accrued vacation or sick leave hours are used up) to participate in a substance abuse program. Any employee, who requests assistance and a leave of absence to address an alcohol or drug problem, but fails to enroll in a program, may be subject to termination. Such leave of absence will be available to an employee one time only and will be conditional upon the employee's full compliance with the term of the rehabilitation program. No disciplinary action will be taken in cases where the employee comes forward before the company identifying alcohol or drug problem on the job. Employees, who have completed a program and returned to work, will be subject to random testing for two years.

VI. TESTING RESULTS

KE&G Conducts in house drug testing for Pre-Employment, Random, Reasonable Suspicion and Post Accident. If a Supervisor reasonably suspects that an employee's ability to work is impaired due to the use of illegal drugs, alcohol, or prescription drugs, the following action must be taken:

1. Notify his immediate Supervisor and the Safety Manager.
2. Once the test has been authorized, the employee must be under the direct control of a company Supervisor. The Supervisor must remain in visual contact with the employee until an authorized KE&G representative arrives on-site to complete the test or until the employee is taken to an approved clinic for testing.
3. After testing has been completed and if the employee is found to be positive for drugs in his or her system, the employee will be immediately suspended from the time of the test without pay. A sample of the specimen and the chain of custody will immediately be forwarded to an external Medical Review Officer for verification. The company Safety Manager or General Superintendent will contact the employee after all positive test results have been confirmed. The employee may contest or question results at that time. Upon request of the employee and at the discretion of KE&G Management, an alternative test or testing method may be performed at the employee's expense.
4. The employee will either be terminated or placed on unpaid suspension for an indefinite period. The type of action taken will depend upon the facts of any case. If an employee is suspended for an indefinite period, he or she must enter a rehabilitation program and comply with the terms of the program to be eligible for consideration for return to work. Employees discharged for violations of the Company's drug and alcohol policies will not be eligible for rehiring for a period of up to two years. Whether any such employee is ever returned to work is totally within the discretion of the company.

NOTE: No prior approval from a General Superintendent, Safety Manager, Supervisor, or Office Manager is required if the employee is injured on the job and requires a trip to the clinic. In the case of an accident or incident that requires a drug screen, continuous visual contact by a Supervisor will be required until an authorized KE&G representative arrives on-site to complete the test or until the employee is taken to an approved clinic for testing.

VII. NOTICE OF DRUG VIOLATION:

Any employee that has been charged, convicted of, or pleaded "guilty" or "no contest" to criminal offenses involving the manufacture, use, sale or transfer of illegal drugs, or the illegal transfer of prescription drugs must notify the Safety Manager in writing within five (5) working days. Failure to do so may be considered grounds for termination.

VIII. CDL DRIVERS

Random drug and alcohol testing is mandated by 49 CFR, Part 40 Federal DOT Regulation. Such procedures and processes affecting these employees will differ somewhat from those covering the remainder of the group. Nevertheless, these employees are not exempt from the random testing required for all other KE&G employees.

A designated medical service provider for KE&G will be responsible for testing at least 50% of the covered workforce for drugs and 10% of the hidden workforce for alcohol quarterly. Selection will occur based on an arbitrary selection method utilized by the service provider. The Safety Manager or other designated individual will be notified of the selection in advance by the testing provider. The name of the employee to be tested shall not be released to anyone other than the employee and manager and then only 1-2 hours prior.

Beginning January 6, 2020, a repository created by the FMCSA will collect information on drivers' DOT drug and alcohol violations occurring under a motor carrier's testing program. Employers and service providers are called upon to report DOT drug and alcohol testing program violations to the Clearinghouse. Motor carriers, medical review officers, third-party administrators, and substance abuse professionals must provide information when a driver:

- Tests positive for drugs or alcohol;
- Refuses drug and alcohol testing;
- Undergoes the return-to-duty drug and alcohol rehabilitation process.

The following records will be collected and maintained in the Clearinghouse:

- A verified positive, adulterated, or substituted drug test result;
- An alcohol confirmation test with a concentration of 0.04 or higher;
- A refusal to submit to any test required by Subpart C of Part 382;
- An employer's report of actual knowledge, as defined at §382.107, including:
    - On duty alcohol use pursuant to §382.205;
    - Pre-duty alcohol use pursuant to §382.207;
    - Alcohol use following an accident pursuant to §382.209; and
    - Controlled substance use pursuant to §382.213;
- A substance abuse professional report of the successful completion of the return-to-duty process; and
- An employer's report of completion of follow-up testing.

The Clearinghouse will aid the company in learning of a driver's need start or continue with the necessary steps in the DOT return-to-duty process (i.e., Substance Abuse Professional (SAP) program).

FMCSA requires motor carrier employers to:

- Query the system for information on driver applicants, and
- Search the database annually for current employees.

Before a motor carrier may gain access to the information in the Clearinghouse, the driver must grant consent. Failure to provide consent prevents the motor carrier from using the CDL driver in a safety-sensitive function.

A driver can review his or her report at no cost by registering with the Clearinghouse.

Accident Reporting

100% Employee Owned

I. RESPONSIBILITIES:

A. The Project Supervisor will secure the scene, ensuring all employees are safe. They will immediately call all involved employees and will stay with them until a preliminary investigation has been completed. The supervisor will be responsible for starting the investigation and will use the who, what, when, where, why, and how questions as a guide.

B. Safety Manager is responsible for training supervisors and all other affected employees on this procedure, reporting requirements, and the responsibilities of incident response and incident investigation techniques. Training requirement will include proper form identification and will also include the following:

- Initial assessment of the accident scene.
- Managing the accident investigation until an authorized representative arrives on the scene. This includes including collecting data to assist with determining the root cause analysis.
- First Responder Responsibilities.
- Identifying and implementing corrective action.
- Notifying chain of command, affected parties and other notifications as required in Section III, Reporting Requirements.
- Notifying the client or host facility within 24 hours of the incident.

II. INCIDENT INVESTIGATION PROTOCOLS

If It is a severe event or an event requiring fire, rescue, or police, IMMEDIATELY call 911.

1. The supervisor will immediately secure the scene, start the debrief with the employee(s) involved. The debrief will include the following elements: Who was involved, What happened, Where did it happen? When did it happen? Why do you believe it happened? Even if you are not sure, indicate your first reaction of the occurrence to determine the root cause. Someone from the Safety Department will arrive on the scene, depending on the severity of the incident. They will procure all the necessary information to assist in the determination of causal factors and will support the supervisor with the determination of corrective action.

2. The supervisor will keep the employee(s) in their care, or under their designated representatives care, until it is determined if a drug screen will be performed. The employee cannot go to their vehicle or be out of sight at any time.

3. Witnesses will also be kept in the supervisor's care, depending on the severity of the incident, i.e., injury that was witnessed or significant property damage.

4. The supervisor must ensure the proper forms are submitted within 24 hours of the occurrence.

5. When an incident occurs, KE&G will follow the established protocols required by our clients. This will be outlined in our contract and will be

III. REPORTING REQUIREMENTS

All reporting must be completed in the specified manner outlined in the table below:

	Who to Notify Verbally	When	Correct Form to Fill Out
Minor First Aid or injuries requiring a trip to the clinic.	Notification to Safety Manager and/or General Superintendents. Level of investigation will be determined by nature and cause of injury.	Immediately after the incident but no later than the end of the shift	Supervisor will Report Incident through HCSS. Identifying persons involved in injury.
Injury requiring medical transport	911 Supervisor Safety Manager and/or General Superintendents	Immediately after incident	Supervisor will report through HCSS. Employee Injury form will need to be selected in HCSS.
If the injury resulted in amputation, loss of an eye or hospitalization	Safety Manager and/or General Superintendents KE&G Executive Management OSHA (ADOSH 602-542-5795) 24-hour hotline 1-800-321-6742	Immediately after the incident. **OSHA must be notified within 24 hours of the incident.**	Supervisor will report through HCSS. Employee injury form will need to be selected in HCSS.
Fatality	Safety Manager and/or General Superintendents KE&G Executive Management OSHA (ADOSH 602-542-5795) 24-hour hotline 1-800-321-6742	Immediately after the incident. **OSHA must be notified within 8 hours of the incident**	Supervisor will report through HCSS
Vehicle Collisions	Safety Manager and/or general superintendents And 911 for police report or transport to a medical facility	Immediately after incident	Supervisor will report through HCSS
Property Damage	Safety Manager and/or general superintendent. Affected Utility if damage occurred	Immediately after incident	Supervisor will report through HCSS

IV. INCIDENT REVIEW

All incidents will be reviewed up to the appropriate level of KE&G as determined by Management. Minor incidents will be investigated and reviewed by the supervisor and corrective action taken, documented on the appropriate form, and forwarded to the Safety Manager. All incidents will be investigated and reviewed depending on their severity and incidents that rise to a monetary loss, including injuries or property damage, will be reviewed by an incident review team who will identify causal factors and determine if corrective action as appropriate

Corrective action will be completed by the supervisor and/or the Safety Manager.

Safety Procedures

100% Employee Owned

TOPICS

A. Forward
B. General Safety Regulations
C. Trenching and Excavation
D. Fire Protection
E. Mobile Equipment
F. Material handling Storage
G. Power Tools
H. Powder-Actuated Tools
I. Temporary Wiring
J. Ladders
K. Ropes, Cables & Rigging
L. Concrete Forming, Reinforcing & Pouring
M. Personal Protective Equipment
N. Floor Openings & Stairways
O. Lifting
P. Medical Services and First Aid
Q. Tools & Equipment
R. Safety Acknowledgement Form

A. FORWARD

It is not intended that any project's safety procedures be confined to the following requirements. On the contrary, each project is expected to use these company requirements as a nucleus that can be expanded to meet particular needs.

We will comply and enforce all OSHA/MSHA regulations at our work sites as applicable. Employees are expected to report all unsafe conditions immediately to their supervisors. When company requirements conflict with Federal, State, or Local regulations, the more stringent must be followed.

B. GENERAL SAFETY REGULATIONS

All injuries and occupational illnesses can be prevented. Habits, attitudes, and behavior on the job must conform to the high safety standards required to avoid accidents/incidents. The following general rules are guidelines of conduct that every safe worker must follow:

1. Observe and obey all warning signs.
2. Only authorized operators/personnel are permitted on the job site.
3. Fighting or horseplay will not be tolerated.
4. No intoxicating beverages of any kind are permitted on the job site.
5. No one under the influence of intoxicating beverages or illegal or unauthorized drugs will be permitted on the job site.
6. Fire protection equipment is to be used for firefighting.

C. TRENCHING/EXCAVATION - (COMPETENT PERSON)

1. Banks more than 5 feet high shall be shored, laid back to a stable slope, or some other equivalent means of protection shall be provided where employees may be exposed to moving ground or cave-ins. Trenches less than 5 feet in depth shall also be effectively protected when examination of the ground indicates hazardous ground movement may be expected.

2. Sides of trenches in hard or compact soil, including embankments, shall be shored, or otherwise supported when the trench is more than 5 feet in depth and 8 feet or more in length. In lieu of shoring, the sides of the trench above the 4-foot level may be sloped to preclude collapse but shall not be steeper than a 1-foot rise to each 1/2-foot horizontal materials used for sheeting. Sheet piling, bracing, shoring, and underpinning, shall be in good serviceable condition, and timbers used shall be sound and free from large or loose knots, and shall be designed and installed to be effective to the bottom of the excavation.

4. Additional precautions by way of shoring and bracing shall be taken to prevent slides or cave-ins, when excavations or trenches are made in locations adjacent to backfilled excavations, or where excavations are subjected to vibrations from the railroad, highway traffic, and the operation of machinery or any other source.

5. When employees are required to be in trenches 4 feet deep or more, an adequate means of exit, such as a ladder, ramp, or steps, shall be provided and located to require no more than 25 feet of lateral travel. Bracing or shoring of trenches shall be carried along with the excavation.

6. Cross braces or trench jacks shall be placed in true horizontal position, be spaced vertically, and be secured to prevent sliding, falling or kick-outs. Portable trench boxes or sliding trench shields may be used for protection instead of a shoring system or sloping. Where such trench boxes or shields are used, they shall be designed, constructed, and maintained in a manner which will provide protection equal to or greater than the sheeting or shoring required for the trench.

7. Portable trench boxes or sliding trench shields may be used for protection instead of a shoring system or sloping. Where such trench boxes or shields are used, they shall be designed, constructed, and maintained in a manner which will provide protection equal to or greater than the sheeting or shoring required for the trench.

8. Backfilling and removal of trench supports shall progress together from the bottom after the employees have cleared the trench.

D. FIRE PROTECTION

1. Only employees who have been properly trained on the general principals of a fire extinguisher, and the hazards involved in the use, will utilize a fire extinguisher. Employee training will be conducted annually, documentation will be maintained by the Safety Manager for a period of 5 years. Fire extinguisher training will be provided by KE&G.
2. Annual maintenance inspections will be conducted and documented. Monthly inspections will also be conducted, individuals in possession of fire extinguishers will be responsible for ensuring fire extinguisher tags are dated and initialed upon completion of inspection.
3. Gasoline and other flammable liquids shall be stored in approved containers and properly labeled.
4. Rubbish, brush, long grass, or combustible liquids shall be properly stored or handled.
5. Flammable storage tanks and systems shall be electronically bonded and grounded.
6. Fire Extinguishers shall be inspected monthly, all firefighting equipment, etc., shall be kept readily accessible and visible.
7. Ventilation must be adequate to prevent the accumulation of flammable vapors where the painting is done.
8. Don't smoke or use an open flame, exposed heating element or any other source of ignition in areas or rooms where the painting is done.

E. MOBILE EQUIPMENT

1. Do not ride on running boards or stand up in/on moving vehicles and one person per seat.
2. Don't get on or off equipment while it is in motion.
3. Use three points of contact when entering and exiting equipment.
4. Stay clear of moving equipment whenever there is danger from swinging booms, crane cabs, suspended loads, etc.
5. Do not walk or work under a suspended load or hoisting operations.
6. Use a tag line to guide a suspended load.
7. Do not ride the ball, hook or load on any crane or derrick.
8. Unless special cab protection is provided, the driver will not remain in the cab of a truck when it is loaded from overhead with rocks or heavy material by shovel, crane, or similar equipment.
9. Do not move winch trucks unless loads suspended from winch lines are secured to prevent swinging.
10. Cranes, derricks, winch trucks or any equipment are never to be operated within 10-foot or more reach of power lines. Assume all wires are hot.

11. All power lines must be barricaded or flagged, when applicable, when there is danger of contact by mobile equipment.
12. Lines that could be reached accidentally must be de-energized or otherwise made safe before any work is done.
13. No equipment is to work over the top of energized power lines.
14. Only an appointed signalman or qualified riggers may give signals to the operator.
15. Use only standard hand signals to direct equipment operations.
16. Only authorized operators will operate cranes.

F. MATERIAL HANDLING & STORAGE

1. Ensure material is correctly blocked and placed in such a way that it will not fall from the stack.
2. Ensure that material is unloaded and stored according to plan and that there is safe, easy access to material handling equipment.
3. Be especially careful when unloading trucks with circular material, i.e. pipes, casing, etc. Ensure that material is properly secured to the truck until it is ready to be moved. Provide stakes or bins on the ground to safely confine material until utilized.
4. When stacking material bags, step back the layers and cross key all bags at least every 10 bags high when stacking.
5. The material will not be stored on scaffolds or runways beyond daily work needs.
6. Used lumber will have all nails withdrawn before stacking, and stacked on level solidly supported sills, and will be self-supporting.
7. Use a pry bar or spud wrench rather than your hands when separating or spreading material.
8. Keep small material in containers or bundled together.
9. Do not pile material in aisles or passageways.
10. Do not leave blocking, chains, cable, hose, or tools lying between piles of material.
11. No one is permitted on the bed of pickup trucks while a load is being lifted by mechanical equipment.
12. Always position cables and hooks so that loads are equally distributed.
13. If clamps have been jammed against a stop, sheave, pulley, etc., reset the clamps before further use.
14. Loads will not be carried on the point of a hook.
15. Only one person shall signal the crane operator during a lift.
16. Always stay clear of the load so that if it swings, slips, slides or spills, you will not be injured.

17. Report to your Supervisor any equipment that appears unsafe, and do not use it until it is repaired or replaced.

G. HAND AND POWER TOOLS

1. Power tools shall be of a manufacturer listed by a nationally recognized testing laboratory for the specific application for which they are to be used.

2. Hand and power tools shall be used, inspected, and maintained in accordance with the manufacturer's instructions and recommendations and shall be used only for the purpose which designed. Manufacturers instructions shall be maintained with the tools.

3. Hand and power tools shall be inspected, tested, and determined to be in safe operating condition before use, including quarterly assured ground requirements. Daily inspections shall be made to assure safe operating condition and proper maintenance.

4. All hand/power tools shall be maintained in safe operating conditions. Hand/power tools found defective will be immediately removed from service until repaired or replaced.

5. All portable and fixed power saws shall be equipped with guards over the blades. Radial saws shall be set up so that the saw drafts toward the column of the machine when the handle is released.

6. All Grinding and Abrasive machinery shall be used only on machines with safety guards. Wheels must be matched to specifications and tongue guard adjusted to within ¼" and work rest 1/8" distance from the wheel. Wheels shall be ring tested prior to installation.

7. Pneumatic tools shall be used, operated, repaired, serviced, and handled ONLY by authorized personnel. Authorized users will have received training required by the manufacturers' requirement.

8. Chainsaws shall be used, operated, repaired, serviced, handled, and refueled ONLY by authorized personnel. Authorized users will have received training required by the manufacturers' requirement.

9. Personal protective equipment required for any type of hand/power tools will be utilized. This will include employees assisting other employees utilizing hand/power tools.

H. POWDER ACTUATED TOOLS

1. Powder actuated tools shall be used, operated, repaired, serviced, and handled only by authorized personnel.

2. The operator shall wear safety goggles, shield or other approved face and eye protection as recommended by the manufacturer.

I. TEMPORARY WIRING

1. All electrical circuits shall be grounded in accordance with the requirement of the national electrical code. GFCI's will be used where temporary wiring is utilized.

2. Temporary wiring shall be guarded or isolated by elevation to prevent accidental contact by employees or equipment.
3. Extension cords shall be of a type listed by the Underwriters Laboratories for the purpose in which they are being used and equipped with approved connections.
4. Bulbs attached to extension cords shall be protected by wire guards.
5. Exposed empty light sockets and broken bulbs shall not be permitted.

J. LADDERS

1. All ladders in use shall be inspected daily.
2. Ladders shall be long enough for the job and, if reaching to a walkway or platform, they shall project at least 36 inches beyond the top landing.
3. All ladders shall be secured in place.
4. Follow the 4:1 rule: The distance from the ladder's base to the vertical side of support shall be one- fourth of its supported length.
5. Distance between rungs shall not exceed (12") inches and shall be uniform throughout.
6. Damaged ladders shall be tagged as "Dangerous, Do Not Use," and taken out of service.
7. Gang ladders shall conform to OSHA standards.
8. Wooden ladders shall not be painted.
9. Portable metal ladders shall not be used for electrical work or where they may contact electrical conductors, only fiberglass ladders will be allowed.
10. Manufacturer's information label must remain on the ladder, ensuring load capacity for the ladder in use is strictly adhered to. If the label is removed/not legible, it will be taken out of service.
11. Ladders will be utilized for its intended purpose, always utilizing proper safe work practices.
12. Double cleat ladders over 24 feet in length shall not be used.
13. Use three points of contact, always when climbing up and down ladders.
14. Carrying loads on ladders is not permitted.

K. ROPES, CABLES, WEB STRAPS & RIGGING

1. All employees handling wire rope shall wear gloves.
2. Taglines will be utilized at ALL TIMES.
3. Rigging equipment shall not be loaded more than its recommended load capacity (safe working load).
4. Rigging equipment, when not in use, shall be removed from the project site and stored appropriately.

5. Wire ropes and web slings shall be inspected before or as necessary before each use.
6. Items shall be removed from service upon evidence of excessive wear, cuts, tears, broken wires, kinking, corrosion, heat damage or suspicion of electrical damage.
7. Wire rope and web straps shall be cut up when they are removed from service due to defects.
8. Cable clamps of the "Crosby" type should be applied only with the U-bolt over the dead-end of the cable. Alternating clips are not safe. Follow manufacturer's directions for other types of fittings.
9. Wire rope shall be lubricated regularly and kept out of abrasive dirt to avoid excessive wear.
10. Wire rope shall not be used in such a way as to cause sharp bends or continual reverse bending.
11. No employees will be allowed under a suspended load at any time; such incidents will be considered as a “Near-Miss” and documented.
12. Riding a load, hook or buckets is prohibited.
13. All hooks on hoisting equipment shall be equipped with safety latches or housed.
14. When a hook has been bent from overloading, it will be destroyed. A new hook shall be used.

L. CONCRETE FORMING, REINFORCING AND POURING

1. All employees tying reinforcing bars in walls, piers, columns, etc., will wear and secure a safety harness when working more than 6 feet above the ground.
2. Before climbing reinforcing steel, ensure it is properly tied or supported to prevent collapse.
3. Prior to installing structural members (i.e. studs, walls, ties, etc.) in the forming process, visually inspect each to ensure that only good quality material is erected.
4. Lumber and material from stripped formwork will have nails pulled and hardware removed before it is stacked.
5. A worker must be identified who shall be responsible for directing the location of the ready-mix truck. They must stay in a visible position to be seen by the truck driver and be able to see the entire area where the truck is backing.
6. Wash concrete off exposed skin as soon as practical.
7. Never lay tools on the outside edges of scaffolding or anywhere they are likely to be kicked or knocked off the edge.
8. Always maneuver wheelbarrows or power buggies where intended and make sure that traffic patterns are maintained free of obstruction or cross traffic.
9. Never sweep or throw debris off upper-level edges or down floor openings.
10. Always use OSHA Standard caps to protect exposed rebar and form pins.

