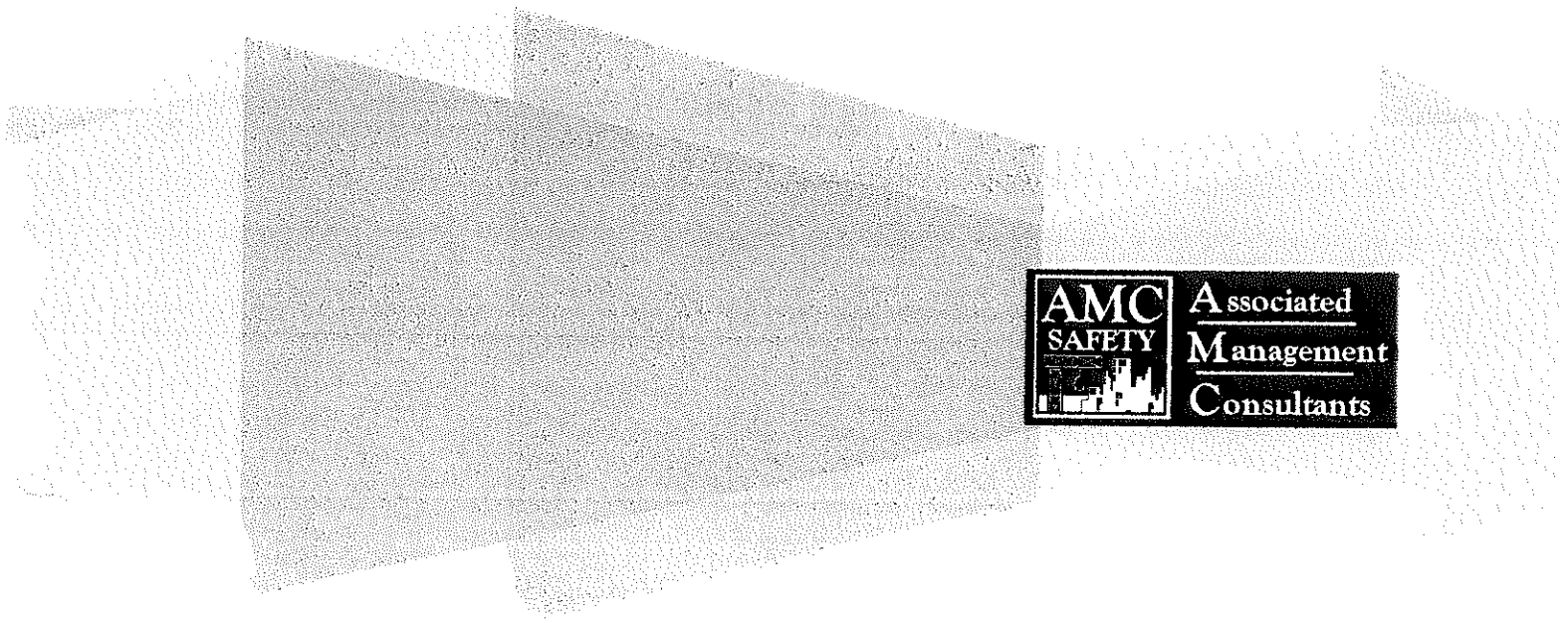
HAMPTON CRANE SERVICE, INC.

SAFETY & HEALTH MANUAL/ PLAN

HARZARDOUS COMMUNICATION PROGRAM

GHS

GLOBAL HARMONIZATION SYSTEMS



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INTRODUCTION

Objective is to emphasize that protecting people and property are of paramount importance to the success of The Project. 'The Project' is defined as any location referenced in the construction documents. Incidents at The Project can be controlled and prevented through safe work practices. The General Contractor and Subcontractors of any tier and each of their employees are responsible for safety at The Project.

Active participation by the General Contractor and Subcontractors of any tier in all Project safety and loss prevention programs is mandatory. The General Contractor and all Subcontractors of any tier must demonstrate to their employees, their complete support and continuing involvement in all safety and loss prevention programs.

DEFINITIONS

CONSTRUCTION CONTRACT: The written agreement between OWNER and General Contractor or between General Contractor and their prime Subcontractors and their Subcontractors of any tier.

CONTRACTOR(S): Any individual, firm or corporation undertaking construction or other services under a contract with either, General Contractor or Subcontractor of any tier to furnish labor, services, materials and/or equipment, and/or to perform operations at or from The Project site.

CONTRACTOR (Designated) SAFETY COORDINATOR: The individual assigned by the Contractor or

Subcontractors to perform the onsite safety duties.

DRUG TESTING: Includes five panel testing and alcohol testing.
EMPLOYER: Any insured performing work under contract at job site.
GENERAL CONTRACTOR: The individual, firm, or corporation entering into contract with Owner.
JOB SITE: The premises owned by _____ as described in the Contract between_____ and/or General Contractor and/or area and way contiguous thereto, including any approved work sites set up by _____ for use by an insured exclusively for storage or staging of material or equipment.
OFF-SITE: Any premises *outside* the fenced property of the job site.
ON-SITE: The premises *within* the fenced property of the job site.
PROJECT: The construction of The Project, as further described in the Contract between _____ and General Contractor.
PROJECT MANAGER (TBD): The individual assigned by the General Contractor with overall project responsibility.
PROJECT SAFETY COORDINATOR (TBD): The individual assigned by the General Contractor that supervises all of the Subcontractors to ensure safety at the job site.
PROJECT SAFETY PROGRAM: The manual that identifies the requirements of The Project's safety and loss prevention program as established by General Contractor.
PROJECT SUPERINTENDENT (TBD): The individual assigned by the General Contractor who supervises all Subcontractors at the job site.
SUBCONTRACTOR: Any individual, firm, or corporation entering into a contract with contractor.

CONTRACTOR'S SAFETY AND LOSS PREVENTION PROGRAM

The General Contractor shall ensure that each Subcontractors bid includes the cost to maintain a safety and loss prevention program that meets or exceeds the requirements captained in The Project Safety Program.
The General Contractor will have a Project Safety Coordinator. The individual will be a technical advisor to the General Contractor's project management team and will be responsible for monitoring Subcontractors' compliance with all safety and loss prevention programs. The Project Safety Coordinator who has the authorization to stop any work that may stem from non-compliance with safety procedures.
Each Subcontractor will be solely responsible for carrying out their safety and loss prevention program. Each General Contractor, Contractor and Subcontractor shall designate an on-site Safety Coordinator who has the responsibility for safety. The General Contractor, Contractor and Subcontractor Safety Coordinator is responsible for directly overseeing the Subcontractors employees to ensure that the Subcontractors programs and actions adhere to and comply with the minimum safety standards as required by federal, state, and local codes and regulations, and The Project Safety Program.

CONTRACTOR'S SAFETY AND LOSS PREVENTION PROGRAM ELEMENTS

While it is the responsibility of each individual to work safely, it is ultimately the responsibility of the General Contractor to see that all safety and health rules and practices are followed and enforced.
Safety should never be sacrificed for production and must be considered an integral part of the planning process. Our goal and your goal, as a contractor or subcontractor on The Project is to eliminate incidents. Each contractor and all subcontractor of every tier are charged with the responsibility for developing, adhering to, and enforcing their safety and loss prevention programs in accordance with the Safety Program.

ORIENTATIONS

Each employee of all General Contractors and Subcontractors will be required to attend a safety orientation before being allowed to work on the job site.

SAFETY EMPHASIS POINTS

It is important that all General Contractors and Subcontractors follow the safety guidelines listed in The Project Safety Program and all federal, state, and local regulations and ordinances. However, some of the most critical of these for various trade groups have been identified and listed in Form 14. These are the safety-related activities that The Project Safety Coordinator will be monitoring most closely.
The Safety Emphasis Points for each trade group are listed. There is some overlap because there are some items that are pertinent to all personal working on the jobsite. The Project Safety Coordinator and safety personnel from the insurance broker and insurance carrier will be using these Safety Emphasis Points in the format shown in Form 14 to evaluate safety on the job site.
When these personnel walk through the site, they will note the number of occasions they see the activity to be performed and the number of times the activity was performed according to the safety emphasis point being measured. For example, if there were ten workers in an area and seven of them

had hardhats, that would be marked seven "Yes" and three "No". The score would be 70. Scores will be posted in various areas for workers to see how the site is performing. If there was no opportunity to observe a particular point, it will be marked, "Not Observed".
CONTRACTORS are encouraged to congratulate their employees when they receive a high score and use the scores in conjunction with any safety incentive programs they may be running on the site.

SELF-INSPECTIONS

General Contractors and Subcontractors will make regular inspections of work areas on at least a daily basis. The General Contractor, Contractor and Subcontractor Safety Coordinator or the Superintendent! Fore person may perform these inspections. Whenever possible, corrections should be made on-the-spot. Those deficiencies which cannot be corrected immediately should be noted in writing for immediate follow-up by The Project Safety Coordinator.
The Purpose is to strengthen the safety program and prevent losses. It is also a time to point out physical hazards (i.e. unprotected floor opening, etc.) and unsafe acts (i.e. personal protective equipment, etc.) that can be improved or corrected before an accident occurs. It is an ideal time to complement those who are doing their jobs safely and well. Inspection tours also allow the CONTRACTOR to review job progress, equipment manpower usage and housekeeping. The benefits may extend beyond pure safety issues.

SAFETY RESPONSIBILITIES

It is imperative that all parties on the JOB SITE work together as a team. Each party must fully understand his or her specific safety responsibilities and perform accordingly. All parties are expected to meet the letter and intent of the responsibilities listed in these Project Safety Program.
General Contractors and Subcontractors, when on the JOB SITE, will be responsible and accountable to the PROJECT SAFETY COORDINATOR on-site. CONTRACTORS will comply with the safety standards established by the OWNER, The Project Safety Program and applicable federal, state and local regulations.

1. The General Contractor requires all Subcontractors to provide a safe, healthy workplace for personnel involved in the project, the general public, property, equipment and the environment. The policy and programs documented in these guidelines have been developed for that purpose. **The GENERAL CONTRACTOR requires each SUBCONTRACTOR and their employees working on The Project to provide proof of training per trade(s) and to follow all OSHA Safety Standards.**
2. The PROJECT SAFETY COORDINATOR will advise the GC who will be responsible for enforcing CONTRACTOR compliance with these guidelines. THE PROJECT SAFETY COORDINATOR will serve as an advisor for safety management-related activities on-site. These responsibilities may include:
    a. Requiring that each CONTRACTOR submit a written safety program which describes Job Specific Hazard Control and identifies a Safety Coordinator and enforcement policy. Use of the Project Safety Program satisfies compliance of submitting a written safety manual.
    b. Reviewing CONTRACTOR'S safety program.
    c. Participating in safety meeting with CONTRACTOR Safety Coordinators.
    d. Cooperating with the GC and the Safety Compliance Officers.

e. Monitoring each CONTRACTOR'S activities for compliance with applicable federal, state and local regulations and The Project Safety Program.
f. Ensuring that CONTRACTOR'S provide all new employees with a proper safety orientation.
g. Requiring each CONTRACTOR to perform Incident Analysis and submit their findings via written reports.
h. Assist CONTRACTORS with Incident Analysis involving mishaps of a relatively serious nature.
i. Communicating information to CONTRACTORS regarding unusual hazards that may arise during the course of the project.
j. Instructing CONTRACTORS as to specific areas of the project which should be avoided because of existing hazards or potential interference with work currently in progress.
k. Reporting unsafe conditions or practices observed to the OWNER Authority is given to "stop work" in imminent danger cases.
l. Monitoring injury record keeping as required by the federal, state or OSHA regulations and insurance carrier needs.
m. Verifying that adequate first-aid supplies and personnel are available.
n. Assuring that an emergency/contingency plan has been developed and that designated personnel are properly trained. Such planning includes emergency evacuation of the JOB SITE and coordination with public medical assistance.
o. Prepare a written spill and leak contingency plan and a written waste disposal plan for hazardous and non-hazardous material. These plans shall identify the CONTRACTOR representative in charge of these plans.
p. Requiring all SUBCONTRACTORS to maintain project injury experience records which are better than the Bureau of Labor Statistics' (BLS) frequency /severity rates for their Standard Industry Classification (SIC) Code. Id a CONTRACTOR of SUBCONTRACTOR fails to meet this requirement, they will be required to submit a written recovery plan to The Project Safety Coordinator describing how they will reduce injuries and illnesses.
q. Requiring all CONTRACTORS and SUBCONTRACTORS to submit a written "*Substance Abuse Program*" which meets the guidelines of the project Substance Abuse Program.

Each GENERAL CONTRACTOR AND SUBCONTRACTOR will have in place, before work begin, a safety program meeting or exceeding The Project Safety Manual. To maintain a uniform safety program, each GENERAL CONTRACTOR *and* SUBCONTRACTOR will conform to the described procedures and **forms in this program.**

Each General Contractor and Subcontractor shall be responsible for complying with and executing the safety, sanitary, fire protection and control and medical requirements prescribed by The Project Safety Program, and federal, state *and* local regulations.

Each General CONTRACTOR, and Subcontractor will designate in writing an on-site Safety Coordinator who will be responsible for the following duties:

1. Each representative will attend or show proof that they have attended the OSHA 30-hour Outreach course. (WITHIN A '3' YEAR TIME PERIOD OF CURRENT DATE)
2. Reviewing and fully understanding the site safety programs.
3. Maintaining a written safety program manual. (Including Haz-Com program)
4. Coordinating medical service availability with The Project Safety Coordinator.
5. Establishing first-aid procedures and coordinating with off-site medical services.
6. Providing documentation of their employees on site who are certified in First-Aid and CPR.
7. Maintaining the safety and first-aid records required by federal, state and local laws and providing these monthly to The Project Safety Coordinator.

8. Conducting and documenting weekly safety meeting with employees on-site.
9. Reviewing weekly safety meeting reports and attendance sheets to ensure that the meetings are effective and being held on a weekly basis.
10. Provide documentation on their on-site Safety Coordinator.
11. Distributing safety and health information to employees on-site.
12. Attending general project safety meetings.
13. Providing consultation on safety issues to employees and Subcontractors on-site.
14. Performing documented follow-up inspection on non-compliance issues.
15. Analyzing and evaluating incidents and preparing incident reports.
16. **Performing on-site safety reviews and critical activities audits.**
17. Documenting that all employees have completed project Safety Orientation Training (completed Form 10, Orientation Documentation).
18. Cooperating with the OWNER representatives, Project Safety Coordinator, government officials, **insurance company representatives and consultants designated by the OWNER.**
19. Ensuring that employees follow all safety rules, including the wearing of appropriate personal protective equipment.
20. Submitting a written recovery plan to The Project Manager if the CONTRACTOR'S or its SUBCONTRACTORS' project accident experience places them lower than the top 40 percent of the Bureau of Labor Statistics' (BLS) frequency/severity rates.
21. Comply with the project spill and leak contingency plan.
22. Submitting a written "Substance Abuse Program."
23. **Submitting the required documentation on their employees per the "Substance Abuse" section this Safety Manual.**

Each SUBCONTRACTOR and SUBS TO CONTRACTOR of all tiers will be responsible for the safety and health of their employees as well as other workers; the protection of equipment, materials and structures, and protection of the general public and environment.
Each SUBCONTRACTOR will designate an on-site Safety Coordinator to act as the safety liaison with the GENERAL CONTRACTOR and Project Safety Coordinator, and maintain safe working practices and conditions. The SUBCONTRACTOR'S Safety Coordinator will be responsible for ensuring that their personnel comply with the Job Safety Guidelines as well as all applicable federal, state and local regulations. The duties of the SUBCONTRACTOR Safety Coordinator include:

1. Implement and maintain the safety program, Haz-Com Program and MSDS files.
2. Understanding established first-aid procedures and coordinating with off-site emergency medical facility services.
3. Maintaining safety and first-aid records.
4. Participating in weekly safety meeting with on-site employees.
5. Distributing safety and health information to on-site employees.
6. Performing on-site safety reviews and critical activities audits.
7. Performing follow-up safety inspections of non-compliance issues.
8. Analysis and evaluation of incidents and preparing incident reports.
9. Accompanying safety and compliance officers on-site.
10. Ensuring that all SUBCONTRACTOR employees have proper safety orientation and training.

EMPLOYEES – ALL CONTRACTORS AND SUBCONTRACTOR employees are responsible for understanding and complying with all safety and health requirements that them on The Project. It is each employee's responsibility to support the employer and the project by providing a safe place to work and protect themselves, all co-workers, and the public from injury or illness.

Each employee will be responsible for reporting identified safety or health hazards on the job to their supervisor or Safety Coordinator. Employees shall also report all incidents occurring on the job which may result in. or have potential for, loss. Employees shall cooperate and assist in the investigation of all incidents. Employees shall cooperate and assist in determining proper safety measures for preventing recurrence.

VENDORS AND VISITORS – THE GENERAL CONTRACTORS SUBCONTRACTORS AND SUBS TO SUBCONTRACTORS are responsible for ensuring that all on-site vendors and visitors follow the established safety procedures in this document.

The OWNER shall post signs accordingly in conspicuous places to notify vendors and visitors of these safety procedures. The CONTRACTORS shall require that all visitors and vendors sign in at the JOB SITE office and provide their name, firm and purpose of visit and time of arrival. CONTRACTORS must require each visitor or vendor to sign out when leaving the JOB SITE. Each vendor and visitor will sign a "General Release Form" (Form 9) before being allowed in the project.

Vendor compliance is the responsibility of the CONTRACTOR coordinating the vendor services. Vendors will provide proper personal protective equipment for their employees and will enforce their use whenever on-site. Vendor non-compliance will not be tolerated. The CONTRACTOR coordinating the vendor service will be responsible for correcting the violation immediately or removing the vendor from the site.

The CONTRACTOR must arrange for visitors to be escorted while on the JOB SITE. The representative appointed to escort visitors will be responsible for explaining the safety program as it applies to visitors. Visitors must be briefed on the potential hazards of the area visited and provided with appropriate person protective equipment. All visitors will be required to wear hard hats and sturdy shoes while on-site. Tennis shoes, sandals, open toe shoes, and high heel shoes are strictly forbidden. Eye protection and/or ear protection must be worn where warranted.

Damages, costs, expenses or other losses caused by a vendor or visitor may be charged back to the CONTRACTOR responsible for bringing the vendor or visitor on-site.

Enforcement of these policies regarding vendors and visitors is the responsibility of the CONTRACTOR.

ENFORCEMENT POLICY

Hampton Crane Service, Inc. will hold its employees, Subcontractors and subs to Subcontractors accountable for complying with the specific provisions and intent of these safety guidelines. Each Subcontractor will be responsible for designating an on-site Safety Coordinator who will be responsible for guideline compliance.

Each SUBCONTRACTOR will advise employees that unsafe acts or conditions will not be tolerated and that violators will be subject to the follow actions:

1. 1st violation- Verbal Warning (documented) with a witness present, advising the offender **of the nature of the violation.**
2. 2nd violation- Written Warning to employee, Foreman and Employer.
3. 3rd violation- Written Warning with 3-Day Suspension.
4. 4th violation or willful disregard to safety guidelines- Written Warning and Removal from and job sites.

IN THE EVENT OF IMMINENT DANGER, WORK SHOULD BE STOPPED IMMEDIATELY.

Should such non-compliance and/or unsafe practices be allowed by any employee, SUBCONTRACTOR or vendor, appropriate action will be taken by Hampton Crane Service, Inc.

HEALTH SERVICES

Injured parties requiring emergency treatment will be treatment will be transported to health facilities in the expeditious manner **including ambulance or paramedic units.**
Each CONTRACTOR must maintain the required OSHA Form 300 Log and First-Aid Log. Both logs shall be available for review by the OWNER, its Consultants, Insurance Carriers and appropriate regulatory authorities. First-Aid kits should be provided by all CONTRACTORS, vendors and other parties on-site. Kits should be kept in offices, vehicles storage or warehouse facilities and other structures erected for the duration of the project.

CONTRACTOR employees designated to provide first-aid (minimum of 2 per Contractor) on The Project are required to be trained in the Bloodbourne Pathogen Standard and cardiopulmonary resuscitation (CPR). Each CONTRACTOR will provide a list of those trained personnel and will post it on the appropriate bulletin board.

ORIENTATION PROGRAM

General Contractor, Contractor and Subcontractor will complete their own orientation program for all employees working at this site, including safety training for general and job-specific operations. In addition, a site orientation will be required. The site orientation will cover the following as a minimum.

1. PERSONAL PROTECTIVE EQUIPMENT

Proper Personal Protective Equipment such as Hard Hats, Eye Protection, Work Style Boots or Shoes, Pants with full leg coverage and Shirts with sleeves at least 4" in length will be required for all employees on the project.

2. SAFETY PROGRAM

The initial orientation will include a review of The Project Safety Program, Safety Emphasis Points and critical activities which apply to the new employees work. The safety philosophy of the OWNER should also be included.

3. HAZARD COMMUNICATION PROGRAM

Employees must be made aware of the OSHA Hazard Communication Standard, the written Hazard Communication Program, the location of the Hazardous Materials Inventory and Material Safety Data Sheets (MSDSs) how to use MSDSs, and specific chemical precautions unique to their jobs.

4. ACCIDENT PREVENTION

All personnel will be trained in the potential hazards involved in their jobs and the appropriate precautions associated with these hazards. This may be followed by a brief tour of their respective work areas; introductions to their foreman, supervisors, and fellow workers: and instructions for their initial work assignment.

5. SUBSTANCE ABUSE POLICY

All personnel must be aware of the "*Substance Abuse and Weapons Policy*" in place.
General Contractor, Contractor and Subcontractor will have implemented a written Substance Abuse Program to provide a safe and healthy workplace for all employees. Substance abuse in the workplace *can* cause accidents and affect job performance. Any person found using, selling or possessing illicit drugs or alcohol in the workplace will be subject to termination. Any employee causing or involved in an incident resulting from substance abuse may be subjected to workers' compensation benefit penalties as stated by the Workers' Compensation Law.
Employees involved in an incident will be required to take a substance abuse test. Employer reserves the right to test employees when reasonable suspicion exists. In case of a "positive" result, a second test will be performed. If a second test is positive, the employee will not be allowed to work on the project.

6. DOCUMENTATION

When the initial orientation is over, the employee should sign and date the "Orientation Documentation Form" (Form 10) to verify that the employee understands the orientation material. A copy should be retained for the individual's personnel file.

