



# **PROJECT MANAGEMENT PLAN**

**CONSTRUCTION MANAGER AT RISK SERVICES  
FOR THE  
22ND STREET SEWER AUGMENTATION PROJECT**

**SUBMITTED BY:**

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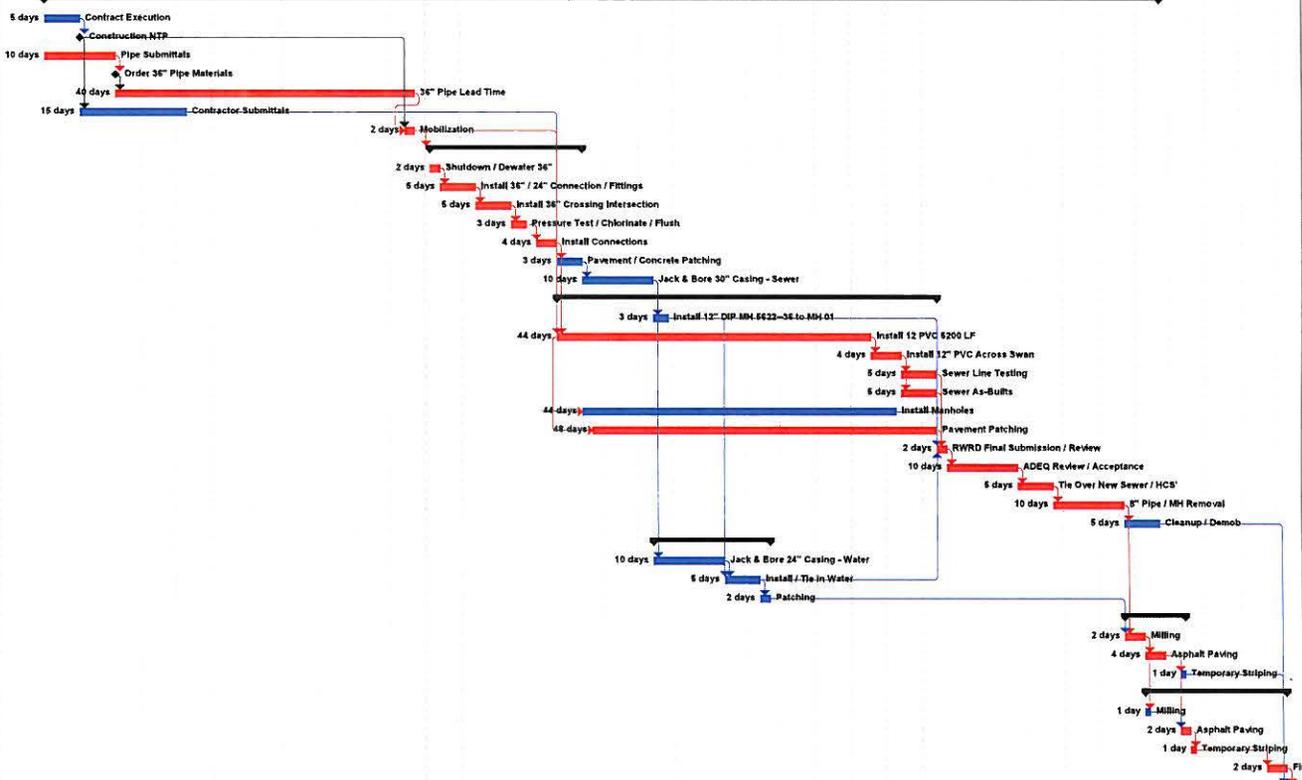
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22nd St Sewer Augmentation - Construction



ID	Task Name	Duration	Start	Finish	Predecessors
1	22nd St Sewer Realignments	170 days	Tue 10/20/15	Mon 6/20/16	
2	CMAR CONSTRUCTION	154 days	Tue 10/20/15	Thu 6/26/16	
3	Contract Execution	5 days	Tue 10/20/15	Mon 10/26/15	
4	Construction NTP	0 days	Mon 10/26/15	Mon 10/26/15	3
5	Pipe Submittals	10 days	Tue 10/20/15	Mon 11/2/15	
6	Order 36" Pipe Materials	0 days	Mon 11/2/15	Mon 11/2/15	5
7	36" Pipe Lead Time	40 days	Tue 11/3/15	Thu 12/31/15	6
8	Contractor Submittals	15 days	Tue 10/27/15	Mon 11/16/15	
9	Mobilization	2 days	Wed 12/30/15	Thu 1/23/16	8, 5 days, 7FS-2
10	Relocate 36" Potable Water	22 days	Mon 1/14/16	Tue 2/2/16	
11	Shutdown / Dewater 36"	2 days	Mon 1/14/16	Tue 1/15/16	
12	Install 36" / 24" Connection / Fittings	5 days	Wed 1/15/16	Tue 1/12/16	11
13	Install 36" Crossing Intersection	5 days	Wed 1/13/16	Tue 1/19/16	12
14	Pressure Test / Chlorinate / Flush	3 days	Wed 1/20/16	Fri 1/22/16	13
15	Install Connections	4 days	Mon 1/25/16	Thu 1/28/16	14
16	Pavement / Concrete Patching	3 days	Fri 1/29/16	Tue 2/2/16	15
17	Jack & Bore 30" Casing - Sewer	10 days	Wed 2/3/16	Tue 2/16/16	16
18	Install Pipe	53 days	Fri 1/29/16	Tue 4/12/16	
19	Install 12" DIP MH 5622-36 to MH 01	3 days	Wed 2/17/16	Fri 2/19/16	18
20	Install 12" PVC 5200 LF	44 days	Fri 1/29/16	Wed 3/30/16	19, 15
21	Install 12" PVC Across Swan	4 days	Thu 3/31/16	Tue 4/5/16	20
22	Sewer Line Testing	5 days	Wed 4/6/16	Tue 4/12/16	21
23	Sewer As-Builts	5 days	Wed 4/6/16	Tue 4/12/16	22
24	Install Manholes	44 days	Wed 2/3/16	Mon 4/12/16	20SS+3 days
25	Pavement Patching	48 days	Fri 2/5/16	Tue 4/12/16	20SS+5 days
26	RWRD Final Submission / Review	2 days	Wed 4/13/16	Thu 4/14/16	24, 25, 23, 22, 19, 33
27	ADEQ Review / Acceptance	10 days	Fri 4/15/16	Thu 4/28/16	26
28	Tie Over New Sewer / HCS	5 days	Fri 4/29/16	Thu 5/5/16	27
29	8" Pipe / MH Removal	10 days	Fri 5/6/16	Thu 5/19/16	28
30	Cleanup / Demob	5 days	Fri 5/20/16	Thu 5/26/16	29
31	Relocate 6" Water	17 days	Wed 2/17/16	Thu 3/10/16	
32	Jack & Bore 24" Casing - Water	10 days	Wed 2/17/16	Tue 3/1/16	31
33	Install / Tie in Water	5 days	Wed 3/2/16	Tue 3/8/16	32, 19
34	Patching	2 days	Wed 3/9/16	Thu 3/10/16	33
35	22nd Street Bryant to Alverson Mill / Overlay	7 days	Fri 5/20/16	Tue 5/31/16	
36	Milling	2 days	Fri 5/20/16	Mon 5/23/16	29, 34
37	Asphalt Paving	4 days	Tue 5/24/16	Fri 5/27/16	36
38	Temporary Striping	1 day	Tue 5/31/16	Tue 5/31/16	37
39	22nd Street Swan to Bryant Mill / Overlay	19 days	Tue 6/24/16	Mon 6/20/16	
40	Milling	1 day	Tue 5/24/16	Tue 5/24/16	38
41	Asphalt Paving	2 days	Tue 5/31/16	Wed 6/1/16	40, 37
42	Temporary Striping	1 day	Thu 6/2/16	Thu 6/2/16	41
43	Final Striping	2 days	Fri 6/17/16	Mon 6/20/16	42FS+10 days
44	Project Completion	0 days	Mon 6/20/16	Mon 6/20/16	38, 30, 43