M. PERSONAL PROTECTIVE EQUIPMENT

1. Personal protective equipment (PPE) training will be provided to all KE&G employees during Onboarding and will be documented using supervisor's checklist. Training will include proper fit, and maintenance of equipment.

2. Retraining will be conducted when:

   - A new task is introduced, when a task has changed, or when employees show a lack of use, improper use, or if they have not been trained to utilize PPE.

3. Protective equipment furnished to the employees shall be determined by an advance hazard assessment of the job requirements and work conditions that occur as work progresses. Hazard assessments shall be approved and signed by the Supervisor, and/or the Safety Manager.

On all worksites and projects, the following PPE requirements shall be adhered to:

1. Safety glasses, a full-face shield or goggles shall be worn by employees who are engaged in chipping, grinding, or performing any operations where they are exposed to eye and face injury hazards.

2. During welding, cutting and brazing operations, approved respirators, goggles, face masks, shields, and helmets suitable to the type of work will be worn by employees engaged in or watching the work.

3. Protective screens will be placed around welding operations to protect others from an eye injury.

4. Hard hats, safety glasses and appropriate safety apparel/hi-visibility vests shall be worn on all jobs by all employees, subcontractors, and visitors.

5. Any identified employee required to wear a respirator will be added to the Participant List (Attachment A of the Respiratory Protection Program). Additionally, a Respiratory Fit Test Record will be kept (Attachment C) that will include the name of the employee, the type of respirator being used, and fit testing verification.

6. Respirators classified as an N95 will be offered to all employees for their comfort. When an employee chooses to use an N95, the employee will sign Appendix D Volunteer use form for the Respiratory Protection Program, which explains the limitations and proper use and care of the N95.

6. PPE will be cleaned and maintained by the employees, PPE items found defective and damaged will be discarded and replaced, as necessary.

7. Employee-owned PPE will not be allowed.

8. The Supervisor shall ensure the wearing of gloves, earplugs and ANSI approved boots and glasses, as necessary.

9. The Supervisor shall be responsible for enforcing the use of protective equipment and determining, with guidance from the Safety Manager, when special equipment is needed.

N. FLOOR OPENINGS AND STAIRWAYS

1. At all unprotected floor openings, elevator shafts, and stairways, the provision shall be made for barriers and toe boards. These shall remain in place until the openings have been closed or permanent stairs installed. When contractors must remove such barriers in the performance of their work, they are responsible for replacing barriers to always provide maximum protection.
2. Floor openings that are big enough for someone to accidentally fall into shall be guarded by either a standard railing with a standard toe board on all exposed sides or a floor hole cover of standard strength and construction that is secured against accidental displacement. When the cover is not in place, the floor hole shall be protected by standard railing and toe board.
3. All permanent metal stair treads shall have all depressions filled with secure blocking to eliminate tripping hazards.
4. Temporary handrails shall be installed on all stairs during initial stair erection.

O. LIFTING

1. If the load is too heavy, get help.
2. Wear gloves to protect your hands.
3. Be sure you have good footing.
4. Keep feet parted with one foot alongside and one foot behind the object.
5. Bend your knees and crouch down to the load. Keep your body close to the load.
6. Get a good grip with the whole hand.
7. Keep your back straight, nearly vertical, and lift with your legs.
8. Avoid twisting your body. Shift your feet.
9. Be sure you can see where you are going.
10. To lower the load, reverse the above steps.

P. MEDICAL SERVICES AND FIRST AID

1. First Aid: When a medical facility is not reasonably accessible, a person trained to render first aid shall be available on the site.
2. First Aid Responder: The responder must possess a valid certificate/card in first aid training, which was obtained through the American Heart Association, or equivalent documented training.
3. First Aid Supplies: Supplies shall be readily available and stored in either or both, the vehicles and project site trailer(s). Kits shall consist of an adequate supply of items, which will be periodically inventoried by Supervisors, Safety Manager, and vendors.

4. Eyewash/Portable Stations: In the event an employee's body/eyes are exposed to injurious corrosive materials, ensure a portable eyewash station is on the specific job site where the chemical is located. They must be readily accessible and inspected weekly to ensure proper operation. *Inspection must be documented*.

5. Telephone Numbers: All emergency telephone numbers shall be conspicuously posted near the phone (i.e., "911", ambulance, doctor, fire department, paramedics, etc.).

Q. TOOLS AND EQUIPMENT

1. Use the right tool for the job. Never use hand tools for any other purpose than that for which the tools were intended. Never use any makeshift devices.

2. Never use damaged tools with frayed/defective electric cords. Never use unguarded machinery.

3. Before starting power equipment, be sure that no one will be endangered by gears, belts, or other moving parts of the machinery and that all guards are secured in place. Do not wear gloves or loose or torn clothing around moving parts or machinery.

4. Ensure that all machinery before cleaning, repairing, or adjusting is declared safe by following the Lock-Out Tag Out (LOTO) procedures. (Red-Tagging used in the Shop)

5. All gasoline engines must be shut down before refueling.

6. The use of gasoline as a cleaning solvent is strictly forbidden. An approved cleaning solvent must be used to clean tools, machinery, and similar equipment.

7. Be sure the machine is locked out and tagged out before removing safety guards when making repairs or adjustments.

8. Prevent others from starting equipment on which you are working by posting warning signs and padlocking switch boxes.

9. Only authorized personnel are permitted to repair or operate power equipment.

10. When using any electrically operated power equipment, be sure that it is properly grounded.

11. Never use power equipment beyond its rated capacity. This also pertains to ropes, cables, chains, hooks, etc.

12. Never use wire rope if it is frayed, has broken strands or other defects. Notify your Supervisor of any defects.

13. Before doing any hot work on any vessel, disconnect and blank all connecting pipelines. The atmosphere inside the tank must be tested by a Competent Person before entry.

14. Remedy or report all unsafe conditions and equipment to your Supervisor.

15. No smoking will be allowed while refueling or around flammable material.

R. Safety acknowledgment form - TO ALL EMPLOYEES

Welcome to KE&G Construction Inc. We are an employee-owned company. It is our intent to provide you with a safe, productive place in which to work. To do this, we have prepared a safety acknowledgement form. Safety is a state of mind that must be cultivated on a continuing basis. Please read this form carefully and have your Supervisor further explain and answer any questions you may have. We are proud of our Safety Program at KE&G and we want you to become an integral part of it. To do this, we must have 100% of your cooperation. You, your family, and the company will be the ones to benefit now and in the future. Can you think of a better investment?

Violation of any of these rules may subject you to disciplinary action and could be a reason for termination, depending on the severity. This is not intended to be an all-inclusive list and may be modified as deemed necessary without prior notification.

1. Willful violation of company safety rules.
2. Theft of company or subcontractor tools, equipment, or materials. This may result in prosecution.
3. Engaging in fighting, horseplay, or practical joking.
4. Willful damage of tools, equipment, material, or property.
5. Aggravated display of firearms or other lethal weapons.
6. Willful disrespect, verbal or physical, toward project owner's representatives, KE&G, or subcontractor personnel.
7. Unauthorized entry into the owner or subcontractor's property.
8. On the job use of alcohol, illegal drugs or any controlled substance that has not been prescribed by a physician for the employee's specific purpose, reporting to work under conditions whereby your ability to work safely is in any way limited using illegal drugs or alcohol. Possession of the above or being under their influence is not permitted on KE&G property or job sites. When circumstances warrant, KE&G reserves the right to require any employee to be tested at company expense. Employees involved in an on-the-job injury or accident while driving a company vehicle will be tested. In addition, employees involved in work-related incidents involving unusual behavior where alcohol or drug use is reasonably suspected to be a contributing factor will be tested. Refusal to submit to testing under the above circumstances is grounds for termination.
9. Insubordination, including the refusal to follow a reasonable order of a Supervisor.

By signing below, you acknowledge you understand the importance of our safety program and how it applies to you.

PLEDGE:

I agree that it is my responsibility to read and understand KE&G safety procedures. It has been explained to me by my Supervisor. I promise to cooperate with the Company and my fellow employees to do my part toward maintaining an excellent safety program.

_____

Employee Name Signature Date Supervisor Name Signature Date

Hazard Communication

100% Employee Owned

I. Introduction

The purpose of this program is to ensure that potential hazards and hazard control measures for chemicals used by KE&G are understood by KE&G employees.

The written program is available for employee review at any time. A copy of the program will be provided to any employee or employee representative, upon request. Additional job sites may also request a copy of the HAZCOM Program. The Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (HCS) 29 CFR 1910.1200 (General Industry) and 29 CFR 1926.59 (Construction Industry) call for the development of a Hazard Communication Program when employees may be exposed to any chemical in the workplace under normal conditions of use or in a foreseeable emergency. In 2012, OSHA revised the HCS to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). As a result, this program has been revised to comply with the requirements of the OSHA HCS 2012. The written hazard communication program will include and address the following criteria to satisfy the minimum requirements of the OSHA HCS 2012:

- List of all hazardous chemicals known to be present in the workplace or individual work area
- Methods used to ensure that all containers, including pipes and holding tanks, are labeled, tagged, or marked properly
- Methods used to obtain and maintain safety data sheets (SDSs)
- Methods used to provide employees with information and training on hazardous chemicals in their work areas
- Methods used to inform employees of the hazards of non-routine work practices
- Methods used to provide the employees of other employers (e.g., consultants, construction contractors, and temporary employees) on-site access to SDSs for each hazardous chemical that the other employer's employees may be exposed to while working in the workplace
- Methods used to inform the employees of other employers of precautionary measures that need to be taken to protect themselves during the workplace's normal operating conditions and in foreseeable emergencies
- Methods used to inform the employees of other employers of the labeling system used in the workplace

The Hazard Communication program will identify the following:

- Key personnel responsible for the program
- Location of the chemical inventory list and SDSs
- Workplace labeling system
- Good work practices and procedures to minimize exposures
- How training will be performed
- Procedures to maintain the program and update the required information
- How records will be maintained

II. RESPONSIBILITIES

The Safety Manager is responsible for administering the Hazard Communication Program.

This person is also responsible for:

- Reviewing the potential hazards and safe use of chemicals
- Maintaining a list of all hazardous chemicals and a master file of SDSs
- Ensuring that all containers are labeled, tagged, or marked properly
- Providing new-hire and annual training for employees
- Maintaining training records
- Monitoring the air concentrations of hazardous chemicals in the work environment
- Properly selecting personal protective equipment
- Directing the cleanup and disposal operations of the spill control team
- Identifying hazardous chemicals used in nonroutine tasks and assessing their risks
- Reviewing the effectiveness of the hazard communication program and making sure that the program satisfies the requirements of all applicable federal, state, or local hazard communication requirements

The Company Purchasing Agent:

- Contacting chemical manufacturers and/or distributors to obtain SDSs and secondary labels for hazardous chemicals used or stored in the workplace

Supervisor/Foreman requesting chemical:

- Reviewing incoming hazardous chemicals to verify correct labeling
- Holding hazardous chemicals in the receiving area until receipt of the SDS for the product

Employees are responsible for the following aspects of the hazard communication program:

- Identifying hazards before starting a job
- Reading container labels and SDSs
- Notifying the Supervisor of torn, damaged, or illegible labels or of unlabeled containers
- Using controls and/or personal protective equipment provided by the company to minimize exposure
- Following company instructions and warnings about chemical handling and usage
- Properly caring for personal protective equipment, including proper use, routine care and cleaning, storage, and replacement
- Knowing and understanding the consequences associated with not following company policy concerning the safe handling and use of chemicals
- Participating in training

III. CHEMICAL INVENTORY LIST

KE&G uses as online service, KHA, to track its chemical inventory list. All employees have 3 ways to fully access the chemical inventory list. This is accessing it through **keg.kha.com** as well as a specific KE&G QR Code accessible to all employees via hard hat stickers and work vehicles.

This list will contain the product identifier that is referenced in the appropriate SDS, the location or work area where the chemical is used, and the personal protective equipment and precautions for each chemical product. This list will be updated annually, and whenever a new chemical is introduced to the workplace.

IV. LABELS AND OTHER FORMS OF WARNING

Each container of hazardous chemicals received from the chemical manufacturer, importer, or distributor will be labeled with the following information:

- Product identifier
- Signal word; such as “Warning,” “Danger,” etc.
- Hazard statement(s)
- Pictogram(s)
- Precautionary statement(s)
- Name, address and telephone number of the chemical manufacturer, importer, or another responsible party

KE&G Construction will use the GHS labeling system for secondary containers. When a chemical is transferred from the original container to a portable or secondary container, the container will be labeled, tagged, or marked with a GHS label containing the following information:

- Product identifier
- Signal word; such as “Warning,” “Danger,” etc.
- Hazard statement(s)
- Pictogram(s)
- Precautionary statement(s)

Portable containers into which hazardous chemicals are transferred from labeled containers and that are intended for the immediate use of the employee who performs the transfer do not require a label, however, when in doubt, label the container. If the portable container will be used by more than one employee or used over the course of more than one shift, the container must be labeled. Food and beverage containers should never be used for chemical storage.

Signs, placards, process sheets, batch tickets, operating procedures or other such written materials may be used in lieu of affixing labels to the individual, stationary process containers if the alternative method identifies the containers to which it is applicable and conveys the information required for workplace labeling.

Where an area may have a hazardous chemical in the atmosphere (e.g., where extensive welding occurs), the entire area will be labeled with a warning placard.

Pipes that contain hazardous chemicals should be labeled in accordance with ANSI/ASME A13.1 and indicate the direction of flow. (Please note that this not a requirement of the OSHA HCS but a best practice or requirement of the local jurisdiction.)

Workplace labels or other forms of warning will be legible, in English and prominently displayed on the container or readily available in the work area throughout each work shift. If employees speak languages other than English, the information in the different language(s) may be added to the material presented if the information is presented in English as well.

Note: After Dec. 1, 2015, distributors may not ship containers labeled by the chemical manufacturer or importer unless the label on the container meets GHS labeling requirements.

V. SAFETY DATA SHEETS

An SDS will be obtained and maintained for each hazardous chemical in the workplace. SDSs for each hazardous chemical will be readily accessible during each work shift to employees when they are in their work areas.

SDSs will be obtained from the chemical manufacturer, importer, or distributor. The name on the SDS will be the same as that listed on the chemical inventory list. SDSs for chemicals or process streams produced by the company will be developed and provided by the safety coordinator.

KE&G uses as online service, KHA, to maintain its chemical inventory list. All employees have 3 ways to fully access the chemical inventory list. This is accessing it through keg.kha.com as well as a specific KE&G QR Code accessible to all employees via hard hat stickers and work vehicles.

SDSs for new products or updated SDSs for existing products will be obtained by the purchasing agent and forwarded to the safety coordinator. The safety coordinator will then update the master file with new and/or updated SDSs.

If problems arise in obtaining an SDS from the chemical manufacturer, importer or distributor, a phone call will be made to request an SDS and to verify that the SDS has been sent. The phone call will be logged, and a letter will be sent the same day. If the KE&G purchasing agent is unable to obtain the SDS, then the notification will be made to the safety officer who will pursue the manufacturer for a current SDS.

VI. EMPLOYEE INFORMATION AND TRAINING

Employees included in the hazard communication program will receive the following information and training before exposure to hazardous chemicals and when new chemical hazards are introduced to their work area dependent on work location:

- Requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200 (General Industry) or 29 CFR 1926.59 (Construction Industry)
- Operations in the work area where hazardous chemicals are present
- Location and availability of the hazard communication program, chemical inventory list, and SDSs

- Methods and observations used to detect the presence or release of a hazardous chemical in the work area, such as monitoring devices, visual appearance or odor of hazardous chemicals when being released
- Physical, health, simple asphyxiation, combustible dust, and pyrophoric gas hazards, as well as hazards not otherwise classified of the chemicals in the work area
- Measures employees can take to protect themselves from hazards, such as appropriate controls, work practices, emergency and spill cleanup procedures, and personal protective equipment to be used
- Explanation of the labels received on shipped containers
- Explanation of the workplace labeling system
- Explanation of the SDS, including the order of information and how employees can obtain and use the appropriate hazard information

Note: To facilitate understanding of the new GHS system, the OSHA HCS requires that employees be trained regarding the new label elements and SDS format by Dec. 1, 2013. Employers are required to update the hazard communication program and to provide any additional training for newly identified physical or health hazards no later than June 1, 2016.

VII. NON-ROUTINE TASKS

The Safety Manager and/or the immediate Supervisor of an employee performing a nonroutine task, such as cleaning machinery and other process equipment, is responsible for ensuring that adequate training has been provided to the employee on any hazards associated with the nonroutine task. KE&G employees share in this responsibility by ensuring that their immediate Supervisor knows that the nonroutine task will be performed.

Special work permits are required for the performance of certain nonroutine tasks, such as entry to confined spaces, breaking and opening piping systems, and welding and burning. For some special tasks, employees are required to follow special lockout/tagout procedures to ensure that all machinery motion has stopped, and energy sources are isolated prior to and during the performance of such tasks.

VIII. CONTRACTORS

Prior to beginning work, the Safety Manager and/or Project Manager will inform contractors with employees working on company property of any hazardous chemicals that the contractors' employees may be exposed to while performing their work. The Safety Manager and/or Project Manager will also inform contractors of engineering or work practice control measures to be employed by the contractor, personal protective equipment to be worn by the contractors' employees, and any other precautionary measures that need to be taken to protect their employees during the workplace's normal operating conditions and in foreseeable emergencies.

Furthermore, the Safety Manager and/or Project Manager will advise contractors that they must comply with all OSHA standards while working on company property. Appropriate controls will be established with the contractor to ensure that their employees are not exposed to safety and health hazards from work being performed by the contractor and that company operations do not expose contractors' employees to hazards.

The Safety Manager and/or Project Manager will inform contractors of the workplace labeling system and the availability and location of SDSs for any chemical to which contractors' employees may be exposed while performing their work.

IX. RECORDKEEPING

Records pertaining to the hazard communication program will be maintained by the Safety Manager and/or KE&G purchasing agent. The Safety Manager will keep the following records:

- Chemical inventory list
- Employee training records
- Warnings issued to employees for not following the hazard communication program

X. PARTIAL LIST OF HAZARDOUS CHEMICALS IN THE WORKPLACE

- Acetylene
- Anti-Freeze (Propylene Glycol)
- Concrete (Freshly Mixed - Unhardened)
- Carbon Monoxide
- Diesel Fuel
- Gasoline (Leaded)
- Abrasive Wheels ("A" Resin Bonded)
- Abrasive Wheels ("C" Resin Bonded)
- Abrasive Wheels ("A" Rubber Bonded)
- Abrasive Wheels ("C" Rubber Bonded)
- Abrasive Wheels (Diamond Wheel)
- Oxygen (Industrial)
- Welding Rods (P5)
- Welding Rods (LH70)

The Safety Manager and/or Project Manager will be able to assist you if you have any questions.

Excavation & Trenching

100% Employee Owned

I. INTRODUCTION

1. This program establishes the minimum requirements for all work in excavations and trenches, which may expose employees to the hazards of moving ground.

2. This program incorporates the pertinent requirements of the applicable State and Federal safety regulations for excavations and trenching.

3. Deviations from the requirements of this program or the applicable regulations and all excavations and trenches deeper than 20 feet will be constructed and maintained in accordance with the design prepared by a **registered professional engineer**.

4. If spoils will be hauled away, a haul plan will be put in place and shall address specific equipment to be used, traffic density and patterns of right-of-way rules, and hours of operation.

5. SWPP Plans will also be required if drainage control is necessary and water will move away from the location being excavated.

II. DEFINITIONS THAT APPLY TO THIS SUPPLEMENT

1. **ALUMINUM HYDRAULIC SHORING.** A pre-engineered shoring system comprised of aluminum hydraulic cylinders (cross braces) use in conjunction with vertical rails (uprights) or horizontal rails (wales). Such a system is designed specifically to support the sidewalls of an excavation and prevent cave-ins.

2. **BENCHING**. A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal steps, usually with vertical or near-vertical surfaces between levels.

3. **CAVE-IN**. The separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.

4. **CEMENTED SOIL**. A soil in which the particles are held together by a chemical agent, such as calcium carbonate, such that a hand size sample cannot be crushed into powder or individual particles by finger pressure.

5. **COHESIVE SOIL**. Clay (fine-grained soil), or soil with a high clay content, which has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical side slopes and is plastic when moist. Cohesive soil is hard to break up when dry and exhibits significant cohesion when submerged. Cohesive soils include clay silt, sandy clay, silt clay, clay, and organic clay

6. **COMPETENT PERSON**. One who can identify existing or predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them.

7. **CROSS BRACES**. The horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.

8. **DRY SOIL**. Soil that does not exhibit visible signs of moisture content.

9. **EXCAVATION**. Any man-made cut, cavity, trench, or depression in the earth surface, formed by earth removal.

10. **FACES OR SIDES**. The vertical or inclined earth surfaces formed because of excavation work.

11. **FAILURE**. The breakage, displacement, or permanent deformation of a structural member or connection to reduce its structural integrity and its supportive capabilities.

12. **FISSURED**. A soil material that tends to break along definite planes of fracture with little resistance or material that exhibits open cracks, such as tension cracks, in as exposed surface.

13. **GRANULAR SOIL**. Gravel, sand, or silt (coarse-grained soil) with little or no clay content. Granular soil has no cohesive strength. Some moist granular soils exhibit apparent cohesion. Granular soil cannot be molded when moist and crumbles easily when dry.

14. **HAZARDOUS ATMOSPHERE**. An atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen-deficient, toxic, or otherwise harmful, may cause death, illness, or injury.