REGULATORY INSPECTIONS

1. SCOPE AND APPLICATION

The owner and all General Contractors, Contractors and Subcontractors on the project will comply with all Local, State and Federal regulations during the construction of The Project. It is the intent of all to fully cooperate with compliance officers from any and all such agencies.

2. PROCEDURES

In the event that a compliance officer of any regulatory agency (TOH, OSHA, EPA, etc) arrives on the project, they will be required to check in at the General Contractors offices. They will be treated with respect and courtesy while waiting for The Project Safety Coordinator to be called to meet with them.
If a compliance officer is found in the field unescorted, respectfully request that they proceed to the General Contractors offices and contact The Project Safety Coordinator immediately.
The Project Safety Coordinator will notify any and all contractors on site who need to be involved in inspections or conferences with regulatory inspectors.

Following any regulatory inspection, each contractor who receives a citation will provide a copy of the citation to The Project Safety Coordinator with 24 hours of receipt.

INCIDENT REPORTING PROCEDURES

1. SCOPE AND APPLICATION

This procedure applies to any and all incidents that occur on the project site or as a result of the operations of any contractor working on the project site. Incidents include; injury to personnel working on site; injury to the public; property damage *on* the site; or property damage to the public as a result of operations on the site.

2. PERSONAL INJURY

In the event that any employee working at the site is injured as a result of the activities on site, the contractor's Safety Coordinator shall be notified immediately. The contractors Safety Coordinator will be responsible for assessing the situation and ensuring that initial first aid requirements are met and ensure that proper emergency services have been if needed. *Once* the situation has been assessed The Project Safety Coordinator will be notified of the injury and status.

Within 24 hours of any employee injury, the contractor will provide copies of the First Report of Injury and Supervisors Incident Report, including cause and corrective actions to be initiated, to The Project Safety contractor personnel will cooperate fully with them.

3. PROPERTY DAMAGE

In the event that there is an incident on site that results in damage to property of the owner or any contractor, The Project Safety Coordinator will be notified immediately. The contractor involved will be responsible for the initial analysis of the incident and copies of the Supervisors First Report of Incident will be forwarded to The Project Safety Coordinator within 24 hours of the incident. Contractors will be responsible for filing **claims and reports with the insurance company.**

4. INJURY OR PROPERTY DAMAGE TO THE PUBLIC

In the event that any incident occurs as a result of operations involved in the work on site the contractor involved will immediately make necessary arrangements for emergency services. Once emergency services have been contacted the contractor shall contact The Project Coordinator. The contractor involved will conduct the initial analysis of the incident, but The Project Safety Coordinator and Insurance personnel will be included.

SAFETY AND HEALTH DAMAGE TO THE PUBLIC

1. GENERAL SAFETY RULES

a. All employers shall review each of the rules which their employees are performing for the project.
b. Every new employee will be informed of the safety program. This training will be acknowledged by signing the orientation documentation form.

c. Supervisory personnel shall require all employees working under their jurisdiction to comply with all applicable safety rules.
d. All employees shall assume a fair share of responsibility for their own protection. Personal Protective equipment shall be used where required and maintained in proper condition.
e. Employees shall not engage in practical jokes, horseplay, or the urging of persons to take unnecessary **chances**.
f. Food and Safety Person Protective Equipment and Precautionary will be adhered in food preparation area as required by the Health Department.
g. Employees should not undertake work which they are not properly qualified or equipped to do.
h. Use of intoxicating or unlawful substances by any employee during work hours, including lunch breaks, is forbidden; *any* violation will be sufficient cause for dismissal for the JOB SITE. Employees reporting for work while under the influence of intoxication or unlawful substances shall not be allowed to assume their duties.
i. Employees shall keep all combustible materials properly stored.
j. Employees will abide by all legal, safety and health codes.
k. **Employees shall be aware of their environment and avoid hazardous situations around equipment.**
l. **Supervisory personnel must keep employees aware of their work location.**
m. **Employees should never work alone in an isolated area, unless arrangements have been made for periodic contact with a supervisor.**

2. VEHICLE AND MACHINERY RULES

a. All traffic rules must be followed by each employee when driving on site.
b. Only vehicles covered by Company Auto Insurance will be driven on site.
c. All employees operating company vehicles or machinery shall be properly trained and licensed.
d. Employees are required to observe safety rules and to use adequate safety protective equipment (hearing protection, eye wear, hard hats, respirators, etc.).
e. **All work equipment and machinery will be maintained and operated in a safe condition. Backup alarms on heavy equipment will be maintained in a functional condition.**
f. All driving or operating areas will be kept free of debris, oil, rags, grease, ropes, chains, tools, etc.
g. Equipment shall not be refueled while engine is running. Smoking on or in the vicinity of equipment while it is being refueled is prohibited.
h. All operators and drivers are responsible for securing their loads.
i. Employees shall inspect the area behind any parked vehicle before backing up.
j. Employees shall not board or dismount moving vehicles.
k. All occupants of a vehicle must use seat belts when provided.
l. Loose or frayed clothing shall not be worn around moving machinery or equipment.
m. **Proper traffic control devices must be used when the vehicle is in a position where traffic flow may be inhibited.**
n. Vehicles transporting employees will be equipped with seats and seat belts firmly secured and adequate for the number of employees to be carried.
o. Employees shall not be under the influence of alcohol or drugs.

p. All incidents, injuries or malfunctioning equipment shall be reported immediately to the foreperson/supervisor, and to The Project Safety Coordinator within 12 hours.

HOUSEKEEPING AND MATERIAL STORAGE

Housekeeping is a primary concern for every CONTRACTOR and every employee throughout the project. Good housekeeping tends to minimize fire potential and reduce potential slip and fall injuries. Housekeeping includes removing debris, materials and equipment from the site as needed and ensuring proper storage of materials and equipment.

FLAGGING AND TRAFFIC CONTROL

Flagging and traffic control procedures properly performed during construction operations can contribute to an efficient operation. Standard traffic control measures may be adequate for The Project.
Flagging/signaling procedures may need to be used at times. They should be obeyed as in any conventional traffic pattern.

1. Flag persons understand what the operation involves in order to anticipate traffic demands.
2. Only designated flag persons should be directing traffic, except in emergency situations. They must be alert to traffic conditions and construction operations at all times.
3. Flag persons must never turn their back on traffic.
4. Detours and channeling procedures should be planned and well defined so as to cause no confusion to **drivers.**
5. Flag persons should be equipped with the proper equipment to perform their job. This includes good paddle, flagging vest, hard hat and friendly disposition. They should also give clear and definite signals to control traffic.
6. Flag persons should be firm but courteous at *all* times.

Any infraction of one or more of the above rules can be grounds for immediate dismissal from the JOB SITE.

TOOLBOX SAFETY MEETINGS

Each Subcontractor and SUBS to Subcontractor is required to hold toolbox safety meeting with the entire field staff each week. It is the responsibility of the CONTRACTOR'S Safety Coordinator to conduct and coordinate these meetings. CONTRACTORS not holding safety meetings may attend the safety meetings of another CONTRACTOR, provided that the covered subjects are appropriate for all parties and the CONTRACTOR providing the **training approves such attendance.** Topics will vary from week to week and should cover those areas of greatest concern to the immediate audience. All **site specific incidents and near misses must be covered.**
Attendance should be documented on the "Hazard Analysis Toolbox Safety Training" (Form 11). Special attention should be given to the fact that all attendees much sign in (typed list of attendees is not

acceptable), and that the topic(s) for the meeting must be listed. One copy of the form should be kept in the CONTRACTORS' files, and one copy shall be sent to The Project Safety Coordinator.

SUBSTANCE ABUSE

1. POLICY AND SCOPE

It is the policy of The Project to maintain a safe and healthy work environment for all employees and to promote high quality standards.

a. As a part of this policy, controlled substances (unless prescribed by a physician), illegal drugs and intoxicating beverages are not allowed on the JOB SITE (including parking lots, offices or vehicles).
b. Any employee taking prescribed drugs or over-the-counter drugs which could impair his/her assigned work shall report this fact to his/her supervisor.
c. **The use, sale or possession of alcohol or drugs on the premises, or arriving at or returning at work under the influence, will not be tolerated and will be grounds for immediate removal from the Jobsite.**
d. This policy applies to all project personnel.
e. All General Contractors, Contractors, subcontractors, on any level or tier, must provide H-E-B with the letter listing the names and testing dates of their employees who passed the Drug and Alcohol testing that will be working at the JOB SITE. The letter must be signed by the owner of the company.

2. PRE-EMPLOYMENT SCREENING

GENERAL CONTRACTORS, CONTRACTORS and SUBCONTRACTORS are responsible to ensure that all employees submit to a scientifically valid alcohol and drug testing procedure (minimum 5-panel drug screening). If an employee has passed – drug test and alcohol test within the past 4 months, per their Employer's Substance Abuse Program, the employee will be allowed to work on the JOB SITE (the employee's name and testing dates must be on the letter provided to GC. If not, the employee must submit to the drug and alcohol tests within 5 days of working the JOBSITE. Employees refusing to take the test will not be allowed on the JOB SITE. Positive testing will result in a second confirmation test of the original sample. If the confirmation test is positive, the employee will not be allowed on the JOB SITE.

3. POST ACCIDENT/REASONABLE CAUSE TESTING

Any employee involved in an accident causing person injury, vehicle, equipment, or property damage will be subject to a drug screen. Alcohol testing will be included in this drug screen.
An employee giving project management reasonable cause to believe the employee is under the influence may be asked to take a drug test. Refusal to take the test is grounds for dismissal from the project. Positive testing will result in a second confirmation test of the original sample. If the confirmation test is positive it will be grounds for dismissal or removal from job site and/or project.

4. RANDOM TESTING

All employees are subject to random testing throughout the duration of the project.

5. EMPLOYEE COMMUNICATION

Prospective/current/temporary employee are required to read the project "Substance Abuse Policy" for Training on Drug Free Work Environment and acknowledge that:

a. They have ready and understand the policy.
b. Positive test results are sufficient grounds for removal from the JOB SITE any job site and/or project.
c. The project owner, consultants and safety personnel are held harmless for the confidential use of test **results.**
d. **Test results, positive or negative, will be released to the employer. Employer will provide a list of negative or non-positive results to Project Safe Coordinator.**
e. Should the employee dispute the test finding, another test may be conducted on the original sample at the applicant's expense within 24 hours of being removed from the Project and *any* GC site/project.

WEAPONS/WORKPLACE VIOLENCE

1. POLICY AND SCOPE

Workers on the JOB SITE are expected to display respect toward and cooperation with coworkers and management. Furthermore, workers are to refrain from abusive language, intimidation, threats. Assaults or fighting. No weapons of any type are allowed on the JOB SITE.

2. AGGRESSIVE BEHAVIOR

Workers will be held accountable for aggressive behavior. Workers are required to report all "threatening" behavior to his/her direct supervisor who will then report it to The Project Senior Superintendent. All reports **of aggressive or potentially violent behavior will be investigated and, if verified, appropriate responsive action will be taken.** Such action could include:

a. Monitoring of the situation
b. Taking appropriate disciplinary action, including removal from job site.
c. Consulting with local law enforcement officials.

Construction Safety Guidelines

The following construction-specific safety guidelines contain basic safety rules and specific safety responsibilities for ALL General Contractors, Contractors and Subcontractors and personnel on the project. These safety rules, safety guidelines and safety responsibilities are considered minimum requirements and have been included as part of the contract stipulations.

Hampton Crane Service, Inc. will hold SUBCONTRACTORS accountable for following these safety guidelines and accountable for complying with the specific provisions and intent of these safety guidelines. Non-compliance and/or unsafe practices will not be tolerates and will be treated with

appropriate action by the OWNER. SUBCONTRACTORS will advise their employees of the Enforcement Policy.

These guidelines should be used as a reference for loss prevention issues, and are not intended to replace applicable federal, state or local regulations or industry standards. Due to the project's size, the guidelines cannot possibly address every loss prevention situation. The scope may be exceeded by each CONTRACTOR'S own loss control plan which incorporates appropriate governmental regulations, industry standards, safety professions and prudent loss prevention practices specifically applicable to the CONTRACTOR'S are of specialty. The GC places the highest priority on safe operations throughout the life of The Project. Hampton Crane Service, Inc. has developed these safety guidelines in maintaining a safe and healthy work environment.

Each Subcontractor and SUBS to Subcontractor and level of management is expected to provide a safe and healthy working environment for its employees. Each employee is expected to abide by these safety standards and **safe work practices while employed. A strong team effort is required to maintain a safe work site and protect fellow employees, the general public, property, equipment and the environment.**

HAZARD COMMUNICATION

1. POLICY AND SCOPE

OSHA requires that each employee exposed to potentially hazardous materials be advised of the potential hazards and how to guard against those hazards.

Each CONTRACTOR whose employees are exposed to potentially hazards materials (including fuels, lubricants, form releases, curing compounds, sealants, paints, coatings, etc.) must develop a list of all such materials used on the project; gather the Material Safety Data Sheets (MSDS) for those materials; develop a labeling system for all materials; and train all potentially exposed personnel in the hazards of and controls for **all listed compounds. These steps are outlined in detail in the following material.**

2. PURPOSE

The purpose of this program is to protect employees from hazardous materials in the workplace through proper training, labeling and instruction in emergency situations.

3. PROGRAM

Employee training for this requirement should be documented and retained by the CONTRACTOR.

1. Chemical Inventory & MSDS

Every CONTRACTOR shall be responsible for the development and maintenance of a list of hazardous materials utilized within their project operations and will further be responsible for obtaining and maintaining MSDSs for all such hazardous materials. One copy of said list and of each MSDSs will be forwarded to The Project Safety Coordinator.

Employees shall be allowed access to this information and the specific MSDSs for the materials utilized in their work areas. All questions relating to the program should be directed to The Project Safety Coordinator.

2. Employee Information and Training

All project employees will be given information regarding the requirements of the Hazard Communication Program, the hazardous materials present in their workplace and the physical and health risks of these materials. This requirement may be met most easily by a general training class for all potentially exposed personnel, through orientation sessions for new employees and refreshers during toolbox talks.

The information and training shall also include the following elements:

a) The symptoms of overexposure to specific hazardous materials.
b) How to determine the hazardous presence/release of a material in the workplace.
c) Methods to reduce or prevent the exposure to hazardous materials, such as control procedures, work practices or personal protective equipment.
d) Procedures to follow in the event of an exposure to hazardous materials.
e) The locations of the MSDSs which apply to their workplace and the location of the written Hazard Communication Program.
f) How to review MSDSs to obtain the hazard information for the material, and how to read the label which are required on the chemical containers.

When a new hazardous material is obtained, each employee who could be exposed shall be given the information and training as described above. A copy of the MSDS shall be obtained and distributed to The Project Safety Coordinator prior to actual use of the material. MSDSs shall be available to all employees during each work shift.

3. Container Labeling

The CONTRACTOR'S Safety Coordinator shall verify that all chemical containers received by the CONTRACTOR at the site are clearly labeled as to the contents, the hazards involved and **the name and address of the manufacturer.**
The CONTRACTOR'S Safety Coordinator shall ensure that all secondary containers of **hazardous materials are clearly labeled with the same information as the original container.**

4. **Non-Routine Tasks**

In the event that an employee is assigned a non-routine task, the employee will be given information and training related to the hazardous materials which *may* be encountered in the non-routine task. This will be provided by the first-line foreperson or CONTRACTOR'S Safety Coordinator. This information will include:

a) The potential specific hazards of the material.
b) The controls and protective measures required.
c) The types of personal protective equipment required.

d) How to use the equipment.
e) The nature of other work being performed.

5. **Contractor Information**

The CONTRACTOR'S Safety Coordinator is responsible for providing information on hazardous materials that other CONTRACTOR employees may be exposed to on the JOB SITE and the control precautions required. The information will be disseminated prior to the CONTRACTOR starting work on the JOB SITE.

6. **Audit and Review**

It shall be the CONTRACTOR'S responsibility to review the Hazard Communication Program on at least a *quarterly* basis. The purpose of this review is to revise and update the program to reflect all changes (i.e. purchase, use, storage and handling of hazardous materials) on the site.
It shall further be the responsibility of the CONTRACTOR'S Safety Coordinator to periodically audit procedures in the use of hazardous materials and to institute corrective actions in order to meet the requirements set forth in the MSDSs.

PERSONAL PROTECTIVE EQUIPMENT

1. POLICY AND SCOPE

The use of personal protective equipment for protection from identified hazards will be mandatory under the following conditions:

A) Where required by law
B) Where the work has protection for injury or illness to an employee.

The requirements pertaining to personal protective equipment shall apply to all locations of the project, whether permanent or temporary. It is the CONTRACTOR'S responsibility to provide personal protective equipment and to ensure its proper use wherever necessary.

2. PURPOSE

To reduce the potential for injuries or detrimental effects on health, which are not controllable by engineering **or administrative means, to all employees.**

3. USE REQUIREMENTS

a) Eye and Face Protection
Safety glasses with side shields are to be worn at all times. The use of faces shields is mandatory where there is exposure to a work process that has been identified as a hazard with the potential for injury to the eyes and face. This may include, grinding, chipping, sanding, sandblasting, use of chemicals, etc.

Employees involved in welding operations shall be furnished with filter lenses or plates of at least the **proper shade and number.**
Safety glasses and side shields must conform to the American National Standards Institute (ANSI) Standard Z87.1 for Occupational Eye and Face Protection.

b) Hearing Protection
Whenever engineering or administrative controls fail to reduce sound levels to within OSHA specifications, hearing protection devices must be worn and must conform to all applicable federal, state and local safety and health regulations.

c) Head Protection
Hard hats are required in all construction areas. The head protection devices shall meet the specifications contained in the ANSI Standard Z89.1, Class Band C Requirements for Industrial Head Protection.

Hard hats for the protection of employees exposed to high voltage electrical shock and burns shall meet specifications contained in ANSI Z89.2.

d) Respiratory Protection
Operations that require respiratory protection will comply with applicable OSHA standards.

e) Fall Arrest Systems
Where employees are exposed to falls of 6 feet or greater and no other means of fall protection is available, the use of fall arrest equipment will be required. Fall arrest systems shall consist of a full body harness, dual shock absorbing lanyards (100% TIE OFF) and anchorage. All fall arrest system components shall meet requirements on 1926.500. **Any device actually subjected to loading, other than static testing, shall be immediately removed from service and replaced as an employee safeguard.**
The selection, use and maintenance of the employee safeguard devices shall conform to all applicable federal, state and local safety and health regulations.

f) Foot Protection
Substantial leather work style footwear will be worn by all employees working on the project site (excludes office area). Tennis shoes (or other athletic style), sandals and high heels are specifically prohibited in field work areas.

g) Special Equipment
As stated, the use of personal protective equipment will be deemed mandatory when the hazard cannot be controlled at the source. This shall apply to the use of special protective equipment such as gloves, aprons, sleeves, shoes/boots and hoods. When it has been determined through actual experience, statistical analysis or compliance requirements that the use of special protective equipment is needed to provide the hazard control, the mandatory use requirement shall apply.

h) The mandatory use of personal protective equipment will apply to all visitors.

i) Proper Dress for Work

In all cases, personnel will wear full-length pants and a sleeved shirt or blouse whenever working on the JOB SITE.

CONFINED SPACE ENTRY PROGRAM

1. SCOPE AND APPLICATION

This program covers all employees working on site who may enter confined spaces during the course of work.

2. PURPOSE

This standard establishes requirements for practices and procedures to protect employees from the hazards of entry into permit-required confined spaces (permit spaces).

GENERAL SAFETY PROCEDURES

a) Each CONTRACTOR must establish and maintain an effective confined space entry procedure which complies with OSHA Standard 1910.146. A copy of the confined space entry procedure must be submitted to The Project Safety Coordinator prior to beginning work at the site.

b) All CONTRACTOR employees must be trained to identify confined spaces and know the appropriate **protective measures which must be taken to ensure safe entry and egress. All employees must know** the nature of the hazards involved in confined spaces. All employees must know, understand and **follow the confined space entry procedures. The necessary personal protective equipment for employee entering confined spaces must be provided and used.**

c) CONTRACTOR employees must enforce all provisions of the confined space entry procedures. A confined space entry permit will be provided and used for each entry. Only authorized, competent persons shall evaluate, monitor and approve confined space entry.

3. DEFINITIONS

Confined Space: A space that is large enough that employees can enter and perform assigned work, **and:**

a) Has limited or restricted means of entry or exit. Is not designed for continuous employee occupancy.

A. Hazardous Atmosphere: An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury or acute illness from one or more of the following:

a) **Flammable or explosive atmosphere in excess of 10.0 of the lower flammable limit (LFL) or lower explosive limit (LEL).**

b) Combustible dust concentrations in excess of its LEL.

c) Oxygen content less than 19.5 or greater than 23.5.

d) Exposure above the OSHA PEL (Note- An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury or acute illness due to its health effects is not covered by its Standard).

B. Non-permit confined Space: confined space that does not contain or, with respect to atmospheric hazards have the potential to cause death or serious physical harm.

C. Permit-Required Confined Space: confined space that has one of the following characteristics:
   a) **Contains or has the potential to contain a hazardous atmosphere.**
   b) Contains material that has the potential to engulf an entrant.
   c) **Has inwardly converging walls or floor that taper to a smaller cross section that could trap or asphyxiate an entrant.**
   d) Contains any other recognized serious safety or health hazards.

4. GENERAL REQUIREMENTS

The OSHA Standards Require Employers to:

a) Identify Permit-Confined Spaces (See the Standards, 29 CFR 1910.146 and ANSI Z 117.1-1989).
b) Inform employees that the workplace contains permit spaces.
c) Develop a written permit program and make it available to employees.
d) Establish alternative procedures for entry into non-permit confined spaces.
e) Establish requirements for employers that have confined spaces but choose not to enter.
f) Establish employer responsibilities to CONTRACTORS.