Project: KE&G 22nd St CMAR Precons  
 Date: Fri 9/25/15

<ul style="list-style-type: none"> <li>█ Task</li> <li>█ Critical Task</li> <li>█ Progress</li> </ul>	<ul style="list-style-type: none"> <li>█ Milestone</li> <li>█ Summary</li> <li>█ Rolled Up Task</li> </ul>	<ul style="list-style-type: none"> <li>◆ Rolled Up Critical Task</li> <li>◆ Rolled Up Milestone</li> <li>◆ Rolled Up Progress</li> </ul>	<ul style="list-style-type: none"> <li>█ Split</li> <li>○ External Task</li> <li>█ Project Summary</li> </ul>	<ul style="list-style-type: none"> <li>..... Group By Summary</li> <li>..... Deadline</li> <li>..... Inactive Milestone</li> </ul>	<ul style="list-style-type: none"> <li>█ Inactive Summary</li> <li>○ Manual Task</li> <li>..... Duration-only</li> </ul>	<ul style="list-style-type: none"> <li>..... Manual Summary Rollup</li> <li>..... Manual Summary</li> <li>..... Start-only</li> </ul>	<ul style="list-style-type: none"> <li>█ Finish-only</li> <li>○ External Task</li> <li>█ External Milestone</li> </ul>
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## **Underground Investigations**

KE&G feels that there are two specific areas where it will become necessary to investigate underground facilities. The first area is at the direct crossing below the 36" potable waterline at E of Swan Rd and the second area is at house connections to the existing 8 inch VCP sewer on the N side of 22<sup>nd</sup>. from Alvernon east to Bryant.

The 36 inch potable waterline is necessary to pothole to ascertain the true elevation and location of joints within the existing pipeline. We feel that if a joint lies directly in the crossing location of the new 12" sewer it would become necessary to depressurize and drain the 36 inch water to provide for a safe and secure crossing and assure success. If there is no joint present within the crossing area, we feel that given the 40 foot pipe sections, depressurization would allow us to achieve success without draining the pipeline.

With new house connection sewers being tied into the new pipeline and the existing 8 inch pipe being removed, we feel that it is necessary to determine the actual elevation and horizontal location of the services to reduce the number of fittings / connections within the new line to reduce future maintenance on those service lines. It is necessary to determine the impact of the existing sewer crossing and gas line crossing of the new house connection sewers.



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### **Alternate Strategies for Fast-Tracking**

KE&G feels that with a relatively small degree of risk, there are options for reducing the project schedule and fast-tracking activities. A proposed alternate strategy would be beginning the installation of the casing beneath the box culvert at the intersection of Alvernon and 22<sup>nd</sup>. street immediately following the Pima County Board of Supervisor Approval. We feel that with the advance procurement of traffic control permits would allow to provide our selected Jack & Bore subcontractor to start Jack & Bore activities while mobilization and final approvals were taking place. As the Jack & Bore is progressing, KE&G would begin from new MH 01 laying pipe east toward Swan Rd. Allowing the pipe installation to take place out of sequence would reduce the project schedule by approximately 4 working days. If unforeseen circumstances are encountered with alignment or grade of the casing, a 30 inch casing would provide enough tolerance to correct alignment or grade issues with the piping.

Another potential for fast tracking construction would be installing the pipeline during daylight hours. Under current City of Tucson Standards traffic control would be allowed on arterial streets between the hours of 9:00 am to 3:00 pm M-F and between 7:00 pm and 6:00 am M-F. KE&G will request from the City of Tucson to allow two lanes of eastbound 22<sup>nd</sup>. street to remain closed during daylight hours. This change to daylight hours would increase productivity by five percent and allow a minimum of two working days be eliminated from the project schedule.

Performing rehabilitation of the existing 10 inch VCP sewer on the south side of 22<sup>nd</sup>. street concurrently with the new pipeline installation is a valuable strategy for fast-tracking the project schedule. By completing these activities utilizing a subcontracted or secondary crew will provide the resources necessary for activities to be completed without additional project General Conditions.



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## **Construction Management Plan**

As the Construction Manager at Risk for this project, KE&G's construction management plan has to be broken down into pre-construction and construction phases in order to get the full range of tasks that KE&G is required to complete.