15. **LAYERED SYSTEM**. Two or more distinctly different soil or rock types arranged in layers. Micaceous seams or weakened planes in rock or shale are considered layered.

16. **PLASTIC**. A property of a soil which allows the soil to be deformed or molded without cracking or appreciable volume change.

17. **PROTECTIVE SYSTEM**. A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems and other systems that provide the necessary protection.

18. **REGISTERED PROFESSIONAL ENGINEER**. A person who is registered as a professional engineer in the state where the work is being performed. However, a professional engineer, registered in any state is deemed to be a "registered" professional engineer within the meaning of this standard when approving designs for manufactured protective systems or tabulated data used in interstate commerce.

19. **SATURATED SOIL**. A soil in which the voids between the particles are filled with water. Saturation does not require flow. Saturation or near saturation is necessary for the proper use of instruments such as a pocket penetrometer or sheer vane.

20. **SHIELD**. A structure that can withstand the forces imposed on it by a cave-in and thereby protects employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as the work progresses. Shields can be pre-manufactured, or job built in accordance with Section C3. Of this program.

21. **SHORING**. A structure such as a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

22. **SLOPING**. A method of protecting employees from cave-ins by excavating to form sides of an excavation that is inclined away from the excavation to prevent cave-ins. The angle of incline

required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

23. **STABLE ROCK**. Natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is stable when the rock material on the side or sides of the excavation is secured against caving in or movement by rock bolts or by another protective system that has been designed by a registered professional engineer.

24. **SUPPORT SYSTEM**. A structure such as underpinning, bracing or shoring which provides support to an adjacent structure, underground installation, or the sides of an excavation.

25. **TABULATED DATA**. Tables and charts approved a registered professional engineer and used to design or construct a protective system.

26. **TRENCH**. A narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet. If forms or other structures are installed to reduce the dimensions measured from the forms or structure to the side of the excavation to 15 feet or less, an excavation is considered a trench.

27. **TYPE A SOIL**. Cohesive soils with an unconfined compressive strength of 1.5 tons per square foot (TSF) or greater. Examples of cohesive soils are clay, silty clay, sandy clay, clay loam, and in some cases silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A. However, no soil is Type A if:

    a. The soil is fissured, or

    b. The soil is subject to vibration from heavy traffic, pile driving or similar effects; or

    c. The soil has been previously disturbed; or

    d. The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater; or

    e. The material is subject to other factors that would require it to be classified as a less stable material.

28. **TYPE B SOIL**. Cohesive soil with an unconfined compressive strength greater than 0.5 TSF but less than 1.5 TSF; or, Granular cohesionless soils including: angular gravel (similar to crushed rock), silt, silt loam, sandy loam and in some cases, silty clay loam and sandy clay loam; or Previously disturbed soils except those which would otherwise be classed as Type C soil; or Soil that meets the unconfined compressive strength or cementation requirements for Type A, but is fissured or subject to vibration; or, Dry rock that is not stable; or Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V), but only if the material would otherwise be classified as Type B.

29. **TYPE C SOIL**. Cohesive soil with an unconfined compressive strength of 0.5 TSF or less; or, Granular soils including gravel, sand and loamy sand; or, Submerged soils including soil from which water is freely seeping; or, Submerged rock that is not stable; or, Material in a sloped, layered system where the layers dip into the excavation at a slope of four horizontal to one vertical (4H: 1V) or steeper.

30. **UNCONFINED COMPRESSIVE STRENGTH**. The load per unit area at which a soil will fail in compression. UCS can be determined by laboratory testing, or by using a pocket penetrometer, shear vane, or thumb penetration test.

31. **UPRIGHTS**. The vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not contact each other. Uprights placed so that individual members are closely spaced in contact with or interconnected to each other are often called "sheeting."

32. **WALES**. Horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or the earth.

III. GENERAL REQUIREMENTS

1. All **SURFACE ENCUMBRANCES** (rocks, trees, telephone poles, fire hydrants, etc.) adjacent to an excavation that may create a hazard to employees will be removed, secured, or supported, as necessary, to protect employees.

2. The estimated location of **UNDERGROUND INSTALLATIONS**, such as sewer, telephone, electric, water or other underground utilities will be identified prior to opening an excavation. The regional ONE CALL CENTER notification center in the area and the owners of underground facilities who may not participate in the regional ONE CALL CENTER program will be notified of proposed excavation at least two working days before the start of excavation operations. When excavations approach the estimated location of underground installations the exact location will be determined by probing or hand digging, as necessary, to prevent accidental contact with the underground installations. While the excavation is open, underground installations that create a hazard to employees will be supported, protected, or removed, as necessary to protect employees.

3. Appropriate **ACCESS AND EGRESS** in the form of a stairway, ladder or ramp will be provided in all excavation deeper than 4 feet. In trenches the stairway, ladder or ramp must be within 25 feet of employees and extend above the trench a minimum of 3 feet, access and egress shall not exceed 25 feet of lateral travel.

4. Employees will wear Personal Protective Equipment (safety vests, hardhats, gloves, or other authorized equivalent high visibility apparel) on all job sites, always protected from vehicular traffic.

5. Employees will be protected from **EXPOSURE TO FALLING LOADS** that may be dropped by lifting or excavation equipment.

6. A **WARNING SYSTEM FOR MOBILE EQUIPMENT**, such as barricades, berms signals, stop logs and backup alarms will be provided when equipment is operated adjacent to excavation, and the operator does not have a clear and direct view of the edge of the excavation.

7. Excavations deeper than 4 feet will be tested, as necessary, to identify and prevent exposure to **HAZARDOUS ATMOSPHERES. EMERGENCY RESCUE EQUIPMENT** such as rescue breathing apparatus, a safety harness, and line or a basket stretcher, will be available at the work site where a hazardous atmosphere exists or is reasonably expected to develop in an excavation.

8. Employees will not work in excavations where they will be exposed to the **HAZARDS ASSOCIATED WITH WATER ACCUMULATION**. If water accumulation in an excavation is controlled using pumps, the operation of the pumps will be continuously monitored by a competent person.

9. The **STABILITY OF ADJACENT STRUCTURES** such as buildings, walls, and sidewalks will be maintained using a support system, as necessary to protect employees.

10. Employees will be protected from **LOOSE ROCK OR SPOIL** that could fall or roll into the excavation by placing and keeping such material at least 2 feet from the edge of the excavation.

11. **DAILY INSPECTIONS** of trench and excavations fall under the responsibilities of the competent person, to identify and eliminate conditions that could result in possible cave-ins, failure of support systems, hazardous atmospheres, or other unsafe conditions. Inspections will be conducted before the start of work each day and after every rainstorm or another occurrence that may increase the hazard of moving ground. The results of the inspections will be recorded in the KE&G Daily Trench and Excavation Log (see a sample of log on page 88). The original copy of the log will be forwarded to the Safety Manager for review and filing.

12. Where employees or equipment are allowed or required to cross over excavations appropriate **FALL PROTECTION** in the form of walkways or bridges with standard guardrails will be provided.

IV. REQUIREMENTS FOR PROTECTIVE SYSTEMS

1. Sloping, shoring, or shielding will be provided **for PROTECTION OF EMPLOYEES IN EXCAVATIONS** except where the excavation is made in the stable rock or the excavation is less than 5 feet deep and an **examination by a competent person** does not indicate any potential for the cave-in.

2. When sloping or benching is chosen as the method to protect employees in an excavation one of the following optional **DESIGNS OF SLOPING AND BENCHING SYSTEMS WILL BE USED**:

   Option 1 - Sloping the excavation at an angle of one and one-half horizontal to one vertical or flatter.

   Option 2 - Performing a soil classification and determining the acceptable slopes using the tables located under **SLOPING AND BENCHING** section.

   Option 3 - The project-specific design prepared by a **registered professional engineer.** Engineered designs must be in writing and must include the name and registration number of the engineer, detailed plans and the calculations used in the design, the magnitude of slopes and the configurations determined to be safe. A copy of the design will be maintained at the job site during the use of the engineered system.

3. When a shoring or shielding system is chosen as the method to protect employees in an excavation one of the following optional **DESIGNS OF SUPPORT SYSTEMS, SHIELD SYSTEMS AND OTHER PROTECTIVE SYSTEMS** will be used: Performed by a Competent Person

   Option 1 - Performing a soil classification and determining the appropriate aluminum hydraulic shoring configuration using the shoring manufacture's tabulated data or Section F of this program. When using the manufacture's tabulated data, the shoring system must be installed in accordance with all the specifications, recommendations, limitations, or approvals to deviate issued by the manufacture. If used, the manufacture's tabulated date, specifications, recommendations, limitations, and any written approval to deviate from any of them shall be in writing and maintained at the job site during the use of the shoring system.

   Option 2 - The project-specific design prepared by a registered professional engineer. Engineered designs must be in writing and must include the name and registration number of the engineer, detailed plans and the calculations used in the design and the sizes, types, and configurations of materials to be used in the support system. A copy of the design will be maintained at the job site during the use of the engineered system.

4. The **MATERIALS AND EQUIPMENT** used for protective systems will be free of damage or defects that might impair their proper function. Manufactured materials and equipment will be maintained in accordance with the recommendations of the manufacturer. If material or equipment used in a protective system is damaged, altered or repaired it must be inspected by a competent person before being reused.

5. The **INSTALLATION AND REMOVAL OF SUPPORTS** will be performed in accordance with all the following:

   a. Members of support systems will be securely fastened together, as necessary, to prevent sliding, falling, kick-outs or other predictable failures.

   b. Support systems will be installed and removed in a manner that protects employees from cave-ins, structural collapses, or being struck by members of the support system.

   c. Individual members of support systems will not exceed their design capacity.

   d. Before temporary removal of individual members begins, additional precautions will be taken to protect employees, including installing other structural members to support any additional load imposed on the support system.

   e. Removal will begin at, and progress from, the bottom of the excavation. Members will be released slowly to reduce the likelihood of failure of the remaining members or a cave-in.

   f. Backfilling will progress together with the removal of support systems.

   g. Support systems will be closely coordinated with the excavation of trenches and will extend to within 2 feet of the bottom of the trench, but only if the system is designed to resist the forces calculated for the full depth of trench, and there is no indication that there is a loss of soil from behind or below the bottom of the support system.

6. **SHIELD SYSTEMS** will not be subjected to loads exceeding their design capacity. Shields will be installed in a manner that restricts lateral or hazardous movement in the event of the application of a sudden lateral load. Employees will remain in the shields at all times and must be protected when entering or exiting the areas protected by a shield. Employees will not be allowed in shields that are being installed, removed, or moved vertically. When shield systems are used in trenches, excavation of material to a depth of not more than 2 feet below the bottom of the shield is permitted only if the shield is designed to resist the forces calculated for the full depth of trench, and there is no indication that there is a loss of soil from behind or below the bottom of the shield.

V. SOIL CLASSIFICATION

1. This section describes a method of classifying soil and rock deposits based on site and environmental conditions and the structure and composition of the earth deposits. This section contains definitions, establishes requirements, and describes acceptable visual and manual tests for use in classifying soils.

2. This section applies and must be used when designing a sloping or benching system in accordance with Option 2 or 3 of Section C 2 or a support or shield system in accordance with Option 1 or 2 of Section C 3 of this program. **A soil classification using this section is not necessary for excavations sloped at an angle of one and one-half horizontal to one vertical or flatter.**

3. The classification of soil and rock deposits will be made based on the results of at least one visual and one manual analysis. These analyses will be conducted by a **competent person** using the tests described in this program or other approved methods of soil classification, such as those adopted by the ASTM or the USDA.

4. The visual and manual analyses will be chosen and conducted to provide sufficient quantitative and qualitative information as may be necessary to identify properly the properties, factors, and conditions affecting the classification of the deposits.

5. When classifying a layered system, the classification is based on the weakest layer. However, each layer may be classified individually when the more stable layer lies below a less stable layer.

6. If, after classifying a deposit, the properties, factors, or conditions change in any way, the changes will be evaluated by a **competent person**. The deposit will be reclassified, as necessary, to reflect the changed circumstances.

7. Visual analysis is conducted to collect qualitative information regarding the excavation site in general, the soil adjacent to the excavation, the soil forming the sides of the excavation and soil taken as samples from the excavated material. The visual analysis includes all the following:

    a. Observe samples of the soil that are excavated and soil in the sides of the excavation to estimate the range of particle sizes and the relative amounts of particle sizes. Fine-grained material is cohesive.

    b. Observe the soil as it is excavated to determine if it stays in clumps. Soil that breaks up easily and does not stay in clumps is granular.

c. Observe the side of the opened excavation and the surface area adjacent to the excavation to identify tension cracks or fissured material.

d. Observe the area adjacent to the excavation and the excavation itself to identify existing underground utilities, structures, or previously disturbed soils.

e. Observe the opened sides of the excavation to identify layered systems. Examine layered systems to determine if the layers slopes toward the excavation, if so, estimate the degree of slope in the layers.

f. Observe the area adjacent to the excavation and the area within the excavation to identify potential sources of vibration that may affect the stability of the excavation.

8. Manual analysis is conducted to collect quantitative as well as qualitative information regarding the properties of the soil and to provide more information to properly classify the soil. The manual analysis usually includes some or all the following.

a. Evaluate the plasticity of the soil by molding a moist or wet sample of soil into a ball and attempting to roll it into threads as thin as 1/8-inch diameter. Cohesive material can be rolled into thread at least two inches long without crumbling or breaking.

b. If the soil is dry and it crumbles on its own or with moderate pressure into individual grains or fine powder it is granular. If the soil is dry and falls into clumps which break into smaller clumps, but the smaller clumps can only be broken up with difficulty, it may be clay in any combination with gravel, sand, or silt. If the dry soil breaks into small clumps which can only be broken with difficulty, and there is no visual indication the soil is fissured, the soil may be considered un-fissured.

c. The thumb penetration test can be used to estimate the unconfined compressive strength of cohesive soils. Type A soils with an unconfined compressive strength of 1.5 TSF can be readily indented by the thumb; however, they can be penetrated by the thumb only with very great effort. Type C soils with an unconfined compressive strength of 0.5 TSF can be easily penetrated several inches by the thumb and can be molded by light finger pressure. This test should be conducted on an undisturbed soil sample, such as a large clump of soil, as soon as possible after excavation to keep to a minimum the effects of drying. If the excavation is later exposed to wetting influences (rain, flooding, watering), the classification of the soil must be changed accordingly.

d. Estimates of the unconfined compressive strength of soils can also be obtained by using a pocket penetrometer, or a hand-operated shear vane in accordance with the manufacturer's recommendations.

e. A drying test can be used to differentiate between cohesive material with fissures, un-fissured cohesive material, and granular material. The procedure for the drying test involves drying a sample of soil that is approximately one inch thick and six inches in diameter until it is thoroughly dry:

i. If the sample develops cracks as it dries significant fissures are indicated.

ii. Samples that dry without cracking are to be broken by hand. If considerable force is necessary to break the sample, the soil has significant cohesive material content. The soil can be classified as un-fissured cohesive material, and the unconfined compressive strength should be determined.

iii. If the sample breaks easily by hand, it is either a fissured cohesive material or a granular material. To distinguish between the two, pulverize the dried clumps of the sample by hand or by stepping on them. If the clumps do not pulverize easily, the material is cohesive with fissures. If they pulverize easily into very small fragments, the material is granular.

VI. SLOPING AND BENCHING

1. This section contains the specifications for sloping and benching when used as a method of protecting employees working in excavations. **THESE SLOPE AND BENCH SPECIFICATIONS ONLY APPLY IF A SOIL CLASSIFICATION HAS BEEN CONDUCTED.**

2. The maximum allowable slope based on the soil classification will be determined using the following table:

MAXIMUM ALLOWABLE SLOPES

SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPES (H: V)[1] FOR EXCAVATIONS LESS THAN 20 FEET DEEP [3]
STABLE ROCK	VERTICAL (90 DEGREES)
TYPE A (2)	3/4:1 (53 DEGREES)
TYPE B	1:1 (45 DEGREES)
TYPE C	1.5:1 (34 DEGREES)

NOTES:

1. The numbers shown in parentheses next to the maximum allowable slopes are angles expressed in degrees from the horizontal. The angles have been rounded off.

2. A short term-maximum allowable slope of 1/2:1 (63 degrees) is allowable in excavations in Type A soil less than 12 feet deep. Short-term maximum allowable slopes for excavation deeper than 12 feet will be 3/4:1 (53 degrees.)

3. Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.

4. The allowable slope or bench configuration based on the soil classification will be determined using the following figures:

EXCAVATIONS IN TYPE A SOIL	EXCAVATIONS IN TYPE B SOIL	EXCAVATIONS IN TYPE C SOIL
SIMPLE SLOPES LESS THAN 20 FEET DEEP WILL HAVE A MAXIMUM SLOPE OF 3/4"1	SIMPLE SLOPE SIMPLE SLOPES LESS THAN 20 FEET DEEP WILL HAVE A MAXIMUM SLOPE OF 1:1	SIMPLE SLOPE SIMPLE SLOPES LESS THAN 20 FEET DEEP WILL HAVE A MAXIMUM SLOPE OF 1-1/2:1
EXCEPTION: SHORT-TERM SIMPLE SLOPES LESS THAN 12 FEET DEEP HAVE A MAXIMUM SLOPE OF 1/2:1		

BENCHED EXCAVATIONS LESS THAN 20 FEET DEEP WILL HAVE A MAXIMUM SLOPE OF 3/4:1	BENCHED EXCAVATIONS LESS THAN 20 FEET DEEP WILL HAVE A MAXIMUM SLOPE OF 1:1	BENCHED EXCAVATIONS ARE NOT ALLOWED
TYPE A SOIL; MULTIPLE BENCH EXCAVATION	TYPE B SOIL; MULTIPLE BENCH EXCAVATION; PERMITTED IN COHESIVE SOIL ONLY	BENCHED EXCAVATIONS ARE NOT ALLOWED
SUPPORTED OR SHIELDED EXCAVATIONS LESS THAN 20 FEET DEEP WILL HAVE A MAXIMUM SLOPE OF 3/4:1	SUPPORTED OR SHIELDED EXCAVATIONS LESS THAN 20 FEET DEEP WILL HAVE A MAXIMUM SLOPE OF 1:1	SUPPORTED OR SHIELDED EXCAVATIONS LESS THAN 20 FEET DEEP WILL HAVE A MAXIMUM SLOPE OF 1-1/2:1
THE SUPPORT OR SHIELD MUST EXTEND AT LEAST 18 INCHES ABOVE THE VERTICAL SIDE.	THE SUPPORT OR SHIELD MUST EXTEND AT LEAST 18 INCHES ABOVE THE VERTICAL SIDE.	THE SUPPORT OR SHIELD MUST EXTEND AT LEAST 18 INCHES ABOVE THE VERTICAL SIDE.

THESE CONFIGURATIONS MAY ONLY BE USED IN TYPE A SOIL:

EXCAVATIONS IN TYPE A SOIL
EXCAVATION LESS THAN 8 FEET DEEP MAY HAVE AN UNSUPPORTED VERTICAL SECTION LESS THAN 3-1/2 FEET AND A MAXIMUM SLOPE OF 3/4:1
TYPE A SOIL; UNSUPPORTED VERTICALLY SIDED LOWER PORTION; MAXIMUM 8 FEET IN DEPTH
EXCAVATION LESS THAN 12 FEET DEEP MAY HAVE AN UNSUPPORTED VERTICAL SECTION LESS THAN 3-1/2 FEET AND A MAXIMUM SLOPE OF 1:1

1. The following footnotes apply to all the aluminum hydraulic shoring tables:

   A. Trenches deeper than 20 feet will be constructed and maintained in accordance with the design prepared by a registered professional engineer.

   B. 2-inch diameter cylinders, at this width, must have structural steel tube (3.5x3.5x0.1875) oversleeves, or structural oversleeves of manufacturer's specification, extending the full, collapsed length.

   C. Hydraulic cylinders must have at least the following capacities:

      1. 2-inch cylinders will be a minimum 2 inch inside diameter with a safe working capacity of not less than 18,000 pounds axial compressive load at maximum extension. Maximum extension is to include a full range of cylinder extensions as recommended by the product manufacturer.

      2. 3-inch cylinders will be a minimum 3 inch inside diameter with a safe working capacity of not less than 30,000 pounds axial compressive load at maximum extension. Maximum extension is to include a full range of cylinder extensions as recommended by the product manufacturer.

D. All spacing indicated is measured center to center.

E. Vertical shoring rails will have a minimum section modulus of 0.40 inch.

F. When vertical shores are used, there must be a minimum of three shores spaced equally, horizontally, in a group.

G. Plywood will be 1.125 inches thick of wood or 0.75 inches thick, 14 ply, arctic White Birch (Finland form). Plywood is not intended as a structural member, but only for prevention of local raveling (sloughing of the trench face) between the shores

H. Timber specified in the tables is selected Douglas fir with a bending strength of not less than 1500psi. The dimensions given are not nominal.

I. Wales are calculated for simple span conditions.

J. The following are limits on the application of the shoring tables:

1. It is not intended that these tables apply to every situation that may be experienced in the field. Shoring systems for use in situations not covered by these tables must be designed by a registered professional engineer.

2. When any of the following conditions are present, the members specified in the tables are not adequate, and an alternate system must be designed by a registered professional engineer.

    a. When loads imposed by structures or by stored material adjacent to the trench weigh more than the load imposed by a two-foot soil surcharge. The term "adjacent" as used here means the area within a horizontal distance from the edge of the trench equal to the depth of the trench.

    b. When vertical loads imposed on cross braces exceed a 240-pound gravity load distributed on a one-foot section of the center of the cross brace.

    c. When surcharge loads are present from equipment weighing more than 20,000 pounds.

    d. When only the lower portion of the trench is shored, and the remaining portion of the trench is sloped or benched unless: the slopped portion is sloped at an angle less steep than 3:1 or the members are selected from the tables for use at a depth which is determined from the top of the overall trench, and not from the toe of the sloped portion.