5. PERMIT-REQUIRED CONFINED SPACE PROGRAM

This paragraph establishes the required elements of the written program required by the Standard. **Your program should:**

a) **Prevent unauthorized entry.**
b) Identify and evaluate the hazards of the space.
c) Specify acceptable entry conditions.
d) Describe procedures for isolating the space.
e) **Explain how to eliminate or control atmospheric hazards.**
f) Protect entrants from external hazards.
g) Verify that conditions in space remain acceptable throughout entry.
h) Ensure that the space atmosphere is tested before and during entry (See Appendix A).
i) **Ensure that employees have, and know how to maintain, the following equipment:**
   1. Testing and monitoring equipment.
   2. Ventilation equipment.
   3. **Communication Equipment.**
   4. Personal Protective Equipment.
   5. Lighting Equipment.
   6. Banners and Shields
   7. Ladders
   8. Rescue and emergency equipment
   9. Any other equipment necessary

j) Establish duties of attendant for entry.
k) Designate authorized entrants, attendants, entry supervisors and atmosphere tester.
l) Identify the duties of entrants, attendants, entry supervisors and atmosphere tester.
   1. **Emergency Procedures**
   2. Multiple entities – Specify emergency procedures for attendant monitoring more than **one space.**

m) **Provide training for all employees involved in confined space entry as specified in the Standard.**
n) **Provide procedures for rescue of entrants from confined spaces.**

o) Prevent unauthorized personnel for attempting a rescue.
p) Provide procedure for the preparation, issuance, use and cancellation of entry permits.
q) Coordinate entries involving more than one employer.
r) Review program whenever there is reason to believe it may not adequately protect employees.
s) Review the confined space program annually (using canceled permits) and revise the program as **required.**

6. PERMIT SYSTEM

This paragraph establishes requirements for the permit system.

1. Before entry into a permit space the employer shall:
   a) Prepare an entry permit.
   b) Have the entry supervisor sign the permit indicating authorization to enter.
   c) Make permit available to all entrants at time of entry.
2. The employer is also required to:
   a) Limit the duration of the entry to time shown on permit.
   b) Terminate entry when work has been completed or when conditions not allowed by the permit arise.
   c) Note problem encountered during the entry on the permit.
   d) Retain cancelled entry permits for at least one year.

7. ENTRY PERMIT

This paragraph establishes the requirements for a written permit that conforms to OSHA requirements.

A. The Entry Permit shall identify:
   a) Permit space to be entered.
   b) Purpose of entry.
   c) Date and authorized duration of entry.
   d) Authorized entrants and attendants.
   e) **Name of entry supervisor.**
   f) **Signature of authorizing entry supervisor.**
   g) Hazards of the permit space.
   h) Methods used to control hazards.
   i) Acceptable entry conditions.
   j) **Initial and periodic air monitoring results.**
   k) **Rescue and emergency services to be contacted and how to contact.**
   l) **Communication procedure to be used to maintain contact between entrants and attendants.**
   m) Equipment to be provided for compliance with this standard.
   n) Problems encountered during entry.
   o) Any other additional permits issued (such as hot work in the space).
   p) Any other information necessary to ensure employee safety.

8. TRAINING

A. Employers shall provide training so that all employees whose work is regulated by this Standard acquire the understanding, knowledge and skills necessary for the safe performance of their duties.
B. Training shall be provided:
   a) Before employee is assigned duties under this Standard.
   b) Before there is a change in assigned duties.
   c) **Whenever there is a change in space hazards.**
   d) **Whenever employer believers entry procedures are not being followed or that employees are unaware of the procedures.**
C. Training shall establish employee proficiency in assigned duties.
D. Employers shall certify that employees' required training has been accomplished. The training Certification shall include:
   a) Employee's name.
   b) Signature of Trainer.
   c) Date of Training.

9. DUTIES OF AUTHORIZED ENTRANTS

A. Employers shall ensure that all entrants:
   a) Know that hazards faced during entry.
   b) Properly use the equipment required.
   c) Maintain communication with the attendant.
   d) Alert the attendants to new hazards or changes in the space.
   e) Exit from the space when ordered or when dangerous conditions are recognized.

10. DUTIES OF ATTENDANTS

A. Employers shall ensure that each attendant:
   a) Knows the hazards faced during entry.
   b) **Is aware of behavioral effects that exposure to space hazards may have on entrants.**
   c) Maintains the count and identifies everyone in the permit space at all times.
   d) Remains outside the permit space. Attendants may be allowed entry for rescue purposes if specified in permit program and if they have been properly trained and equipped for rescue.
   e) **Communicates with entrants as necessary to monitor entrant status and to alert entrants to evacuate the space if necessary.**
   f) **Monitors activities inside and outside space to determine if it is safe for entrants to remain in space.**
   g) Orders evacuation of space when appropriate.
   h) **Summons rescue and other emergency services when entrants may need assistance to escape from the space.**
   i) **Warns unauthorized persons to stay away from or exit the permit space.**
   j) **Informs entrants and entrant supervisors when unauthorized personnel have entered the space.**
   k) **Performs non-entry rescues as specified in rescue procedures.**
   l) Performs no duties that may interfere with primary duty of monitoring and protecting the authorized entrants.

11. DUTIES OF ENTRY SUPERVISORS

A. Employers shall ensure that each entry supervisor:
   a) Knows the hazards faced during entry.
   b) Verifies that entry permit is complete and conditions are acceptable for entry before signing permit.
   c) Terminates entry when work has been completed or when conditions not allowed by the permit arise.
   d) Verifies availability of rescue services.
   e) Removes unauthorized individuals who enter or attempt to enter permit space.
   f) Periodically determines that acceptable entry conditions are maintained.

LOCK OUT / TAG OUT PROGRAM

1. POLICY AND SCOPE

A job specific lock out and tag out program will be implemented by all CONTRACTORS and vendors on the JOB SITE.

2. PURPOSE

The purpose of this lock out tag out program is to provide guidance in the control of hazardous energy during **servicing and maintenance of machinery, equipment or processes before work begins. For further detail,** refer to OSHA CFR 1926.417 & 1910.147.

3. GENERAL REQUIREMENTS

Each CONTRACTOR will be responsible for implementation of the lockout tagout program. It shall be the responsibility of the CONTRACTOR'S supervisor controlling the work being performed to determine if the system poses any hazard to the personnel servicing or working on the system. If a hazard is recognized, the supervisor is responsible for implementing the lock out of the system.

Lockout devices shall be substantial enough to prevent removal without use of excessive force or unusual techniques, such as with the use of belt cutters or other metal cutting tools.

Tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means shall be of a non-reusable type, attachable by hand, **self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all environment tolerant nylon cable tie.**

A lockout device is one which, when attached to a circuit switch or a mechanical control device with a padlock, will effectively lock out the equipment in the off position. The device shall have the capability of accommodating several locks.

Each CONTRACTOR will appoint a Tagging Supervisor to ensure the implementation of the procedures. **The supervisor will review the involved circuits, equipment and area to make sure all items are neutralized as required.** The supervisor will also ensure that danger tags are completed and signed and that they are attached to the item being locked out. The supervisor will ensure that all locks and tags used by craft personnel are strictly controlled and an adequate log is maintained of all lockout tagout issues. Equipment used to accomplish the locking out will consist of padlocks, lock holding devices, danger tags and danger **signs.**

Only tamper-proof, hardened steel locks will be used. No two locks should be of the same key number or pattern, and the patterns of the key shall be checked to verify each is unique and operates in only one lock.

4. EMPLOYEE TRAINING

Training will be provided by each CONTRACTOR to ensure that the purpose and function of the energy control program is understood by all their employees.

The training program will include:

a) **Recognition of hazardous energy sources.**
b) Type and magnitude of energy sources in the workplace.
c) Methods used for energy control.
d) Limitations of "danger" tags.
e) Shift and personnel changes.

Retraining will be provided whenever there is a change in job assignment or machinery equipment, **or** process that *may* present a new hazard. Training will be documented for each employee attending with records maintained. Attendees, dates and trainer will be completed in the file.

5. SUPERVISOR

The Supervisor will inspect the involved circuits, equipment and area and review the following to determine **what procedures are necessary to safely isolate the affected area:**

a) All electrical equipment involved with the process.
b) All moving parts.
c) Pneumatic, hydraulic or other fluid lines in the operation.
d) **Mechanisms that are under spring tensions or compression.**
e) Suspended mechanisms or parts that normally cycle by gravity.

All lockout equipment not in use is to be returned to the Supervisor *and* stored in a secure area safe from tampering.

6. PROCEDURE

a) **When a Foreman is assigned work requiring shutdown of equipment or isolation of the component, he** shall coordinate that shutdown/isolation with their Supervisor. A padlock, lockout device and danger tag will be issued by the Supervisor. The lockout key will be completed by the Supervisor before issuing the tagout and lock. The craft supervisor will be given the danger tags and lockout device for installation of the system. The Supervisor will keep the key(s) until the work is completed and verified that it is safe to release the tagout.

b) The control power shall be turned off and a lockout device installed through the safety holes in the handle of the electrical control. Mechanical valves shall be secured by means of chains or other **mechanical means and locked to ensure they remain in a safe condition.**

c) AN individual padlock is to be placed on the controlling device by each craft who is working on the circuit or system. A "Danger – Do Not Operate" tag will then be completed by the foreperson and their **Supervisor, and attached to the lock or switch. This tag will contain the foreperson's signature and Supervisor's signature.**

d) **Other crews or crafts who are working on the circuit, or are working equipment powered by the circuit tagged out, shall obtain their own lockout for that circuit before proceeding with their assigned work.**
UNDER NO CIRCUMSTANCE SHALL ANY INDIVIDUAL WORK UNDER ANOTHER INDIVIDUAL'S SAFETY LOCK. NO ONE IS TO REMOVE A SAFETY TAG EXCEPT THE AUTHORITY THAT ORIGINALLY PLACED THE TAG.

e) Drain, purge and/or bleed off any hydraulic, pneumatic or other fluids affecting the area under construction to eliminate pressure, contents or both. Valves controlling these lines will then be locked in the required position.

f) Mechanisms under spring tension or compression shall be blocked, clamped or otherwise secured in position.

g) Before working on a circuit, it must be checked with an approved testing or volt meter to make certain circuits have been properly de-energized.

h) The padlock and tag can be removed inly by the person who signed and placed the tag and lockout. In the event that the person is absent from the JOB SITE and cannot be recalled to remove the lock, the craft supervisor, after physically ensuring that all other individuals are clear of the system and that safe **conditions have been established, may remove the tags and lockout switch.**

7. ENERGIZED ELECTRICAL WORK

Some electrical work must be done on energized circuits. Recognizing this, the Contractor's Superintendent **may receive permission to do some hot work on energized electrical circuits. In order to receive this permission,** the Superintendent will request, in writing, to _____ for approval prior to work beginning. Such a request must include the following information: (Refer to page 41 for further detail on Energized Electrical Work)

a) Who is requesting the approval?
b) **Description of work.**
c) Reason work cannot be performed under lockout rules.
d) Description of safety measured to be used.
e) List instructions to be given to workers.
f) List names of all workers involved.
g) Name of Superintendent who will directly supervise the work.
h) Signature of the Safety Coordinator Project Manager.

MANUAL MATERIAL HANDLING

Whenever possible, materials should be moved, stacked or lifted by mechanical means.

When manual materials handling methods are to be used, proper lifting methods will be practiced. It will be the primary responsibility of the CONTRACTOR'S Safety Coordinator and the individual supervisor/foreman to instruct employees in the proper methods for lifting various materials. Special handling instructions may be necessary for certain types of materials.

At least two people should be involved when handling extremely long, awkward or odd sized materials. If more than two people are required to make the life, mechanical means should be utilized. Personnel should be encouraged to seek assistance when necessary.

Proper protective equipment will be utilized during manual material handling activities. Whenever metal or lumber are handled, proper gloves will be worn. In the case of handling sack of line or cement, or while moving dusty materials it may be necessary to provide additional eye and/or respiratory protection.

Passageways will be kept dear and in good repair to allow for safe movement of employees and equipment. Particular attention will be given to proper storage/stacking methods. Materials will be piled or stacked in a stable manner so that they will not fall on employees or equipment. Materials stored in lay down areas will be stored in an organized, logical manner, readily accessible and easily removed when needed.

EMERGENCY PROCEDURES

1. POLICY AND SCOPE

These procedures are designed to provide general guidance for emergencies arising in the course of the project. These procedures do not address all potential emergency situations: rather, they are directed to major emergencies within the general confines of the JOB SITE. By the way of definition, a disaster or catastrophic situation could include (and is not limited to) any of the following: tornado, storm, flood, cave-in, mudslide, snow/ice storm, fire/explosion, structural collapse, hazardous waste spill or other occurrence which severely impacts the project.

2. PROCEDURES

A. Medical Emergency – The Project Safety Coordinator will be contacted immediately in the event of any emergency. In the event The Project Safety Coordinator cannot be reached, contact the **Senior Superintendent.**
The JOB SITE will contact emergency agencies and other outside medical facilities.

B. Tornado Warnings- In the event of a tornado, personnel shall be notified of the potential danger and should be moved to structurally protected areas. Personnel should be kept away from windows and glass during a tornado. Personnel should avoid waste piles or stacks of building materials as points of safe refuge.

C. Chemical Release – The same notification will be used if there should be a substantial chemical release. Where possible, personnel downwind of the release will be alerted to the danger by telephone or message. Once the fire department and The Project Safety Coordinator have been alerted, CONTRACTOR personnel and equipment will be employed to control the spill if possible. Personnel must have the proper personal protective equipment and knowledge of the involved chemical before attempting to control the spill. If fire or explosion hazards are present,

control will be left to trained professionals, Where feasible, absorbent materials should be used to contain the spill.

3. RESPONSIBILITIES

Subcontractors will be responsible for training supervisory personnel within this program and for providing all possible assistance during the emergency situation. All General Contractors, Contractors and Subcontractors are also responsible for designating an assembly area away **from the construction and free of other exposures to use during an emergency. Care should be taken to reassess the assembly site as construction progresses so that a viable site is also available.** General Contractors, Contractors and Subcontractors have the responsibility to inform their employees of this site and of the procedure to be followed. Supervisory personnel will complete a roll call immediately upon assembly to account for all personnel. Personnel not accounted for should be reported to the **responding agencies.**

All contact with the media will be conducted by the GC.

The JOB SITE office will maintain a "weather radio" to monitor the continuous weather band in the Construction Project area. All CONTRACTORS must be notified when an alert is given.

EMERGENCY EVACUATION

1. POLICY AND SCOPE

Emergency evacuation procedures during the event of a fire or other emergency will assist in the safe evacuation of all workers at the site. Workers should be aware of the audible and visible signals that will be **used to signify an emergency at their location. Workers should become aware of at least two means of exit from any area.** Subcontractors must train employees in the applicable evacuation procedures for the JOB SITE.

Upon activation of the emergency evacuation notification, or employees becoming aware of a fire or other emergency within the immediate area, the following steps should be followed:

a) If employee is first to become aware of emergency, employees should notify fellow workers within the **immediate area and immediate supervisor.**

b) Workers should exit the structure or excavation using stairways or ladders and proceed to pre-designated assembly areas. Foremen and supervisors should take an immediate roll call to account for all employees. If an employee is missing, the emergency crew should be immediately notified upon its **arrival.**

c) If an evacuation is required due to hazardous material spill or release, employees will be instructed to move upwind from the release. Employees should assemble as far from spill as possible.

d) The fire department and emergency response team should be immediately notified of any emergency situation. **Even small tires of spills can develop into large losses.**

CRANES AND RIGGING SAFETY

1. POLICY AND SCOPE

This section pertains to cranes and rigging and other types of hoisting equipment. CONTRACTORS are responsible for safe operation of all such equipment and for compliance with all applicable federal, state and local codes.

2. CONTRACTOR RESPONBILITIES

The CONTRACTOR is responsible for properly maintaining equipment according to the manufacturer's recommendations. Such equipment (including leased or rented) shall meet all federal, state and local regulations with respect to safe operation. A maintenance history must be maintained and provided upon request. All machinery will be inspected on a daily basis (preferably at the beginning of each shift) by the operator and the oiler (as appropriate), and all deficiencies properly documented. Deficiencies will be corrected on the spot prior to equipment operation. An annual inspection of the hoisting machinery must be made by a competent person. The inspection will be properly documented by the CONTRACTOR for future reference. **Proper certification of each crane and lifting device will be maintained on-site by the CONTRACTOR.**

The swing radius at the rear of the crane should be barricaded in such a manner to prevent employees from being stuck or crushed by the crane.

Wire rope safety factors shall meet ANSI B 30.5. The units will also be equipped with an approved U.L. Listed fire extinguisher (minimal rating 5B:C). All crawler and truck cranes on the JOB SITE will meet the **requirements for design, inspection, testing, construction, maintenance and operation as outlined in ANSI B 30.5.**

3. CRANE OPERATION

Cranes on-site will be operated in accordance with all manufacturers' specifications and limitations pertaining to the piece of equipment. Any attachments utilized with the piece of equipment shall not exceed the capacity, rating or scope recommended by the manufacturer. Rated load capacities, recommended operating speeds and special hazard warnings will be conspicuously posted on all equipment. Such instructions shall be visible to the operator while at the control station.

Only approved standard hand signals for crane, derrick and boom equipment shall be used (see Appendix B, Hand Signals). A copy of these signals will be posted in the operating position of each piece of equipment. Only properly trained persons are to be allowed to give signals to crane operators. Any operator not knowing hand signals shall be removed from the site.

On pile driving and lifting equipment, outriggers must always be utilized on equipment where it is provided prior to actual equipment operation. Special care should be taken on filled areas to utilize sufficient cribbing to compensate for the soft ground. Each outrigger float should have an area of cribbing, in square feet equal to crane capacity in tons, divided by 5. The strength shall be equal to 4" of hardwood for capacities up to 50 tons and 8" of hardwood for capacities over 50 tons.

Crane and other boom equipment operations near power lines are potential danger. Extreme care must be taken under those circumstances. When possible, electrical distribution and transmission lines will be de-energized and visibly grounded, and insulating barriers will be erected to prevent physical contact with the lines. Any overhead wire will be considered to be energized unless and until the line owner or electrical utility authorities indicate it is not energized and the line has been visibly grounded. Equipment or machines near power lines shall be operated in accordance with the following (there requirements are in the most recent ANSI 830.5):

For lines rated 50 kV, or less, the minimum clearance between the lines and any part of the crane or load shall be 10 feet.

Over 50 kV to 200 kV	15'
Over 200 kV to 350 kV	20'
Over 350 kV to 500 kV	25'
Over 500 kV to 750 kV	30'
Over 750 kV to 1000 kV	35'

When a crane can physically reach the minimum clearance, a person must be designated to observe clearance of the equipment and to give warning when the operator cannot maintain the desired clearance by visual means. This person can have no other duties.

1. Hoisting Equipment
   All hoisting equipment, regardless of the intended use. Shall be designed, installed and operated in accordance with the manufacturer's specifications. All such equipment shall be well maintained **throughout its use on the project. Maintenance records will be maintained and available for inspection on request.** Rated load capacities, operating speeds and special hazard instructions shall be posted on the cars and platforms. There shall be at least two full wraps of cable on the drums of hoisting equipment at all times.
2. Personal Hoists
   a) Hoist towers outside the structure shall be enclosed for the full height on the side or sides used for entrance and exit to the structure. At the lowest landing, the enclosure on the sides not used for exit or entrance to the structure shall be enclosed to a height of at least 10 feet. Other sides of the tower adjacent to floors or scaffold platforms shall be enclosed to a height of 10 feet above the level of such floors or scaffolds.
   b) Inside the structures shall be enclosed on all four sides throughout the full height.
   c) Foundation and tie back shall be designed by Registered Professional Engineer Towers shall be anchored to the structure at intervals not exceeding 25 feet. In addition to tie-ins, a series of guys shall be installed. Where tie-ins are not practical, the tower shall be anchored by means of guys made of wire rope at least one-half inch in diameter and securely fastened to anchorages to ensure stability.
   d) Hoistway doors or gates shall not be less than 6'6" high, shall be provided with mechanical locks which cannot be operated from the landing side, and shall be accessible only to one person on the car.
   e) Cars shall be permanently enclosed on all sides and the top, except on sides used for entrance and exit, which have car gates or doors.
   f) A door or gate shall be provided at each entrance to the car which shall protect the full width and height of the car entrance opening.
   g) Overhead protective covering a 2-inch planking, 2-inch plywood, or other solid material of equivalent strength shall be provided on the top of every personnel hoist.
   h) Doors or gates shall be provided with electric contacts (interlocks) which do not allow movement of the hoist when the door or gate is open.
   i) Safety devices shall be capable of stopping and holding the car and rated load when traveling at governed tripping speed.
   j) Cars shall be provided with a capacity and data plate secured in a conspicuous place on the car or crosshead.
   k) Internal combustion engines shall not be permitted for direct drive.
   l) Normal and final terminal stopping devices shall be provided. An emergency stop switch shall be provided in the car and marked "Stop".
   m) Following assembly and erection of hoists, and before being put into service, an inspection and test of all functions and safety devices shall be made under supervision

of a competent person. A similar inspection and test is required following major alteration of an existing installation. All hoists should be inspected and tested at not more than three-month intervals. Records shall be maintained and kept on file for the duration of the job.

n) All personnel elevators used by employees should be constructed of materials and components which meet specifications for materials, construction safety devices, assembly and structural integrity as stated in the ASNI Standard A 10.4, Safety Requirements for Personnel Hoists.
o) Endless belt-type manlifts are prohibited.
p) All personnel hoists shall be designed by a professional engineer.

POWER TOOLS

1. POLICY AND SCOPE

It shall be the responsibility of all CONTRACTORS to provide a continuing inspection program of all power tools within their area, and to conform to all applicable codes, standards and statutes pertaining to the operation of all power-operated tools.

All power tools shall be operated within the specifications of the manufacturer's safe operating procedures and any federal, state or local regulations that apply.

2. GUIDELINES

All power tools designed with guards shall be equipped with such guards when in use. All belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains or other reciprocating, rotating or moving parts of power equipment shall be guarded.

Employees using power tools which create a hazard from falling, flying, abrasive and splashing objects or exposure to harmful dust, fumes, mist, vapors or gases shall use the personal protective equipment necessary to protect them from the hazard. All such personal protective equipment shall conforms to any applicable federal, state or local regulations. Electric power-operated tools shall either be "double insulated" or grounded in accordance with applicable electrical codes. The use of electrical cords for hoisting or lowering tools shall not be permitted on the JOB SITE.

Power-actuated fastening systems shall meet the ANSI Standard A 10.3-1977. All powder-actuated tools are to be used by trained and qualified operators. The tool and fasteners should be stored separately in locked containers. All powered abrasive wheels and tools shall be supplied with sufficient power to maintain the spindle speed at safe levels under all conditions of normal operation.