### Preconstruction

During the pre-construction phase of the project, our role will focus on performance of constructability reviews, value analysis, scheduling scenarios and the identification of alternate approaches. We will facilitate and lead the team through the completion of our tasks, utilizing the Storyboard and Block Scheduling techniques. This can include identification/preparation for permitting, identification of materials, odor control solutions, public relations, and field visits. At any point during the design phase, we have the ability to assume the Owner's risk of the cost of construction and scheduled completion by the submittal of a Guaranteed Maximum Price (GMP) proposal. This ability to assume the financial risk for the completion of the design documents within the parameters of the GMP allows the Owner to release the project for construction prior to design completion. Also during preconstruction is when we will put together the bid packages for the subcontractor selection process. The subcontractor selection is based upon past performance, quality of work, and their ability to perform within our schedule. This practice will help ensure the owner gets a quality finished product completed on time. However, we feel the best way to manage the schedule is to self-perform critical path tasks, including bypass installation and pipe installation. Self-performing gives us the ability to add crews as needed to hit project milestones and keep the project on schedule. Preconstruction also gives us the ability to manage costs by assisting in the design to design-out any constructability issues beforehand, preventing change orders and force account work.

### Construction

Once the project moves to construction our task is deliver a quality project, on time and on budget. Our collaboration in the design will have worked out the majority of constructability issues allowing us to achieve high levels of production and quality, making sure the public is receiving an excellent product for their investment. To begin construction we will bring the utility companies on-site informing the representatives of the project and where we will run into conflicts, and how we plan on spacing out our bluestake requests. The actual construction of the project will begin at the west end of the project at 22<sup>nd</sup> St. and Alvernon Way and will continue east. The jack and bore going under the reinforced concrete box culvert (RCBC) located at the intersection of 22<sup>nd</sup> St. and Alvernon Way is the critical point of the project. We believe it best to have the casing and pipe installed under the RCBC first so that any adjustments that need to be made due to any inaccuracy in the jack and bore can be compensated for upstream of the RCBC. When the jack and bore is complete our crew will work nights installing the 12" sewer. Once a significant amount of pipe is installed a separate crew will come in during the day and pave the trench patch, allowing us to keep minimal sections of the road closed at a time and helping to expedite the project. Approximately 500'-1000' of the westbound left and center lanes on 22<sup>nd</sup> St. will be closed at a time to allow for enough construction room. When the 12" pipe and associated manholes have been installed and approved by ADEQ, KE&G will tie into the existing sewer system. To accomplish the tie-in approximately 1665' of HDPE bypass pipe will



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be installed. In addition to the new pipe and manholes being installed, the existing 8" sewer pipe going from Bryant Ave to Alvernon on the north side of 22<sup>nd</sup> St. will be removed and abandoned. The services currently tying into the 8" pipe will be tied into the new 12" pipe and stub-out service pipes will be installed at the vacant lots along 22<sup>nd</sup> St. for future development. The existing 10" sewer pipe running from Swan Rd to Alvernon Way will also have several repairs made including: UV repairs, point repairs, and manhole rehabilitation or replacement. As the project is ongoing the schedule will be tracked and updated in addition to the tracking of the field quality, progress and associated costs on a daily basis. In order to control costs during construction, daily costs will be calculated to ensure that the different tasks are running at or below budget. KE&G also has weekly cost reviews in-house to see if there's any possible personnel or construction method changes we can arrange to make the different construction tasks more cost-effective. In addition the Project Manager will create a monthly job forecast to project how the overall job outlook is. The Project Manager will also update the schedule weekly and distribute to the other Team members. As construction is progressing KE&G will control the schedule by addressing long-lead time materials early, self-performing pipe and bypass installation, and by holding subcontractors accountable to meet project milestones.



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## **Permitting Strategy**

Before construction begins on the sewer line KE&G will determine which permits will need to be already in place and which will need to be phased along during the construction process. Permits that have long durations, such as PDEQ Fugitive Dust Permits (one year), will be approved before any equipment even shows up on-site. Other permits such as Right-Of-Way (ROW) and Traffic Control (TC) permits will need to be evaluated as the project progresses. ROW and TC permits will be in place for the areas KE&G will be starting on prior to construction activities, but additional permits or renewals will need to be applied for as KE&G gets to other areas of construction. Making sure these permits are in place and accounted for is the responsibility of the Field Engineer. Some of the different permits that will be needed are:

- ADEQ Construction Authorization
- ADEQ Discharge Authorization
- PDEQ Fugitive Dust Permit
- City of Tucson Right-Of-Way
- PCRWRD Public Sewer Construction
- Traffic Control

# **KE&G**

# **SAFETY MANUAL**



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# Table of Contents



## SAFETY PROGRAM

Welcome to KE&G. Your health and safety are of primary concern to the management of KE&G. The Safety Department has various approaches to safety and loss control that will affect your employment with KE&G.

- 1.0 Company Safety Program** **Pg. 1-9**  
Copies of the company safety program are available in every project office or from the Safety Manager. It covers Safety Organization, Safety Training and Motivation, Employee Protective Equipment, First Aid and Medical Treatment, and Accident/Incident Investigation and Reporting and various other programs.
- 2.0 Substance Abuse Program** **Pg. 10-16**  
Drug and alcohol abuse is a very serious problem. It has an accumulating effect on both the economic health of the company as well as the personal safety and health of our employees. KE&G prohibits the use of illegal drugs and alcohol or any controlled substance that has not been prescribed by medical professionals for the employee's specific use, on company time or on company property (including the use of company vehicles outside working hours) and job sites. Possession, use of, or being in a condition where your ability to work safely is limited in any way by the previous use of any of the above is grounds for immediate disciplinary action, including dismissal. A complete copy of this program is included herein and is available at any project office or from the Safety Manager.
- 3.0 Safety Procedures Handbook** **Pg. 17-30**  
This is a summary of KE&G safety procedures which is given to every new employee. A copy is included herein.
- 4.0 Hazard Communication Program** **Pg. 31-40**  
It is our commitment that potential hazards and hazard control measures for chemicals used by this company are understood by all employees. A copy of this program is available at all project offices and from the Safety Manager.
- 5.0 Excavation and Trenching Program** **Pg. 41-54**  
This program pertains to all open excavations made in the earth's surface. Excavations are also defined to include trenches. Each employee in an excavation shall be protected from cave-in by an adequate protective system designed in accordance with OSHA Evacuation Standard 29 CFR 1926.650-652. A copy of this program is available at all project offices and from the Safety Manager.
- 6.0 Fall Protection Program** **Pg. 55-60**  
This program sets forth requirements for employees to utilize fall protection systems/devices and conforms to criteria set forth by OSHA 29 CFR Part 1926, subpart M.
- 7.0 Lock-Out/Tag-Out Program** **Pg. 61-68**  
This program is a plan for safe maintenance of machinery and electrical equipment, including a detailed procedure for use during maintenance.
- 8.0 Confined Space Entry Program** **Pg. 69-78**  
This program prescribes the minimum standards for entry into confined spaces which are defined as follows: Spaces with limited means of access or egress, not designed for normal habitation, but are large enough to perform work.