Fall Protection

100% Employee Owned

I. INTRODUCTION

Due to the seriousness of fall injuries, employees must exercise extreme caution when working at heights. This manual is based on 29 CFR 1926 Construction Standard, and 29 CFR 1910 General Industry Standard, depending on the project. Use of fall protection systems and equipment is mandatory for all KE&G projects where any employee is required to work more than 6 ft; or 4 ft if 29 CFR 1910 is the applied standard. Fall Protection in Construction Standard. Any employee found in violation of fall protection requirements is subject to immediate termination. If for any reason you are uncomfortable with heights, notify your Supervisor immediately.

A "Fall Protection System" is one in which some physical means or methods are provided to eliminate a fall exposure to employees. This may be accomplished using ladders, Scaffolds, Lift Units, Guardrails, Static Lines, Standard or Retractable Lanyards, or a Full Body Harness. A job hazard analysis and pre-planning shall accomplish fall protection on KE&G projects before work begins.

All Fall Arrest Equipment shall be used and installed in accordance with the manufacturer's specifications and recommendations, meet the requirements of applicable ANSI, ASTM, or OSHA standards. In addition, all associated equipment shall be inspected on a minimum quarterly basis by the Safety Manager.

II. POSITIVE FALL PROTECTION

A full-body harness and tie-off are required for all work more than six (6) feet. This includes leading-edge work, and work from all aerial lifts. No more than six (6) feet of free fall distance into any fall protection system is permitted. If there is a risk of a fall, then a fall arrest system must be utilized. Fall arrest systems require the use of a full-body harness. If a static line system is utilized, documentation is required to demonstrate its effectiveness. In the event a fall arrest occurs, the fall arrest system shall be taken out of service and the incident documented and submitted to the Safety Manager. The following is a summary of OSHA's Fall Protection Standard:

DUTY TO HAVE FALL PROTECTION - (1926.501)

Employers must determine whether walking/working surfaces are structurally capable of supporting employees safely.

Employees on walking/working surfaces with unprotected sides or edges six (6) feet or higher above a lower level must be protected from fall using guardrails, nets, or fall arrest systems.

Employees constructing or working near leading edges at six (6) feet or higher above a lower level must be protected from falls by guardrails or personal fall arrest systems.

Employees must be protected from falling more than six (6) feet through holes (including skylights) by covers, guardrails, or personal fall arrest systems.

Employees on the face of formwork or reinforcing steel must be protected from falling six (6) feet or more by personal fall arrest systems, nets, or positioning devices.

Employees on the edge of excavations deeper than six (6) feet must be protected from falling by guardrails, fences, or barricades when the excavations are not easily visible.

Employees less than six (6) feet above dangerous equipment must be protected from falling into or onto the equipment by guardrails or equipment guards.

Employees six (6) feet or higher above dangerous equipment must be protected from falling hazards by guardrails, personal fall arrest systems, or nets.

Employees on walking/working surfaces six (6) feet or higher above lower levels, which are not otherwise addressed must be protected from falling by guardrails, nets, or personal fall arrest systems. Serious injury or death may occur without protection.

Where employees are exposed to falling objects, the employer must have each worker wear a hard hat and must:

1. Erect toe boards, screens, or guardrails to prevent the object from falling,
2. Erect a canopy structure and keep objects from the edge of the higher level, or
3. Barricade the area to which objects could fall and keep objects away from the edge of the higher level.

FALL PROTECTION SYSTEMS CRITERIA AND PRACTICES GUARDRAILS - (1926.502)

The top edge of guardrails must be between thirty-nine (39) inches and forty-five (45) inches high.

Mid-rails, screen, mesh, or intermediate vertical members must be installed between the top edge of the guardrail and the walking/working surface when there is no wall or parapet at least twenty-one (21) inches high.

Guardrails must be capable of withstanding a force of two hundred (200) pounds applied within two (2) inches of the top edge in any outward or downward direction.

With two hundred (200) pounds of downward force, the top edge of the guardrail must not deflect to less than thirty-nine (39) inches.

Mid-rails, screens, mesh, and intermediate vertical members must be capable of withstanding a force of at least one-hundred-fifty (150) pounds applied in any downward or outward direction at any point along the mid-rail or another member.

Guardrail must be surfaced in a way that will prevent punctures, lacerations, and snags.

The ends of top rails and mid-rails must not overhang terminal posts unless an overhang would not create a projection hazard.

Steel and plastic banding shall not be used on top and mid-rails.

Top and mid-rails must be at least one-quarter (1/4) inch nominal diameter or thickness.

When guardrail is used in hoisting areas, a chain, gate, or removable guardrail section must be placed across access opening when hoisting operations are not taking place.

When guardrails are used at holes they must be erected on all unprotected sides or edges.

When guardrails are used to protect openings, which are used for the passage of materials, not more than two (2) sides can utilize a removable guardrail.

SAFETY NETS

Safety nets must be installed as close as possible, but not more than thirty (30) feet below the walking/working surface.

Safety nets must extend outward from the outermost projection of the work surface (refer to current OSHA regulation for distance).

Drop test must be performed on safety nets by dropping a four hundred (400) pound, thirty to thirty-two (30-32) inch diameter bag of sand into the net from the highest walking/working surface (but not less than forty-two (42) inches.

When it is unreasonable to perform a drop test on a net, the employer or a designated competent person must certify that the net and installation follow this standard.

Nets must be inspected at the beginning of each shift, and defective nets and parts must be removed from service.

III. PERSONAL FALL ARREST SYSTEMS REQUIREMENTS:

1. Limit maximum arresting force on an employee to (1,800) pounds when used with a body harness.
2. Rigged such that an employee can neither free fall more than six (6) feet, nor contact any lower level.
3. Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet.
4. Have sufficient strength to withstand twice the potential impact energy of an employee free falling six (6) feet, or the free fall distance permitted by the system, whichever is less.

The attachment point of the body harness shall be in the center of the wearer's back near shoulder level, or above the wearer's head.

Effective January 1, 1998, only locking type snap-hooks shall be used.

Lanyards and vertical lifelines must have a minimum breaking strength of five thousand (5,000) pounds per person attached.

Personal fall arrest systems when stopping a fall must limit the maximum arrest force on the worker to eighteen- hundred (1,800) pounds when used with a body harness.

KE&G employees shall use a full-body harness with a shock-absorbing lanyard.

Personal fall arrest systems must be rigged so that the worker can neither fall more than six (6) feet nor contact any lower level.

Positioning devices must be rigged to prevent free fall of more than two (2) feet.

Controlled access zones must be defined by a control line or other means that restricts access.

When using safety monitoring systems, a competent person must be used to monitor the safety of employees. The employer must provide training for each worker that may be exposed to fall hazards.

The employer must keep a written certification record to verify compliance with training requirements.

The employer must provide retraining when employees do not have the understanding and skills required by initial training.

IV. ACCIDENT/INCIDENT INVESTIGATION:

In the event of a fall-related incident resulting in a serious accident to include "ALL NEAR-MISSES," an accident investigation will be conducted to determine root cause/s and preventive measures to ensure potential fall-related incidents are prevented. The Safety Manager and the General Superintendent will collaborate in gathering information for the investigation and forward for review on facts and findings along with recommendations to eliminate future fall hazards.

V. RESCUE PROCEDURES:

If a fall arrest occurs, all employees will be rescued by on-site personnel with the use of and of an articulating man lift or ladders where feasible. Alternate rescue would be through the local emergency services.

Communication Guidance:

In the event of a fall, the following people will be notified as soon as possible:

1. Rescue personnel (i.e., maintenance personnel).
2. Supervisor.
3. Fire Department or emergency medical services if necessary.
4. Safety Manager and General Superintendent.

At the beginning of any work activity where fall protection is an issue, rescue plans must be identified and discussed with all employees in case of a fall. The Supervisor will develop the rescue plan(s).

All employees involved in a fall arrest or fall will be sent for a medical evaluation to determine the extent of injuries if any.

Lockout/Tagout/Tryout

100% Employee Owned

I. INTRODUCTION

This program establishes procedures for compliance with OSHA's Mechanical and Electrical lockout and tagout program requirements, 29 CFR 1910.147 and 29 CFR 1910.333). These procedures are designed to protect our employees from the hazards and subsequent injuries that occur as the result of the unexpected release of a hazardous energy source during the performance of maintenance operations.

II. DEFINITIONS

An **authorized employee** is one who locks or tags out machines or equipment to perform servicing or maintenance on that machine or equipment. An affected employee can also become an authorized employee if his or her duties include servicing and maintenance along with the operation of the machine or equipment.

An **affected employee** is one whose job requires him/her to operate or use a machine or equipment which servicing, or maintenance is being performed under the lockout/tagout program or whose job requires him/her to work in an area in which such servicing or maintenance is being performed. Another employee is one who under normal conditions are not identified in the qualified, authorized or affected categories.

A **qualified employee** is one who has been trained in 29 CFR 1910.331 through 335, to avoid the electrical hazards of working on or near exposed energized parts. It is possible for an employee to be considered qualified with regard to certain equipment in the workplace but unqualified as to other equipment. An employee who is undergoing on-the-job training and who, during the course training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified employee is considered qualified for the performance of those duties.

Further, the relevant paragraphs of 1910.333 have been incorporated into the training curriculum outlined herein, for work that is performed on electrical circuitry and equipment.

III. TRAINING SCOPE

All employees likely to be assigned tasks involving maintenance or repairs of equipment, machinery, electrical circuits, or any other operations that have a potential energy source will be trained using this lockout procedure before their assignment. All employees will be instructed that compliance with Danger, Warning, and Lock-Out tags is mandatory. The training for both the mechanical and electrical lockout/tagout is included in this program and will consist of several employee classifications including qualified, authorized, affected, and others. Those falling specifically under the mechanical LO/TO/TO program will include the following:

- Authorized
- Affected
- Other
- **Note: For the electrical LOTO Program we have only one classification: Qualified**

A. **Employee Training**

1. Affected Employee Training - The training for affected employees will include the purpose of the program, and how to recognize a LO/TO/TO operation and how it will affect them.

2. Authorized Employee Training - The training for authorized employees will include all aspects of the LO/TO/TO program and all specific procedures for each individual machine or equipment identified in the program.

3. Training for Qualified Employees – Training for the qualified will include the same training as an Authorized Employee in addition to the following:

   a. The skills and techniques are necessary to distinguish exposed parts from other parts of electrical equipment
   b. The skills and techniques are necessary to determine the nominal voltage of exposed live parts.
   c. The capability of working safely on energized circuits.
   d. Familiar with the proper use of precautionary techniques, personal protective equipment and;
   e. How to use insulating and shielding materials, and insulated tools.
   f. Proper use of test equipment.
   g. How to test circuit elements and electrical parts of equipment to which employees may be exposed; and
   h. How to verify that circuit elements and equipment are de-energized.
   i. How to check if the test equipment is properly working before and after each operation.
   j. How to determine if any energized condition exists and if it exists because of inadvertently induced voltage or unrelated voltage back feed even though specific parts of the circuit have been de-energized and presumed to be safe.

IV. TRAINING CERTIFICATION

OSHA requires that completed training be certified and kept up to date. And that the certification contains each employee's name and the dates of training. Accordingly, the following format will be used to certify the training of employees:

Employee Name:	Date of Training:
Instructor Signature:	Date:

V. PERIODIC REVIEW

To ensure KE&G's compliance with the LO/TO/TO Program, periodic reviews for all affected employees will be conducted annually or when a new procedure is implemented. The periodic reviews will be documented on KE&G's Periodic Review form and will include procedures specific to the affected employees work area. Supervisors and/or the qualified employee will visually watch employees perform LO/TO and will determine if:

- The energy control procedures required by each LO/TO/TO process are being followed;
- Employees know their responsibilities required to effectively LO/TO/TO equipment;
- The procedure is adequate and if not, what changes are needed to be more effective;
- If the Supervisor and/or qualified employee determine the procedure is not adequate, changes will be made to the procedure, documented on the periodic review form, and will be relayed to all affected employees.
- If deviations are identified by the Supervisor and/or qualified employee, or if an employee does not clearly understand the specific LO/TO/TO Procedure being reviewed, retraining will be conducted until the employee understands the specifics of the procedure.

A. Periodic Review Form (Attachment A)

OSHA requires that completed inspections be certified and kept up to date. That the certification contains the name of the employee, date, and time, whether retraining is necessary, the machine/equipment on which energy control procedures are being utilized, and the name, date, and signature of the inspector.

VI. GENERAL LO/TO/TO PROCEDURES

1. Preparation for shutdown - Before any authorized, qualified, or affected employees turn off a machine or equipment that is to be maintained or serviced, they will have knowledge of the type and magnitude of the energy, the hazards of the power to be controlled, and the means to control that energy. An assessment will be made to determine all energy sources associated with the specific piece of equipment or machinery. A specific procedure will then be developed which will document the methods to be used for isolating the energy (see specific procedures), which will be followed by the authorized or qualified employee performing the servicing or maintenance operation.

2. Machine or equipment shutdown - The machine or equipment will be turned or shut down using the specific procedures. An orderly shutdown will be followed to avoid any additional or increased hazards to employees as the result of equipment being de-energized.

3. Machine or equipment isolation - All energy control devices that are needed to control the energy to the machine or equipment will be physically located and operated in such a manner as to isolate the machine or equipment from the energy source.

4. Lockout or tagout application - Lockout or tagout devices will be affixed to energy isolation devices by authorized or qualified employees. Lockout or tagout devices shall include the name of the individual placing the device. The lockout devices will be affixed in a manner that will hold the energy isolation device in a “safe” or “off” position.

5. Where tagout devices are used they will be affixed in a manner that will clearly state that the operation or the movement of energy isolation devices from the “safe” or “off” position is prohibited. The tagout devices will be attached to the same point a lock would be attached. If the tag cannot be affixed at that point, the tag will be located as close as possible to the device in a position that will be immediately obvious to anyone attempting to operate the device.

6. Stored energy - Following the application of the lockout or tagout devices to the energy isolating devices, all residual energy will be relieved, disconnected, restrained, and otherwise rendered safe. Applicable sources of potential stored energy can be found in electrical, steam, hydraulic, along with components producing tension, gravity, etc. Where the re-accumulation of stored energy to a hazardous energy level is possible, verification of isolation will be continued until the maintenance or servicing is complete.

7. Verification of isolation - Before starting work on machines or equipment that have been locked or tagged out, the authorized or qualified employee will verify that isolation or de-energization of the machine or equipment has been accomplished.

8. Release from lockout or tagout - Before lockout or tagout devices are removed and the energy restored to the machine or equipment, the following actions will be taken:

    i. The work area will be thoroughly inspected to ensure that non-essential items have been removed and that machine or equipment components are operational.
    ii. The work area is checked to ensure that all employees have been safely positioned or removed. Before lockout or tagout devices are removed the affected employees will be notified that the lockout or tagout devices are being removed.
    iii. Each lockout or tagout device will be removed from each energy device by the employee who applied the device.

9. **Shift or Personnel Changes** To maintain continuity of lockout/tagout protection the authorized employee will assume responsibility and will assure that:
    i. Employees affected by the transfer of lockout-tagout devices between the off-going and oncoming employees are apprised of the transfer to coordinate the change.
    ii. Certify that all aspects of the lockout/tagout program are followed to minimize exposure to hazards from the unexpected energization, start-up of machine or equipment or release of stored energy.
    iii. Outside Personnel (Multi-Employer Worksites)

10. **Group Lockout/Tagout** - When servicing or maintenance is to be performed by a crew, they will each be provided with a lock or a tag. An authorized or when appropriate, a qualified employee will assume responsibility of the entire crew to determine the exposure status of each group member and ensure continuity of protection.

    1. Each employee will affix a personal lockout or tagout device to a group lockout device, group lockbox or comparable mechanism when he or she begins work and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained.

VII. SUB-CONTRACTOR RESPONSIBILITIES

With regards to our mechanical lockout/tagout program, all outside sub-contractors will be informed by KE&G regarding the OSHA requirement for LO/TO 1910.147 and will be expected to follow it. Work will not be performed by outside personnel with the only exception being an (electrical contractor) who will be required to develop their specific procedures for the work they were contracted to perform. The KE&G General Superintendent, Project Manager or their representative will certify the procedure and grant permission for the work to proceed. **Note:** Failure to follow this process is a serious breach of our LOTO procedures and can result in termination of the contract.

Sample Tags

Attachment A

Supervisor LOTO Periodic Employee Review Log

Name of Authorized Employee	Employee ID#	Reviewed By	Date of Review	Work Order/Procedure to Reference	Supervisor Review of Individual Completed (Supervisor Signature)	Was Corrective Action Needed Y/N

Confined Space Entry (PRCS)

100% Employee Owned

I. INTRODUCTION

This program establishes procedures for compliance with OSHA's Confined Space Entry Procedure 1910.146 and in the Construction Standard of Subpart AA of 29 CFR 1926 defined below:

II. PROGRAM ELEMENTS

There are Confined Spaces and Permit-Required Confined Spaces (PRCS). This Program specifically applies to permit-required confined spaces. If you have questions or concerns regarding a non-permit required confined space, contact KE&G Safety Manager.

A. Confined Space is a space that

- Is large enough to bodily enter and perform assigned work
- Has limited means of entry or egress
- Is not designed for continuous human occupancy

B. Permit-Required Confined Space (PRCS) is a confined space that has one or more of the following characteristics:

- Contains or has the potential to contact a hazardous atmosphere
- Contains a material that has the potential for engulfing an entrant
- 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
- Contains any other recognized serious safety or health hazard

C. Non-permit space is a confined space without the hazards identified in section II.B

III. GENERAL REQUIREMENTS FOR PERMIT REQUIRED CONFINED SPACE

All permit-required confined spaces shall be formally assessed, and a permit entry form will be completed every time space is entered (Appendix A). The following must be conducted before any employee enters the PRCS:

- Implement any measures necessary to prevent unauthorized entry
- Identify and evaluate the hazards of the PRCS(s) before entry
- Develop and implement the means, procedures, and practices necessary for safe PRCS entry operations including, but not limited to the following
  - Specify acceptable entry conditions
  - Retrieval means including proper ingress and egress
  - Make monitoring and testing information available to any employees who may work in or around the PRCS
  - Isolate the permit-required confined space
  - Purge, inert, flush or ventilate the PRCS as to eliminate or control atmospheric hazards
  - Provide for a pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards
  - Verify that conditions in the PRCS are acceptable for entry throughout the duration of authorized entry.

A. **Prevention of Unauthorized Entry**

Unauthorized entry into permit-required confined spaces shall be prevented. Prevention measurements include training, signs, and security measures. Any employee working in or around permit-required confined spaces shall attend permit-required confined space awareness training.

B. **Hazard Identification**

KE&G Superintendent, Foreman and Safety Manager will identify all work areas that come under the definition of a permit-required confined space.

C. **Hazard Communication**

Signs shall be posted where feasible near permit-required confined spaces to prevent any inadvertent or unauthorized entry. These postings shall be permanently affixed to the wall or door of the space and shall be large enough to be plainly visible to any entrant. In locations where permanent notices cannot be logically placed (sewer manhole or vaults located in roadways), temporary signs shall be posted along with the necessary barricades and fences in plain view during the entire time the entrance to the permit-required confined space is removed.

The signs shall read DANGER–Permit-required confined space, Do Not Enter or using another similar language that satisfies the requirement.

D. **Identify Employees**

Superintendents and Foremen must designate employees who have active roles (authorized entrants, attendants, and entry Supervisor) in entry operations and identify the duties of each role. At least one attendant must be identified and stationed outside the permit-required confined space for the duration of the entry operation. Only trained attendants, authorized entrants, and entry Supervisors shall work in and around a permit-required confined space. Training shall meet the requirements established by KE&G, OSHA, and MSHA.

E. **Equipment**

Equipment, including testing, monitoring, communication, and personal protective equipment, shall be provided, maintained, and properly used

F. **Rescue**

Non-entry retrieval equipment shall be set-up and utilized where there exists a potential for an IDLH (immediately dangerous to life and health) atmosphere, engulfment, vertical entries, or any other recognizable serious health hazard unless the use of such retrieval equipment would create an additional hazard.

G. **Isolation of Permit-Required Confined Spaces**

Prior to entering any PRCS, all serious safety or health hazards known or suspected in the space shall be purged, drained, and otherwise reduced to a zero-energy state by relieving any stored energy including steam lines. Hot environments shall be ventilated and cooled to ambient temperature prior to entry. Sources of hazardous materials (either solid, liquid or gas) shall be isolated and secured by locking and tagging valves, use of blind flanges, plugging, or otherwise eliminated from use. Electrical sources or machinery whose inadvertent operation would cause injury shall be locked and/or tagged out.

H. **Permit-Required Confined Space Covers and Barricades**

When a PRCS has both top and bottom openings, or access hatches or manways in both high and low positions, it is preferable to use the bottom or low entrance for safety reasons whenever practical. Permit-required confined space openings shall be guarded by a railing, temporary covers, or other barriers that will warn and prevent against an accidental fall as well as preventing foreign objects from falling into space.

I. **Air Monitoring Instrumentation and Test Procedure**

Air monitoring instrumentation shall be operated, maintained, bump tested, and calibrated according to the manufacturer's instructions. The use, maintenance, and calibration shall be performed ONLY by trained personnel and records shall be kept describing maintenance and calibration.