Powered abrasive wheels grinding machines shall be equipped with safety guards in conformance with applicable local, state and federal standards.

Powered masonry saws shall be constructed, guarded and operated in accordance with applicable local, state and federal standards for concrete construction and masonry work.

When the use of a tool creates a respiratory hazard such as dust, the proper respiratory protection shall be used by the employee.

HAND TOOLS

Hand tools can be responsible for accidents when they are improperly used or maintained. To control losses associated with hand tools, all CONTRACTORS will be required to adhere to the following general requirements:

1. Only good quality tools will be allowed.
2. Tools should be maintained in good condition. This shall be verified by daily observation of various jobs being performed.
3. Tools shall be stored in predetermined safe placed, such as racks, shelves or tool boxes when not in use.
4. Approved eye protection shall be required when using tools which present an eye hazard.
5. Sharp tools shall not be carried in hip pockets.
6. Hammers, sledges, drift pins, chisels, wedges or other impact type tools with "mushroomed" heads will not be allowed.
7. Wrenches, including adjustable, pipe, open-end, box end and sockets shall not be used when jaws are **sprung or worn to the point where slippage may occur.**
8. Wooden handles of tools shall be kept free of splinters or cracks, and temporary repair of handles through the use of wire, friction or plastic tape will be prohibited.
9. Handles shall be kept on the heads of all tools.
10. **Hand tools which are covered by specific federal, state or local requirements shall conform to these standards when used on the JOB SITE.**

HEAVY EQUIPMENT USAGE & VEHICLE SAFETY

1. POLICY AND SCOPE

This section addresses general precautions associated with off-road heavy equipment with the exception of cranes and related lifting equipment. Due to the wide variety of such equipment, these rules and guidelines **will not cover every possible aspect. Rather, they are designed to address overall general concerns** associated with this type of equipment. It is the CONTRACTOR'S and operator's responsibility to ensure **that the equipment is maintained and operated in a safe and proper manner.**

2. EQUIPMENT MAINTENANCE

All equipment will be well maintained with maintenance records kept. Equipment operators must perform a pre-operation check at the beginning of each shift. Any piece of equipment showing maintenance defects which would render it unsafe for operation will be removed immediately from operation. All equipment (e.g. bulldozer, grader, rollers, etc.) will be fitted with rollover protection systems in compliance with current OSHA requirements. All backup alarms on heavy equipment must be functional. Additionally, all such vehicles will be fitted with approved seatbelts and operators will be required to wear them whenever **operating said equipment.**

3. OPERATOR TRAINING

All equipment operators must be certified as competent by their employer. All operators will be expected to operate their pieces of equipment in a safe and efficient manner. All operators will be expected to abide by all project speed limits.

4. SAFETY PROCEDURES

When descending grades, the equipment must always remain in gear, with brakes applied. If the brakes fail **to operate, blades or buckets should be dropped to retard the vehicle's progress.**

Whenever a piece of equipment is unattended, the power must be shut off, brakes set, shift lever placed in neutral and blades properly grounded.

HEARING PROTECTION MUST BE PROVIDED FOR ALL EQUIPMENT OPERATORS. USE WILL BE MANDATORY WHERE DB IS OVER 85.

LADDERS

SCOPE

This section covers the selection, maintenance and use of all ladders used on the job site. This includes but is not limited to Job Built Ladders, Portable Extension Ladders and Portable Stepladders.

PURPOSE

To provide guidelines for the safe selection, setup, maintenance and use of all types of ladders on the job site.

GENERAL REQUIREMENTS

The selection of ladders will require the evaluation of the area where it will be used, the experience of the user, and what it will be used for.

1. All ladders used for access from one level to another will require a firm foundation and will be tied or otherwise secured in place to prevent movement during use.
2. Where ladders are to be used as a work platform, care to select the correct ladder will be exercised. Selection criteria will include the proper height, weight bearing capacity and the space in which the ladder is to be used.
3. All ladders will be inspected on a regular basis to insure that they are in good and safe condition.
4. All ladders will be set up in accordance with the following section or the **manufacturer's instructions.**
5. Employees will face the ladder and use both hands while climbing and descending ladders.
6. All materials and tools will be raised and lowered using ropes or lines and not carried by employees climbing ladders.
7. Employees will keep their body centerline between the rails at all times while using ladders.

JOB BUILT LADDERS

1. All job-built ladders will be constructed in accordance with the ANSI standard for Job Built Ladders.
2. **The maximum length of job built ladders will not exceed 24'-0".**
3. Job built ladders will be set up at a maximum angle of one horizontal to 4 vertical, **and secured to prevent movement.**
4. Side rails of job built ladders will extend a minimum of 3'-0" above the landing.
5. In locations where 25 or more employees are to use ladders for access, two ladders or a double cleat ladder shall be used.

PORTABLE EXTENSION LADDERS

All portable extension ladders will be ANSI type I or IA. When portable extension ladders are to **be used near** electrical power line they will be made of non-conductive materials.

1. Care shall be taken when using portable extension ladders to keep them out of pedestrian and equipment paths.
2. **Portable extension ladders will extend a minimum of 3'-0" above the landing when used for access.**

PORTABLE STEP LADDERS

All portable step ladders will be ANSI type I or IA.

1. Portable step ladders will be only used in the fully spread and locked position.
2. Employees will keep their feet at or below the third step from the top at all times.
3. Employees will maintain three points of contact with the ladder at all times. While ascending and descending this will be hands and feet. While working from the ladder the employee may use their knees to keep balance.
4. All employees who work from ladders which are set up close to the edge of the building or a floor opening shall use fall protection.

SCAFFOLDING

1. SCOPE AND APPLICATION

The section applies to all scaffolding, supported or suspended, used by any contractor on The Project. All **contractors will comply with the standards set forth below. Nothing in this section is intended to conflict with the scaffold requirements of the OSHA construction standards 29 CFR 1926 Subpart L.**

2. GENERAL REQUIREMENTS

1. Scaffolding must be designed by a qualified person and must be constructed and loaded in accordance with that design.
    a. According to OSHA, a qualified person is "one who by possession of a recognized degree, certificate or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project."

2. All scaffolding must be erected, dismantled, moved or modified under the direction of a competent person.
    a. The OSHA standard defines competent person as "one who is capable of identifying existing and predictable hazards in the surrounding or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them."
3. Each scaffold qualified and competent person must be designated by the contractor or subcontractor.
4. A competent person before each work shift must inspect scaffold components for visible defects, *and/or* after any occurrence which could affect a scaffold's structural integrity. Inspections should be documented and tags shall be attached to the scaffold system.
5. Any part of a scaffold damaged or weakened such that its strength is less than that specified above, must be immediately replaced, braced to meet the requirements, or removed from service until repaired.
6. Scaffold must not be moved horizontally while employees are on them.
7. The clearance between scaffolds and power lines must never be less than 10 feet.
    a. However each situation must be evaluated by the competent person and issues such as additional clearance needed for tools, materials and/or equipment must be taken into consideration when evaluating safe working distances from power lines.
    b. The utility company owning or operating the power line may be contacted to de-energize the lines, relocate the lines or to install protective coverings to prevent accidental contact with the lines.
8. Employees are prohibited from working on scaffolds covered in snow, ice or other slippery material except as necessary for removal of such material.
9. Where swinging loads are being hoisted onto or near scaffolds such that the loads might contact the scaffold, tag lines or equivalent measures to control the loads must be used.
10. Working from or on scaffolding during high winds and storms is prohibited unless the competent person has determined that is safe for the employees to be on the scaffolding.

3. TRAINING

1. Each employee who performs work while on a scaffold must be trained by a person qualified in the subject matter to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards.
2. Each employee involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting a scaffold must be trained by a competent person to recognize any hazards associated with the work in question.
3. When the supervisor has a reason to believe that an employee lacks the skill or understanding needed to safe work involving the erection, use, or dismantling of scaffolds, each employee must be retrained so that the requisite proficiency is retained.

4. STRENGTH AND CAPACITY

1. **Scaffolds and scaffold components must not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.**
2. All scaffolds and their components, including suspended scaffolds, must meet the strength requirements of Subpart L of the OSHA 1926 standards.

5. SCAFFOLD WORK PLATFORMS AND WALKWAYS

1. A walkway when used in this scaffold policy means a portion of a scaffold platform used only for access and not as a work platform.
2. Debris may not be allowed to accumulate on platforms.
3. Makeshift devices, such as but not limited to boxes and barrels, may not be used on top of scaffold platforms to increase the working level height.
4. Ladders may not be used on scaffold platforms without the permission of the competent person and only after the requirements contained in the OSHA 1926.451(b)(15) have been met.
5. All scaffold work platforms on all working levels must be constructed and maintained as follows:
    a. The platform be installed so that the space between adjacent units and the space between the platform and uprights is no more than one inch wide except in cases where the scaffolding qualified person can demonstrate that a wider space is necessary and creates not additional hazard. The opening between the uprights and platform must not exceed 9 1/2, inches in any case.
    b. The full planking/decking requirement does not apply to platforms used solely as walkways or during erection/dismantling operations. The qualified or competent person must determine the requirement for these situations.
    c. Each scaffold platform or walkway must be at least 18 inches wide. However, there is no minimum width requirement for boatwain's chairs. In areas where the 18 inches cannot be maintained, the designated qualified and competent person(s) must approve the installation and only after guardrails or personal fall arrest systems are installed.
    d. The edge of the platform must not exceed 14 inches from the face of the work unless guardrails and/or personal fall arrest system has been installed. However, the maximum distance from the face for outrigger scaffolds must be three inches and 18 inches for plastering and latching operations.
    e. Scaffold planks must extend over their end supports at least six inches unless cleated, restrained by hooks, or equivalent means. Each end of a plank or platform 10 feet or less in length must not extend over their end supports more than 12 inches unless the platform is designed and installed so that the cantilevered portion of the platform;
        i. Is able to support the intended load (employees, tools, materials, etc.), without tipping
        ii. Has a guardrail been installed which prevents employee's access to the cantilevered section of the scaffold
    f. Platforms greater than 10 feet in length, planks must extend more than 18 inches over end supports unless the platform;
        i. Is designed and installed so that the cantilevered portion is able to support the intended load without tipping.
        ii. Has guardrails installed to prevent access to the cantilevered portion of the scaffolding.

g. On scaffolds where platform planks overlap to create a long platform, the overlap must occur over supports, and must overlap at least 12 inches unless the planks/platforms are nailed together or otherwise secured from movement.
h. At all points where scaffold platforms change direction, such as turning a corner,
    i. Platforms that rest on a bearer at an angle other than a right angle must be laid first.
    ii. Platforms that rest at right angle over the same bearer must be laid second, on top of the first platform.
i. Wood platforms/planks may not be covered with opaque finishes, except for edges, which may be marked for identification. Platforms may be coated with wood preservatives, fire retardant finishers, and slip resistant finishes but these finishes may not obscure the top of bottom wood surfaces.
j. Unstable objects may not be used as working platforms.
k. Equipment may not be used to support scaffold platforms such as front-end loaders and pickup trucks for overhand bridge scaffolds.
l. Forklifts may not be used to support scaffold platforms unless;
    i. Approved by the forklift manufacturer.
    ii. The entire platform is attached to the forks
    iii. And the forklift is not moved horizontally while the platform is occupied.

6. ACCESS

1. When scaffold platforms are +/- 2 feet above or below the access point, portable ladders, hook on ladders, stair towers, ramps, walkways, direct access from another scaffold, structure, personal hoist or **similar surface must be used.**

    Cross braces may not be used as a means of access.
2. Steps and rungs of ladder and stairway type access must line up vertically (including distances between rest platforms).

7. HOOK-ON AND ATTACHABLE LADDERS USED ON SCAFFOLDING

1. Hook on and attachable ladders may be specifically designed for use with the type of scaffold used.
2. Portable, hook on and attachable ladders must be positioned so as not to tip the scaffolding.
3. Hook on and attachable ladders must be positioned so that their bottom rung is not more than 24 inches above the scaffold supporting level.
4. When hook on and attachable ladders are used, they must have rest platforms at 35-foot maximum vertical intervals.
5. Hook on and attachable ladder rungs must be at least 11 inches long with vertical uniform spacing not to exceed 16 inches.

8. STAIRWAY TYPE LADDERS

1. Must be positioned such that their bottom step is not more than 24 inches above the scaffold supporting level.
2. Provided with rest platforms at 12-foot maximum vertical intervals.

3. Must have a minimum step width of 16 inches except for mobile scaffolds, which must have a minimum width of 11 inches.
4. Must have slip resistant treads on all slips and landing.

9. STAIR TOWERS

1. Must be positioned so that the bottom step is not more than 24 inches above the scaffold supporting level.
2. A stair rail consisting of a top rail and mid rail must be provided on each side of each scaffold stairway.
    a. The top rail must also be capable of serving as a handrail, unless a separate handrail is provided.
    b. Stair rails and handrails must be surfaced to prevent injury (lacerations, cuts, punctures and snagging of clothing).
    c. Ends of stair rails must not present a projection hazard.
    d. Hand rails must be at least three inches from other objects.
    e. Stair rails must be:
        i. Not less than 28 inches nor more than 37 inches from the upper surface of the rail to the surface of the tread.
        ii. Measured in line with the face of the riser at the forward edge of tread.
3. A landing platform 18 x 18 inches (minimum) must be provided at each level.
4. Each scaffold stairway must be at least 18 inches wide between stair rails.
    a. Treads and landing must be slip resistant surfaces.
5. Stairways must be installed between 40 to 60 degrees from the horizontal
6. Guardrails as specified in the Fall Protection section of this policy must be provided on the open sides and ends of each landing.
7. Riser height must be uniform, within ¼ inch, for each flight of stairs.
    a. Greater variations are allowed for rise heights for the top and bottom steps of the entire system, not each flight of stairs.
8. Tread depth must be uniform within ¼ inch, for each flight of stairs.

10. RAMPS AND WALKWAYS

1. Ramps and walkways more than six feet above lower levels must have a guardrail system which complies with OSHA Fall Protection Standard, 1926, Subpart M.
2. No ramp or walkway must be inclined more than a slope of one vertical to three horizontal (or twenty (20) degrees above the horizontal) unless provided with cleats not more than 14 inches apart which are **securely fastened to the platform providing footing.**

11. INTEGRAL PREFABRICATED SCAFFOLD ACCESS FRAMES

Must meet the following:

a. Be specifically designed and constructed for use on ladder rungs.

b. Not used as work platforms when rungs are less than 11 1/2, inches in length, unless the effected workers used fall protection or positioning device, which complies with OSHA 1926.502.
c. Be uniformly spaced within each frame section.
d. Have rest platforms at 35 foot maximum vertical intervals.
e. Have a maximum spacing between rungs of 16 3/4 inches. Non-uniform rung spacing caused by joining end frames together is allowed provided the resulting spacing does not exceed 16 3/4 inches.

12. DIRECT ACCESS

Direct access to or from another surface must be used only when the scaffold is more than 14 inches horizontally and not more than 24 inches vertically from the other surfaces.

13. ERECTING / DISMANTLING SCAFFOLDS

1. The scaffold competent person must ensure that safe access is provided for erection and dismantling operation.
2. These activities must be performed only by personnel (experienced and trained workers) selected for suck work by the scaffolding competent person.
3. Hook on or attachable ladders must be installed as soon as scaffold erection has progressed to a point that permits safe installation and use.
4. When erecting or dismantling fabricated frame scaffolds, (or system scaffolds), end frames with horizontal members spaced not more than 22 inches apart vertically, may be used as climbing devices for access, provided that they are erected in a manner that creates a usable ladder and provides good hand hold and foot space.
5. Cross braces on fabricated frame scaffolds (tubular welded frame or system scaffolds), may not be used as a means of access or egress.

14. SCAFFOLD COMPONENTS

1. Components manufactured by different manufacturers may not be intermixed.
2. Scaffold components made of different metals may not be intermixed.
3. Any exception to the mixing components or use of components made of different metals must be obtained from the scaffold competent person and manufacturer prior to use.

15. GUYS, TIES AND BRACING

1. Guys, ties and bracing must be installed at locations where horizontal members support both inner and outer legs.
2. Guys, ties and braces must be installed according to manufacturer's recommendations or at the closest horizontal member to the 4:1 (base to height ratio) height above the base,
    a. And repeated vertically every 20 feet or less at horizontal member for scaffolds three feet wide or less.
    b. And repeated vertically every 26 feet or less at horizontal member for scaffolds greater than three feet wide.
3. The top guy, tie or brace must be placed no further than 4:1 (base to height ratio) height from the top.

4. Guys, ties and braces must be installed at each end of the scaffold and at the horizontal intervals not to exceed 30 feet measured from one end. (Not from both ends).
5. Ties, guys or braces must be installed to prevent tipping of supported scaffolds in circumstances where an eccentric load, (such as a cantilevered work platform) is applied or is transmitted to the scaffold.

16. SCAFFOLD SUPPORT AND FOOTING

1. Scaffold support poles, legs, posts, frames and uprights must be placed on base plates, with mudsill or other firm foundation.
2. All footings must be level, sound, rigid and capable of supporting the loaded scaffolding without settling or displacement.
3. Unstable objects such as concrete blocks, barrels, boxes and loose brick may not be used to support scaffolds or platform units.
4. Scaffold poles, legs, posts, frames and uprights must be plumb and braced to prevent swaying and displaced.

17. FALL PROTECTION

1. Guardrails must be installed on all scaffold platforms six feet (6'-0") or more above lower levels.
    a. If this requirement cannot be met, The Project Safety Coordinator must be consulted prior to the use of any scaffolding not protected by a guardrail system.
2. **Additionally, any employees using boatwain's chairs, catenary scaffolds, needle beam scaffolds or ladder jack scaffolds must be protected by a personal fall arrest system.**
3. Personal fall arrest system and guardrails are required for the use of:
    a. Single-point and two-point suspension scaffolds (such as window washers scaffolds).
    b. Welder's baskets used during erection and welding of steel beams.
4. Each employee using a stair tower must be protected by a guardrail system installed within 9 inches of and along at least one side of the stair.
5. Each employee performing overhand brick laying operations must be protected from falling by the use of **a guardrail system and/or personal fall arrest system.**

18. STANDARD GUARDRAIL CONSTRUCTION REQUIREMENTS

1. Guardrail systems must be installed on all open sides and ends of platforms.
2. Guardrail systems must be installed before the scaffold is released for use for anyone other than the erection/dismantling crews.
3. The top rail must be approximately 42 inches high (scaffolding manufactured before January 1, 2000 top rail height between 36 and 45 inches, scaffolding manufactured after January 1996, top rail height between 38 and 45 inches).
4. The top rail must be capable of supporting (without failure) a downward or horizontal pressure of:

   a. At least 200 lbs. applied at any point along the top end for frame system and tube and coupler scaffolds.
   b. At least 100 lbs. for guard rails for guardrails installed on single point or two point adjustable suspension scaffolds.
5. Mid rails, screen mesh, intermediate vertical member, and solid panels must be capable of supporting:
   a. 150 lbs of pressure applied downward or horizontally without failure for frame systems and tube and coupler scaffolds.
   b. 75 lbs for single point adjustable scaffolds.
6. Guardrails must not present injury hazards to scaffold users (cuts, punctures, etc.) or snagging of clothing.
7. End of rails must not overhand end support posts to create a projection hazard.
8. Steel or plastic banding may not be used for top or mid rails.
9. Manila or plastic rope may not be used for top or mid rails.
10. If and when guardrails will not provide necessary fall protection for the work done using scaffolding, personal fall arrest system must be utilized as approved by scaffolding competent person.
11. Cross bracing cannot be used as a guardrail replacement on The Project.

19. INSPECTION

1. Before starting on a scaffold, inspect visually to determine that:
   a. Handrails, mid rails, toe boards and decking is in place.
   b. All wheels are locked on movable scaffolds.
   c. Locking pins are in place at each joint.
2. Employees must wear safety harnesses and be properly tied off on any scaffold platform over six feet (6'-0") in height and not equipped with standard handrails, mid rails or complete deck.
   a. Do not change or remove scaffold member unless authorized.
   b. No one is allowed to ride on a rolling scaffold when it is being moved. **Remove or secure all tools and material on the deck before moving.**
   c. **Do not climb on or work from any scaffold, handrail, mid rail or brace member.** Use ladder to get on the scaffold.
   d. All scaffolds must be erected level and plumb, on a firm base.
   e. Scaffolds must be tied off or stabilized with outriggers when the height is more than four times than smaller base dimension. Scaffolds must also be tied off horizontally every 30 feet.
   f. When space permits, all scaffold platforms must be equipped with standard 42-inch high handrails rigidly secured (not wired), standard 21-inch high mid rails, completely decked with safety plank or manufactured scaffold decking and rigidly secured toe boards, all four sides.
   g. Adjusting or leveling screws may not be used on scaffolds equipped with wheels. Adjusting screws shall not be extended more than 12 inches of thread.
   h. Be sure *you* know the safe working loads on all scaffolds.

i. Rolling scaffolds must be used only on level, smooth surfaces or the wheels must be contained in wooden or channel iron runners. Watch for overhead **clearance when moving. Casters must be pinned.**
j. Do not alter any scaffold member by welding, burning, cutting, drilling or bending.
k. Do not stack brick, tile, block or similar material higher than 24 inches on the scaffold deck.
l. Patented Metal Scaffolding
    i. Generally, parts and sections of scaffolding made by one **manufacturer are not to be used with another manufacturer's.**
m. Suspended Scaffolding
    i. **Swinging stages, boatswain chairs, floats and beams require special approval prior to use.**
    ii. Attach and secure safety belt before stepping on these scaffolds and do not remove until clear of the scaffold. Tie off to independent lifeline or building structure. One lifeline per person.
n. Decking
    i. Planks of two-inch scaffold grade lumber or laminated wood. Store on dunnage separately from ordinary lumber.
    ii. Manufactured aluminum decking. Use for scaffolds only.