<b>9.0</b>	<b><u>Respiratory Protection Program</u></b>	<b>Pg. 79-82</b>
	This program establishes the minimum requirements for the use of respiratory protective equipment, including respirator selection, medical evaluation, fit testing, instruction and training, use, maintenance and the physical requirements of the users.	
<b>10.0</b>	<b><u>Crane and Suspended Personnel Platform Procedure</u></b>	<b>Pg. 83-90</b>
	This program sets forth the minimum requirements for the use of cranes and suspended personnel platforms in accordance with OSHA regulations.	
<b>11.0</b>	<b><u>Bloodborne Pathogens Program</u></b>	<b>Pg. 91-98</b>
	This program provides an overview of the OSHA standard and informs the KE&G employee's of the risk of occupational exposure to Bloodborne Pathogens and how to reduce these risks.	
<b>12.0</b>	<b><u>Assured Equipment Grounding Conductor Program</u></b>	<b>Pg. 99-104</b>
	This program provides a procedure for KE&G personnel to describe the requirements to assure the installation and maintenance of equipment grounding conductors for temporary wiring on construction sites in accordance with OSHA Standards for construction.	
<b>13.0</b>	<b><u>Arizona Blue Stake Program</u></b>	<b>Pg. 105-108</b>
	This program provides a procedure for KE&G personnel to activate the process of the one-call notification system. This system is designed to assist excavators in notifying underground facility owners prior to the excavation.	
<b>14.0</b>	<b><u>KE&amp;G Forms</u></b>	<b>Pg. 109-120</b>
	This section contains the forms most frequently used by KE&G employees.	

**All of these programs will affect you during your stay with KE&G. Read and understand them. We, at KE&G are very serious about safety and loss control.**

# 1.0 Safety Program





## 1.0 Safety Program



# SAFETY POLICY

It is the belief of KE&G 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/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), in an effort to eliminate injuries to employees who come under this firm's jurisdiction.

Sincerely,

Christopher Albright  
President  
KE&G CONSTRUCTION, INC.

## **I. SAFETY ORGANIZATION**

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.

- A. Project Manager
- B. Project Superintendent
- C. Safety Manager
- D. Project Foreman
- E. Workers

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 discharge 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 regulatory safety violation.
- Impose penalties for safety violations pursuant to the regulatory progressive discipline program.

### **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.
- Instruct the Foremen that safe practices are to be followed and maintained throughout the job.
- Inform the foremen that they are required to direct and instruct workers 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.
- 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 pertaining to safety.

### **C. SAFETY MANAGER DUTIES AND RESPONSIBILITIES:**

- Provide a means to ensure compliance with the safety program.
- Work closely with all company personnel to ensure full compliance with policies and programs.
- 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.
- Review all accidents/incidents and injuries with the superintendents and foremen.
- File reports in a timely manner. See that corrective action is taken immediately.
- Be familiar with all laws pertaining to safety.
- Make regular visits to job sites to conduct safety inspections and file appropriate reports.
- Meet, as required, with government and insurance representatives and safety inspectors to assure compliance with all applicable federal and state safety standards.

### **D. PROJECT FOREMEN DUTIES AND RESPONSIBILITIES:**

- See that the entire safety program is carried out at the work level.
- See that the workers commit no unsafe practices.
- Make every attempt to eliminate unsafe conditions.

## 1.0 Safety Program



- Determine whether the necessary protective equipment is on hand and used properly.
- Instruct all workers in safe procedures and job safety requirements and enforce compliance.
- Discuss safety by personal contact with workers 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 and near misses. See that the causes are corrected immediately.
- Be familiar with all laws pertaining to safety.

### E. ALL WORKERS RESPONSIBILITIES:

- Work according to good safety practices as they are posted, instructed and discussed.
- Refrain from performing any unsafe act, which may endanger the worker or co-workers.
- Use all safety devices provided for personal protection.
- Report any unsafe condition(s) or action(s) to a supervisor immediately.
- Assume the worker's share of the responsibility for thoughtless or deliberate acts causing injury to the worker or co-workers.
- Recognize the worker's responsibility to the family to be a safe worker.

## II. SAFETY TRAINING AND MOTIVATION

- A. All employees prior to commencing work for KE&G will be given an initial safety orientation by the **Superintendent or Safety Manager** as a means of becoming familiar with the company safety requirements and program. Each employee will be encouraged to check with the **site superintendent** as to the required **personal protective equipment and hazards on this particular site**. **The employee will be advised of the importance of reporting any injury or accidents/incidents and to acquire first aid immediately. Any unsafe conditions should be reported to the supervisor without hesitation.** A record of attendance ensuring the employee has received the initial orientation will be required for each new employee.
- B. Meetings between the **Project Superintendent and Safety Manager** will be held at regular intervals and as often as necessary to discuss project safety and observations on past safety issues.
- C. Each company employee will receive an opportunity for training in regularly scheduled safety meetings and through review of pertinent safety literature as well as opportunity to attend special safety training classes. **Weekly Tool Box safety meetings are mandatory** and will be held at the beginning of the first shift at each work location. **After any employee injury a critique of the incident will be discussed at the next weekly toolbox safety meeting.**
- D. **The Safety Manager and Job Superintendent** will review past accidents/incidents and ways of avoiding the same will be discussed. Any hazardous situations anticipated for future work will be discussed as a means 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. Owner's representatives are welcome at all safety meetings.
- E. 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.
- F. All employees will be alerted to identify potential safety hazards on the job and to report those conditions to their supervisors.

## III. ENFORCEMENT AND DISCIPLINE

- A. Any employee who disregards the information presented during the initial safety orientation or during safety meetings and violates the safety rules and regulations will be subject to discharge.

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

#### **IV. EMPLOYEE PROTECTIVE EQUIPMENT**

- A. It will be the responsibility of the Project Superintendent to ensure that all employees have the required protective equipment for use on each project.
- B. Hard hats and high visibility vests or authorized appropriate safety clothing will be worn at all times on job sites. Work boots with safety toes, in good condition, will be worn at all times. Safety glasses and work gloves will be worn.
- C. Earplugs will be made available as needed. These will be required during the operation of all machinery and pneumatic equipment.
- 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. Portable light plants will be used when it is not practical to use stationary floodlights. All night lighting structures will be properly grounded with metal guards attached to minimize breakage.