The following protocol shall be followed when performing air sampling and monitoring for permit-required confined space entry authorization:

- Before any use within a permit-required confined space, the instrument must be checked and calibrated according to the manufacturer's instructions, including field testing and fresh air testing, as required.
- When pre-entry testing or continuous monitoring is required as a condition of the permit-required confined space entry permit, the atmosphere within the permit-required confined space shall be tested for oxygen deficiency, combustible gases and vapors, and any other toxic air contaminants that may be potentially present (in that order). The minimum acceptable levels of air quality are listed on the permit-required confined space entry permit and below:

Oxygen Level	Not less than 19.5% nor greater than 23.5% by volume
Combustible Gas	The concentration shall not exceed 10% of the lower explosive limit/lower flammable limit (LEL/LFL)
Toxic Gas	The concentration shall not exceed to toxic guidelines of OSHA

If the standards listed above cannot be met, then the permit-required confined space shall not be entered. If space is occupied and the continuous air monitor detects air quality falling outside of these acceptable standards, then the work must cease, the space evacuated, and a Supervisor must be contacted immediately. Space may not be re-entered until the atmosphere returns to acceptable levels as measured by the air monitor.

J. **Permit-Required Confined Space Ventilation**

Ventilation shall be required whenever preliminary air sampling detects a hazardous or potentially hazardous atmosphere. The ventilation shall be accomplished by discharging fresh, uncontaminated air into space for the duration of occupancy. When preliminary sampling indicated the atmosphere within the permit-required confined space is within acceptable limits, ventilation is not required.

The use of ventilation equipment to control fumes, dust, vapors, mists, or other corrosive or toxic materials to a concentration below the permissible exposure limit (PEL) within the space is preferred to the use of personal respiratory devices. The only time personal respiratory devices shall be used is when ventilation proves to be impractical, ineffective, or to provide an additional level of safety. Compliance with the KE&G Respiratory Protection Program is mandatory for respirator users.

K. **Personal Protective Equipment (PPE)**

All personal protective equipment shall be selected, used, inspected, and cleaned according to the manufacturer's recommendations and any applicable OSHA regulations. When special protective equipment is required for specific hazards, contact the Safety Office in selecting the proper equipment.

A comprehensive evaluation must be completed for all hazards that may be encountered. Every reasonable effort will be made to eliminate or control the hazards before permitting entry into the PRCS.

Personal protective equipment (PPE) will not be substituted for hazard elimination if feasible. If required, PPE will be used to protect the entrant from potential hazards. All required PPE will be provided by KE&G and it is the responsibility of all affected employees to use the equipment properly. If in doubt as to the correct PPE or if any question as to the adequacy of the provided protection for a given task, the employee will contact their Supervisor before entry operations.

L. **Hot Work in Permit-Required Confined Spaces**

Any welding, brazing, cutting, heating, and grinding operations within a PRCS requires a hot work authorization on the PRCS entry permit. Continuous ventilation and air monitoring shall be performed during hot work when the potential exists for the creation of a hazardous atmosphere.

Welding operations or any other spark-producing work shall not be performed if 10% or more of the lower explosive limit/lower flammable limit (LEL/LFL) of any combustible gas exists in the permit-required confined space. If these hazards are present, the Entry Supervisor will be responsible for reviewing the KE&G Hot Work Permit Procedure and for issuing a Hot Work Permit for the work being performed (Appendix B). Additionally, as per the Hot Work Procedure, Fire extinguishers shall be available at the worksite, and a person standing fire watch is required. Welding cylinders and electric welding machines shall be kept outside the permit-required confined space, whenever possible.

M. Before entering a permit-required confined space pre-planning must include all affected personnel, and other contractors affected by the entry. Planning must include provisions for the following.

- The task to be conducted within the permit-required confined space.
- Requirements for making space safe, including isolation, ventilation, atmospheric monitoring and guarding
- Equipment needed for entry, possibilities including personal protective equipment (PPE) appropriate for the hazards that may be encountered, personal monitors, ventilation equipment, rescue equipment/apparatus, radios, spark-proof tools, fall protection, and lights
- Communication (verbal, radio, wired) between the entrant and the attendant

- Emergency procedures, including:
    - Knowing the locations of emergency exits (if applicable)
    - Nearest location of fire suppression and AED equipment
    - Knowing the telephone number and procedures to summon emergency help
    - Developing a description of your location to provide emergency services
    - Employees involved and their specific responsibilities
    - Evaluation of the possible hazards within the space. This includes Information on atmospheric hazards, hazardous energies, and the possibility of engulfment and the risk of falling

IV. ENTRY PERMIT SYSTEM REQUIREMENTS

The entry permits that documents compliance with this Program and authorizes entry to a permit-required confined space is in **Appendix A**. A permit-required confined space entry permit must be completed for each PRCS entry by the Entry Supervisor and must be completed before entry into space. The permit must be signed by the entry Supervisor.

If the PRCS conditions remain the same, the permit will be valid for up to eight hours. No permit will be issued for more than one work shift or eight hours or whichever is shorter. Following the completion of entry operations, a copy of the canceled permit will be sent to KE&G Safety Office and kept for one year. Before entry is authorized, the following shall be completed and documented on the entry permit form.

- The permit-required confined space to be entered
- The purpose of entry
- The date and authorized duration of entry including start time and end time
- The authorized entrant(s)
- The attendant(s)
- The hazard(s) of the space
- The hazard control or elimination measures (lockout/tagout, purging, ventilation, blocking, etc.)
- The acceptable conditions of entry
- Initial and periodic atmospheric testing, if applicable
- Rescue and emergency contingency plans
- Communication procedures
- Equipment needed
- The entry Supervisor's signature authorizing entry
  The entry permit shall be made available at the time of entry by posting it at the entry portal or by any other equally effective means to confirm that pre-entry preparations have been completed.

A. Permit Termination

The Entry Supervisor shall terminate entry and cancel the entry permit when.

- The entry operation covered by the entry permit has been completed
- A condition that is not allowed under the entry permit arises in or near the permit-required confined space

NOTE: The initiator shall forward a copy of the canceled permit to the Safety office. The safety office will hold the permit for one year.

B. Permit-Required Confined Space Evacuation

An entrant's evacuation from a permit-required confined space shall take place when any of the following conditions occur.

- An attendant or entry Supervisor gives the order to evacuate
- The entrant recognizes any symptom of exposure or warning sign of a dangerous situation
- An attendant or entrant observes a potential problem that can affect the entrants, such as failure of a control device or PPE
- Activation of an alarm that signals a hazardous change in atmospheric conditions

In the event an entrant becomes unconscious, attendants will not attempt to enter the space to perform a rescue. Rescue services which can be performed safely from outside of the permit-required confined space (e.g. hoisting a harnessed entrant) will be undertaken. Other entrants in the space shall immediately exit the space and only provide such assistance as will not endanger themselves. The attendant shall immediately contact first responders (911 or nearest emergency response) depending on the work location, by one of the following:

- Calling 9-1-1 from a mobile device
- Radio for help

Inform dispatch that this is a permit-required confined space rescue and explain all hazards that may be present during the rescue. This information shall be communicated to the fire department. The telephone number must be in the attendant's possession prior to any entry.

Emergency rescue services will be provided for all permit-required confined space emergencies by the local fire department.

V. TRAINING AND RECORDKEEPING

Training will be provided so that all affected KE&G employees who may need to enter permit-required confined spaces or who may be responsible for acting as an attendant or entry Supervisor understand potential hazards and obtain the skills necessary for safe performance of their assigned duties. Training will be provided to each affected employee, in case of any of the following:

- Before the employee is first required to work in permit-required confined space
- When there is a change of assigned duties

- When there is a change in the regulations affecting permit-required confined space entry that presents a hazard about which an employee has not previously been trained
- When different air monitoring or retrieval equipment is purchased and made available for use in permit-required confined space entry
- When the authorized Supervisor has reason to believe either that there are deviations from the permit-required confined space entry procedures or that there are inadequacies in the employee's knowledge or use of the permit-required confined space entry procedures
- When refresher training is deemed necessary by KE&G

A. Permit-Required Confined Space (PRCS) Program Training

Full permit-required confined space training will include instruction of affected employees on the following topics.

- The differences in responsibilities between the entrant, attendant, and entry Supervisor
- Types of permit-required confined spaces that may be encountered in various field activities
- Components of the written PRCS program
- Components of the entry permit system
- Atmospheric testing equipment including its use, calibration, and maintenance
- Atmospheric testing protocol:
    - Oxygen, combustibles, toxic
    - Pre-entry, frequent, or continuous testing
    - Check all levels of the space
- Methods for the control or elimination of any atmospheric hazards:
    - Inerting
    - Draining
    - Purging and cleaning
    - Continuous forced air ventilation
    - Procedures the employees must follow if they detect a hazard
    - The evaluation process to be used if they detect a hazard
    - Train employees on the use of entry equipment; and recognition of signs of employee exposures to hazards in the confined space, including oxygen deficiencies.
- Personal protective equipment required.
    - Full body harness
    - Gas meters
    - Anchor points
    - Respiratory Protection
    - Chemical protective clothing
    - Eye and face protection

KE&G employees covered by this Program that are required to act in the capacity of an entrant, attendant or Supervisor during permit-required confined space entry, will receive training to maintain proficiency of these subjects. Additional or refresher training will be required every three years.

B. **Permit-Required Confined Space Awareness Training**

Training will be provided so that all affected KE&G employees who may work near a permit-required confined space understand potential hazards and obtain the skills necessary for the safe performance of their assigned duties.

C. Recordkeeping

All completed permits as required by 29 CFR 1910.146 will be maintained by KE&G Safety Office. KE&G will maintain records associated with permit-required confined space inspection, training, and any compliance related records.

VI. DEFINITIONS

A. Entry Supervisor - The entry Supervisor will be responsible for receiving training to ensure that the required atmospheric tests are performed at the confined space entry and the results recorded on the Confined Space Entry Permit Form before entry authorization. The ES will be responsible for maintaining all equipment, ensuring all personnel involved are prepared to enter the Confined Space. They must ensure that all conditions before and during the entry are maintained and constant with the Entry Permit. Additionally, the ES will be responsible for the authorization to enter the Confined Space and upon completion of the work to cancel the permit.

Entry Supervisor Responsibilities - Ensuring that the required atmospheric tests are performed at the confined space and results recorded on the permit before entry authorization.

- You are obtaining and maintaining all equipment necessary to complete the confined-space entry project.
- You are authorizing entry by signing the Entry Authorization space on the entry permit after all conditions for a safe entry have been met.
- Terminating the entry and canceling the permit.
    - Entry operations covered by the entry permit have been completed.
    - A condition that is not allowed under the entry permit arises in or near the permit space.
- Determining, whenever responsibility for a permit space entry operation is transferred, and at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

B. Attendant - Employees authorized to perform duties as attendants shall be responsible for and receive training that will include hazard recognition, the symptoms signs and consequences of exposure, behavioral effects of hazard exposure to the entrants and control of the entry area. They must remain outside of the confined space and must continuously record an accurate count of the authorized entrants. The attendant shall monitor the activities both inside the permit space and outside the entry.

The attendant shall have access to summon rescue and other emergency services as soon as assistance is needed. If any unauthorized individual enters the designated safety zone, the attendant shall warn and advise them to leave immediately. The attendant must notify the entrants and Entry Supervisor of the violation and remain at their assigned position.

NOTE: The attendant can serve as the Entry Supervisor:

Attendant Responsibilities - Knowing the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of exposure.

- Awareness of possible behavioral effects of hazard exposure in authorized entrants.
- Continuously maintaining an accurate count of authorized entrants in the permit space and ensuring that the means used to identify authorized entrants accurately determines who is in the permit space.
- Remains outside the permit space during entry operations until relieved by another attendant.
- Attempting non-entry rescue if proper equipment is in place and the rescue attempt will not present further hazards to the entrant or attendant.
- Communicating with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space when conditions warrant.
- Monitoring activities inside and outside the space to determine if it is safe for entrants to remain in the space and ordering the authorized entrants to evacuate the permit space immediately under any of the following conditions:
- If the attendant
    - detects a prohibited condition.
    - detects the behavioral effects of hazard exposure in an authorized entrant.
    - detects a situation outside the space that could endanger the authorized entrants.

C. Authorized Entrant: The person(s) authorized to enter a confined space shall be responsible for and receive training that will include hazard recognition, methods of entry, signs, and symptoms of exposure, proper use of atmosphere testing and monitoring equipment, ventilation units, communication equipment, lighting, barriers, shields, ladders, and harnesses. They must understand and be able to communicate with the attendants in case of alerts and the need to evacuate. Additionally, they must be aware of warning signs or symptoms of exposure to enable them to exit quickly.

Authorized Entrant Responsibility - Aware of the hazards that may be faced during entry, and

- Information on the mode, signs, and symptoms and consequences of the exposure;
- Properly use equipment as required;
- Communicate with the attendant as necessary to enable the attendant to assess entrant status and to enable the attendant to alert entrants of the need to evacuate the space as required;
- Alert attendant whenever;
    - There is any warning sign or symptom of exposure to a dangerous situation.
    - The entrant detects a prohibited condition.
    - An order to evacuate has been given by the attendant or entry Supervisor.
    - In any case above, the entrant will exit from the PRCS as quickly as possible whenever.

VII. Annual Review

A. This procedure will be reviewed annually to ensure proper procedures are up to date.

Side A of a properly filled out **Confined Space Entry Permit**

PROJECT # 0090000

CITY TUCSON

DATE JANUARY 1, 2009

CONFINED SPACE ENTRY PERMIT

Is a permit required for the space to be entered? ☒ Yes ☐ No
If no, complete only 1, 2, 3, 7, 9, 11 and cancel permit.

1 Permit Space To Be Entered M.H.# 1461 ,SEC.# 2 ,JOB# 090000

2 Purpose of Entry REPAIR AND REPLACE PIPE

3 Date of Entry JANUARY 1, 2009 Authorized Duration of Entry Permit 8 HOURS

4 Authorized Entrants JOHNNY JONES, HARRY SMITH, CLEM ROGERS

5 Attendant(s) BILL WESTON, GEORGE BEST

6 Name of Current Entry Supervisor(s) 1. WILLIAM WALL Time 8:10
2. JESUS CASSIAS Time 1:14

Entry Supervisor who Originally Authorized Entry WILLIAM WALL
Signature or Initials

7 Record hazards of the permit space to be entered.

Hazard	Yes	No	N/A
A. Lack of Oxygen	✓		
B. Combustible Gases	✓		
C. Combustible Vapors	✓		
D. Combustible Dusts	✓		
E. Toxic Gases	✓		
F. Toxic Vapors	✓		
G. Chemical Contact	✓		
H. Electrical Hazards		✓	
I. Mechanical Exposure		✓	
J. Temperature		✓	
K. Engulfment	✓		
L. Entrapment	✓		
M. Others			

8 Check off List the measures used to isolate the permit space and to eliminate or control permit space hazards before entry

☒ A. Purge-Flush and Vent

☒ B. Ventilation FORCED AIR

☒ C. Lockout/Tag Out

☐ D. Inerting

☒ E. Blankin, Blocking, Bleeding PLUG

☒ F. External Barricades RESTRICT WORKSITE

☒ G. Confined Space Identification/Signs PLACED AROUND WORKSITE AND ON TRIPOD.

DO NOT DESTROY THIS PERMIT
AFTER CANCELLATION THIS ENTRY PERMIT MUST BE RETAINED
BY EMPLOYER FOR AT LEAST ONE YEAR.

Side B of a properly filled out **Confined Space Entry Permit**

CONFINED SPACE ENTRY PERMIT

9 Acceptable Entry Condition: AIR + ENTRY LEVELS OK

10 Test(s) To Be Taken	Permissible Entry Levels	Test 1	Test 2	Test 3	Test 4
A. Percent of Oxygen	19.5% to 23.5%	20.1	20.1	20.0	20.1
B. Combustible Gas	<10% LEL	0	0	0	0
C. H_2S	<10PPM	0	0	0	0
D. CO	<25 PPM	0	0	0	0
E.					
F.					
G.					
H.					
I.					
Name or Initials of Tester		JJ	[illegible]	[illegible]	[illegible]
Test Times		8:00AM	9:00AM	10:00	11:10

11 Rescue and Emergency Services Available

Name: BILL DENTON TFD — Name: ______

Telephone: 791-4441 — Telephone: ______

12 Communication procedures: HAND + ROPE SIGNALS

13 Equipment supplied to the employee.

Yes	No	N/A	Equipment	Description
✓			(i) Gas Test and Monitoring	Name GRAE Model/Type 20; Serial/Unit No. 162784
✓			(ii) Ventilating	FORCED AIR
✓			(iii) Communications	MANUAL
✓			(iv) Personal Protective Equipment	☒Safety Harness With Life Lines ☐Respiratory ☒Hard Hats ☒Eye ☐Ear ☒Face ☒Hand ☒Foot ☒Clothing
✓			(v) Lighting	PORTABLE / HAND LIGHT
✓			(vi) Barriers/ Shields	☒Pedestrian ☐Vehile ☒Other
✓			(vii) Safe Ingress/Egress	☒Ladders
✓			(viii) Rescue and Emergency	☒Lifelines ☒Hoists ☐Resuscitators Inhalator
✓			(ix) Other Safety Equipment	WADDERS

14 Other information for this particular confined space to ensure employee safety

15 Additional Permits Required ☐Hot Work ☐Other

THIS CONFINED SPACE ENTRY PERMIT HAS BEEN CANCELLED:

William Wall — Entry Permit Supervisor

12:30 PM — Time (AM/PM)

1/1/09 — Date

Side B of a properly filled out **Must be signed by supervisor to be cancelled**

(APPENDIX A)

Hot Work Permit

Before initiating hot work, can this job be avoided? Is there a safer way?

This Hot Work permit is required for any temporary operation involving open flames or producing heat and/or sparks. This includes, but is not limited to Brazing, Grinding, Soldering, Thawing Pipe, Torch Applied Roofing and Welding.

Instructions:

1. Verify the precautions listed below or do not proceed with work.
2. Complete this permit and issue to a person(s) performing the work.
3. Retain this copy in the project file.

Permit #:	Date:	Shift:	Work Order #:

Location of Work:
Equipment Number:
Purpose of work:
Name of person(s) doing the work:
Name of fire watch person:

I verify the above location has been examined, the precautions checked on the Precautions Checklist below to minimize the chance of fire.
Supervisor's Name: Signature:
Duration (Hrs): Start Time: Stop Time:

Hot Work Permits may not be authorized for more than one shift!

Yes	No	N/A	Item
			Are water hoses or fire extinguishers available and in good repair?
			Is hot work equipment in good repair?
			Have flammable liquids, dust, lint, and oily deposits within 35 ft. been removed?
			Has an explosive atmosphere been eliminated? Test results:
			Has the work surface area been cleaned of grease, paint, etc.?
			Have combustible floors been wet down, covered with damp sand, or covered with fire-resistant sheets?
			Have surface areas below work area been protected?
			Have access ways below work area been barricaded?
			Are UV shields in place?
			Has enclosed equipment been cleansed of all combustibles?
			Have all containers been purged of flammable liquids and vapors?
			Will fire watch be provided during and for 60 minutes after work, including coffee and/or lunch breaks?
			Has fire watch been provided with suitable fire extinguishing devices?
			Has the fire watch person been trained in the use of fire extinguishing devices and in sounding alarm(s) or other emergency communications?
			Has additional fire watch been assigned to adjoining areas, above and below?
			The hot work area will be monitored for 4 hours after completion of work?
			Other:

Respiratory Protection

100% Employee Owned

I. INTRODUCTION

1. This program establishes the minimum requirements for the use of respiratory protective equipment, including respirator selection, instruction and training, use, maintenance, and the physical requirements of the users.

2. When it is clearly impractical to remove respiratory hazards through engineering controls or where emergency protection against occasional or brief exposures is necessary, approved respiratory protective equipment will be issued and used in accordance with this program.

3. These requirements apply to all exposures in which employees are required or allowed to wear respiratory protective equipment.

II. HAZARD IDENTIFICATION

1. Prior to the selection of respirators, the potential respiratory hazards will be identified. This identification should take place during the estimation phase of all work. When Engineering Controls are not feasible appropriate respirators shall be used for the following identified hazards:

   - Oxygen deficiency
   - Gas and vapor contaminants
   - Particulate/airborne Contaminants
   - Combinations of any of the hazards listed above.

III. RESPIRATOR SELECTION

1. Only respirators approved for use in a particular respiratory hazard by the Mine Safety and Health Administration (MSHA) or the National Institute for Occupational Safety and Health (NIOSH) will be used.

2. Selection of respirators requires consideration of the following factors:

   - The classification of the hazard
   - The extent and concentration of the hazard
   - The duration of potential exposure
   - The work requirements and conditions
   - The characteristics and limitations of available respirators

3. Employees potentially exposed to a respiratory hazard will be issued and required to use a respirator specially selected to protect against the known hazards.

4. These employees will be documented by name and tracked using Appendix A – Respiratory Program Participants

5. The classification and extent of the hazard should be verified by monitoring and evaluation of potential employee exposure.

IV. TRAINING

1. Prior to exposure to a known or suspected respiratory hazard that requires the use of respirators employees will be trained in the safe use of respirators. The minimum training includes the following information.

   - The reasons for the need for respiratory protection.
   - The nature, extent, and effects of the potential hazards to which employees may be exposed.
   - The procedure used in respirator selection.
   - The capabilities and limitations of the respirators provided.
   - The actual use of respirators, including fitting and testing procedures.
   - The recognition and handling of emergency situations.
   - Special training as needed for special conditions.

V. RESPIRATOR FIT TESTING

1. A qualitative respirator fit test of every respirator user will be conducted at least annually to determine the ability of respirator users to obtain a satisfactory fit.

2. Qualitative respirator test will consist of exposing a respirator wearer to an irritant smoke, odorous vapor, or another suitable test agent. An air-purifying respirator must be equipped with a purifying element which effectively removes the test agent from the air. If the respirator wearer is unable to detect penetration of the test agent into the respirator, the wearer has achieved a satisfactory fit with the respirator being tested.