20. AERIAL LIFTS

1. Employees must be trained on the equipment they will be operating.
2. Lifts must be inspected and determined to be in a safe condition prior to use.
3. Only the minimal materials, tools and equipment are allowed to be hoisted in personnel lifts.
    a. Lifts may not be used to raise/position materials.
4. Continuous tie-off is required by utilizing a full body harness with dual shock absorbing lanyards.
    a. The guardrails around scissor lift platforms are an acceptable tie of point, if approved by the manufacturer.
5. All gates/guardrails must be closed/installed prior to raising the platform.
6. Employees may not dismount from lifts in an elevated position (unless double-lanyard tie off is possible).
7. Appropriate clearances around energized electrical conductors must be maintained.
    a. Recognized electrical safe work practices must be observed.
8. All parts of an employee's body must remain inside the lift platform when it is being raised.
    a. Lifts must be lowered prior to traveling long distances (over ten feet).
    b. If lifts are moved in a raised position, the operator must look in the direction of travel and avoid all overhead obstructions.
    c. Floor load ratings must be adhered to.

21. PROTECTION FROM FALLING OBJECTS

1. In addition to hard hats, contractors must provide protection from falling objects through the use of debris nets, catch platforms, canopies, installation of toe boards, etc.
2. When potential falling objects are too large or heavy to be contained of deflected by the above mentioned protective measures.
    a. The objects must be kept away from the edge of the surface from which they could fall,
    b. And secured as necessary to prevent their falling.
3. Scaffolds four feet or higher must have toe boards, screens, mesh installed or must be barricaded beneath to prevent employee access.
4. Whenever tools, material or equipment are piled higher than the toe board,
    a. Paneling or screening extending from the toe board or platform to the top of the guardrail shall be erected for a distance sufficient to protect workers below.
    b. A guardrail system with opening small enough to prevent material from falling.
    c. A canopy, net, or catch platform strong enough to withstand impact forces of the potential falling objects shall be erected over the employees below.
5. Toe boards must meet the following:
    a. Must be capable of withstanding a 50 pound *force* applied *downward or outward* at any point along its length.
    b. Must be at least 3 ½ inches high (2x4 nominal) from the top edge to the walking/working surface.
    c. Must be securely fastened at the outer edge of the platform.
    d. Must be solid or with opening not greater than 1 inch in its greatest dimension.
6. Tables contained in the OSHA 1926 Scaffolding Standard (revised 1996 or later), and the manufacturers specifications must be used to determine size, spacing, height, spans, grade, loading and working levels for the levels for the type of scaffolding to be erected.
7. Competent persons must document scaffold inspections. Scaffold inspection tags should be used on each scaffold to document that they have been inspected by a competent scaffold person prior to use.

STAIRS

This section covers all stairs and stair railings used during the construction of the project. This includes temporary access to parts of the structure as well as entrances into office and storage trailers.

1. PURPOSE

To establish the minimum requirements for stairways and railings used during the construction of the Project.

2. GENERAL REQUIREMENTS

The following general requirements apply to all stairways used during the process of construction, as indicated:

1. Stairways, that may not be a permanent part of the structure on which construction work is performed, must have landings at least 30 inches deep and 22 inches wide at every 12 feet or less vertical rise.
2. Stairway shall be installed between 40 degrees and 60 degrees, from the horizontal.
3. Variations in riser height or stair tread depth must not exceed ¼ inch in any stairway system, including any foundation structure used as one or more treads of the stairs.
4. Where doors or gates open directly onto a stairway, a platform must be provided that is at least 20 inches in width beyond the swing of the door.
5. Metal pan landings and metal pan treads must be secured in place before filling.
6. All stairway parts must be free of dangerous projections such as protruding nails.
7. Slippery conditions on stairways must be corrected.
8. Employees may not use spiral stairways that will not be a permanent part of the structure.

The following requirements apply to stairs in temporary service during construction:

a. Pan stairs will not be used by employees for access from floor to floor until the treads and landing have been filled with solid material. During the construction of the stair, employees may use the open pan and landing for access to the work location on the stair. All temporary treads and landings must be replaced when worn below the top edge of the pan.
b. Except during construction of the actual stairways, skeleton metal frame structures and steps must not be used (where treads and/or landings are to be installed at a later date) unless the stairs are fitted with secured temporary treads and landings.
c. Temporary treads may be made of wood or other solid materials and installed the full width and depth of the stair.

3. STAIR RAILING

The following general requirements apply to all stair rails and handrails:

1. Stairways having four or more risers, or rising more than 30 inches in height, whichever is less, must have at least one handrail. A stair rail also must be installed along each unprotected side or edge. When the top edge of a stair rails system also serves as a handrail, the height of the top edge must not be more than 37 inches nor less than 36 inches from the upper surface of the tread.
2. Winding or spiral stairways must be equipped with a handrail to prevent using areas where the tread width is less than six inches.
3. Mid-rails, screens, mesh intermediate vertical members or equivalent intermediate structural members must be provided between the top rail and stairway steps of the stair rails system.
4. Mid-rails, when used, must be located midway between the top of the stair rails system and the stairway steps.
5. Screens or mesh, when used, must extend from the top rail to the toe board or step and along the entire opening between top rail supports.
6. Intermediate vertical members, such as balusters, when used, must not be more than 19 inches apart.
7. Other intermediate structural members, when used, must be installed so that there are no openings of more than 19 inches in width.
8. Handrails and the top of the stair rail systems must be capable of withstanding, without failure, at least 200 pounds of weight applied within two inches of the top edge in any downward or outward direction, at any point along the top edge.

9. The height of handrails must be no more than 37 inches nor less than 30 inches from the upper surface of the tread.
10. The height of the top edge of a stair rail system used as a handrail must be no more than 37 inches nor less than 36 inches from the upper surface of the stair rails system to the surface of the tread.
11. Stair rail systems and handrails must be surfaced to prevent injuries such as punctures or lacerations and to keep clothing from snagging.
12. Handrails must provide an adequate handhold for employees to grasp to prevent falls.
13. The ends of stair rails systems and handrails must be constructed to prevent dangerous projections such as rails protruding beyond the end posts of the system.
14. Temporary handrails must have a minimum clearance of three inches between the handrail and walls, stair rails systems and other objects.
15. Unprotected sides and edges of stairway landings must be provided with standard 42-inch high guardrail systems.

GENERAL LIGHTING AND ELECTRICAL SAFETY

1. POLICY AND SCOPE

All lighting and electrical work of any kind, whether permanent or temporary, will conform to the requirements of the National Electric Code and other applicable federal, state and local codes. Only qualified electricians familiar with these code requirements will be allowed to perform electrical work.

2. PURPOSE

To protect CONTRACTOR employees from electrical shock that may result from defective tools, cords and equipment.

3. GENERAL REQUIREMENTS

U.L. Listed, explosion-proof electrical components, as outlined in the National Electric Code, will be used where flammable or explosive atmospheres may be encountered.

When working close to energized power circuits, the circuit must be de-energized and grounded or guarded through insulation in order to prevent a potential electric shock.

All 11 Ov outlets for temporary construction power will have ground fault circuit interrupters. Basic electrical systems will also be fitted with/have ground fault circuit interrupter systems.

All temporary installation, whether they are extension cords or transmission/distribution lines, shall be installed properly and covered or sufficiently supported overhead to avoid damage and interference. High voltage power lines will have at least 25 feet clearance above roadways, work areas, etc.

Each disconnecting means for a piece of equipment and any service meter or branch circuit (at its point or origination) will be legibly marked to indicate its purpose. Additionally, circuits in excess of 600 volts will be marked with "Danger-High Voltage" signs wherever unauthorized personnel may come in contact with live parts.

Extension cords used with portable electric tools should have three-pronged (grounded) plugs. Defective cords or cords with missing ground prongs will be taken from service.

4. EXTENSION CORDS/CORD SETS

This program applies to all cord sets, receptacles not part of the building or structure, and equipment connected by cord or plug.
This procedure also applies to tools protected by double insulation and projects protected by Ground Fault Interrupters.

5. RESPONSIBILTY

1. The CONTRACTOR'S Project Superintendent or designee is responsible for conducting the daily visual inspection.
2. All employees are responsible for identifying *defective* tools, cords and equipment and removing them from service until repaired and tested.

6. DAILY VISUAL INSPECTIONS

1. Prior to each day's use a visual inspection shall be made to determine in any external defects (i.e. deformed or missing pins, insulation damage) or indications of internal damage exists on the following:
    a. Extension Cords
    b. Power Tool Cords
2. Equipment found damaged or *defective shall be immediately removed* from service and shall not be used until repaired.
3. Electrical extension cords and power tool cords will not be repaired by using electrical tape.

7. TESTING

1. Electrical contractor will test all hard wired GFCI's at least once each month and maintain a log showing test results.
2. All defective equipment will be removed from service until repaired or replaced.
3. Portable (cord/plug) connected GCFI will be tested by company using them at least **once each month. Defective units will be replaced.**

8. JEWELRY AND CLOTHING

Conductive articles of jewelry and clothing (such as watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread or metal headgear) may <u>not</u> be worn on or near exposed energized parts.

9. LIGHTING

Artificial lighting will be provided by each CONTRACTOR to allow a safe operating **environment on the project. This applies to exterior night work and interior work. Lighting will be provided in passageways and stairways to allow effective movement.** Artificial lighting systems will be inspected regularly to ensure they are operative and in good repair. Defective lamps should be replaced on a regular basis (all such lamps should be deeply recessed or fitted with guards). Exposed empty light sockets and broken bulbs will not be tolerated.

ENERGIZED ELECTRICAL SAFETY

1. POLICY AND SCOPE

The electrical safety program is designed to structure safety procedures that will effectively meet the federal, state and local standards for all contractors who are required to work in the presence of electrical energy. This policy has been established to ensure that electrical work on energized parts is performed only when necessary, and every alternative means to carry out de-energized work has been considered and eliminated, and to establish environmental and personal protective safeguards that will identify and control all hazards encountered in testing, maintenance, service and all other work involving exposure to live electrical parts. This policy applies to all individuals working on premises.

2. DEFINITIONS

Authorized Persons: An authorized person shall meet all of the requirements of a qualified person. They shall be trained in all of the following:

- The skills and techniques necessary to distinguish exposed energized parts from other parts of electric equipment.
- The skills and techniques necessary to determine the nominal voltage of exposed energized parts.
- The decision-making process necessary to determine the degree and extent of the hazard and the personal protective equipment and job planning necessary to perform the work safely
- In addition, an authorized person may hold a valid journeyman electricians license, or the equivalent in experience and training as determined by management.

Qualified Person: a qualified person shall be knowledgeable of the construction and operation of equipment, and trained to recognize and avoid the electrical hazards. In addition, a qualified person may hold a valid journeyman electricians license, or the equivalent in experience and training as determined by management. A qualified person must be familiar with and trained in:

- The proper use of special precautionary techniques,
- Personal protective equipment,
- Insulating and shielding materials,
- Along with insulated tools and test equipment.

A person can be considered qualified in respect to certain equipment and methods and still be unqualified for others.

Energized Electrical Work: Any work on electrical equipment, circuits, devices, systems or any other energized part(s) where an employee is required to deliberately, or could accidentally, place *any* part of this body, tool or material into or around such electrical devices where the voltage has been deemed to be in excess of 50 volts.

Flash Suit: Protective clothing that provides for easy and rapid removal. The entire flash suit including the window shall have energy absorbing characteristics that are suitable for the arc-flash exposure and shall be supplied by the company before performing the work.

De-energized: Current carrying parts that are free from any connection to a source of voltage or electric charge; not having a potential different than that of the earth.

Electrical Hazard: This is recognized to include three separate hazard categories.

- Electric shock (a) by simultaneous contact with both the energized ungrounded and grounded conductors. (b) by contact with one of the energized conductors and the ground, and (c) by contact with a metallic part that has become energized by an energized conductor while also in contact with the ground.

- Electric Arc: Arcing faults or "flash" burns are generated as a result of inadequate electrical contact or poor insulation, from phase to ground or phase to phase, as short-circuit current surges through vaporized metal and carbon. Arc temperatures can reach 35,000 degrees F. and the length and duration of the arc will vary. Burns are severe and often fatal.
- Arc Blast: Tremendous air pressure is developed as a result of the instantaneous occurrence of an electric arc, in the form of a shock wave that *may* cause property damage, injury or death.

Energized: Electrically connected to a source of voltage or otherwise electrically charged with a potential noticeably different than that of the earth.

FR Clothing: Protective clothing that meets all the requirements of ASTM F 1506 and has been labeled specifically with:

- The tracking identification code system
- Identified ad meeting the requirements of ASTM F 1506
- Manufacturers Name
- Size and other associated standard labeling
- Care instructions
- Fiber Content
- The clothing must be designed for easy and rapid removal and the closure design should be appropriate for easy removal of the garment.

Protective Clothing: Clothing including shirts, pants, coveralls and jackets, routinely worn by workers who, under normal working conditions, are exposed to momentary electric arc are 100 natural fibers and be untreated.

Testing Equipment: For the purpose of this policy, only testing equipment that bears the identifying mark of a recognized testing laboratory, such as IL or CSA, will be used in field operations.

Trouble Shooting: The testing of live electrical circuits known as troubleshooting shall be confined to the purpose of diagnostic readings of voltage and amperage only. All methods of safety will be employed during this procedure, and the live parts shut down and locked out for subsequent repair or additional work.

Requirements: Energized electrical work includes working on or near any energized electrical system, whether alternating or direct current, including, but not limited to, service entrance sections, distribution switchgear, transformer, distribution panels, UPS Systems and branch circuit wiring and may include, but not limited to:

- Voltage Testing
- Circuit Testing
- Trouble-Shooting
- Power Switching
- De-energized and Re-energizing Procedures
- Pushing fish tapes or pushing/pulling wire into an energized enclosure
- Work performed on energized enclosures
- Excavations near underground electrical lines

All circuits, equipment, devices and other apparatus must be placed into an electrically safe work condition before any work can be performed. If the equipment cannot be placed into an electrically safe condition a Hazard/Risk Analysis must be performed and approved by management. This must be done using the hot work request form that is part of this document. No management approval shall be granted unless all requirements of the Energized Electrical Work Safety Program have been satisfied.

An electrically safe (de-energized) work condition shall be achieved when performed in accordance with company policy and the following conditions have been met:

- Determine all possible sources of electrical supply to the specific equipment. Check applicable up-to-date drawings, diagrams and identification tags.
- After properly interrupting the load current, open the disconnecting device(s) for each source.
- Where it is possible, visually verify that all blades of the disconnecting devices are fully open or that draw-out type circuit breakers are withdrawn to the fully disconnected position.
- Apply lock/out tag/out devices in accordance with company lock/out tag/out policy.
- Use an adequately rated voltage detector to test each phase conductor or circuit part to verify they are de-energized. Proximity detectors shall be permitted for preliminary testing but shall not be considered an adequately rated voltage detector. An additional test with an adequately rated voltage detector will be required when a proximity tester has been utilized.

  Note: The suggested test instrument is a vibrometer (Wiggy). The vibrometer does not rely on internal voltage sourced to operate functionally and therefore is the most reliable instrument for determining a circuit is de-energized.

Where the possibility of induced voltages or stored electrical energy exists, ground the phase conductors or circuit parts before touching them. Where it could be reasonably anticipated that the conductors or circuit parts being de-energized could contact other exposed energized conductors or circuit parts, apply ground-connecting devices rated for the available fault.

- Only authorized persons are permitted to work on electrical conductors or circuit parts that have been de-energized and locked out.
- Only authorized persons are permitted to work on electrical conductors or circuits that cannot be de-energized.
- All equipment shall be installed and used in accordance with the manufacturer's instructions.
- Steps shall be taken to maintain electrical equipment's insulation and enclosure integrity.
- All work on equipment that is energized at 50 volts or more shall be planned and documented according to the procedures of this program.
- Every attempt shall be made to protect employees from shock, burn, arc-blast and other hazards that are present in this working environment. Employees shall be responsible for protecting themselves from such hazards with the assistance and supervision of management, and personal adherence to the policies and procedures set forth in this manual. This includes lock/out tag/out procedures and the appropriate personal protective equipment.
- Employees shall use only appropriate equipment to accomplish an assigned task.
- The true effectiveness of any safety program relies upon the execution and acceptance of the policy by the employees affected. This program shall be audited annually and revised as needed. The management shall encourage input from all the employees concerning safety procedures and policies.

- Training is essential to employee safety. Each company shall strive to provide up-to-date training to employees on an annual basis. Employees shall keep current on personal protective techniques, safety policies and techniques and potential hazards.

3. ENGINEERING HAZARDS CONTROLS

Control of electrical hazards shall be established and observed by all employees to minimize hazards from electrical energy:

- Approved clearances will be established for all distribution panels and equipment.
- Electrical rooms, vaults and areas containing equipment will be guarded against accidental damage by suitable barriers and structural means.
- **Electrical installations will conform to the requirements of the NEC, including support requirements for all conduit and equipment.**
- **Adequate lighting shall be maintained in all area where energized work is to be carried out.**
- **All enclosures, including junction boxes, switches, panels, etc., as required by the NEC shall be properly maintained in order to safely contain energized parts. Shock injuries may be caused by poorly grounded or ungrounded electrical equipment. Close attention must be paid to the condition of all equipment and the integrity of the grounding system.**

4. ADMINISTRATIVE HAZARD CONTROLS

- **Every electrical conductor or circuit part shall be considered energized until proven otherwise.**
- **De-energized conductors and equipment that have not been locked out or tagged out shall be treated as energized parts.**
- No barehanded contact is to be made with exposed energized electrical conductors or circuit parts above 50 volts to ground.
- All employees will follow established electrical safety requirements set forth in this Policy.
- Work on energized electrical parts is limited to Authorized Persons, under the requirements set forth in this Policy.
- Each company will train their employees in the procedures set forth in this policy to qualify them for working as Authorized Persons, and will establish records and procedures to ensure that Authorized Persons engage in work on live electrical parts.
- Access to electrical rooms or other areas engaged in energized work, is limited to those employees who have a legitimate need to enter.
- Housekeeping duties will not be performed at close distances to live parts unless adequate barriers and insulating equipment are employed.
- Portable ladders shall have non-conductive side rails if the ladder or employee might be in a position to contact live electrical parts.
- Physical barriers and warning signs will be used to prevent unauthorized entry to areas where energized work is being carried out.

- Violation of the safety policies and work procedures set forth in the addendum will be considered willful misconduct and subject to disciplinary procedures, up to and including termination.

5. PROTECTIVE EQUIPMENT

- Authorized persons should wear electrically rated footwear or use an approved electrical rated mat when appropriate when engaged in the performance of energized work.
- Only tools that are designed and rated for the appropriate voltages will be used on energized circuits, equipment or systems.
- Metal belt buckles, jewelry, key chains, cell phones, pagers, etc., should be removed when working or anything energized. Hands should be clean and free of lotion or sunscreen to prevent damaging the voltage rated glove liners. Disposable cloth gloves may be worn inside the liners to limit the effects of perspiration.
- Safety glasses and hard hats will be worn at all times. Additional personal protective equipment must be used as outlined in the Hot Electrical Work Personal Protective Equipment Matrix.
- Voltage rated gloves will be stored in the proper canvas bag, with the (rubber) liners separated from the outer leather (glove) protectors. The person doing the works will inspect all voltage rated PPE before use.
- Blankets will be stored in protective tubes and bear an inspection date of not more than one year from the date of intended use.
- Voltage rated tools should be clean and have a smooth finish with no breaks in the insulation. These tools should be stored separately or in protective devices to avoid damage from other tools or materials.

6. PROCEDURES

The following procedures shall apply to all work on, or close to exposed and energized electrical conductors or circuit parts. Additional procedures may be needed for specific tasks.

- Employees shall exhaust every reasonable effort to perform work **de-energized.**
- If the decision is made to work on the circuit, equipment or system energized then refer to the energized electrical safety matrix. The definition of energized work is:
  Any work on electrical equipment, circuits, devices, systems or any other energized part(s) where an employee is required to deliberately, or could accidentally, place any part if his body or any type of tool into or around such electrical devices where the voltage has been determined to be excess of 50 volts.
- To work on energized devices as identified in this program you must be:
  -A Journeyman Electrician or the equivalent in experience and training as determined by management.
  -Trained on the Energized Electrical Work Safety Program.
  -Be considered an authorized person as defined in this program.
- If the owner requires that work must be performed on energized circuits, they must sign the appropriate permit included in this program. If the decision to work on energized circuits is made by the contractor, then the owner does not need to sign these forms.
- The qualifications and the number of employees that will be involved in the work will be established and authorized persons will be selected for the work.
- The work hazards and the extent of the risk shall be thoroughly examined.

- The appropriate Hot Electrical Work form will be selected, completed and approved. This form will be reviewed by each employee performing the work and will be maintained in the immediate work area.
- Ensure the appropriate personal protective equipment has been obtained as outlined in the Matrix.
- Manufacturer's instructions and equipment details shall be consulted prior to any work being performed.
- Appropriate barricades, signs and warning tape must be employed in order to restrict the area to unauthorized personnel as well as create safe working space for authorized persons.
- If the second person cannot perform a safe distance (4 – feet) from the exposed part(s), he or she must be wearing the same PPE as the authorized person performing the work.
- Once the work is complete, you should return the energized equipment PPE kit to the office.

7. HAZARD ANALYSIS PROCEDURE

The employees involved in work on or near electrically energized conductors or circuit parts shall be responsible for completing a Hot Electrical Work Permit BEFORE any work may be performed.

The Hot Electrical Work Form shall be submitted to supervising management for approval before any work may be performed.

- The Hot electrical Work Permit must be completely filled out and submitted to **supervising management prior to any work being done.**
- All involved shall be briefed on the potential hazards to persons and property.
- **The supervising management will be responsible for managing and maintaining records including Hot Electrical Work Permits.**
- The Hot Electrical Work can be performed if absolutely necessary but appropriate safety precautions will be required.
- If the supervising management determines that it is not possible to perform the Hot Electrical Work in a safe manner even with the precautions set out in this program, then the work is not to be performed unless changes can be made to protect employees.
- A single Hot Electrical Work Permit shall be permitted to be filed for work that is repetitive in nature such as trouble shooting on a construction project with supervising management's approval. A Hot Electrical Work Permit must be filed with management for each individual job site and the unique hazards of each jobsite must be evaluated. This permit will be valid for a period not to exceed 30 days. After 30 days the energized work procedures must be re-evaluated and a new permit completed and signed.
- **The Hot Electrical Work Permit must be filled out. Employees shall follow the directions presented below for each section.**
- Date work will be performed: the actual date of install or work shall be placed here. If the date is not yet determined, use a tentative date.
- Time work will be performed: Use the estimated time the work will be performed. **List both approximate start and stop times.**
- Project: Enter the Job Name.