#### **V. PERSONAL HYGIENE AND REFRESHMENT**

- A. Portable rest rooms will be provided at each job site.
- B. Potable drinking water will be available to all personnel. Water will be served from containers with faucets. These water containers will be covered at all times to ensure proper sanitary conditions. Paper cups with reinforced edges must be located next to the water containers.

#### **VI. PROTECTION OF THE PUBLIC**

- A. The public will be protected from physical harm insofar as possible by the use of warning signs and signals.
- B. Construction and warning signs will be located as directed by the owner's representative and in a manner that is in compliance with federal, state and city safety regulations.

#### **VII. FIRST AID AND MEDICAL TREATMENT**

- A. Emergency first aid treatment will be available at all times. First aid supplies will be available at all job sites. One or more qualified individuals with 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. The Safety Manager will maintain accurate records regarding first aid treatment provided to employees.

#### **VIII. ACCIDENT/INCIDENT INVESTIGATION AND REPORTING**

- A. The most immediate Supervisor and Safety Manager will investigate all accidents/incidents. 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 is subject to dismissal. Safety meetings 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.

## 1.0 Safety Program



- 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. The Project Superintendent will submit the necessary reports to the Safety Manager no later than 24 hours after the accident/incident occurs (*see sample Accident/Incident Report on pages 90-91*). All accidents/incidents will be reported to the main office as soon as practical.
- C. All accident/incident reports will be reviewed by the Project Superintendent and will require his signature. The Safety Manager will also review these reports.
- D. Accident/incident reporting will be based upon the specific requirements of the government. Appropriate accident/incident reports will be provided on the following:
  - Disabling injury
  - Permanent impairment
  - Death
  - Injury to public persons and/or employees

*\*Employers Report of Industrial Industries shall be completed in all cases of employee injury (see sample report on page 93)*

  - Damage to Government Property
  - Fire Damage
  - Damage to private property
  - Damage to contractor equipment

### IX. SPECIFIC JOB HAZARDS

- A. All tools and equipment will be inspected prior to being placed into use and on a daily basis thereafter. Defective tools and equipment will be taken out of service, replaced or repaired, and re-inspected before being returned to service.
- B. When required, a qualified signal man will be provided by the Project Superintendent to signal equipment operators of personnel working nearby, and for the protection of ground personnel.
- C. All persons on job sites will be required to wear hard hats, safety glasses, work boots with safety toes and high visibility vests, or authorized appropriate safety clothing which will be furnished by the company.
- D. 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.
- E. All obstructions or hazards that may cause interference with construction operations will be removed prior to the commencement of work.
- F. 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 prior to burning operations.

### X. 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.
- B. Danger signs will be placed at hazardous locations throughout the job site.
- C. Approved scaffolds, in accordance with current safety standards, will be constructed and utilized in areas where it is necessary for employees to work above ground level. **Full body harnesses will be required where there is no scaffold or handrail.**

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

**XI. SUBCONTRACTOR PARTICIPATION**

- A. Any subcontractor engaged in work will be required to abide by all of the safety stipulations of this plan. They will be required to conform to the same contract requirements in performance of their work as the prime contractor.
- B. All subcontractors shall recognize their responsibility in ensuring compliance by their personnel with federal and state safety and health regulations. All subcontractors shall cooperate to the fullest possible extent to ensure coordination and correlation of safety related activities concerning all personnel and respective projects.

**XII. FIRE AND SAFETY**

- A. KE&G will conform to all appropriate federal, state, and Fire Marshall Regulations pertaining to safety equipment, personnel and fire safety.
- B. Smoking will be permitted in designated areas and at least 100 feet from flammable materials.

**XIII. EQUIPMENT INSPECTION AND TESTS**

- A. Daily inspection for compliance with safety measures will be made by the equipment operators, maintenance mechanic and the jobsite foreman. Inspections will be conducted and recorded at the jobsite prior to operation to ensure that all equipment is in a safe operating condition.
- B. The Project Superintendent shall be responsible for ensuring that all equipment operators have completed and documented the required physical examinations and testing prior to commencing work. (*see Daily Equipment Checklist Repair Order on page 89*)

**XIV. HOUSEKEEPING**

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

**XV. FIRE PROTECTION AND PREVENTION**

- A. Approved and certified fire extinguishers will be placed in the equipment repair and fuel service areas. They will also be maintained in the field office and storage areas.
- B. Gasoline or any other liquid that has a flash point of 100 degrees and above will not be used in lieu of approved cleaning fluids.
- C. 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 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 combustible liquids. Berms or containment units will be provided around fuel tanks to minimize spillage and leak damage to the environment. All fuel tank installations will be inspected and approved for location and safety.

**XVI. CONSTRUCTION EQUIPMENT**

- A. No construction equipment will be placed in operation until such time as it is inspected and approved for use.

## 1.0 Safety Program



- B. Items such as steel cables, operating mechanisms, tracks, tires, etc., will be inspected daily by either the operator and/or other qualified/competent person. Equipment shall be operated in such a manner that it does not endanger the safety of others.
- C. Riding on loads, hooks, hammers, buckets, trucks, moving equipment or material hoists are strictly prohibited.
- D. All equipment operators will be required to wear seat belts when operating or moving all company equipment and vehicles as required by **OSHA 29CFR Part 1926.602**.
- E. All equipment left unattended at night, adjacent to a highway in normal 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.