3. Records of respirator fit tests will be maintained for at least the duration of employment and will contain at least the following information:

   The reasons for the need for respiratory protection. The make and model of respirator used

   - The reasons for the need for respiratory protection.
   - The type of test agent used
   - The name of the person tested
   - The name of the person conducting the test
   - The date of the test
   - The results of the test.

4. **Attachment C – Respirator fit testing record form will be used to document fit testing**

VI. RESPIRATOR USE

1. Employees will not be required or allowed to wear a respirator unless a licensed physician has determined that they are physically able to perform work while using the required respiratory protective equipment. This action shall occur before the fittest.

VII. VOLUNTARY USE OF A RESPIRATOR

1. Because of the nature of jobs employees may encounter, KE&G will allow the use of N-95 respirator for comfort or nuisance dust. This is strictly on a *volunteer basis*. Employees will, prior to using an N-95 respirator be provided a copy of Appendix D – Volunteer Use of a Respirator – Attachment B and will be made aware of the requirements of Appendix D.

VIII. RESPIRATOR MAINTENANCE

1. All respirators will be inspected before and after each use. Respirators not routinely in use will be inspected at least monthly.
2. Respirators will be routinely collected, cleaned, and disinfected to ensure that employees are properly protected.
3. Replacement of parts or other repairs will only be done by experienced persons within the recommendations of the manufacturer.

IX. PROGRAM EVALUATION

1. Supervisors will make frequent inspections to assure proper selection, use, and maintenance of respirators.
2. This program will continuously be reviewed to ensure employee protection. Suggestions for improvement should be directed to the Safety Manager.

XI. REFERENCE:

AMERICAN NATIONAL STANDARD
PRACTICES FOR RESPIRATORY
PROTECTION Z88.2-1980.

OCCUPATIONAL SAFETY & HEALTH
STANDARDS FOR THE CONSTRUCTION
INDUSTRY 29 CFR PART 1926.134

Attachment A

Respiratory Protection Program Participants

Our Respirator Program Administrator is _____

Our administrator's duties are to oversee the development of the respiratory program and, make sure it is carried out at the workplace. The administrator will also evaluate the plan regularly to make sure procedures are followed, respirator use is monitored, and respirators continue to provide adequate protection when job conditions change.

Selection of Respirators

We have evaluated our use of chemicals at this facility and found respirators must be used by employees in the following locations or positions or doing the following duties, tasks, or activities:

Employee Name position and activity	**Chemicals or products used**	**NIOSH approved respirators assigned**	**When used (routinely, infrequently, or in emergencies)**

We selected these respirators based on the following information: [*optional: attach air sampling results that show where respirators are required*]

Attachment B

RESPIRATORY PROTECTION VOLUNTEER USE FORM – APPENDIX D

Appendix D, Information and Acknowledgement Form for Employees Using Respirators When Not Required Under the OSHA Standard Sec. 29 CFR 1910.134, Appendix D

You have indicated that you may at some point, wish to wear a respiratory protection device voluntarily. The following information is required by OSHA to be supplied to employees who want to use respiratory protection devices voluntarily. Please read this information and sign the form to indicate that you have received this information:

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for employees. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, employees may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard. You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirator's limitations.

2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.

3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.

4. Voluntary respirator use is permitted in non-hazardous atmospheres only.

5. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

I acknowledge that I have read the KE&G Construction Appendix D form and understand I am using this respirator for Voluntary (Comfort) use only. I recognize the limits of this respirator and have received a copy of the information for voluntary use of respirators when not required under the Standard Sec. 1910.134.

Employee Name: _____ Date:_____

Employee Signature: _____

Supervisor Signature: _____Date: _____

Please forward this signed form to the Safety Office - This document will be kept on file

Updated: 5/21/2018

Attachment C

Respirator Fit Test Record

Name: _____ **Initials**: _____

Type of qualitative/quantitative fit test used: _____

Name of test operator: _____ **Initials**: _____

Date: _____

Respirator Mfr./Model/Approval no. Size Pass/Fail or Fit Factor
Note: "Fit factor" is the numerical result of the quantitative fit test from instrument reading

1. _____S M L P F _____

2. _____S M L P F _____

3. _____S M L P F _____

4. _____S M L P F _____

Clean Shaven? Yes___ No___ (Fit test cannot be done unless clean-shaven)

Medical Evaluation Completed? Yes___ No___

NOTES: _____

_____

_____

This record indicates that you have passed or failed a qualitative or quantitative fit test, as shown above for the respirator(s) shown. Other types will not be used until fit tested.

Silica Exposure Control

100% Employee Owned

I. SCOPE

The purpose of this exposure control plan is to establish KE&G's approach to protecting employees from harmful exposure to airborne silica dust.

KE&G Construction, Inc. has the duty to protect our employees from silica exposure on our worksites. Studies show that construction work tasks involving equipment used to move materials produce asphalt and demolition work may contain levels of silica that could generate airborne silica levels above the action level of 25ug/m3. Adequate engineering controls are available to protect employees from harmful exposure.

In accordance with 29 CFR 1926.1153 and following the control measures outlined in Table I of that standard, KE&G will achieve adequate control of this exposure. KE&G commits to being diligent in our efforts to select the most effective control technologies available and to ensure that the best practices, as described in this Exposure Control Plan (ECP), are followed at all affected worksites.

The work procedures we establish will protect not only our employees but all employees on our worksites.

II. RESPONSIBILITIES

Assignment of responsibilities for developing, implementing, and maintaining this ECP depends on the scope of the work and the size of the workplace.

Due to the significant risk posed by respirable silica, it is critical that all personnel involved in operations that could potentially create silica dust take specific action to ensure that, as much as possible, a hazard is not created.

A. KE&G and the Safety Manager are Responsible for:

- Ensuring that the materials (e.g., tools, equipment, personal protective equipment) and other resources (i.e., worker training materials) required to fully implement and maintain this exposure control plan (ECP) are readily available where and when they are required.
- Make available a copy of the Exposure Control Plan and making it available at the worksite.
- Implementing and documenting the appropriate site-specific control measures
- Providing adequate instruction to employees on the hazards of working with silica-containing materials (e.g., concrete) and on the precautions specified in the job-specific plan covering hazards at the location.
- Providing a job-specific ECP for each project, which outlines in detail the work methods and practices that will be followed on each site. Considerations will include.
    - Availability and delivery of all required tools/equipment
    - Scope and nature of work to be conducted
    - Control methods to be used
    - Level of respiratory protection if required
    - Plan coordination with the Prime Contractor

- Conducting a periodic review of the effectiveness of the ECP. This would include a review of the available dust-control technologies to ensure these are selected and used when practical.
- Initiating sampling of worker exposure to concrete dust when there are non-standard work practices for which the control methods to be used have not been proven to be adequately protective.
- Ensuring that all necessary tools, equipment, and personal protective equipment are readily available and used as required by the ECP.
- Ensuring Supervisors and employees are educated and trained to an acceptable level of competency.
- Maintaining records of training and inspections (equipment, PPE, work methods/practices).
- Coordinating the work with the contractors and other employers to ensure a safe work environment.

B. Project Foreman/Superintendent (Competent Person) Responsibility:

- Ensuring a copy of the ECP is available at the worksite.
- Selecting, implementing, and documenting the appropriate site-specific control measures.
- Providing adequate instruction to employees on the hazards of working with silica-containing materials (e.g., concrete) and on the precautions specified in the job-specific plan covering hazards at the location.
- Directing the work in a manner that ensures the risk to employees is minimized and adequately controlled.
- Enforces cleanup at breaks and lunchtime and assures that all employees follow proper hygiene procedures before eating and that their clothes are vacuumed off, if necessary.
- Ensures all employees clean their gear and store it properly at the end of their shift.
- Communicating with the prime contractor and other sub-contractors to ensure a safe work environment.
- Monitors the work area to assure that all safety procedures and being followed and the proper equipment and PPE are in use.
- Checks the worksite and makes sure that all barricades/signs are in place before the start of work.
- The competent person will be responsible for looking for potential silica hazards and take corrective action as needed.

C. The Worker is Responsible for:

- Knowing the hazards of silica dust exposure.
- Following established work procedures as directed by the competent person.
- Using the assigned protective equipment effectively and safely.
- Wear all the required PPE and make sure that it is clean and in good condition. If it is not, request new PPE that meets the proper requirements.
- Checking the equipment being used daily to make sure that it is clean and in proper operating conditions.
- Setting up the operation in accordance with the site-specific plan.
- Personal cleanup at breaks and lunchtime, including hands/face washing procedures before eating and that their clothes are vacuumed off, if necessary.

- Reporting any changes in the scope of work of protective devise to the competent person so that a new plan can be formulated.
- Reporting any unsafe conditions or acts to the Supervisor immediately.
- Knowing how and when and where to report exposure incidents.

III. CONTROL MEASURES

The Federal Occupational Safety and Health standard direct employers to use the best control technology available for the task and circumstance. If we perform a task that could release an unusually high amount of dust, and we are unsure of the adequacy of our control measures, we will conduct air sampling to ensure that control methods are proactive.

This will require compiling data, running samples, and determining silica levels. Labs will be used to analyze aggregate and KE&G contracted Certified Industrial Hygienist (CIH) will assist with the determination of potential silica exposure, including control methods. Also, every effort will be made to control levels and keep below the action level. These methods will include.

1. Elimination or Substitution
2. Engineering Controls
3. Administrative Controls
4. Personal Protective Equipment/Tools

A. Engineering Controls

The method required for heavy equipment use, excavation, demolition work, and other vehicle operators include the use of any method that will suppress dust and be compatible with the job tasks. These can include.

- Tank trucks equipped with hoses and nozzles that spray water or other dust suppressants over large areas to wet the materials disturbed during earthmoving tasks, including haul road and job sites in general.
- A worker who assists the operator by applying water or other types of dust suppressants to the material being moved.
- Large atomizing misting devices.
- Spray equipment attached directly to the vehicle.
- Nozzles adjusted so that water spray is directed at the work areas where dust suppression is required.
- Timing the application of the water or other dust suppressants to ensure that the materials are still damp when they are disturbed.
- Tools equipped with vacuum or wet systems.

B. Administrative Controls

Activities that are not directly related to the actual physical work but are important strategies to support the exposure control plan and ensure that all employees are protected from exposure to silica dust. Examples of administrative controls include:

- Posting warning signs
- Rescheduling our activities at different times than other work
- Work schedule rotation for employees
- Relocating unprotected employees away from our work area if necessary

C. Personal Protective Equipment

- NIOSH-approved N95 respirators will be used for nuisance particles larger than 3mg and wearing of the respirator is strictly voluntary by KE&G employees.
- All employees who voluntarily choose to wear an N-95 respirator will be advised of the limits and the requirements of 29 CFR 1910.134 Appendix D – Voluntary Use of Respirators.

In addition to the hazard controls identified above, the following safe work practices will be followed:

- A copy of this plan, along with a site-specific ECP will be available at sites which may pose a potential hazard.
- We will establish procedures for housekeeping including restricting work areas, reminding of personal hygiene.
- Warning signs will be posted to warn employees about the hazards of silica and to specify any protective equipment required that may be required.
- If possible, demolition work will be scheduled during the night shift to minimize the number of employees and the public exposure to airborne dust.

IV. SITE-SPECIFIC EXPOSURE CONTROL PLAN

Specific locations may require a site-specific exposure control plan (ECP) for the worksite. The plan will also cover personal protective equipment and any other methods to prevent KE&G employees from potential exposure of silica dust over the Action Level of 25urn/m3. This plan will be based on this ECP, and would include the following:

- Contractor name, address, and contact information (names and phone numbers)
- Worksite information (project name, location, and site contacts)
- Scope of work and list of tasks
- Site-specific hazards and risk assessment (Task Hazard Analysis)
- Dust (and other) control procedures and equipment
- Safe work procedures
-

V. EDUCATION AND TRAINING

KE&G will ensure that its employees are informed about the contents of the ECP and will be provided

with adequate knowledge and training to work safely with and around materials that contain silica.

KE&G Construction will train all employees potentially exposed to airborne silica dust in the following:

- Hazards associated with exposure to silica dust
- The risks of exposure to silica
- Signs and symptoms of silica disease
- Safe work procedures to be followed (e.g., administrative/engineering controls, disposal of silica waste, personal decontamination)
- The voluntary use of N95 respirators and other personal protective equipment
- Use of control systems (e.g., LEV and wet methods)
- How to seek first aid (for example, the location and use of eyewash stations, etc.)
- How to report an exposure to silica dust
- Records of training will be kept for 5 years

VI. SAFE WORK PRACTICES

Safe work procedures and hygiene practices are on-the-job activities that reduce the exposure potential from contaminated surfaces and work areas. Silica can also accumulate on the hands, clothing, and hair. From there, it can be disturbed, re-suspended in air, and inhaled. Employees should, therefore, follow proper hygiene procedures after each shift. There should be no smoking, eating, or drinking in contaminated areas, and lunches should be stored in an uncontaminated area. It is important to follow safe work and hygiene practices whenever silica is present.

Safe work practices can include:

- Safe operation of all equipment, including dust control attachments and related equipment
- Setting up enclosures
- Vacuum maintenance
- Cleanup procedures
- Worker decontamination procedures (hygiene facilities to permit proper handwashing are a basic expectation under all ECPs)

VII. DOCUMENTATION

Records must be kept of the following:

- All employees who are exposed to respirable silica dust while on the job
- Worker education and training sessions
- Equipment maintenance and repair
- Worksite analysis

The exposure control plan must be reviewed at least annually and updated as necessary by the employer, in consultation with the workplace health and safety committee or the Safety Manager.

Crane & Suspended Personnel Platform

100% Employee Owned

I. INTRODUCTION

1. The use of a crane or derrick to hoist employees on a personnel platform is prohibited. Except when the erection, use, and dismantling of conventional means of reaching the worksite, such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform or scaffold, would be more hazardous, or it is not possible because of structural design or work site conditions.

2. Any use of a crane hoisted personnel platform must be approved in writing on a case-by-case basis. The approval must be given by the Project Manager and Safety Manager after determining that other means of reaching the work location would be more hazardous or not possible because of structural design or work site conditions.

3. Approval will include execution of the KE&G permit for Use of a Crane Suspended Personnel Platform, which describes the work to be performed, reasons to justify the use of the crane suspended platform and verifies compliance with these procedures.

II. CRANE REQUIREMENTS

1. A Pick Plan shall be prepared before lifting. The Plan shall specify the type and set up of lifting gear to be used. Responsibilities for rigging, dogging, and spotting (1 designated signaler) shall be specified. The plan shall ensure the crane does not contact obstacles.

2. Tag lines shall be attached on all loads.

3. Load lines will be capable of supporting at least 7 times the maximum intended load (10 times the load for rotation resistant wire rope).

4. The load line hoist drum will have a system or device on the power train other than the load hoist brake which provides power-controlled load lowering. Freefall is prohibited.

5. The crane will be equipped with a positive acting anti-two-block device which deactivates the hoisting action before a two-block situation occurs.

6. A boom angle indicator will be always readily visible to the operator.

7. Cranes with telescoping booms will be always equipped with a boom length indicator visible to the operator.

8. Load and boom hoist drum brakes, swing brakes and locking devices will be engaged when the occupied personnel platform is in a stationary working position.

9. Total weight of the loaded personnel platform related rigging will not exceed 50 percent of the rated capacity for the operating radius and configuration of the crane.

10. The crane will be located on firm, level ground, leveled within one percent of level grade, with outriggers fully deployed in accordance with the manufacturer's specifications.

11. All other safety requirements for crane operations contained in the KE&G Safety Program, Equipment Owners/Operators manual, and the manufacturer's instructions will be complied with.

III. PERSONNEL PLATFORMS

1. The personnel platform and suspension system will be designed by a qualified engineer, competent in structural design.
2. The platform will be capable of supporting its weight and at least five times the maximum intended load.
3. The platform will be equipped with standard guardrails (42 inches high), mid-rails, and toe boards (4 inches tall), and will be enclosed at least from the toe board to mid-rail with either solid material or expanded metal having openings no greater than 1/2 inch.
4. A grab rail will be installed inside the entire perimeter of the platform.
5. Access gates, if installed, will not swing outward when hoisting and will be equipped with a restraining device to prevent accidental opening.
6. Headroom will be provided which allows personnel to stand upright on the platform, and a canopy for overhead protection will be provided when personnel is exposed to falling objects.
7. The platform will be conspicuously posted with a plate or other permanent marking which shows the weight of the platform and its rated load capacity.
8. Personnel platforms will be used only for personnel, their tools, and the materials necessary to do their work, and will not be used to hoist only materials or tools.
9. Materials and tools for use during a personnel lift will be evenly distributed for balance and secured to prevent displacement.

IV. RIGGING

1. Wire rope, shackles, rings, master links, and other rigging hardware will be capable of supporting at least five times the intended load transmitted to that component. If rotation resistant wire rope slings are used, they will be capable of supporting at least ten times the maximum intended load.
2. Each bridle leg of a wire rope bridle will be connected to a master link or shackle in such a manner that the load is evenly divided between the bridle legs.
3. The hook on the load block or another attachment assembly will be of a type that can be closed and locked, eliminating the throat opening. Alternatively, an alloy anchor type shackle with a bolt, nut, and retaining pin may be used.
4. All eyes in wire rope slings will be fabricated with thimbles.
5. Bridles and associated attachment rigging will be used only for the personnel platform and will not be used for any other purpose when not hoisting personnel.

V. TRIAL LIFT, INSPECTION, AND PROOF TESTING

1. At each job site prior to hoisting personnel, and after any repair or modification, the platform and rigging will be proof tested to 125 percent of the platform's rated capacity by holding it in a suspended position for five minutes with the test load evenly distributed on the platform. After

proof testing, the platform and rigging will be inspected for signs of any distortion, damage, or failure.

2. A trial lift with the unoccupied platform loaded at least to the anticipated lift weight, will be made from the position where employees will enter the platform to determine that all systems, controls, and safety devices are functioning properly, and that there are no obstructions or interference's, and that all configurations necessary to reach each work location will keep the lifts within the 50 percent of chart capacity limit.

3. The trial lift will be repeated prior to lifting personnel whenever the crane is set up at a different location.

4. After the trial lift and just prior to hoisting personnel, the platform will be lifted a few inches for inspection to be certain it is secure and properly balanced. The crane rigging and base support will also be inspected to determine whether the testing and trial lift have produced any adverse effect upon any component.

VI. WORK PRACTICES

1. Personnel occupying the platform will use a PFAS with the lanyard attached to the lower load block or to a structural member within the platform.

2. Personnel will keep all parts of the body inside the platform during raising, lowering, and positioning, except for the signal person if necessary, for direct visual contact with the operator.

3. Tag lines will be used.

4. Personnel being hoisted will remain in continuous sight of and in direct communication with the crane operator or signal person.

5. The crane operator will always remain at the controls when the crane is running, and the platform is occupied.

6. No lifts will be made with any other load line while the personnel is suspended on a platform.

7. Hoisting personnel will be discontinued upon indication of any hazardous weather conditions, such as wind and/or lightning.

8. Traveling is not permitted while hoisting or suspending an occupied personnel platform.

VII. PRE-LIFT MEETING

1. Prior to the trial lift at each work location, a meeting will be held to review these procedures and safety instructions with all personnel involved in the operation. This meeting will include the Supervisor, the crane operator, the signal person, the personnel to be hoisted, and any others necessary for the task.

VIII. PERMIT

1. The KE&G permit to use a Crane Suspended Personnel Platform serves as both a checklist of OSHA requirements and a format for project management certification and approval for use of the crane suspended personnel platform.
2. The permit form is to be completed for every different task description, before hoisting personnel, and is to be kept at the job site for the duration of work, then preserved with other job records.
3. A copy of each permit must be submitted to the Safety Manager.

Bloodborne Pathogens

100% Employee Owned

I. PURPOSE

This procedure provided mandatory guidelines to eliminate or minimize occupational exposure to hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV) and other blood-borne pathogens.

II. SCOPE

This procedure applies to all KE&G employees exposed to blood or other potentially infectious materials (OPIM) who are working in areas where bloodborne pathogens may exist, such as sewer lines and wastewater treatment areas. It also includes employees who have been identified as first aid responders on KE&G job sites. Any act or occurrence that may result in exposure to blood or OPIM must be reported to the superintendent or Foreman and Safety Manager immediately after a potential exposure to ensure that post-exposure evaluation and follow-up care if needed, are directly provided to the employee.

III. RESPONSIBILITIES

Superintendent and/or Foreman is responsible for enforcing this procedure and ensuring the proper reporting procedure, including reporting a significant exposure event has been done.

The Safety Manager is responsible for monitoring compliance with this procedure, identifying affected employees, and ensuring training is provided to those employees. Additionally, employees who are in the BBP Program are required to complete annual refresher training.

IV. PROCEDURE

- Good general principles shall be followed when the potential to exposure of a blood-borne pathogen exists. This includes.
    - Minimize exposure
    - Implementing work practice controls to eliminate or minimize employee exposure
    - Implementing an exposure control plan to educate our employees and to protect them from exposure
    - To provide appropriate measures should an exposure occur

- Keeping exposure control plan up to date.
    - Annually
    - Whenever new or modified tasks and procedures are implemented
    - Whenever a new position is established that may put a new classification into the BBP Program

V. METHODS OF COMPLIANCE

Universal precautions shall be observed by personnel to prevent contact with blood or OPIM. Universal precautions mean you will treat blood and OPIM as though they are infected with HBV or HIV or other bloodborne pathogens. All identified personnel shall use universal precautions.

VI. ENGINEERING AND WORK PRACTICE CONTROLS

Used to minimize employee exposure. Where engineering control is not feasible, personal protective equipment shall be used. Engineering controls may include quick drenching eyewash/handwashing stations to flush eyes and mucous membranes – if an employee may have been exposed.