- Supervisor Requesting Hot Work: Enter the name of the supervisor who will be directly responsible for supervising the work.
- Employees involved in the work: Enter the names of all employees that will be directly involved in the work. Be sure to list all persons that will or could enter the 4 feet Flash Hazard Boundary.
- Explain the work to be performed: A detailed explanation of the work to be performed, including exact procedures to be followed, shall be listed.
- Required PPE: List all the PPE according to the Hot Electrical Work Matrix.
- Approval: The Hot Electrical Work Permit must be presented to each of the individuals listed and a signature obtained to indicate they have reviewed and approved the Hot Electrical Work.
- Involved Employees: All employees will be listed on the Hot Electrical Work Permit and shall review all the documentation and receive task specific training necessary for the work to be performed. Each employee shall sign the Permit after completion of this training.
- *NOTE: Although the space provided limits the Hot Electrical Work Permit format to a single page document, the document should be viewed as a guideline to assist in the survey and analysis of flash and electrical hazards prior to work on energized parts. The explanations required by these sections should be detailed and may require additional sheets attached to the Hot Electrical Work Permit.*

STEEL ERECTION

1. SCOPE

This section applies to all employees involved in the erection of structural or miscellaneous steel and iron during construction of The Project.

2. PURPOSE

To set forth the minimum safety requirements for steel erection on the job site.

3. FLOORING REQUIREMENTS

1. Permanent Flooring-Skeleton Steel Construction in Tiered Buildings
    a. The permanent floors must be installed as the erection of structural member progresses, and there shall be not more than eight stones between the erection floor and the uppermost permanent floor, except where the structural integrity is maintained as a result of the design.
    b. At no time may there be more than four floors of 48 feet of unfinished bolting or welding above the foundation or uppermost permanently secured floor.

2. Temporary Flooring – Skeleton Steel Construction in Tiered Buildings
    a. The derrick or erection floor shall be solidly planked over its entire surface except for access opening. Planking must be of proper thickness to carry the working load but may be less than two inches thick, full size undressed, and must be laid tight and secured to prevent movement.
    b. On buildings or structures not adaptable to temporary floors, and where scaffolds are not used, safety nets shall be installed and maintained whenever the potential fall distance exceeds two stories or 25 feet. The nets must be hung with sufficient clearance to prevent contacts with the structures below. Net installation must

conform to the OSHA (CFR 1926) standards. Safety harnesses with cable safety lines may be used to provide fall protection in lieu of safety nets but the safety harness and static life line systems must conform to OSHA (CFR 1926) standards. Note: Fall protection is required for all personnel exposed to a fall of 6 feet or more.

c. A safety railing of ½ inch wire rope or equivalent must be installed approximately 42 inches above the working walking surface around the periphery of all temporary-planked or temporary metal-decked floors of tier buildings and other multi-floored structures during structural steel assembly.
d. Where erection is being done by means of a crane operating on the ground, a tight and substantial floor shall be maintained within two stories of 30 feet, whichever is less, below and directly under that portion of each tier of beams on which bolting, riveting, welding or painting is being done.

3. Flooring – Other Construction

a. In the erection of a building having double wood floor construction, the rough flooring shall be completed as the building progresses, including the tier below the one on which floor joists are being installed
b. For single wood floor or other flooring systems, the floor immediately below the story where the floor joists are being installed shall be kept planked over.

4. Structural Steel Assembly
   a. During the final placing of solid web structural members, the load shall not be released from the hoisting line until the members are secured with not less than two bolts, or the equivalent at each connection and drawn up wrench tight.
   b. Open web steel joints shall not be placed on any structural steel framework, unless such framework is safely bolted or welded. In steel framing, where bar joints are utilized, and columns are not framed in at least two directions with structural steel members, a bar joist shall be field-bolted at columns to provide lateral stability during construction.
      i. Where long span joists or trusses 40 feet or longer are used, a center row of bolted bridging shall be installed to provide lateral stability during construction prior to slacking of hoisting line.
      ii. No load shall be placed on open web steel joists until these stability requirements are met.
   c. Tag lines shall be used at all times for controlling loads.
   d. False decking or safety nets, and fall arrest systems must be provided for steel assembly exceeding 25 feet in height from the ground or solid floor/deck. *Note: Fall protection is required for all personnel exposed to a fall of 6 feet or more.*

BOLTING, RIVETING, FITTING-UP AND PLUMBING-UP

1. *GENERAL REQUIREMENTS*

a. Containers shall be provided for storing or carrying rivets, bolts and drift pins, and secured against accidental displacement when aloft.
b. Pneumatic hand tools shall be disconnected from the power source, and pressure in hose lines shall be released, before any adjustments or repairs are made.

c. Air line hose sections shall be tied together except when quick disconnect couplers are used to join sections.
d. Eye protection must be worn.
e. Fall protection must be provided and enforced for personnel exposed to a fall of 6 feet or more.

2. *BOLTING*
   a. When bolts or drift pins are being knocked out, means shall be provided to keep them from falling.
   b. Impact wrenches shall be provided with a locking device for retaining the socket.

3. *RIVETING*
   a. Riveting shall not be done in the vicinity of combustible material, unless precautions are taken to prevent fire.
   b. When rivet heads are knocked off, or backed out, means shall be provided to keep from falling.
   c. A safety wire shall be properly installed on the snap and on the handle of the pneumatic riveting hammer and shall be used at all times. The wire size shall be not less than NO. 9 (B&S gauge), leaving the handle and No. 14 (B&S gauge) for the snap or equivalent.

4. *PLUMBING – UP*
   a. Connections of the equipment used in plumbing-up shall be properly secured.
   b. The turnbuckles shall be secured to prevent unwinding while under stress.
   c. Plumbing-up guys and related equipment shall be placed so that employees can get at the connection points.
   d. Plumbing-up guys shall be removed only under the supervision of a competent person.
5. Wood planking shall be of proper thickness to carry the working load, but shall not be less than two inches thick, full size undressed, exterior grade plywood, at least inch thick or equivalent materials inch and larger plywood may not span more than 18 inches without being braced or kicked to give added support.
6. Metal decking of sufficient strength shall be laid tight and secured to prevent movement.
7. Planks must overlap the bearing on each end by a minimum of 12 inches.
8. Inch or larger exterior plywood or equivalent must be used around columns where planks do not fit tightly.
9. Provisions must be made to secure temporary flooring against displacement.
10. All unused openings in floors, temporary or permanent, must be completely planked over or guarded.

11. *FALL PROTECTION*

   a. Contractor must develop a written fall protection plan prior to start of work.
   b. Where possible handrail or guardrails must be installed.
   c. **Continuous tie off for all situations where potential fall distance is 6 feet or more and other methods of fall protection are not available.**

d. Personal fall arrest systems must include the following:
    i. Full Body Harness
    ii. Dual Shock Absorbing Lanyards with deceleration devise or retractable line.
    iii. Anchor Points

CONCRETE WORK

1. POLICY AND SCOPE

All concrete construction and masonry work (including the placement of reinforcing steel and forms) shall meet the Safety Requirements of OSHA 29 CFR 1926.700 to 1926.706 Concrete and Masonry Construction.

2. PERSONAL PROTECTIVE EQUIPMENT

Employees working with concrete will be required to wear shirts with **minimum 4" sleeves, gloves and rubber boots for protection against the hazard of cement burns. Protective creams or lotions to reduce skin irritation and dermatitis *may* be provided to the workers.**
Concrete finishers shall be required to wear knee pads, and to use long-handled floats or powered equipment whenever possible. If powered finishing equipment is used, vibration damping devices should be a part of that equipment.
Nozzle men applying cement, sand, air or water through pneumatic or pressurized hose systems should wear protective face shields and head protection.
Safety glasses and face shields shall be used by employees when shipping, wire brushing or using powered hand tools (including impact and rotary tools).
Hearing protection shall be required in areas with sound levels identified to have potential for **hearing impairment.**

3. GENERAL EQUIPMENT

Concrete pumping stations shall comply with the manufacturer's specifications and limitations applicable to the operation of concrete or similar systems. The limitations assigned to the equipment shall be based on the determination of a qualified engineer, competent in this field when the manufacturer's specifications are not available. These determinations shall be documented and recorded.
Discharge pipes of concrete pumping systems shall be provided with pipe supports designed for 100 overload. Concrete pumping hoses shall be provided with positive fail-safe joint connectors to prevent separation of sections when pressurized.
Powered, rotating-type concrete trowel machines, manually guided, shall be equipment with an automatic shutoff (whenever operator removes his hands from the equipment handles).
The handles of concrete buggies shall not extend beyond the wheels on either side of the buggy.
Where the handles of bull floats have the potential to contact energized electrical conductors, the handles shall be constructed of nonconductive material or insulated with a nonconductive sheath to provide the equivalent protection of a handle constructed of a nonconductive material.

4. FORMS AND SHORING

Form work and shoring shall be designed, erected, supported, braced and maintained so that they will safely support all vertical and lateral loads that may be imposed during placement of concrete. Engineering drawings or plans of all form work and shoring showing the layout, working decks and scaffolding shall be available at the JOB SITE. When temporary storage of reinforcing rods, material or equipment is required on the top of any form work, these area shall be designed to meet the additional loads of such material.

No partially completed structure shall be exposed to any construction load unless such loading has been considered in the design and approved by the project engineer/architect.

Forms and shoring that have been stripped shall be stockpiled in such a manner to eliminate hazards of protruding wall nails, wire ties and other form accessories having the potential for injury.

Manufacturer's recommendations shall be followed for tubular steel frame shoring. These shall be in conformance with the Scaffolding and Shoring Institute's recommended procedures for compression testing scaffold and shores. Couplers (clamps) shall not be used if found to be deformed, broken or defective in any manner. They shall be constructed of structural type steel, malleable iron or structural grade aluminum. A thorough inspection shall be made of all steel frame shoring prior to erection to ensure the material is *not* deteriorated by rust or damaged or defective by dents or other damage.

5. PRE-STRESSED AND POST-STRESSED CONCRETE OPERATIONS

When anchor fittings are utilized for tension strands, the recommendations and instruction of the supplier concerning installation, maintenance and replacement shall be followed.

Tools and strand vises shall be kept clean and in good repair.

During jacking operations of *any* tensioning element or group of tensioning elements, the anchors shall be kept turned up close to the anchor plate.

No one shall be permitted to stand in line or directly over the jacking equipment during tensioning operations.

No one shall be allowed to stand behind the jack during tensioning operations.

All stressed concrete members shall be handled or lifted at the point specifically designated *on the manufacturer's drawing,* with the recommended lifting devices by the manufacturer or the engineer in charge.

All stress members shall be stored on level base and adequately supported during storage and transportation to prevent tipping.

6. MASONRY WORK

The handling and storage of all masonry equipment or material shall be carried out in such a manner as to prevent sliding, falling or collapse of the tiers or stacked, racked or interlocked material.

In stacking bagged materials, such as cement and lime, stacks of over ten bags high shall be provided with restraining walls of sufficient strength to prevent tipping. All cement, lime and

other materials stored in bags and used in masonry work shall be stacked so that the mouths or tops of the outside bags are facing towards The Center Operating of the stack.
To prevent a premature slacking action that may cause fires, lime must be stored in a dry place.

7. BRICKS AND MASONRY BLOCKS

Stacks of bricks and masonry blocks shall be kept level and the taper maintained **during unstacking operations. Bricks and blocks shall never be stacked on uneven or soft surfaces. Stacks of bricks shall not exceed seven feet.** Starting at a four-foot elevation, bricks shall be tapered back up to the seven-foot maximum height.
Brick, block or stone power saws should be equipped with a dust collection system. If a dust collection system is not used, all employees performing this task shall be provided with an approved respirator for protection from the dust hazard. Approved safety goggles and face shields shall be used when cutting brick, block and stone.

8. LADDERS AND SCAFFOLDING

All ladders and scaffolding used in concrete or masonry work shall conform to the section on ladders and scaffolding.

FALL PROTECTION

1. SCOPE AND APPLICATION

The provisions contained in this policy are general in nature and are intended to set the basic guidelines for work at elevations of six feet or more above lower levels. Each contractor must develop site specific fall prevention plans to cover their scope of work. The specific requirements of these plans must *not* conflict with the provisions contained in this policy. Additionally, contractors' and subcontractors' site specific policies and procedures must comply with OSHA's 1926 Subpart M, Fall Protection.
Contractors and subcontractors developing site specific fall prevention plans may need to refer to other sections of this manual as the scope of work may require. Some other sections of this manual, which may be consulted, include: scaffolding, stairways & ladders, steel erection, scissor-lifts and aerial work platforms.

2. RESPONSIBILTY

1. Senior Supervisor
    a. Must conduct an assessment of the work site to evaluate potential fall hazards to determine proper applications of the requirements outlined in this policy.
    b. Ensure that the policies and procedures implemented meet the requirements stated here in.
    c. Ensure that all employees receive the required training in fall prevention.
2. Safety Coordinators
    a. Must assist in the evaluation and implementation of this policy and act as **advisor to the senior supervisor.**
    b. Must assist in providing the required training.

3. Employees
    a. All employees are required to comply with the fall protection requirements outlined in this policy and any site-specific practices.

3. GENERAL PRACTICES

1. All elevated walking/working surfaces must be evaluated to ensure strength and structural integrity to support employees, materials and tools safely.
2. Unprotected sides or edges that are six feet or more above the lower level must be protected by fall system such as safety nets or personal fall arrest systems. Personal fall arrest systems must incorporate the use of a full body harness.
3. Any employees who is constructing a leading edge six feet or more above the lower level must be protected by the use of guardrails, safety nets (meeting the OSHA standards for fall protection nets), and/or personal fall arrest system
4. Any employee in a hoist area must be protected from falling six feet or more by a guardrail or personal fall arrest system.
5. If during the course work, a guardrail system (or portion there-of) has to be removed to facilitate hoisting, landing material, etc. and an employee is subject to falling six or more feet, those employees must be protected by a personal fall arrest system.

4. SPECIFIC HAZARD TYPES

1. Holes (gaps measuring 2 inches or more in its least dimension in a walking/working surface):
    a. Employees must be protected from falling through holes in walking/working surfaces (including skylights) by covers (labeled Hole Cover or color-coded), personal fall arrest system, guardrails erected around the entire hole or nets erected according to the OSHA standard.
    b. Employees must be protected from objects falling through holes (including skylights) by covers, toe boards, mesh barricades erected under the opening preventing entry or similar protective measure.
    c. Barricade tape may only be considered a warning and used only when there is enough room to allow for safe use as a warning (at least six feet back from the opening or edge).

2. **Form work and reinforcing steel:**
    a. All employees on the edge of form work or reinforcing steel must be protected from falls 6 feet or more to the lower level by;
        i. Personal fall arrest system, safety nets or guardrails.
        ii. Positioning devices may be used while the employees is in a work position and not moving, however, once the worker starts to move a lanyard must be used to provide protection while in motion.
3. **Ramps and Runways:**
    a. When the potential exists for falls more than six feet, guardrails must be used on open sides.
4. **Excavations:**

a. When an excavation depth is six feet or more, and employees are exposed to a fall hazard such as working near the edge of the excavation, fall prevention must be provided by the use of guardrails, fence or barricade.
b. Barricade tape and other warning devices, if used, must be placed back from the excavation edge at least six feet and entry restricted. If the six-foot distance cannot be maintained, a guardrail, fence or barricade must be used to provide protection.
c. Employees at the edge of pier holes, wells, pits, shafts and similar opening which are six feet or more in depth must be protected by guardrails, fences, covers, barricades or personal fall arrest systems attached to an anchor point capable of sustaining 5,000 lbs. loading.

5. **Dangerous Equipment:**
   a. Employees exposed to falling into dangerous equipment such as gears, pulleys, sprockets, electrical equipment and chemical vats must be protected by guardrails; equipment guards such as vat covers, gear and sprocket covers, etc.

6. **Overhand Bricklaying and Related Work:**
   a. Overhand bricklaying relates to the process of laying bricks and masonry units such that the surface of a wall to be joined is on the opposite side of the wall from the mason, requiring the mason to lean over while performing such work six feet or more above lower levels. Protection must be provided by guardrails, nets, or personal fall arrest system.

7. **Roofing Work:**
   a. Low Slope (slope less than or equal to 4 in 12 vertical to horizontal):
      i. Fall protection must be provided by guardrails, safety nets, personal fall arrest systems or a combination of warning line system (a barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge), and guardrails, warning line system and safety nets, warning line system and personal fall arrest system, warning line system and safety monitoring system (a competent person is responsible for recognizing and warning employees of fall hazards).
      ii. On low-slope roofs 50 feet in width, the use of a safety monitoring system alone is permitted.
      iii. The safety monitoring system requires:
         (a) Competent person to monitor at *all* times.
         (b) Monitor must be readily identified by sight, i.e. wearing vest or special color hard hat.
         (c) Monitor is on the same level in visual sight of employees.
         (d) Monitor is close enough to orally communicate.
         (e) No mechanical equipment used or stored in area.
         (f) Only roofing employees involved.
         (g) Employees must comply with warning issued by competent **person/monitor, and the monitor may not have any other duties.**
         (h) Steep-Roofs (having a slope greater than 4in 12 vertical to horizontal): Fall protection must be provided by the use of guardrails, safety nets or personal fall arrest system.

8. **Precast Concrete Erection:**
    a. Includes but is not limited to the erection of wall panels, columns, beams and floor & roof "tees", and related operations such as grouting, setting concrete bridge beams, etc.
    b. Employees engaged in such activities six feet or more above lower levels must be protected by guardrails, safety nets, or personal fall arrest systems.
9. **Steel Erection:**
    a. Includes but is not limited to the erection of structural steel for buildings (i.e. columns, beams, metal decking, grating, etc.) and miscellaneous and ornamental metals (stairs, handrails, brick ledgers, door and window headers and braces, etc.)
    b. All employees engaged in the erection of structural and miscellaneous steel exposed to a fall of six feet or greater must be protected by the use of a personal fall arrest system, or guardrail system.
    c. All employees using a personal fall arrest system must comply with the continuous tie-off policy.

5. GENERAL FALL PROTECTION

1. Wall openings (including chute openings):
    Where the outside bottom edge of the wall opening is six feet or more above the lower level and the bottom of the wall opening is less than 39 inches above the walking/working surface, protection must be provided by guardrails, safety nets or personal fall arrest systems.
2. Walking/Working Surfaces Not Otherwise Addressed:
    a) Personnel on walking/working surfaces six feet or more above lower levels must be protected by guardrails, safety nets or personal fall arrest systems.
    b) The procedure does not necessarily relate to working from or on:
        i. Scaffolds
    ii. Cranes & Derricks
    iii. Steel erection
    iv. Construction of electrical transmission lines, and
    v. Stairways and ladders
    vi. Check other procedures/policies listed in this manual for additional **requirements pertaining to those conditions listed above and the appropriate OSHA standards.**

3. Protection From Falling Objects
    a) In additional to utilizing hard hats at all times on the site according to company policy and OSHA standards, the following shall apply:
        i. Erect toe boards, screens and/or guardrails to prevent objects from falling from higher levels.
        ii. Barricade the area into which objects could fall and prohibit entry,
        iii. Keep objects at least ten feet away from outside edges and **at least six feet away from inside floor openings to prevent accidental displacement.**

6. FALL PROTECTION SYSTEMS

1.General requirements for guardrails (for additional information refer to OSHA 1926.502 for more details):

a) Top rail height 42 inches (+/- 3 inches) above the walking/working level.

b) **Midrails, screens, mesh intermediate vertical members or equivalent must be installed between the top rail and the walking/working surface when there is no wall parapet at 21 inches high.**

c) Midrails must be installed midway between the top rail and the walking/working surface (approximately 21 inches).

d) Screens and mesh, when used, must extend from the top rail to the walking/working surface and along the entire opening between the top rail supports.

e) Intermediate members (such as balusters), when used between the support posts, must be spaced not more than 19 inches apart.

f) When employees are using stilts, the top edge height of the top rail must be increased an amount equal to the height of the stilts. This requirement also pertains to such situations such as pan deck work where the employees are exposed to falls because their working surface height negates the effectiveness of the guardrail system. In such situations, the top rail height must be extended to provide protection equivalent to the standard **approximate** height of 42 inches.

g) Top rail systems must be constructed to be able to withstand a force of 200lbs. applied within of the top edge applied in any outward or downward direction at any point along the top edge. The 200 lbs. of pressure must not deflect the top edge of the guardrail to a height less than 39 inches above the walking/working surface.

h) Midrails, screens, mesh, vertical members, etc. must be capable of withstanding a force of 150 lbs. applied in any outward or downward direction.

i) Toe board must be capable of withstanding 50 lbs.

j) Guardrail surfaces must not present puncture or laceration hazards.

k) Any overhang on terminal posts must constitute a projection hazard.

l) Wire cable when used as a guardrail (includes midrail) must not be less than ½ inch in diameter. Top cable shall be flagged at least every six feet with high visibility material.

m) In hoist areas, a chain gate or removable guardrail system may be used, when the hoist area is not in use the chain gate or guardrail system must be in place. A personal fall arrest system must be used by the employees during the time that the chain gate or guardrail is not in place. No one except the personnel actually assigned to complete the job will be allowed in the area where the chain gate or guardrail is removed.

n) Guardrails must completely surround floor holes unless floor hole covers are used. When necessary, two sides of the floor hole guardrail system can be removed to allow for the movement of material but must be replaced or a hole cover used to provide the required protection when material handling operations have been completed. However, personnel exposed to falls during the time frame that the guardrails are removed must be protected by a personal fall arrest system.

o) Ladder openings protected by guardrails must utilize a gate or offset to prevent accidental entry.

p) Guardrails used on ramps and runways must be erected on all protected sides.

q) All guardrail systems must comply with OSHA 1926.502 (b) (3), (4) and (5) which specify construction requirements.