### XVII. 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 – 5100 S. Alvernon Way, Tucson, AZ (520-748-0188)
- KE&G Safety Manager – 5100 S. Alvernon Way, Tucson, AZ (520-468-9257) (Mobile)

### XVIII. MODIFICATIONS AND REVISIONS

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

### XIX. PENALTIES

- A. KE&G employees are subject to the following penalties for safety violations occurring within a 2 year period.
  - 1st violation – Written Warning (*see sample Employee Warning Report on page 87*)
  - 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 a 6 month period:
  - 1st violation – Written Warning
  - 2nd violation - \$50.00 fine
  - 3rd violation - \$100.00 fine
  - 4th violation - \$1,000 fine and possible removal from work area or job site



# 2.0 Substance Abuse





## 1.0 Safety Program



# SUBSTANCE ABUSE PROGRAM

### PROGRAM:

Alcohol and drug abuse is a very serious problem. It has a cumulating effect on both the economic health of the company and the personal safety and health of our employees, being all employee positions within KE&G are safety sensitive in order to provide a safer environment for KE&G. KE&G prohibits any employee from the use of alcohol, illegal drugs or any controlled drug that has not been prescribed by a doctor for his or her specific use, on company time or on company property (including the use of company vehicles outside working hours) and job sites. Possession, use of or being in a condition where your ability to work safely is limited in any way by the previous use of any of the above is grounds for immediate disciplinary action, up to and including termination.

When there is knowledge or reasonable suspicion to suspect that an employee has violated the above program, KE&G reserves the right to require any employee to appear at a medical facility of our choice for a blood test and/or urinalysis to determine the presence of alcohol or drugs in his or her system. Effective January 1, 2008 KE&G has established a policy of random or chance basis, unannounced testing for all employees. This screening will be on company time, at company expense and will be mandatory. KE&G will, in its sole discretion, determine and may at any time change the requirements, extent and frequency of random testing. Additionally, any employee involved in an on-the-job accident/incident or an accident/incident while driving a company vehicle will be tested.

Circumstances which would make such test appropriate include, but are not limited to: exhibiting erratic behavior normally associated with persons under the influence of alcohol or drugs, involvement in any work related incidents where alcohol/drug abuse is suspected to be a contributing factor, observed using alcohol, drugs or possession of, and reports from reliable and credible sources that the employee has violated this policy. Moreover, involvement in any on-the-job accident/incident or collision while driving a company vehicle will require testing within 24 hours of the incident.

Refusal to cooperate under this program will be considered testing positive and will carry the appropriate disciplinary action, up to and including termination.

**An employee who voluntarily admits a problem and requests assistance with an alcohol or drug rehabilitation program prior to KE&G identifying an alcohol or drug problem on the job will be granted a leave of absence (without pay, if earned vacation or sick leave hours are used up) to participate in an employee assistance program. Any employee, who 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 prior to the company identifying an alcohol or drug problem on the job. Employees, who have completed a rehabilitation program and returned to work, will be subject to random testing for a period of two years. **At its option, KE&G may, pay for all, part or none of the cost of the rehabilitation program.**

### TESTING:

KE&G will test specifically and randomly.

**Specific tests** may be performed at the time of employment and if there is reasonable suspicion that an employee is using drugs or alcohol affecting that employee's work performance on the job. Tests will be performed immediately after an accident/incident or injury while working.

**Random tests**, in addition to an unannounced chance basis, may be performed at any time at the decision of a company officer. However, CDL drivers random testing is mandated by 49 CFR, Part 40 Federal DOT Regulation and the company will comply with that rule. 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.

### **AUTHORITY TO TEST:**

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.
2. If a decision to test is made, a request for testing can be authorized by a General Superintendent, Manager, Supervisor or Office Manager.
3. Once the test has been authorized, the employee must be under the direct control of a company supervisor. The employee must be taken to an approved testing facility and the supervisor must remain in visual contact with the employee until turned over to the approved clinic.
4. Upon completion of the test, the supervisor shall drive the employee back to the job site and the employee shall leave the job site until results are confirmed. This may take the remainder of the working day.

**NOTE:** No prior approval from a General Superintendent, Manager, Supervisor or Office Manager is required if the employee is involved in an on- the-job accident/incident. Continuous visual contact by a supervisor will be required until turned over to the approved clinic.

### **RANDOM TESTING**

Random alcohol and drug testing, in addition to the unannounced and chance basis, shall be conducted at any time company management desires in order to assure a drug and alcohol free workplace. The tests may include any or all crafts at any work site.

Random testing for CDL drivers will follow KE&G and Federal guidelines:

A designated medical service provider of the company will be responsible for testing at least **100%** of the covered work force during any 12 month period. Selection will occur based on an arbitrary selection method utilized by the medical provider. Employees may be notified with only an hour or so in advance of the request for testing. The project manager or other designated individual will be notified by the testing provider in advance. The name of the employee to be tested shall not be released to anyone other than the employee and manager and then only with 1-2 hours prior.

### **NEGATIVE TEST RESULTS:**

After testing has been completed and if the employee's test results are negative, the employee may return to full work status and is paid for the remaining portion of the day when he or she was tested.

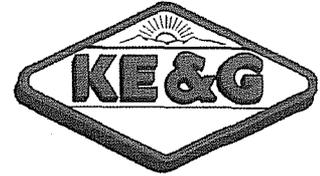
### **POSITIVE TEST RESULTS:**

After testing has been completed and the suspect employee is found to be positive for alcohol or drugs in his or her system, the employee will be immediately suspended from the time of the test without pay. Upon request of the employee, an alternative test or testing method may be performed at **the employee's expense**. The company Safety Manager will contact the employee after all positive test results and the employee may contest or question results at that time.

After a management review, the employee will either be terminated or placed on unpaid suspension for an indefinite period of time. The type of action taken will depend upon the facts of any particular case. If an employee is suspended for an indefinite period of time, he or she must enter a rehabilitation program and comply with the terms of the program in order 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 rehire 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.

KE&G may, at its option, pay for all, part or none of the cost of the rehabilitation program. This will be determined on a case by case basis jointly determined by the Safety Manager, the supervisor and an officer of the company.

## 1.0 Safety Program



### **TEST REFUSAL:**

If an employee refuses to submit to an examination, that employee will be immediately suspended from work without pay and given an opportunity to speak with the company Safety Manager as soon as reasonably possible. The employee is expected to explain why he or she should not be discharged for refusal to submit to testing or examination.

### **NOTICE OF DRUG VIOLATION:**

Employees that have 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.





## 3.0 Safety Procedures





## 3.0 Safety Procedures



# SAFETY PROCEDURES

### TOPICS

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

When company requirements conflict with Federal, State, or Local regulations, the more stringent must be followed.

We will comply and enforce all OSHA regulations at our work sites. Employees are expected to report all unsafe conditions.

#### **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 prevent 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.
7. ALL INJURIES, no matter how slight, must be reported to your foreman.