- Training shall be provided to KE&G staff on a regular schedule to ensure the effectiveness of the engineering and work practice controls and training will consist of instructing staff to perform all tasks using appropriate precautions, engineering, and work practice controls.
- Employee shall wash hands and any other skin with soap or germicidal agents and water or flush mucous membrane with water immediately or as soon as practicable following contact with blood or OPIM.
- Hands shall be washed for at least 20 seconds after the potential of contamination has occurred.
- Eating, drinking, smoking, applying cosmetics or lip balm, handling contact lenses, and touching skin surfaces with contaminated hands shall be prohibited.

VII. PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment (PPE) is required if occupational exposure remains after instituting engineering and work practice controls, or if those controls are not feasible. PPE will be provided at no cost to the employee.

The use of personal protective equipment helps prevent occupational exposure to infectious materials. KE&G employees will be required to wear personal protective equipment when any possibility of exposure to bloodborne pathogens exists, including but not limited to:

- Gloves
- Aprons
- Face shields
- Masks
- Eye Protection

Personal protective equipment is considered appropriate only if it does not permit blood or other potentially infectious materials to pass through or reach employee's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time which the protective equipment will be used. Hypoallergenic gloves or other similar alternatives will be made available to employees who have an allergic sensitivity to gloves.

All KE&G employees will be required to observe the following precautions for safely handling and using personal protective equipment:

- Employees will remove protective equipment before leaving the work area and after a garment becomes contaminated.
- All employees will place used protective equipment inappropriately designated areas or containers when being stored, washed, decontaminated, or discarded.

- All employees must wear appropriate gloves when it can be reasonably anticipated that the employee may have contact with blood, other potentially infectious materials; and when handling or touching contaminated items or surfaces. Replace gloves if torn, punctured, contaminated, or their ability to function as a barrier is compromised.
- Never wash or decontaminate disposable gloves for reuse.
- Wear appropriate face and eye protection such as a mask with glasses with solid side shields or a chin-length face shield when splashes, sprays, spatters, or droplets of blood or other potentially infectious materials such as raw sewage pose a hazard to the eye, nose, or mouth.
- Wear appropriate protective body coverings such as gowns, aprons, caps, and boots when occupational exposure is anticipated. The type and characteristics will depend on the task and degree of exposure anticipated. If the employee is not certain which protective equipment is appropriate, consult the KE&G Safety Manager for further assistance.

VIII. HOUSEKEEPING

KE&G shall ensure that the worksite is maintained in a clean and sanitary condition. All equipment and environmental surfaces shall be cleaned and decontaminated after contact with blood or blood products.

- Contaminated work surfaces or areas and equipment shall be decontaminated with a 1:10 bleach/water mixtures or another appropriate sterilant.
- Always use mechanical means such as tongs, forceps, or a brush and a dustpan to pick up contaminated broken glassware, never pick up with hands even if gloves are worn.
- When discarding contaminated waste, place the waste in containers that are closable and appropriately label the container.
- Discard all regulated waste according to Federal, State, and local regulations.
- Handwashing facilities will be readily available at work locations, or antiseptic solutions will be readily available at all work sites if handwashing is not available.

IX. HBV AND POST EXPOSURE EVALUATION

KE&G will make available the Hepatitis B vaccine and vaccination series and post-exposure evaluation and follow-up, including prophylaxis, to all employees who have an exposure incident.

KE&G will ensure that all medical evaluations and procedures, including the Hepatitis B vaccine and vaccination series and post-exposure evaluation and follow-up, including prophylaxis are as follows:

- Made available at no cost to the employee
- Made available to the employee at a reasonable time and place
- Performed by or under the supervision of a licensed physician or the supervision of another licensed healthcare professional

X. REPORTING OCCUPATIONAL EXPOSURE

- Employees shall report occurrences of exposure as soon as feasible after the exposure but no more than 8 hours after exposure.
- The following steps will be taken in reporting potentially infectious materials:
    - Employees shall notify their immediate Supervisor
    - Employee shall complete an incident analysis report
    - Employee shall sign the incident report and will give the signed copy to their Supervisor
    - The Supervisor shall immediately forward a copy of the report to the Safety Manager or their representative

XI. POST-EXPOSURE EVALUATION AND FOLLOW-UP

- Following a report of exposure, KE&G shall immediately offer the exposed employee confidential medical evaluation and testing
    - Post-exposure evaluation and follow-up shall consist of at least the following elements
        - Document the route of exposure
        - Identification, documentation, and source testing the individual
        - Collection and testing of blood for HBV and HIV serological status
        - Evaluation of reported illnesses
- KE&G shall ensure the healthcare professionals who are responsible for evaluating employees following exposure incident receive and review the following information.
    - Job description
    - Routes of exposure and circumstances which the exposure occurred
    - Source individuals blood testing if available
    - Maintenance of all medical records relevant to the treatment of the exposed employee including vaccination status
- A written opinion from the Healthcare Professional on whether a Hepatitis B vaccine shall be limited to whether the employee has received such a vaccine
- The healthcare professional written opinion for post-exposure evaluation and follow-up shall be limited to the following information.
    - The employee has been informed of the results
    - The employee has been told about the medical conditions resulting from exposure to blood or OPIM with require further evaluation
- The healthcare professional's other findings or diagnosis shall remain confidential and shall not be included in a written report.
- KE&G will evaluate the failures of control at the time of the incident to identify and make a recommendation for corrective action.

XII. INFORMATION AND TRAINING

All training records must be kept for at least a duration of no less than three years, from the date of hire. The exposure control plan will be made available at any time during the duration of employment.

All medical records shall be made available for examination and copying by the subject employee, anyone having written consent of the subject employee, and to OSHA. Medical records will be kept for the duration of employment and for 30 years after.

All KE&G employees who have the potential of occupational exposure to bloodborne pathogens will be given information and training provided at no cost to the employee. This training will be conducted before the initial assignment, and once a year thereafter. Additional training will be provided when existing tasks are modified, or new tasks that involve occupational exposure to bloodborne pathogens affect the employee's exposure. Training records shall be maintained three years from the date of hire.

KE&G CONSTRUCTION, INC
HBV VACCINATION ACCEPTANCE/DECLINATION FORM

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination currently. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a severe disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me.

Employee Name:

Site Location (Tucson/SV):

Employees Signature: Date:

Supervisor's Name:

Supervisor's Signature:

Assured Equipment Grounding Conductor

100% Employee Owned

I. INTRODUCTION

It is the policy of KE&G Construction, Inc. to establish and implement an assured equipment grounding conductor program on construction sites covering all cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and equipment connected by cord and plug which are available for use or used by employees. This policy shall apply to all construction sites not equipped with ground fault circuit interrupters in accordance with OSHA standard 29 CFR 1926.400 (h)

Supervisors are designated to implement the assured equipment grounding conductor program: 29 CFR 1926.32(f) defines competent person as one who can identify existing and predictable hazards in the surrounding area or working conditions which are unsanitary, hazardous, or dangerous to employees, and who is authorized to take prompt corrective measures to eliminate them.

Supervisors will be responsible and accountable for the following:

Each cord set, attachment cap, plug and receptacle of cord set, and any equipment connected by cord and plug, except cord sets and receptacles which are fixed and not exposed to damage, shall be visually inspected before each day's use for external defects, such as deformed or missing pins, or insulation damage, and for indication of possible internal damage. Equipment found damaged, or defective must be tagged out of service until repaired.

Authorized and trained personnel who have been designated as the competent person, are responsible for tests on all cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and cord and plug connected equipment repaired to be grounded. A KE&G employee will be designated and responsible for the execution of the program. Tests shall be documented on the log for assured equipment grounding conductor program and shall be on the job site for inspection by OSHA officials and any affected employee. Equipment that does not meet the prescribed test shall not be put into service. The following tests shall be performed:

A. All equipment grounding conductors shall be tested for continuity and shall be electrically continuous.

B. Each receptacle and attachment cap or plug shall be tested for correct attachment of the equipment grounding conductor. The equipment grounding shall be connected to its terminal.

In accordance with OSHA Construction Safety and Health Standards 29 CFR 1926.21 Safety Training and Education, Supervisors shall attend such training sessions as the company may deem necessary.

II. SCOPE

This procedure describes the requirements to assure the installation and maintenance of equipment grounding conductors for temporary wiring on construction sites in accordance with paragraph (c) (30 of part 29 CFR 1910.309 of the Occupational Safety and Health Standard and paragraph (h) (3) of part 29 CFR 1926.400 of the Safety and Health regulations for construction.

III. POLICY

Ground fault circuit interrupters (GFCI's) are not required for 120-volt, single-phase, 15- and 20-ampere receptacles outlets where all the requirements of this procedure are implemented at the construction site. Employees shall not use any equipment which has not met the requirements of this procedure.

IV. TRAINING

Training on this procedure will be conducted every quarter as the new color code changes.

V. JOB SITE INFORMATION

A. Name or description of the construction site
B. Employer complying with this procedure is
C. A person designated to implement the procedure is

VI. REQUIREMENTS

Equipment grounding conductors shall be installed and maintained in accordance with this procedure.

A. Installation - Equipment grounding conductors shall be installed as follows:

1. All 120-volt, single-phase, 15- and 20- ampere receptacles shall be of the grounding-type and their contacts shall be grounded by connection to the equipment grounding conductor of the circuit supply the receptacle in accordance with the applicable requirements of the National Electrical Code.

2. All 120-volt cord sets (extension cords) shall have an equipment grounding conductor which shall be connected to the grounding contacts of the connector(s) on each end of the cord.

3. The exposed concurrent-carrying metal parts of the 120-volt cord and plug-connected tools and equipment that are likely to become energized shall be grounded in accordance with the applicable requirements of the National Electrical Code.

B. Visual Inspection - Employees shall be instructed to visually inspect receptacle, flexible cord sets (extension cords), except those that are fixed and not exposed to damage, and equipment connected by cord and plug before each day's use for external defects such as deformed or missing pins or insulation damage and indication of possible internal damage. Where there is evidence of damage, the damaged item shall be taken out of service and tagged until tested and any required repairs have been made.

C. All 120-volt, single-phase, 15 and 20- ampere receptacles which are not a part of the permanent wiring of the building or structure, 1220-volt flexible cord sets, and 120-volt cord and plug connected equipment required to be grounded shall be tested as follows:

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

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

D. Testing Schedule - All required tests shall be performed:

1. Before first use.

2. Before equipment is returned to service following any repairs.

3. Before equipment is used after any incident which can be reasonably suspected to have caused damage (for example, when a cord set is run over).

4. At intervals not to exceed three months.

E. Test Records

Test verification shall be by means of numeric or color-coded marking tape on the receptacle, cord set or equipment to identify that it has passed the test and to indicate the date (a month or quarter) in accordance with section F Coding Scheme. Records will be maintained for 5 years and kept on file in shop records by the tester/inspector.

F. Coding Schemes for assured equipment grounding conductor test record.

Month	Quarter	Color Coding Scheme
January	1	White
February		
March		
April	2	Green
May		
June		
July	3	Red
August		
September		
October	4	Orange
November		
December		
Repair or Incident	Anytime	Bro

Arizona 811

(Blue Stake)

100% Employee Owned

1. Project Engineers or KE&G Office Personnel will call in for Blue Staking at 1-800-782-5348 or 811 or 1-800-stake-it. You can also generate a ticket online by using the E-Stake process on the Arizona 811 web site. Go to www.Arizona811.com and click on E-Stake. You must make contact at least two working days before the crew will be excavating. Two working days exclude Saturdays and Sundays. Please have the information below ready:

    a. If a project is large, request a meeting in advance with contractor

    b. Location of dig site (Street address, intersection, or between intersections) is very specific with directions.

    c. Type of work

    d. Will explosives be used?

    e. Permit number or N/A

    f. Is access open?

    g. Is address posted

    h. Is site white lined?

    i. Project Job number

    j. Will the overhead notification be necessary?

    k. Is offset marking acceptable?

    l. Will there be any directional boring during the excavation?

m. Company Name and phone # (KE&G Construction, Inc. 520-748-0188)

n. Contact name and alternate contact name; use Tucson or Sierra Vista's Office Personnel.

o. What utilities need to be contacted to blue stake?

2. Notify KE&G Office with:

a. Job number

b. Blue Stake ticket number

c. Expiration date

3. KE&G Office will print ticket and renewals and distribute to:

a. Project Superintendent/Foremen

b. Project Manager (SV Only)

c. Project Engineer (Tuc Only)

d. General Superintendent (Tuc Only)

e. Safety Manager (Tuc Only)

f. Job File

g. Blue Stake Book

4. KE&G Office Personnel will update the Blue Stake book and keep track of:

a. Utility notifications

b. Expiration dates

c. Renew any open projects

d. Blue Stake log in "F" drive under Blue Stake

Hearing Conservation Program

A. INTRODUCTION

In accordance with OSHA (29CFR 1910.95), the following program establishes policies and procedures for the effective control of excessive noise and to protect KE&G employees from hearing loss. The regulations require that each employer implement a hearing conservation program if employees' noise exposure levels exceed 85 decibels for an average of eight (8) hours per day.

Purpose

The purpose of the Noise Exposure and Hearing Conservation program is to:

Eliminate or reduce employee, student worker, and volunteer occupational exposure to noise exposure levels exceeding 85 decibels for an average of eight (8) hours per day or as recommended by Table G-16.

Table G-16 – Permissible Noise Exposures [1]

Duration per day, hours	Sound level dBA slow response
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

[1] When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions: $C_1/T_1+C_2/T_2$ C_n/T_n exceeds unity, then, the mixed exposure should be considered to exceed the limit value. C_n indicates the total time of exposure at a specified noise level, and T_n indicates the total time of exposure permitted at that level.

Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

Current noise survey reports contained in this program are used to ensure that noise exposed employees are part of the hearing conservation program.

Scope

This plan covers all KE&G employees who work in areas with excessive noise levels. Employees who work more than 4 hours per day in an area with noise levels exceeding 85 dBA will be required to have regular hearing tests. The primary affected employees who work with loud equipment or in areas of possible high noise.

All employees are required to comply with the scope of this Noise Exposure & Hearing Conservation plan, at no cost to the employee.

B. DEFINITIONS

Permissible Noise Exposure: There are two exposure levels that if exceeded require specific compliance activities:

- **Permissible Noise Exposure** is an eight-hour time-weighted average of 90 decibels on the A scale or a dose of 100%.

- **Action Level** is an eight-hour time-weighted average of 85 decibels on the A scale or a dose of 50%.

Representative Noise Exposure: Measurements of an employee's noise dose or 8-hour time-weighted average sound level that KE&G deems to be representative of the exposures of other employees in the workplace.

Sound measurements as taken by: As identified and designated by the Safety Manager

- Noise dosimeter: An instrument that integrates a function of sound pressure over a period of time in such a manner that it directly indicates a noise dose.
- Sound level meter: An instrument for the measurement of sound level.

Time-weighted average sound level: That sound level which, if constant over an 8-hour exposure, would result in the same noise dose as is measured.

C. GENERAL RESPONSIBILITIES

Safety Manager is responsible for the following:

- General oversight of the program
- Ensure representative noise surveys are conducted
- Ensure employees are trained on the use of hearing protection
- Train supervisors on the use of hearing protection
- Maintain records of noise surveys
- Maintain the Noise and Hearing Conservation written program
- Perform evaluations of the program and updated to be consisted with changes to PPE and work processes.
- Notify employees and supervisors of shifts in hearing
- Ensure that employee medical records and all past employee records per the OSHA standard are maintained

Supervisors are responsible for the following:

- Ensure that noise exposed employees wear hearing protection
- Ensure that noise exposed employees receive annual noise training
- Ensure that noise exposed employees have baseline and annual hearing tests
- Assist Safety Manager with evaluation of the program

All Noise Exposed Employees are responsible for the following:

- Be familiar with the NE&HC program
- Wear appropriate hearing protection
- Take an active part in the annual training
- Have baseline and annual hearing tests

D. NOISE SURVEYS

Noise surveys are required to be done on work operations that have potentially high noise levels (85 dBA and above).

- The noise measurements will be included in the program manual.
- Additional noise surveys are required to be taken when additional equipment or processes are introduced which could result in higher noise levels, and periodically to re-verify the test results.

Each employee exposed to noise at or above the 85 dBA average is to be informed of the results. This will be done by posting the data and including the information at the employee initial and annual employee noise training.

E. HEARING PROTECTION

Hearing protection is required to be worn during the operation of equipment or processes that exceed 85 dBA noise levels as a time-weighted average exposure.

The hearing protection required or recommended by area (ear plugs, foam plugs, or ear muffs) are available in the following areas at no cost to the employees:

Construction Sites, supervisors, safety personnel, Office site

The use and availability of the hearing protection will be pointed out to each new employee during their initial safety orientation, employees will also be updated to be consisted with any changes to the PPE and work processes as needed.

EMPLOYEES REQUIRED TO WEAR HEARING PROTECTION WILL BE INFORMED BY THEIR SUPERVISOR

Employees will be trained in how to properly fit the hearing protectors by Safety Manager or their supervisor. If anyone has problems with the devices, please contact your supervisor.

Employees will be provided with at least two styles of protection – plugs or muffs to try on to determine which device would be best for them. All the devices provided will be evaluated to determine if they provide adequate noise attenuation for the noise exposure levels.

Each employee will be responsible for the maintenance of his/her assigned hearing protective devices.

- Disposable plugs will be discarded at end of shift or when they become excessively soiled.
- Inserts or barriers will be checked prior to each use for any defects. If barriers are used, the head band will be checked to ensure it is tight and the inserts are not torn, disfigured, or do not properly seal. If equipment is damaged, new devices will be obtained and used.
- Manufacturer's recommendations on maintenance will be followed.

F. AUDIOMETRIC (HEARING) TESTING

New employees assigned to a noise area (where the time weighted exposure to noise is above 85 dBA) will be given a baseline hearing test and then will be tested annually thereafter. The hearing test will be given by contracted certified audiometric technicians. Hearing tests showing a significant hearing loss are forwarded to the contracted professional reviewer.

Baseline or initial tests will be given to new employees at the time of hire, or within 6 months of an employee's first exposure at or above the action level. The baseline tests require the employee not to be in the occupational noise area for 14 hours prior to the test. The test will be conducted at the start of the work shift. This test will be the reference for further tests to determine if hearing levels change.

Annual hearing test should be taken at the start of a work shift. These results will be compared with the baseline tests.

- Significant threshold shift (STS) criterion: The hearing loss criterion is a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2000, 3000, and 4000 hertz (Hz) in either ear.

- The employee may be retested within 30 days and the results of the retest will be considered to determine if a permanent shift has occurred.

- Employees will be informed if their tests show significant changes in their hearing levels based on OSHA standards. Within 21 days of receiving notification from the contracted audiologist of the employee's hearing change, the Safety Manager will notify the employee.

- In all cases of hearing loss, the employee will be re-instructed on how to properly wear hearing protection. The Safety Manager and/or supervisor will follow-up on all hearing tests that show a reduction in the employee's hearing from the baseline.

The contracted audiologist will determine if additional tests are needed and the status of the employee's hearing.

Baseline and annual hearing tests are at the employers' expense.

Note: Job descriptions need to be available to the contracted audiologist at the time of hearing testing, as well as information about duration and frequency of noise exposure, and hearing protection provided.

G. EMPLOYEE TRAINING

New employees will receive Hearing Conservation training at initial assignment to a noise area. The training will be repeated annually for all noise exposed employees. The specific training materials are provided in this manual and are to be a guideline for supervisors and/or the Safety Manager.

Training shall include the following topics:

- Effects of noise on hearing
- Hearing protectors' purpose, advantages and disadvantages, attenuation of various types, and instructions on selection, fitting, use and care-
- Purpose of hearing testing and an explanation of the test procedures.

H. NOISE ENGINEERING CONTROLS

The Safety Manager is responsible to determine if there are feasible engineering controls that could reduce noise levels to below 85 dBA as a time-weighted 8-hour average.

Engineering Control Feasibility Studies: In some cases there may be records of noise control studies done on pieces of equipment or processes. These records should be kept to show compliance with OSHA noise engineering control standard. The records should be maintained for the duration the equipment or process is in use.

I. RECORDKEEPING

Records must be maintained for the various elements of the program. This includes the following requirements:

Noise Exposure Measurement
Time Frame: Current plus 2 years of results. (Note: The current record may represent measurements taken longer than 2 years ago. This is permitted as long as the readings are reflective of noise exposure levels.)

Audiogram records
Time Frame: Duration of employment plus thirty years.

Training Records

Time Frame: Employee training records will be kept on file by their supervisor and available for employee inspection upon request. Training record shall be maintained for three years from date of the training.

The following information shall be documented:

1. The dates of the training sessions;
2. An outline describing the material presented;
3. The names and qualifications of the person conducting the training; and
4. The names and job titles of all persons attending the training sessions.

Access to records

All records required by this Hearing Conservation program shall be provided upon request to employees, former employees, and individual employee representatives, and to the Assistant Secretary of Labor for the Occupational Safety and Health Administration and the Director of the National Institute for Occupational Safety and Health upon request. The provisions of 29 CFR 1910.20 (a)-(e) and (g)-(i) apply to access to records under this section.

OSHA 300 Log Record

If an employee's hearing shift is permanent it must be recorded on the employer's OSHA 300 Log. (By definition, a standard threshold shift is identified as a 10dB shift at 2000, 3000, and 4000 Hz.)

Employee must be informed in writing within 21 days of the determination of permanent hearing shift.

Hot Work Permit

100% Employee Owned

I. Purpose and Scope

1. Hot Work Permit: All Hot Work that is conducted in an area that is not specifically designed and equipped for hot work operations, must be conducted under an approved Hot Work Permit.