2.Safety Nets

a) Must be installed as close as possible to the walking/working surface but in no case further than 30 feet below.

b) Safety nets must extend from the outmost projection of the work surface as follows:

Vertical Distance from working level plane of the Net	Minimum required horizontal distance to outer edge of the net from the working surface
Up to five (5) feet	Eight Feet (8'-0)
Greater than five (5) feet up to ten (10) feet	Ten feet (10'-0)
Greater than ten (10) feet up to thirty (30) feet	Thirteen feet (13'-0)

c)**Structures, objects, projections, etc. must not present a hazard to someone falling into a safety net.** A drop test must be performed as follows to ensure safe rigging and sufficient clearances:

i. A drop test must be performed at the job site after initial installation and prior to being used as a fall protection system.

ii. A 400-lb. bag of sand 30 inches in diameter (+/- 2") must be dropped into the net from 42 inches above the highest walking/ working surface at which employees are exposed to fall hazards.

d)Defective nets must not be used. Nets must be inspected prior to work start up **each day. And a formal written inspection must be conducted at least weekly** and/or after any occurrence which could affect the integrity of the safety net system.

e)Debris must be removed from safety nets as soon as possible or at least before the next shift.

f) Mesh openings in safety nets must not exceed six inches. Attachment openings must not exceed 36 square inches nor be longer than six inches on any side. Connections between safety net panels must be spaced no more **than six inches apart.**

g) Safety net border ropes or webbing must have a minimum breaking strength of 5,000 lbs.

3.Personal Fall Arrest Systems

a) Safety harnesses, lanyards, positioning devices and retractable life lines must be purchased from a commercial supplier who will ensure compliance with the specific material construction requirements for such fall protection equipment listed in the OSHA 1926 subpart M standard.

b) Only locking type snap hooks are acceptable on safety lanyards used as part of a fall protection system.

c) The practice of connection two or more lanyards together to form a longer lanyard is prohibited.

d) On suspended scaffolds, vertical lifelines must be used equipped with rope grabs and shall have a minimum breaking strength of 5,000 lbs. **When vertical lifelines are used, each employee must be provided with an individual vertical lifeline and OSHA 1926 subpart M shall be consulted for specific requirements.**

e) Horizontal lifelines must have a safety factor of at least two times the intended load.

f) All lifelines must be protected from damage.

g) Self-retracting lifelines must allow for a fall no greater than two feet.

h) Shock absorbing lanyards must be used to limit shock-loading requirements specified in OSHA subpart M.

i) Anchorage for fall arrest systems must be independent of suspended work platforms and capable of supporting at least 5,000 lbs. or designed by a qualified person with safety factor of at least two.
j) All fall arrest systems must be installed and maintained under the guidance of a qualified fall protection competent person.
k) Lanyard attachment points must be in The Center Operating of the users back at shoulder height for full body harnesses.
l) Fall protection equipment must only be used to provide such protection and not used for any other purpose.
m) It is highly recommended that all fall arrest system components utilized be from the same manufacturer to reduce any confusion over compatibility and warranty.
n) Prompt means of rescue must be provided at the job site.
o) All employees required to utilize fall arrest systems must receive specific **training on how to properly inspect such equipment and training records shall be maintained for inspection.**
p) Personal fall arrest systems must not be attached to guardrail systems not hoisting equipment.
q) Only cable of appropriate size for the intended load (including safety factor) must be utilized for horizontal lifelines allowing for lanyard locking snap hook attachment. Synthetic rope, manila nylon, etc must not be utilized as a HORIZONTAL lifeline.

4. Inspection:
a)All personal fall arrest system components must be inspected by the employee before use for evidence of excessive wear, damage, or other defect or deterioration.
b) All damaged equipment must be removed from service and not used again until inspected and authorized by the manufacturer.
c) All fall arrest equipment subjected to shock loading must be removed from service and not used again until inspected and approved for use by the manufacturer.

5. **Positioning Devices:**
a)Such devices cannot allow for a fall greater than two feet.
b) Can only be attached to anchorage that can withstand an impact load of 3,000 lbs. or two times the expected shock loading (whichever is greater).
c) Positioning device systems must be inspected before use.
d) **Positioning device systems must only be used for worker safeguarding and not for any other purpose.**

7.WARNING LINE SYSTEMS

1. Must be erected on all sides of roof area.
2. **When mechanical equipment is not being used, the warning line system must be erected at least six feet from the roof edge.**
3. When mechanical equipment is running, the warning line system must not be erected less than six feet from the parallel roof edge not less than ten feet from the roof edge which is perpendicular to the direction of the mechanical equipment's operation.
4. Points of access, material handling areas, storage areas, and hoisting areas must be connected to the work area by an access path formed by two warning lines. When not in use, the path must be blocked to prevent entry into the area.

5. The warning system must be erected as follows:
    a) The rope, chain or wire must be flagged at no more than six foot intervals with highly visible materials and have a tensile strength of at least 500 lbs.
    b) The rope, chain or wire must not sag to less than 34 inches from the walking/working surface or erected to a height greater than 39 inches.
    c) Support stanchions must be capable of supporting at least 16 lbs. of force applied horizontally 30 inches above the walking/working surface perpendicular to the warning line. The line must be attached to the stanchions in such a way that slack will not be taken up in adjacent sections before the stanchion tips over.
6. Employees not performing roof work must not be allowed between the warning line and the roof edge.
7. Mechanical equipment must only be used or stored on roofs in areas where employees are protected by a warning line system, guardrail system and/or personal fall arrest system.

8.CONTROLLED ACCESS ZONES

1. When used to control access to leading edge work, the area must be defined by a control line or other means which restricts access to the area.
    a) Training must be conducted and all exposed employees must sign an attendance sheet before being allowed to work in a controlled access zone.
2. Control lines must be erected no closer than six feet to the leading edge nor further than 25 feet from the unprotected or leading edge.
3. When erecting pre-cast concrete members, the control line must be erected no closer than six feet but not further than 60 feet or half the member being erected, whichever is less, from the leading edge.
4. The control line must be parallel and extend along the entire length of the unprotected side or leading edge. The control line shall be connected on each side to a guardrail system *or* wall.
5. Controlled access for overhead bricklaying operations:
    a) The control line must be erected no closer than 10 feet nor more than feet from the working edge.
    b) The control line must extend along the entire area where overhead bricklaying operations are taking place and shall be erected parallel to the working edge.
    c) Additional control lines must be used to enclose the controlled access zone.
    d) Only employees actually performing the overhand bricklaying operations may be allowed in the controlled access zone.
6. Control lines shall be erected as follows:
    a) Ropes, chains, wires *or* equivalent material must have a minimum breaking strength of 200 lbs. and shall be flagged every six feet with high visibility material.
    b) Each line must be erected so that the line is not higher than 45 inches from the working surface nor less than 39 inches (including sag).
    c) On roofs *or* floors where guardrail systems are not in place, prior to beginning overhand bricklaying operations, controlled access zones must be enlarged as necessary to enclose all points of access, material handling area, and storage areas.

9.SAFETY MONITORING SYSTEM

1. Safety monitor systems must only be used with roof work.
2. The contractor *or* subcontractor must appoint a competent person to monitor the safety of all employees as follows:

a) The monitor must be trained in the requirements of this procedure and OSHA 1926, subpart M to recognize and evaluate the fall protection necessary to protect exposed workers.

b) The monitor must warn all employees when it appears that the employees are unaware of a fall hazard or is acting in an unsafe manner.

c) The monitor must be on the same working surface and in visual sight of the employees being monitored.

d) The monitor must be close enough to communicate orally with the employees.

e) The monitor must wear a Hi-visibility Safety Vest.

3. Mechanical equipment must not be used or stored in areas where the safety monitoring system is being used to monitor employees on low pitched roofs.

4. Employees not engaged in roof work must not be allowed in the work areas being **monitored.**

5. All employees being monitored must be instructed to promptly comply with warning issued by the monitor.

6. The Safety Monitoring System must be used in conjunction with a Controlled Access Zone.

10.HOLES COVERS

1. Covers used on roadways for vehicular traffic must be capable of supporting at least twice the expected load of the largest vehicle (axle load) anticipated to cross over the **cover.**

2. All other covers must be capable of supporting at least twice the weight of employees, equipment and materials that may be imposed on the cover at any one time.

3. All covers must be secured to prevent accidental displacement.

4. All covers must be color coded or labeled "Hole" or "Cover" to provide warning of the hazard.

5. These requirement do not apply to cast iron manhole covers or steel grates used on streets or roadways.

11.PROTECTION FROM FALLING OBJECTS

1. Toe boards must be capable of withstanding a force of at least 50 pounds applied in any downward or outward direction at any point along the toe board.

2. Toe boards must be a minimum 3 ½ inches in vertical height and there shall be no more than an inch gap between the toe board and walking/working surface.

3. Where materials or tools are piled higher than the toe board, screening or paneling must be installed between the working surface and the top rail to prevent such materials, tools or equipment from being accidentally displaced.

12.TRAINING:

1. Fall protection training must be conducted for all affected employees and will cover at least the following topics.

a) Nature of fall hazards at the site.

b) The site specific fall protection plan.

c) The use, inspection and maintenance of fall prevention and fall arrest systems employed at the site, and

d) Safe practices outlined in this procedure and OSHA 1926 subpart M.

e) Reporting procedures for fall hazards.

2. Retraining must be conducted as necessary when one of the following circumstances occur:

a) Employees do not demonstrate an understanding or required skill to comply with this policy.

b) Changes in site conditions and/or equipment that render previous training obsolete.

3. Competency:

a) All employees completing the fall protection training may be required to demonstrate their understanding of the material presented through testing, skill demonstration, supervisory observation, etc.

EXCAVATION

1.SCOPE AND APPLICATION

- This policy highlights the OSHA excavation requirements found in 29 CFR 1926.650. It is not intended to replace the need to review the actual standard that contains greater detail.
- This policy applies to all open excavations made in the earth's surface.
- For purposes of this policy and excavation is any man made cut, cavity, trench or depression in the earth's surface. Since the requirements for trenches are explicit and in some cases more restrictive than for general excavations the definition of Trench as used herein is: a narrow excavation made below the surface of the ground, where the depth is greater than the width, and the width does not exceed 15 feet.

2.GENERAL REQUIREMENTS

Existing Utilities

Before any excavation actually begins, the Contractor must determine the estimated location of all utility installations i.e. sewer, telephone, fuel lines, underground and overhead electric, water lines, or any other underground installation that may be encountered during excavation. Also, before starting the excavation, the contractor must contact the utility companies or utility owners involved and inform them, within established or customary local response times, of the proposed work. Utility companies or owners must be asked to locate all underground utilities and allow at least 24 hours for them to do so, before excavation work started.

1.In the event that they cannot find the exact location of the utility installations, the contractor may proceed with caution. Employees must use safe and acceptable means to locate the underground installations.

2. If underground installations are exposed during excavation or trenching operations, they shall be removed protected or property supported.

SAFETY CONSIDERATIONS

The contractor must determine the amount and type of safety equipment required for the excavation and trenching operation. _____ considers the soil at all JOB SITES as Class "C" soil. No matter how much trenching, shoring and back filling jobs have been done in the past, each job must be approached with the utmost care and preparation. Consideration must be made for the following as a minimum:

1.Type of soil excavation (TYPE C Soil).

2. Type of Sloping and/or Shoring that must be used in type "C" soil.

3. Employee access and egress.

4. Location of equipment, materials and stockpiles.
5. Possibility of hazardous atmospheres.
    a) Gas metering equipment.
    b) Rescue equipment (Harness, lifeline, tripod, etc.)
6. Rescue procedures in case of an injury or cave-in.
7. Personal Protective Equipment requirements.
    a) Traffic vests
    b) Hard hats
    c) Safety glasses
    d) Work boots
8. Operators must be trained in the proper and safe operation of any equipment which they might be expected to operate during the excavation and trenching operation.
9. A competent person for excavation and trenching must be on site during all excavation and trenching operations.
    a) A competent person is one who has received formal training on the OSHA standard and **one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.**
10. Adequate precautions must be in place to protect employees working in excavations, against the hazards posed by water accumulation.
11. Employees must be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations.
    a) Protection must be provided by placing and keeping such materials or equipment at least two (2') feet from the edge of excavations.
    b) Flag person or stop logs must be provided when equipment approaches the edge of an excavation (such as dumping backfill material).
12. A stairway, ladder or ramp must be used as a means of access or egress in trench excavations that are four feet or more in depth. The ladder(s), stairway(s), or ramp must be spaced so that no employee in the trench excavation is more than 25 feet from a means of egress. When ladder(s) are employed, the top of the ladder must extend a minimum of three feet above the ground and be properly secured.
13. Employees must not be permitted underneath loads handling by lifting or digging equipment.
    a) Employees must be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling material.
    b) Employees may remain in cab of trucks equipped with overhead protection.
14. Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing or underpinning must be provided to ensure the stability of such structure for the protection of employees.
15. Sidewalks, pavement and appurtenant structure may not be undermined unless a support system such as shoring is provided to protect employees from the possible collapse of such structures.

Permit Requirements

A permit must be obtained for any excavation three feet or more in depth.
In excavations where oxygen deficiency or gaseous conditions exist, or could reasonably be expected to exist, a confined space permit must be obtained.

1.Where oxygen deficiency (atmosphere containing less than 19.5 oxygen) exist, the area must be continuously ventilated until the oxygen levels are at an acceptable level (19.5 and 20.5).
2. Where a gaseous condition exists, the area must be ventilated until the flammable gas concentration is below 10 of the lower flammable limits.
3. All requirements of the confined space permit must be followed.

3.PROTECTIVE SYSTEMS

The major cause of serious injury to or death of an employee working in an excavation comes from cave-ins. When the danger of collapse exists, trenches and excavations less than 5' in depth must also be protected, especially when an employee's entire body is below grade, by one of the following systems. It is due to the seriousness of this type of accident that the following requirements must be met.

General Requirements

All excavations five feet or more in depth must be protected from cave-in by one of the following methods.

a)Sloping, or benching the sides of the excavations.
b) Shoring the sides of the excavation.
c) Placing a shield between the side of the excavation and the work area.
d) All excavations, which are twenty feet or more in depth, must be designed by a registered professional engineer.

All excavations where the contractor elects to use the sloping or benching of the banks to prevent cave-in must:

1. Be sloped as required by the OSHA standards for the class of soil encountered.
2. Be benched in such a manner that the first vertical rise no greater than four feet.
3. The equivalent slope of all benching must match that required by the OSHA standards for the class soil encountered.

All shoring systems must meet the requirement of the OSHA standards for the construction industry 29 CFR 1926.650 and be:

1. Designed using information from the tabulated data shown in the OSHA manual.
2. Designed using tabulated data prepared by a registered professional engineer for the soil type encountered.
3. Designed using manufacturer's tabulated data for the soil conditions encountered.
4. Designed by a registered professional engineer.

At least one copy of the information, including the identity of the registered professional engineer who approved the data, must be kept at the work site during construction of the protective system. Upon completion of the system, the data may be stored *away* from the job site, but a copy must be available, upon request, to the Assistant Secretary of Labor for OSHA.
A trench shield (or trench box) may be used which either has been:

1. Designed or approved by a registered professional engineer,
2. Or based on tabulated data prepared or approved by a registered professional engineer.

Shoring systems and trench shields must extend down to within two feet of the bottom of the excavation and eighteen inches above the top of vertical banks.
Excavation below the level of the base or footing of any foundation or retaining wall is prohibited unless:

1. A support system such as underpinning is provided,
2. The excavation is in stable rock, or
3. A registered professional engineer determines that the structure is sufficiently removed from the excavation and that excavation will not pose a hazard to employees or the structure.

Excavations under sidewalks and pavements are also prohibited unless an appropriately designed support system is provided or another effective method is used.
Whenever support systems, shield systems, or other protective systems are being used, a copy of the manufacturer's specifications, recommendations and limitations must be in written form and maintained at the job site.

Installation and Removal of Protective Systems

The following procedures are required for the protection of employees when installing support systems:

1. Securely connect member of support systems,
2. Safely install support systems,
3. Never overload members of support systems, and
4. Install other structural members to carry loads imposed on the support system when **temporary removal of individual members is necessary.**

As soon as work is completed, the excavation should be back filled as the protective system is dismantled.

1. Employees should slowly remove the protective system from the bottom up, taking care to release members slowly.
2. Remove shoring at a rate consistent with the backfilling operation.

Inspection Requirements

A competent person must perform the following inspections:

1. Perform daily inspection of protection equipment trench conditions, and adjacent areas.
2. Inspections must be made prior to start of work and as needed throughout the shift.
    a. Includes atmosphere testing.
3. Inspections must be made after every rainstorm or other hazard-increasing occurrence.

The competent person must:

1. Remove employees from hazardous conditions and make all changes necessary to ensure their safety.
2. Categorize soil conditions and conduct visual and manual tests.
3. Determine the appropriate protection system to be used.
4. Obtain appropriate permits when needed.
5. Maintain in-site records of inspections and protective systems used.

MATERIALS AND EQUIPMENT

The contractor is responsible for the safe condition of materials and equipment used for protective systems. Defective and damaged materials and equipment can result in the failure of protective system and cause excavation hazards.

1. To avoid possible failure of a protective system, we must ensure that:

a. Materials and equipment are free from damage or defects,
b. Manufactured materials and equipment are used and maintained in a manner consistent with the recommendations of the manufacturer.
c. While in operation, materials and equipment are examined by a competent person to determine if they are suitable for continued use.
d. Materials and equipment which are not safe for use are removed from service,
e. Damaged materials are not returned to service without the evaluation and approval of a registered professional engineer.

4. SIGNS AND BARRICADES

All signs and barricades required by this section must meet the requirement of the section of this manual titled "Sign, Signals and Barricades".

1. All excavations, which are obstructed from the view of employees, either on foot or in a vehicle must be barricaded, or fenced.
2. No excavation must be left open over night without substantial barricades being placed along all open sides.
3. Warning signs must be posted at fifty foot intervals on all excavations that will remain open for more than 24 hours.
4. In area subject to vehicle traffic, barricades must be equipped with flashing lights if left in place after sundown.
5. Confined space "Permit Required Before Entry" signs must be placed at the access points to all excavations that have or are reasonably expected hazardous atmospheres.

FIRE PREVENTION, PROTECTION & CONTROL

1. SCOPE AND APPLICATION

The following sets forth the minimum requirements for Fire Prevention, Protection and Control for the project. All contractors will be required to comply with these requirements. Additionally each contractor will meet the requirements of OSHA 29 CFR 1926 subpart F.

2. GENERAL REQUIREMENTS

Contractors are responsible for assigning an individual to implement the fire protection, prevention and **control programs for the contractor's scope of work. The minimum program requirements are:**

1. Training of personnel
2. Inventory of available firefighting equipment as required by scope of work.
3. Weekly inspection of firefighting equipment.
4. Weekly inspection of flammable material storage.
5. **Periodic inspection of contractors operations to verify compliance with this section.**

3. FIRE PREVENTION

Keep work and storage areas clean and free of flammable or combustible debris at all times. Ensure that all flammable and combustible materials are stored properly; with all flammable liquids and gases separated from other flammable materials.

Dispose of all rags which have oil, grease, paint thinners and cleaning agents that may be combustible in accordance with applicable local, state and federal regulations.

All internal combustion engine powered equipment shall be inspected and repairs made, if such hazards as igniting of fuel exist.

1. Fueling area or station
    a. "No Smoking" signs must be posted and enforced.
    b. "Turn Engines Off" signs must be posted and enforced in the same area.
    c. Bonding of equipment to be fueled must be accomplished through the use of internally grounded hose or external ground cable.
2. Make sure that fuel distributors fuel tank, dispensing hose and nozzle comply with federal, state and local regulations.
3. Only approved industrial metal safety cans will be used for the handling and storage of flammable and combustible liquids up to 60 gallons and must be labeled as to the contents.
4. Portable storage tanks with the capacity of 60 gallons or more must be:
    a. Plainly marked as to contents
    b. At least 50 feet away from any building
    c. Kept free from debris, trash, grass and weeds at all times
    d. Properly vented, if storing 600 gallons or more.

FIRE PROTECTION

1. 1926.150(a)

General requirements.

2. 1926.150(a)(1)

The employer shall be responsible for the development of a fire protection program to be followed throughout all phases of the construction and demolition work, and he shall provide for the firefighting equipment as specified in this subpart. As fire hazards occur, there shall be no delay in providing the necessary equipment.

3. 1926.150(a)(2)

    Access to all available firefighting equipment shall be maintained at all times.

4. 1926.150(a)(3)

    All firefighting equipment, provided by the employer, shall be conspicuously located.

5. 1926.150(a)(4)

    All firefighting equipment shall be periodically inspected and maintained in operating condition. Defective equipment shall be immediately replaced.

6. 1926.150(a)(5)

    As warranted by the project, the employer shall provide a trained and equipped firefighting organization (Fire Brigade) to assure adequate protection to life.

7. ***..1926.150(b)***

8. 1926.150(b)

   Water supply.

9. 1926.150(b)(1)

   A temporary or permanent water supply, of sufficient volume, duration, and pressure, required to properly operate the firefighting equipment shall be made available as soon as combustible materials accumulate.

10. 1926.150(b)(2)

    Where underground water mains are to be provided, they shall be installed, completed, and made available for use as soon as practicable.

11. 1926.150(c)

    Portable firefighting equipment-

12. 1926.150(c)(1)

    Fire extinguishers and small hose lines.

13. 1926.150(c)(1)(i)

    A fire extinguisher, rated not less than 2A, shall be provided for each 3,000 square feet of the protected building area, or major fraction thereof. Travel distance from any point of the protected area to the nearest fire extinguisher shall not exceed 100 feet.

14. 1926.150(c)(1)(ii)

    One 55-gallon open drum of water with two fire pails may be substituted for a fire extinguisher having a 2A rating.

15. 1926.150(c)(1)(iii)

    A 1/2-inch diameter garden-type hose line, not to exceed 100 feet in length and equipped with a nozzle, may be substituted for a 2A-rated fire extinguisher, providing it is capable of discharging a minimum of 5 gallons per minute with a minimum hose stream range of 30 feet horizontally. The garden-type hose lines shall be mounted on conventional racks or reels. The number and location of hose racks or reels shall be such that at least one hose stream can be applied to all points in the area.

16. ***..1926.150(c)(1)(iv)***

17. 1926.150(c)(1)(iv)

    One or more fire extinguishers, rated not less than 2A, shall be provided on each floor. In multistory buildings, at least one fire extinguisher shall be located adjacent to stairway.

18. 1926.150(c)(1)(v)

    Extinguishers and water drums, subject to freezing, shall be protected from freezing.

19. 1926.150(c)(1)(vi)

A fire extinguisher, rated not less than 10B, shall be provided within 50 feet of wherever more than 5 gallons of flammable or combustible liquids or 5 pounds of flammable gas are being used on the jobsite. This requirement does not apply to the integral fuel tanks of motor vehicles.