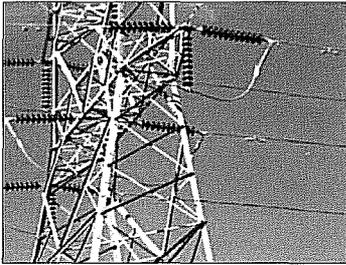
#### **C. HOUSEKEEPING**

1. Housekeeping is the first law of accident/incident prevention on construction projects and shall be the concern of all superintendents and foremen.
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 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 work sites shall be kept clear of obstruction or trip/fall hazards.

#### **D. SCAFFOLDS**

1. Training:
  - All KE&G employees working with scaffolds, will be properly trained prior to use. Training documentaion will be maintained in the safety manager's office.
  - Scaffolding training will involve familiarizatio with fall hazards, electrical hazards and falling objects, proper use of and capacity of scaffolds.
  - Employees showing lack of knowledge on scaffolds, improper use of scaffolds, will be retrained as directed by the supervisor, and the safety manager.
2. General:
  - All scaffolding shall be thoroughly checked by the Superintendent or Competent Person , both before and after erection. Subsequent safety inspections shall be made daily and after any scaffolding has been altered or relocated.
  - Scaffolding found defective during inspections will be tagged out of service.

## 3.0 Safety Procedures



- When work is being performed above a scaffold, the scaffold shall be fitted with overhead protection.
  - No scaffold platform shall be narrower than the width of three 10 inch planks.
  - Install all planked or staged areas over 6 feet in height with 42 inch high guardrails, mid-rails and toeboards 3.5 inches in height.
  - Power lines near scaffolds are dangerous, use caution and consult the power service company for advice. **NO WORK CLOSER THAN 10 FEET.**
    - Do not overload scaffolds.
- Do not use ladders or makeshift devices on top of scaffolds to increase the height.
  - **Planking:**
    - i. Use only lumber that is properly inspected and graded as scaffold planking.
    - ii. Planking shall have at least 12 inches overlap and extend 6 inches beyond center of support, or be cleated at both ends to prevent sliding off supports.
    - iii. Secure plank to scaffold when necessary.
3. **Tubular Steel Scaffolds:**
- Provide adequate sills for scaffold posts and use base plates.
  - Use adjusting screws instead of blocking to adjust to uneven grade conditions.
  - Plumb and level all scaffolds as the erection proceeds. Do not force braces to fit. Level the scaffold until proper fit can be made easily.
  - Fasten all braces securely.
  - Do not climb across braces.
  - On wall scaffolds, place and maintain anchors securely between structure and scaffold at least every 30 feet of length and every 26 feet of height.
  - Freestanding scaffold towers must be restrained from tipping by guying or other means.
4. **Rolling Scaffolds:**
- The following additional rules apply:
- Do not ride rolling scaffolds.
  - Secure all materials and equipment on platform before moving scaffold.
  - Caster brakes must be applied at all times, when scaffolds are not being moved.
  - Do not attempt to move a rolling scaffold without sufficient help. Watch out for holes in floor and overhead obstructions.
  - Standard guardrails, mid-rails and toe boards will be used.
  - Use horizontal diagonal bracing near the bottom, top and at intermediate levels of 30 feet.
  - Platforms will be tightly planked.
  - The working platform height of a rolling scaffold must not exceed four times the smallest base dimension unless guyed or otherwise stabilized.

### **E. 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 unstable or soft material, 5 feet or more in depth, shall be shored, sheeted, braced, sloped or otherwise supported by means of sufficient strength to protect the employees working within them.

3. 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 5 foot level may be sloped to preclude collapse, but shall not be steeper than a 1 foot rise to each 1/2 foot horizontal. When the outside diameter of a pipe is greater than 6 feet, a bench of 4 foot minimum shall be sound and free from large or loose rocks, and shall be designed and installed so as to be effective to the bottom of the excavation. 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 so as 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 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 or steps, shall be provided and located so as 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 kickouts. Portable trench boxes or sliding trench shields may be used for protection in lieu 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 in lieu 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.

#### **F. 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 a fire extinguisher. Employee training will be conducted annually, documentaion will be maintained by the safety manager for a period of 5 years. Fire extinguisher training will be provided by the employer.
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 combustibile 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, fire barrels, sand pails, hose lines, etc., shall be kept readily accessible and visible.
7. Ventilation must be adequate to prevent the accumulation of flammable vapors where 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 painting is done.

#### **G. MOBILE EQUIPMENT**

1. Do not ride on running boards or stand up in/on moving vehicles.
2. Don't get on or off equipment while it is in motion.
3. Stay clear of moving equipment whenever there is danger from swinging booms, crane cabs, suspended loads, etc.

## 3.0 Safety Procedures



4. Do not walk or work under a suspended load or hoisting operations.
5. Use a tag line to guide a suspended load.
6. Do not ride the ball, hook or load on any crane or derrick.
7. 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.
8. Do not move winch trucks unless loads suspended from winch lines are secured to prevent swinging.
9. All hooks must be moused unless they have a built in safety lock.
10. Cranes, derricks, winch trucks or any equipment are never to be operated within **10 foot** reach of power lines. Assume all wires are hot.
11. All power lines must be barricaded or flagged 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 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.

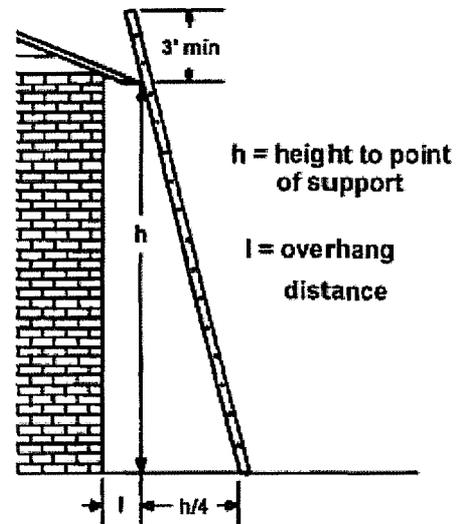
### **H. MATERIAL HANDLING & STORAGE**

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, ie. 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. Step back the layers and cross key all bags at least every 10 bags high when stacking.
5. 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 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.