   The Hot Work Permit is valid for one day or shift and must be renewed daily or as needed. Hot Work Supervisors are responsible for designating qualified personnel to serve at Fire Watch and Hot Work Operators.

   The Project Manager or the Superintendent will determine when and where a Hot Work Permit is required and issued.

2. Fire Hazard: If the object to be welded or cut cannot readily be moved, all movable fire hazards in the vicinity shall be taken to a safe location.

3. Guards: If the object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards shall be used to confine the heat, sparks, and slag, to protect the immovable fire hazards.

4. Restrictions: If the requirements stated above cannot be followed, then welding and cutting shall not be performed.

5. Combustible material: Wherever there are floor openings or cracks in the flooring that cannot be closed, precautions shall be taken so that readily combustible materials on the floor below will be exposed to sparks which might drop through the floor. The same precaution shall be observed with regarding cracks, holes in walls, open doorways and open or broken windows.

6. Fire Extinguishers: Suitable fire extinguishing equipment shall be maintained in a state of readiness for instant use.

II. Procedure

1. Fire watch is required when welding or cutting is performed in locations where other than a minor fire might develop or any of the following conditions exist. The Project Manager, Superintendent or designee shall approve all Authorized Controlled Areas. Authorized Controlled Areas are specifically designed to allow hot work operations, such as the Tucson shop and the Sierra Vista shop. Hot Work Permits are not required for operations in Authorized Controlled Areas, provided they meet the applicable criteria from the Hot Work Permit:

   - Appreciable combustible material in building construction or contents, closer than 35' to a point of operation
   - Appreciable combustibles are more than 35' away but easily ignited.
   - Wall or floor openings within a 35' radius expose combustible materials in adjacent areas including concealed spaces in walls or floors.
   - Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.
   - Floors - where combustible materials such as paper clippings, wood shavings, or textile fibers are on the floor, the floor shall be swept clean for a radius of 35 feet (10.7 m). Combustible floors shall be kept wet, covered with damp sand, or protected by fire-

resistant shields. Where floors have been wet down, personnel operating arc welding or cutting equipment shall be protected from possible shock.

- Prohibited areas - cutting and welding shall not be permitted in the following situations.
  - Areas not authorized by management.
  - In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dusts with air), or explosive atmospheres that may develop inside uncleaned or improperly prepared tanks or equipment which have previously contained such materials, or that may develop in areas with an accumulation of combustible dust.

III. Responsibility

1. Hot Work Supervisor

   - Supervisors or their designees are required to review hot work operations and to determine if it is being conducted in Authorized Controlled Areas or under a Hot Work Permit.
   - If required, the Hot Work Supervisor must complete the Hot Work Permit (Attachment A) and review it with the Hot Work Operator and Fire Watch.
   - Hot Work Supervisors are responsible for designating qualified personnel to serve at Fire Watch and Hot Work Operators.

2. Hot Work Operator

   - Hot Work Operators are the workers performing the hot work (Purpose and Scope).
   - Hot Work Operators are required to comply with this procedure and all requirements listed on the Hot Work Permit.

IV. Fire Watch

- Fire Watch is a worker assigned by the Hot Work Supervisor to observe ongoing hot work and to identify and respond to fire hazards.
- Fire Watch must be able to immediately communicate with Emergency Personal (911) and Hot Work Supervisor by radio or phone during a fire emergency.
- The Fire Watch shall be equipped with a portable fire extinguisher and be adequately trained in its use.
- A Fire Watch must be posted if it is required by the Hot Work Permit (Attachment A).
- The Fire Watch is required to comply with this procedure and all requirements listed on the Hot Work Permit.
- A Fire Watch shall be maintained at least one-half hour after completion of the welding or cutting operations to detect and extinguish smoldering fires.

V. Training

The Hot Work Supervisor or designee and affected workers must attend the Hot Permit Procedure training provided by KE&G.

(APPENDIX A)

Hot Work Permit

Before initiating hot work, can this job be avoided? Is there a safer way?

This Hot Work permit is required for any temporary operation involving open flames or producing heat and/or sparks. This includes, but is not limited to Brazing, Grinding, Soldering, Thawing Pipe, Torch Applied Roofing and Welding.

Instructions:

1. Verify the precautions listed below or do not proceed with work.
2. Complete this permit and issue to a person(s) performing the work.
3. Retain this copy in the project file.

Permit #:	Date:	Shift:	Work Order #:

Location of Work:
Equipment Number:
Purpose of work:
Name of person(s) doing the work:
Name of fire watch person:

I verify the above location has been examined, the precautions checked on the Precautions Checklist below to minimize the chance of fire.
Supervisor's Name: Signature:
Duration (Hrs): Start Time: Stop Time:

Hot Work Permits may not be authorized for more than one shift!

Yes	No	N/A	Item
			Are water hoses or fire extinguishers available and in good repair?
			Is hot work equipment in good repair?
			Have flammable liquids, dust, lint, and oily deposits within 35 ft. been removed?
			Has an explosive atmosphere been eliminated? Test results:
			Has the work surface area been cleaned of grease, paint, etc.?
			Have combustible floors been wet down, covered with damp sand, or covered with fire-resistant sheets?
			Have surface areas below work area been protected?
			Have access ways below work area been barricaded?
			Are UV shields in place?
			Has enclosed equipment been cleansed of all combustibles?
			Have all containers been purged of flammable liquids and vapors?
			Will fire watch be provided during and for 60 minutes after work, including coffee and/or lunch breaks?
			Has fire watch been provided with suitable fire extinguishing devices?
			Has the fire watch person been trained in the use of fire extinguishing devices and in sounding alarm(s) or other emergency communications?
			Has additional fire watch been assigned to adjoining areas, above and below?
			The hot work area will be monitored for 4 hours after completion of work?
			Other:

Vehicles, Machinery & Equipment

100% Employee Owned

I. General

To establish requirements and procedures for operating vehicles and mobile equipment.

II. Requirements

- All mobile equipment and vehicle operators shall receive task training compliant with company and regulatory requirements. Training shall be documented and be present in the field. All light vehicles must be equipped with first aid kits and fire extinguishers.
- Mobile equipment must have fire extinguishers.
- Light vehicles must meet applicable DOT standards for use on public roads.
- Inspect all equipment for safety defects by using and completing the Pre-Operational Shift Equipment Report, before placing the equipment in service. Remove from service any equipment with a defect that could affect safety in any manner. Tag the defective equipment out of service, and report the defect to the supervisor.
- All light vehicles and mobile equipment shall have identification numbers visible from all directions.
- All light vehicles shall have buggy whips and strobe lights when operated around mobile or haulage equipment.
- All light vehicle and mobile equipment operators shall have a system for communicating with each other and haulage equipment operators. Examples radios or push to talk systems.

III. **Operation**

- Prior to operation, a pre-operational safety check will be performed. Equipment with defects affecting safety must be tagged out and the operator's supervisor notified immediately. Equipment will be taken out of service and repaired in a timely manner. Repairs will be documented and records retained.
- Mobile equipment and vehicles shall be operated within the scope of the manufacturer's recommendations.
- Operators of small vehicles (pickups and vans) must possess a valid driver's license and a copy must be in the employee's file. Employees are required to notify their supervisor of any traffic convictions affecting the status of their license.
- Fasten seat belts whenever the equipment is in motion.
- Always operate equipment at a prudent speed, even if this speed is lower than the posted speed limit. Do not endanger personnel through careless handling of the machine. Slow down for curves and during abnormal weather or operating conditions. Obey all site traffic rules.
- Before leaving any equipment unattended, make sure that attachments are fully lowered to the ground and that parking brakes are set. Always use wheel chocks unless parked at a ready line or parking space with a wheel depression or if on a slope with the wheels turned into a berm.
- Be certain that all persons and equipment are at a safe distance before starting or moving mobile equipment.
- Sound the horn before starting or moving equipment. The horn signals are applied:
    - Once prior to stopping.
    - Twice prior to starting forward
    - Three times prior to starting in reverse
- Know all emergency shutdown and start-up procedures associated with the equipment.

- Keep the equipment and cab clean and free of extraneous material.
- When entering an intersection, always sound the horn to notify pedestrians and other operators in the vicinity. Entering a building requires a spotter.
- Light vehicles, if equipped, ensure that the backup alarm is working. Functioning backup alarms are required on mobile equipment.

IV. Vehicle Requirements

1. Coverage

Operating off-highway vehicles in areas not open to the public.

2. General Requirements

A. All vehicles shall have a service brake system, an emergency brake system, and a parking brake system. These systems may use common components, and shall be maintained in operable condition. All motor vehicles shall be inspected prior to use of each shift.

B. Whenever visibility conditions warrant additional light, all vehicles, or combinations of vehicles, in use shall be equipped with at least two headlights and two taillights in operable condition.

C. All vehicles, or combination of vehicles, shall have brake lights in operable condition regardless of light conditions.

D. All vehicles shall be equipped with an adequate audible warning device at the operator's station and in an operable condition.

E. No employer shall use any motor vehicle equipment having an obstructed view to the rear unless:
   a. The vehicle has a reverse signal alarm audible above the surrounding noise level.
   b. The vehicle is backed up only when an observer signals that it is safe to do so.

F. All vehicles with cabs shall be equipped with windshields and powered wipers. Cracked and broken glass shall be replaced. Vehicles operating in areas or under conditions that cause fogging or frosting of the windshields shall be equipped with operable defogging or defrosting devices.

G.. All haulage vehicles, whose pay load is loaded by means of cranes, power shovels, loaders, or similar equipment, shall have a cab shield and/or canopy adequate to protect the operator from shifting or falling materials.

H. Tools and material shall be secured to prevent movement when transported in the same compartment with employees.

I. Vehicles used to transport employees shall have seats firmly secured and adequate for the number of employees to be carried.

J. Seat belts and anchorages meeting the requirements of 49 CFR Part 571 (Department of Transportation, Federal Motor Vehicle Safety Standards) shall be installed in all motor vehicles.

K. Trucks with dump bodies shall be equipped with positive means of support, permanently attached, and capable of being locked in position to prevent

accidental lowering of the body while maintenance or inspection work is being done.

L. Operating levers controlling hoisting or dumping devices on haulage bodies shall be equipped with a latch or other device which will prevent accidental starting or tripping of the mechanism.

M. Trip handles for tailgates of dump trucks shall be so arranged that, in dumping, the operator will be in the clear.

N. All vehicles in use shall be checked at the beginning of each shift to assure that the following parts, equipment, and accessories are in safe operating condition and free of apparent damage that could cause failure while in use: service brakes, including trailer brake connections; parking system (hand brake); emergency stopping system (brakes); tires; horn; steering mechanism; coupling devices; seat belts; operating controls; and safety devices. All defects shall be corrected before the vehicle is placed in service.

These requirements also apply to equipment such as lights, reflectors, windshield wipers, defrosters, fire extinguishers, etc., where such equipment is necessary.

V. Heavy Equipment

- Backhoe / Loader
- Bulldozer / Crawler Tractor / Loader
- Skid Steer Loader Safety
- Compact Excavator Safety
- Trencher Safety
- Roller Compactor Safety

KE&G has rules governing opreration and maintenance of equipment. Before you tart work at a new location, check with your supervisor or safety. Ask about rules you may be expected to obey. There are, however, rules that MUST be adhered to always:

- Know the capacity and operating characteristics of the machine you are operating.
- NEVER modify or remove any part of the machine (except for service).
- ALWAYS wear your seat belt before you start the equipment.
- Keep others away from your operation.
- Carry the load low.
- Whenever you leave your machine, always put equipment into its resting position. Engage the parking brake, stop the engine, cycle the hydraulic controls, and remove the key.

Make sure you understand the rules covering traffic at your jobsite. Know what all signs, flags, and markings mean. Understand hand, flag, horn, whistle, siren, and bell signals. Know when to use lights, turn signals, flashers, and horns.

Know how to operate all equipment on your machine. Know the purpose of all the controls, gauges, and indicators. Know the rated load capacity, speed range, braking and steering

characteristics, turning radius, and operating clearances. Keep in mind that rain, snow, ice, loose gravel, soft ground, etc., change the operating capabilities of your machine.

Study the DANGER, WARNING, and CAUTION safety signs on your machine and the information signs too.

STUDY THE MANUFACTURER'S OPERATOR'S MANUAL BEFORE STARTING THE ENGINE. IF THERE IS NO MANUAL WITH THE MACHINE, GET ONE!! STUDY IT BEFORE YOU START WORK.
IF THERE IS SOMETHING IN THE MANUAL YOU DON'T UNDERSTAND, ASK YOUR SUPERVISOR TO EXPLAIN IT TO YOU.

A. Check the Safety Equipment

To protect you and others around you, your machine may be equipepped with the following safety equipment. See that each itme is securel in place and operating condition.

- Falling Object Protective Structure (FOPS)
- Roll-Over Protective Structure (ROPS)
- Seat Belts/Operator Restraints
- Lights
- Safety Signs
- Horn
- Guards
- Shields
- Back-up Alarm
- Mirrors
- Fire Extinguisher
- First Aid Kit

B. Check the Machine

Before you begin work, inspect your machine and have all syst4ems in good operational condition. Do not operate the machine until all deficiencies are corrected.

- Check for broken, missing or damaged parts. Make necessary repairs.
- Check tires for cuts, bulges, and correct pressure. Replace badly worn or damaged tires.
- Check service and parking brakes for proper operation.
- Perform all maintenance procedures outlined by the manufacturer of your machine.
- Check the hydraulic system. Have any leaks repaired.

WARNING: Diesel fuel or hydraulic fluid under pressure can penetrate the skin or eyes and cause serious injury, blindness or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks but do not use bare hand. Wear a face shield or safety goggles for eye protection. If any fluid is injected into the skin, it must be removed within a few hours by a doctor familiar with this type of injury.

WARNING: Allow the radiator to cool before checking the level. Check that the steering frame lock on an articulated machine has been removed and properly stored.

C. Clean Up

- Clean windshields, mirrors and all lights.
- Make sure the operator's area, steps and hand holds are clean. Oil, grease, snow, ice or mud in these areas can cause you to slip and fall. Clean your boots of excess mud before getting on the machine.
- Remove all personal items or other objects from the operator's area. Secure these items in the tool box or remove from the machine.

D. Know the Working Area

- Learn – beforehand – as much as your working area as possible.
- Conditions of haul roads.
- Direction of travel on haul roads.
- Holes, obstructions, mud or ice.
- Heavy traffic.
- Thick dust, smoke, fog.
- Exact location of any buried and/or overhead electrical, gas, telephone, water, sewer, or other utility lines. If necessary, have the utility company mark, shut off or relocate them before you being working.

WARNING: Never approach power lines with any part of your machine unless all local, state/provincial and federal (MSHA/OSHA) required safety precautions have been taken. Use extreme caution.

When operating machine inside a building, know what clearances you will encounter – overhead, doorway, aisles, etc.; also, the weight limitations of floors and ramps.

E. Rules of the Road

- If the machine is to be driven over the road, refer to the manufacturer's manual for instructions.
- Make sure clearance flags, all lights and warning signs are in place and visible. Make sure the "Slow Moving Vehicle" emblem is visible to any vehicle approaching from the rear.
- When traveling on public roads or streets, obey all local traffic regulations appropriate to backhoe/loader use and local classification. Find out if you must use an escort vehicle.
- Make sure dual brake pedals are locked together (if so equipped). Place the loader bucket and outriggers in the transport lock position. Approach intersections with caution, observe speed and traffic control signs. Don't speed. Know your stopping distance at a given speed. Always regulate your travel speed accordingly. Avoid panic stops and sharp turns. If traffic backs up, pull over and allow other vehicles to pass.
- Stop at all railroad crossings and look both ways before proceeding. Never park in traffic areas. If it is necessary to stop at night, pull off the road and set up flares or reflectors. When driving at night, use appropriate lights.

- Always use hand signals or turn signals when turning.

F. Mount Safely

When you get o or leave the machine, always:

- Maintain a three point contact with the steps and hand holds.
- Face the machine.
- Never jump on or off the machine. Never attempt to mount or dismount a moving machine.

Do not use the steering wheel or any control lever as a hand hold when you enter or leave the machine.

Before starting, walk completely around the equipment. Make sure no one is under the machine, on it, or close to it. Let other workers and bystanders know you are starting up and don't start until everyone is clear of the machine.

Welding, Cutting & Brazing

I. SCOPE

This policy applkies to all of those employees who may perform welding, cutting, or brazing as part of their job function.

II. General Requirements

A. Basic Precautions for Fire Prevention

1. The object to be welded shoud be moved to a safe place, when possible.
2. If the object annot be readily moved, all movable fire hazards in the vicinity shall be moved to sa safe location.
3. If the project cannot be readily moved and all fire hazard cannot be removed, guards shall be used to confine the heat, sparks, and slag, and protect immovable fire hazards. (i.e. curtains).

SPECIAL PRECUATIONS WHENEVER GUARDS ARE USED:

Wheverver floor cracks, or holes in walls, open doorways, open or broken windows, or openings that cannot be closed are presention, take precuations to insuren that readily combustible materials on the floor below will not be exxposed to sparks that may drop through the cracks or openings.

4. A fire watch is required whenever there is a possibiliyt of fire developing. The fire watchers wil lhave fire extinguishing equipment immediately available and shall be trained in its use. They will also be familiar with the methods used to sound an alarm.

    - Appreciable combustible material, in buildikng construction or content, or closer than 35’ to point of operatino.
    - Appreciable combustibles are more than 35’ away, but easily ignited by sparks.
    - Wall or floor openings within 35’ radius epose combustible material in adjacent areas including concealed spaces in walls for floors.
    - Combutible materials are adjacent to the opposite side of metal partitioioons, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.

5. If requirements 1-4 above cannot be followed, welding and cutting shall not be performed.

B. Hot Work Permit Requirement: See Hot Work Permit Section – Page 122

C. Supervisor or Designee Responsibilities

The supervisor and/or their designee will ensure the following before performing any welding, cutting and/or brazing:

1. Be responsible for the safe handling of the cuttoing or welding equipoment and the safe use of this equipment during the cutting or welding process.
2. Determine the combustible materials and hazardous areas present or likely to be present in the work location.
3. Protect combustibles from ignition by the following:

    - Have th work moved to a location free from dangerous combustibles.
    - If the work cannot be moved, have combustibles moved to a safe distance from the work or have the combustibles properly shielded against ignition.
    - See that cutting and wlding are so scheduled that operations that might expose combustibles to ignition are not started during cutting or welding.

4. Secure authorization for the cutting or welding operations fromteh departmental supervisory representative.
5. Determine that the cutter or welder ensures that conditions are safe b efore preeceding.
6. Determine that fire protection and extinguishing equipment are functional and located in the immediate vicinity of the site.
7. Verify that hot work permits are completed and copies maintained for one year.

D. Training

The supervisor must determine that those performing welding, cutting and brazing operations and their supervisor are properly trained and competent concerning their assigned duties.

E. Welding or Cutting Containers

1. *Used containers*. No welding, cutting or other hnot work shall be performed on used drums, barrels, tanks or other containes until they have been cleaned thoroughly.
2. *Venting and Purging*. All hollow spaces, cavities or containers shall be vented to permit the escape of air or gases before preheating, cutting or welding.

F. Protective Equipment

1. When Working at heights 6’ or greater, proper fall protection system must be used.
2. Helmets or hand shield shall be used during all arc welding/cutting operations. All helpers and attendants shall be provided with proper eye protectino. Goggles or other suitable eye protection shall be used during all gas welding or oxygen cutting operations. Spectacles with side shields and suitable filter lenses are required during gas welding operations on light work, torch brazing, and for inspections. Operators and attendants of resistance welding or brazing shall use transparent face shiels or goggles, depdning on the particular job.

   Specification for eye protection shall meet the test for transmission of radiant energy set forth in ANSI Z87.1-1968, American National Standard Practice for Occupational & Education Eye and Face Protection. Helmets and hand shields shall be made of material which is an insulator for heat and electricity. They shall not be readily flammable and shall be capabale of withstanding sterilization. Helmets and hand shields shall be arranged to protect face, neck, and ears from direct radiant energy from the arc.

3. Special protection from arc welding rays shall be used. Where the work permits, the welder should be enclosed in an individual booth constructed of non-combustible, non-reflective materials.

4. Protective clothing shall be worn in accordance with 1910.132. The degree of protective clothing will vary with size, nature, and location of work being performed.

G. Working in Confined Spaces

Confined space is defined as relatively small or restricted space such as a tank, boiler, pressure vessell, or manhole.

When performing welding or cutting in confined space:

- Ventilation is always a prerequisite.
- Gas cylinders and welding machines will be left outside.
- Heavey portable equipment on wheels will be securely blocked.
- When arc welding is suspended, electrodes will be removed from the holders and the holders located so that accidental contact cannot occur.
- Torch valves shall be closed and fuel-gas and oxygen supply to the torch shut off outside the space whenever the torch is not in use for a substantial period of time.

Three factors in arc and gas welding govern the amount of containation to which welders may be exposed.

- Dimension of space where welding is being done.
- Number of welders

- Possible evolution of hazardous fumes, gases or dust according to metals involved.

H. Ventilation

Mechanical ventilation shall be provuided when wleinding or cutting is performed on metals not listed below. These metals have their own specific allowable concentration/ventilation requirements. Fluorine compounds, Zinc, Lead, Beryllium, Cadmium, Mercury, Cleaning Compounds, Stainless Steels.

General Requirements – Mechanical Ventilation is needed when:

1. Space is less than 10,000
2. Ceiling height in room is less than 16 feet.
3. In confined spaces, or where welding space contains partitions or other. structureal barriers which may obstruct cross ventilation.

I. Cylinder Storage and Use

When gas cylinders are used during welding or cutting operations, employees shall follow all precautionary practices for transporting, storage and labeling.