### **I. POWER TOOLS(and HAND)**

1. Provisions shall be made for the grounding of all fixed and portable electrical tools and equipment.

2. All hand/power tools shall be maintained in safe operating conditions. Hand/power tools found defective will be removed out of service until repaired, or replaced.
3. 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. All tools with machine guarding will remain in place while in use at all times.
4. Personal protective equipment required for hand/power tools will be utilized. This will include employees assisting other employees utilizing hand/power tools.
5. The saw table of all radial saws shall be wide enough to ensure that the saw blades cannot be pulled beyond the edge of the table. If this is not practical, a stop should be fitted to the arm to limit the travel of the cutting head.
6. All power tools, both portable and fixed and electrical cords shall be checked daily before use to insure proper operating conditions.



#### **J. 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 or other approved face and eye protection.

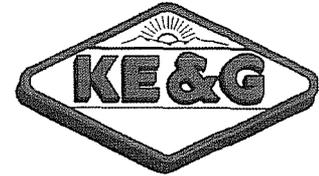
#### **K. TEMPORARY WIRING**

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 workers 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 three wire twist lock 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.

#### **L. LADDERS**

1. All ladders in use shall be inspected before each use.
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 be withdrawn from 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.

### 3.0 Safety Procedures



10. Manufacturer's information label must remain on the ladder, ensuring load capacity for the ladder in use is strictly adhered to, will be taken out of service if missing.
11. Ladders will be utilized for it's intened purpose, utilizing proper safe work practices at all times.
12. Double cleat ladders over 24 feet in length shall not be used.

#### **M. ROPES, CABLES, WEB STRAPS & RIGGING**

1. All workers handling wire rope shall wear gloves.
2. Tag-lines will be utilized at ALL TIMES.
3. Rigging equipment shall not be loaded in excess of 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 rope and web slings, rigging equipment shall be inspected prior to each use and as necessary.
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 which otherwise will casuse 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 anytime, 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 moused.
14. When a hook has been bent from overloading, it will be destroyed. A new hook shall be used.

#### **N. CONCRETE FORMING, REINFORCING AND POURING**

1. All workers 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, insure that it is properly guyed 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. He must be in a position to be clearly seen by the truck driver and be able to see the entire area where the truck is backing.
6. Wash concrete spots 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.

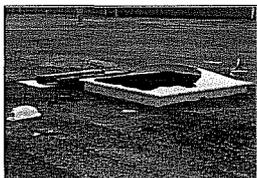
## **O. PERSONAL PROTECTIVE EQUIPMENT**

1. Personal protective equipment (PPE) training will be provided to all KE&G employees during their safety orientation.
2. Training will be documented and shall be maintained in the Safety Mgrs. office.  
When new tasks have changed, or when employees show lack of use, improper use, or not trained properly to utilize PPE, retraining will be conducted as needed.
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. However, on all projects, the following shall be the minimum:
  4. Safety glasses, a full face shield or goggles shall be worn by workers who are engaged in chipping, grinding or performing any operations where they are exposed to eye and face injury hazards.
  5. During welding, cutting and brazing operations, approved respirators, goggles, face masks, shields and helmets suitable to the type of work will be worn by workers engaged in or watching the work.
  6. Protective screens will be placed around welding operations to protect others from eye injury.
  7. Hard hats will be worn properly on head, safety glasses and appropriate safety apparel/hi-vis vests shall be worn on all jobs by all employees, subcontractors and visitors.
  8. PPE requiring proper fit such as respirators, will be instructed and fitted by the safety manager. This will include physical health assessments prior to respirator fit-tests.
  9. PPE will be maintained by the employees, ppe items found defective and damaged will be discarded and replaced as necessary.
  10. All PPE provided and used will be maintained in a sanitary and relabel condition. PPE found unservicable will be discarded.
  11. Employee-owned PPE will not be allowed.
  12. The supervisor shall ensure the wearing of gloves, ear plugs and safety toed shoes as needed.
  13. The supervisor shall be responsible for enforcing the use of protective equipment and determining, with guidance from the Safety Manager, when special equipment, such as safety belts and respirators are needed.



## **P. FLOOR OPENINGS AND STAIRWAYS**

1. At all unprotected floor openings, elevator shafts and stairways, provision shall be made for barriers and toeboards. 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 so as to provide maximum protection at all times.
2. Floor holes into which persons may accidentally fall 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.



*Unprotected floor opening*

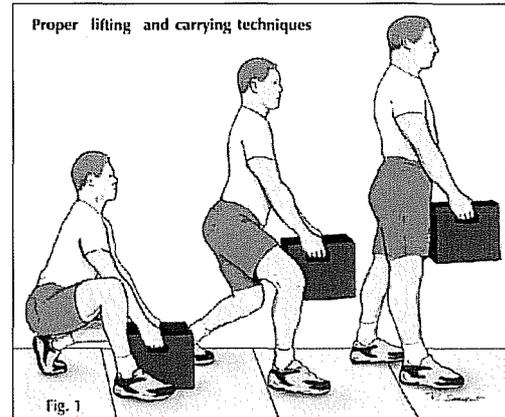
### 3.0 Safety Procedures



4. Temporary handrails shall be installed on all stairs during initial stair erection.

#### Q. LIFTING

1. If the load is too heavy, get help.
2. Wear gloves to protect your hands.
3. Be sure you have a 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.
- 11.



Proper lifting and carrying techniques

#### R. 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 Red Cross, 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 adequate supply of items, which will be periodically inventoried by supervisors, safety manager, and CINTAS.
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 project site. Eyewash/showers in the shop will be readily accessible, periodically inspected for proper operation, and documented.
5. Telephone Numbers. All emergency telephone numbers shall be conspicuously posted near the phone (i.e., "911", ambulance, doctor, fire department, paramedics, etc.).

##### APPLYING FIRST AID

1. Prevent loss of blood. Most external bleeding can be controlled by applying pressure directly over the wound. The use of a tourniquet in case of severe bleeding from a limb is rarely justified.
2. Maintain or restore breathing. Seconds count! Start CPR immediately.
3. Prevent further injury. If the victim is injured in hazardous area, try to move him out of danger. In cases of electrical shock, shut off the electrical current before moving the victim. **DO NOT** move a person unless it is absolutely necessary.
4. Prevent shock. The signs of shock are: cold and clammy skin, perspiration on the forehead, chills, nausea and shallow breathing. Keep the victim quiet and lying down with the feet elevated except in cases of head injuries or broken bones.

#### S. 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. Damaged tools, frayed or defective electric cords and unguarded machinery must never be used.
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 prior to cleaning, repairing or making adjustments 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 which 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.