20. 1926.150(c)(1)(vii)

Carbon tetrachloride and other toxic vaporizing liquid fire extinguishers are prohibited.

21. 1926.150(c)(1)(viii)

Portable fire extinguishers shall be inspected periodically and maintained in accordance with Maintenance and Use of Portable Fire Extinguishers, NFPA No. 10A-1970.

22. **1926.150(c)(1)(ix)**

Fire extinguishers which have been listed or approved by a nationally recognized testing laboratory, shall be used to meet the requirements of this subpart.

23. **1926.150(c)(1)(x)**

Table F-1 may be used as a guide for selecting the appropriate portable fire extinguishers.

Table F-1 FIRE EXTINGUISHERS DATA

	WATER TYPE				FOAM	CARBON DIOXIDE	DRY CHEMICAL			
							SODIUM OR POTASSIUM BICARBONATE		MULIT-PURPOSE ABC	
	 STORED PRESSURE	 CARTRIDGE OPERATED	 WATER PUMP TANK	 SODA ACID	 FOAM	 CO2	 CARTRIDGE OPERATED	 STORED PRESSURE	 STORED PRESSURE	 CARTRIDGE OPERATED
CLASS A FIRES WOOD, PAPER, TRASH HAVING GLOWING EMBERS	YES	YES	YES	YES	YES	NO	NO	NO	YES	YES
CLASS B FIRES FLAMMABLE LIQUIDS GASOLINE, OIL, PAINTS, GREASE, ETC.	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES
CLASS C FIRES ELECTRICAL EQUIPMENT	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES
CLASS D FIRES COMBUSTIBLE METALS	SPECIAL EXTINGUISHING AGENTS APPROVED BY RECOGNIZED TESTING									
METHOD OF OPERATION	PULL PIN-SQUEEZE HANDLE	TURN UPSIDE DOWN AND BUMP	PUMP HANDLE	TURN UPSIDE DOWN	TURN UPSIDE DOWN	PULL PIN-SQUEEZE LEVER	RUPTURE CARTRIDGE-SQUEEZE LEVER	PULL PIN-SQUEEZE HANDLE	PULL PIN-SQUEEZE HANDLE	RUPTURE CARTRIDGE-SQUEEZE LEVER
RANGE	30' - 40	30' - 40	30' - 40	30' - 40	30' - 40	3' - 8'	5' - 20'	5' - 20'	5' - 20'	5' - 20
MAINTENANCE	CHECK AIR PRESSURE GAUGE MONTHLY	WEIGH GAS CARTRIDGE ADD WATER IF REQUIRED ANNUALLY	DISCHARGE AND FILL WITH WATER ANNUALLY	DISCHARGE ANNUALLY -RECHARGE	DISCHARGE ANNUALLY -RECHARGE	WEIGH SEMI-ANNUALLY	WEIGH GAS CARTRIDGE-CHECK CONDITION OF DRY CHEMICAL ANNUALLY	CHECK GAS PRESSURE GAUGE AND CONDITION OF DRY CHEMICAL ANNUALLY	CHECK GAS PRESSURE GAUGE AND CONDITION OF DRY CHEMICAL ANNUALLY	WEIGH GAS CARTRIDGE-CHECK CONDITION OF DRY CHEMICAL ANNUALLY

24. ***..1926.150(c)(2)***

25. 1926.150(c)(2)

Fire hose and connections.

26. 1926.150(c)(2)(i)

One hundred feet, or less, of 1 1/2-inch hose, with a nozzle capable of discharging water at 25 gallons or more per minute, may be substituted for a fire extinguisher rated not more than 2A in the designated area provided that the hose line can reach all points in the area.

27. 1926.150(c)(2)(ii)

If fire hose connections are not compatible with local firefighting equipment, the contractor shall provide adapters, or equivalent, to permit connections.

28. 1926.150(c)(2)(iii)

During demolition involving combustible materials, charged hose lines, supplied by hydrants, water tank trucks with pumps, or equivalent, shall be made available.

29. 1926.150(d)

Fixed firefighting equipment-

30. 1926.150(d)(1)

Sprinkler protection.

31. 1926.150(d)(1)(i)

If the facility being constructed includes the installation of automatic sprinkler protection, the installation shall closely follow the construction and be placed in service as soon as applicable laws permit following completion of each story.

32. ***..1926.150(d)(1)(ii)***

33. 1926.150(d)(1)(ii)

During demolition or alterations, existing automatic sprinkler installations shall be retained in service as long as reasonable. The operation of sprinkler control valves shall be permitted only by properly authorized persons. Modification of sprinkler systems to permit alterations or additional demolition should be expedited so that the automatic protection may be returned to service as quickly as possible. Sprinkler control valves shall be checked daily at close of work to ascertain that the protection is in service.

34. 1926.150(d)(2)

Standpipes. In all structures in which standpipes are required, or where standpipes exist in structures being altered, they shall be brought up as soon as applicable laws permit, and shall be maintained as construction progresses in such a manner that they are always ready for fire protection use. The standpipes shall be provided with Siamese fire department connections on the outside of the structure, at the street level, which shall be conspicuously marked. There shall be at least one standard hose outlet at each floor.

35. 1926.150(e)

Fire alarm devices.

36. 1926.150(e)(1)

An alarm system, e.g., telephone system, siren, etc., shall be established by the employer whereby employees on the site and the local fire department can be alerted for an emergency.

37. 1926.150(e)(2)

The alarm code and reporting instructions shall be conspicuously posted at phones and at employee entrances.

38. 1926.150(f)

Fire cutoffs.

39. 1926.150(f)(1)

Fire walls and exit stairways, required for the completed buildings, shall be given construction priority. Fire doors, with automatic closing devices, shall be hung on openings as soon as practicable.

40. ***..1926.150(f)(2)***

41. 1926.150(f)(2)

Fire cutoffs shall be retained in buildings undergoing alterations or demolition until operations necessitate their removal.

[44 FR 8577, Feb. 9, 1979; 44 FR 20940, Apr. 6 1979, as amended at 58 FR 35162; June 30, 1993; 61 FR 31427, June 20, 1996]

FIRE PREVENTION

1. 1926.151(a)

   Ignition hazards.

2. 1926.151(a)(1)

   Electrical wiring and equipment for light, heat, or power purposes shall be installed in compliance with the requirements of Subpart K of this part.

3. 1926.151(a)(2)

   Internal combustion engine powered equipment shall be so located that the exhausts are well away from combustible materials. When the exhausts are piped to outside the building under construction, a clearance of at least 6 inches shall be maintained between such piping and combustible material.

4. 1926.151(a)(3)

   Smoking shall be prohibited at or in the vicinity of operations which constitute a fire hazard, and shall be conspicuously posted: "No Smoking or Open Flame."

5. 1926.151(a)(4)

   Portable battery powered lighting equipment, used in connection with the storage, handling, or use of flammable gases or liquids, shall be of the type approved for the hazardous locations.

6. ***..1926.151(a)(5)***

7. **1926.151(a)(5)**

   The nozzle of air, inert gas, and steam lines or hoses, when used in the cleaning or ventilation of tanks and vessels that contain hazardous concentrations of flammable gases or vapors, shall be bonded to the tank or vessel shell. Bonding devices shall not be attached or detached in hazardous concentrations of flammable gases or vapors.

8. 1926.151(b)

   Temporary buildings.

9. 1926.151(b)(1)

   No temporary building shall be erected where it will adversely affect any means of exit.

10. 1926.151(b)(2)

    Temporary buildings, when located within another building or structure, shall be of either noncombustible construction or of combustible construction having a fire resistance of not less than 1 hour.

11. 1926.151(b)(3)

    Temporary buildings, located other than inside another building and not used for the storage, handling, or use of flammable or combustible liquids, flammable gases, explosives, or blasting agents, or similar hazardous occupancies, shall be located at a distance of not less than 10 feet from another building or structure. Groups of temporary buildings, not exceeding 2,000 square feet in aggregate, shall, for the purposes of this part, be considered a single temporary building.

12. 1926.151(c)

    Open yard storage.

13. 1926.151(c)(1)

    Combustible materials shall be piled with due regard to the stability of piles and in no case higher than 20 feet.

14. 1926.151(c)(2)

    Driveways between and around combustible storage piles shall be at least 15 feet wide and maintained free from accumulation of rubbish, equipment, or other articles or materials. Driveways shall be so spaced that a maximum grid system unit of 50 feet by 150 feet is produced.

15. ***..1926.151(c)(3)***

16. 1926.151(c)(3)

    The entire storage site shall be kept free from accumulation of unnecessary combustible materials. Weeds and grass shall be kept down and a regular procedure provided for the periodic cleanup of the entire area.

17. 1926.151(c)(4)

    When there is a danger of an underground fire, that land shall not be used for combustible or flammable storage.

18. 1926.151(c)(5)

    Method of piling shall be solid wherever possible and in orderly and regular piles. No combustible material shall be stored outdoors within 10 feet of a building or structure.

19. 1926.151(c)(6)

    Portable fire extinguishing equipment, suitable for the fire hazard involved, shall be provided at convenient, conspicuously accessible locations in the yard area. Portable fire extinguishers, rated not less than 2A, shall be placed so that maximum travel distance to the nearest unit shall not exceed 100 feet.

20. 1926.151(d)

    Indoor storage.

21. 1926.151(d)(1)

    Storage shall not obstruct, or adversely affect, means of exit.

22. 1926.151(d)(2)

    All materials shall be stored, handled, and piled with due regard to their fire characteristics.

23. 1926.151(d)(3)

    Noncompatible materials, which may create a fire hazard, shall be segregated by a barrier having a fire resistance of at least 1 hour.

24. ***..1926.151(d)(4)***

25. 1926.151(d)(4)

    Material shall be piled to minimize the spread of fire internally and to permit convenient access for firefighting. Stable piling shall be maintained at all times. Aisle space shall be maintained to safely accommodate the widest vehicle that may be used within the building for firefighting purposes.

26. 1926.151(d)(5)

    Clearance of at least 36 inches shall be maintained between the top level of the stored material and the sprinkler deflectors.

27. 1926.151(d)(6)

    Clearance shall be maintained around lights and heating units to prevent ignition of combustible materials.

28. 1926.151(d)(7)

    A clearance of 24 inches shall be maintained around the path of travel of fire doors unless a barricade is provided, in which case no clearance is needed. Material shall not be stored within 36 inches of a fire door opening.

    [44 FR 8577, Feb. 9, 1979; 44 FR 20940, Apr. 6, 1979, as amended at 51 FR 25318, July 11, 1986]

SEE OSHA STANDARDS 1926.152 SUBPART F for information on FLAMMABLE LIQUIDS.

Make sure materials and equipment does not block the access to extinguishers and fire protection hoses, hydrants and standpipes. Also, make sure materials are kept at least 18 inches from sprinkler heads.

Attempt to extinguish small fires (trash can size) only if trained to do so. If trained to extinguish fires, familiarize yourself with the location of fire extinguishers in the work area.

At least one portable fire extinguisher of not less than 20 B rating must be located not less than 25 feet nor more than 75 feet from a flammable combustible liquid storage area located outside.

Fire extinguisher location plans must be prepared before construction of a structure begins. Fire extinguisher must be placed according to the plan prior to bringing flammable materials in the area.

WELDING & CUTTING

1. SCOPE AND APPLICATION

   This section set forth the minimum requirements for all welding and cutting on the project. Due to the possibility of starting fires with these operations a "Hot Work Permit" will be required for all welding and cutting operations (See Appendix A). The requirements stated herein apply to all contractors working on the project.

2. **WELDING**

   All welding operations will comply with the following general guidelines:

   1. A suitable fire extinguish or other fire control devices must be ready for instant use in any location where welding is done. Where welding must be performed near combustible materials, a helper or other extra person shall be on hand to guard against fire.
   2. Screens, shields or other safeguards must be provided for the protection of workers or combustible materials below or otherwise exposed to sparks or falling objects. When others

must work nearby they must be protected from the arc rays but screens or by other adequate individual protection.

3. When welding or cutting lead, zinc, cadmium-coated, lead-bearing, or other toxic materials, provision must be made for the removal of fumes or the use of proper personal respiratory protection. Contact your Safety Coordinator to assist with evaluation and control methods.
4. Protective clothing required for any welding operation may vary with the size, nature and location of the work.
    a. Some suggested protective measures for welding and helper are:
        i. Flame-resistant gauntlet gloves to be worn except where welding is engaged in light work.
        ii. Flame-resistant aprons of leather, or other suitable material as protection against radiated heat and sparks.
        iii. Clothing should be free of oil and grease. Woolen clothing is not readily ignited as untreated cotton. Welders or helpers may not wear double-knits or nylon.
        iv. Pockets and cuffs invite sparks. Collars and cuffs must be buttoned and cuff turned up inside pants. Pockets must be eliminated from the front of the vests, shirts and aprons or provided with buttoned flaps.
    b. Low-cut shoes with unprotected top are not permitted.
5. Fire-resistant capes and shoulder covers must be worn during overhead welding operations. Ear protection is recommended to prevent hot slag from entering the welder's ears (never use cotton).
6. Fire retardant clothing is recommended for welding operations generating large quantities of hot slag.
7. Prior to commencing work, all work specific and area hazards must be understood and communicated and all appropriate permits must be obtained.
8. All personnel in the surrounding work area must be properly warned of the hazardous work area by the use of barricades or other communication means.
9. Prior to work, within 35 feet of work area:
    a. Flammable liquids, dust lint and oily deposits must be removed
    b. Explosive atmosphere must be eliminated or if not possible, monitored
    c. Floors must be swept clean
    d. Combustible floors wet down, combustibles in the area must be removed or covered with fire resistive protection
    e. Floor and wall openings must be covered or fire resistive tarpaulins suspended beneath work.
        i. OSHA defines flammable as being easily ignited, burning intensely, or having a rapid rate of flame spread. Flammable liquid means any liquid having a flash point below 140 F
        ii. OSHA defines combustible liquid as a liquid having a flash point at or above 140 F and below 200 F.

iii. OSHA defines flash point as the temperature at which it gives off vapor sufficient to form an ignitable mixture with the air near the surface of the liquid.

10. Hot Work may not be conducted in any area classified as a Class 1, Division 1 or area according to the current Uniform Fire Code. Contact your Safety Coordinator for questions.
11. Respiratory protection is not required for most jobs if good ventilation is provided.
12. When the welding, cutting, or heating operation is such that normal fire prevention precautions are not sufficient, additional personnel shall be assigned to guard against fire while the actual welding, culling or heating operation is being performed and for sufficient period of time (not less than 30 minutes) after completion of work to ensure that no possibility of fire exists. Such personnel shall be instructed as to the specific anticipated fire hazards and how the firefighting equipment provided is to be used.
13. Welding screen is required to protect adjacent workers from exposure to non-ionizing radiation. Adjacent workers are required to wear appropriate eye protection where screens are not feasible. Welder's assistants and those working inside the screened in area must wear appropriate eye protection.

VENTILATION & PROTECTION IN WELDING, CUTTING & HEATING

1. Welding, cutting and heating may normally be done without mechanical ventilation or respiratory protective equipment, but where, because of unusual physical or atmospheric conditions and unsafe accumulation of contaminants exist suitable mechanical ventilation or respiratory protective equipment shall be provided.
2. Employee/owners performing any type of welding, cutting or heating shall be protected by suitable eye protective equipment.
3. Other employee/owners exposed to the same atmosphere as the welders or burners shall be protected in the same manner as the welder or burner. All welders and welders' helpers are to wear safety tinted glasses when exposed.
4. In confined space where welding, cutting, or heating metals that contain zinc, lead, cadmium, mercury, chromium, beryllium or covered with preservative coatings or working with inert gas arc welding is taking place then check with your Safety Coordinator concerning the recommended safe operating procedures, air sampling and control methods.

ARC WELDING

Welding equipment shall meet the following:

1. Only standard electric arc welding equipment confirming to the requirements of the National Electrical Manufacturers Association or the Underwriter's Laboratories, Inc., or both, shall be used.
2. Power circuits shall be installed and maintained in accordance with the National Electrical Code. Check to see what voltage the machine is wired for before connecting.
3. Check the manufacturers requirements for grounding the electric welding machine operated from power circuits.
4. Electrode and ground cables should be supported so as not to create obstructions interfering with the safe passage of workers. The ground lead for the welding circuit should be mechanically strong and electrically adequate for the service required. Grounding should be accomplished as close to the welding operation as possible.
5. Adequate exhaust to the outside shall be provided where internal combustion engines are used to operate welding machines in enclosed spaces.

6. All welders must wear combination safety hard hats and welding hoods.
7. The proper shade welding lens is required and an adequate supply of cover lenses shall be available. Personnel assisting operators should also wear protective lenses to avoid "welding flash" burns to the eyes.
8. Manual electrode holder shall be of a capacity capable of safely handling the maximum rated current required by the electrodes being used.
    a. They shall be fully insulated against the maximum voltage encountered to ground.
9. Welding Cables and Connectors
    a. All arc-welding cables shall be of the completely insulated, flexible type capable of handling the maximum current requirements of the work in progress. When is becomes necessary to connect or splice lengths of cable one to another, they shall be securely fastened together to give good electrical contact, and the exposed metal parts shall be completely insulated.
    b. Cables in poor repair shall not be used. If a cable becomes worn to the extent of exposing bare conductors, the portion that is exposed shall be protected by means of rubber and friction tape or other equivalent insulation.
    c. Insulation repairs using tape shall not be allowed within ten (10) feet of the electrode holder (stinger).
10. The frames of all arc-welding machines shall be grounded either through a third wire in the cable containing the circuit conductor or through a separate wire, which is grounded at the source of the current. Always follow the manufacturer's requirements for grounding of welding machines.
11. When electrode holders are to be left unattended the electrode shall be removed and the holder shall be placed or protected so that they cannot make electrical contact with employees, owner or conducting objects.
12. Hot electrode holders shall not be dipped in water.
13. Any faulty or defective equipment shall be reported to the supervisor.
14. Electrodes shall not be struck against a compressed gas cylinder to strike an arc.

GAS WELDING AND CUTTING

Storage of all compressed gas cylinders will conform to the following:

1. Cylinders must be stored in designated places where they will not be damaged by passing or falling objects. Storage facilities must be designated as a non-smoking area and posted with the names of the gases to be stored. Outside storage of cylinders must be protected from adverse weather conditions.
2. Oxygen cylinders shall be stored at least 20 feet from other flammable material. Full, unused cylinders must be kept in a designated area, separate from empty cylinders.
3. Oxygen and oxidizing gas cylinders must be stored separate from flammable-gas cylinders (i.e. Acetylene, Propane, etc.) or combustible materials (especially oil or grease) by a minimum distance of twenty feet or by a non-combustible barrier, at least five feet high, having a fire resistance rating of at least one-half hour. This does not include oxy-acetylene carts.
4. Valve protection caps shall be in place and secured.
5. Compressed gas cylinders shall be secured in an upright position at all times, except if necessary for short periods of time while cylinders are actually being hoisted or carried. All compressed gas cylinders must be identified by a legibly marked label or stencil rather than by color of cylinder. Cylinder color must not be relied upon for content identification. Department of Transportation (DOT) labels are required if shipped of the road.

6. Do not accept or use any cylinder that is not identified by a legible label or stencil. Cylinders of this type must be tagged and returned to the supplier.
7. When emptied, all compressed gas cylinders are to be marked, by the person who emptied the cylinder as "EMPTY" or "NR". Only the venders who refill the tanks may remove these markings.

The transpiration and moving of compressed gas cylinders will conform to the following:

1. When cylinders are hoisted, they shall be secured on a cradle, sling, board or pallet. They shall not be hoisted or transported by means of magnets or choker slings.
2. Cylinders shall be moved by tilting and rolling them on their bottom edges. They shall not be intentionally dropped, struck, or permitted to strike each other violently.
3. When cylinders are transported by power vehicles, they shall all be secured in a vertical position.
4. Valve protection caps shall not be used for lifting cylinders from one vertical position to another.
5. Unless cylinders are firmly secured on a special carrier intended for this purposed, regulators shall be removed and valve protection caps put in place before cylinders are moved.
6. Suitable cylinder, truck chain or other steadying device shall be used to keep cylinders from being knocked over while in use.

Placement of cylinders for use will conform to the following:

1. Cylinders shall be kept far enough away from actual welding or cutting operation so that sparks, hot slag or flame will not reach them.
2. Cylinders shall be secured to prevent over turning during use.
3. Cylinders containing oxygen or acetylene or other fuel gas shall not be taken into confined spaces.

Hoses for gas welding or cutting equipment will conform to the following:

1. Hoses will be color coded for oxygen and acetylene with connections, which are not interchangeable.
2. All hoses used in carrying acetylene, oxygen or any other gas or substance, which may ignite, must be inspected at the beginning of each working shift. Defective hoses must be removed from service.
3. Hoses which have been subject to or which shows evidence of wear or damage must be tested to twice the normal pressure to which it is subjected to under normal working conditions. Defective hoses or hoses in doubtful conditions may not be used.
4. Hose coupling must be of the type that cannot be unlocked or disconnected by means of a straight pull without rotary motion.
5. Boxes used for storage of gas hoses must be ventilated.
6. Hoses and other equipment must be kept clear of passage ways, ladders and stairs.

All torches used for cutting or welding will be used and maintained in conformance with the following:

1. Clogged torch top opening must be cleaned with suitable cleaning wires, drills or other devices designed for such purpose.
2. Torches in use must be inspected at the beginning of each working shift for leaking cut off valves, hose couplings and tip connections. Defective torches may not be used.
3. Torches must be lighted by friction lighters or other approved devices and not by matches or cigarette lighters. The use of hot work as a means of lighting torches is not permitted.
4. Torches must be equipped with flash back arrests (not check valves). Consult with the torch manufacturers regarding this issue and follow their recommendations.

All regulators and gauges being used for cutting and welding will be in conformance with the following:

1. Oxygen and fuel gas pressure regulators, including their gauges, must be in **proper working order while in use.**
2. Regulators and gauges must be kept free of grease and dirt at all times.
3. Regulators with broken gauge glass, missing screws, etc. must be taken out of service and repaired or discarded.
4. Regulators are to be equipped with built-in or external check valves.

CHIPPING, CLEANING & GRINDING

The following equipment and procedures will be used for chipping, cleaning and grinding operations:

1. When removing excess weld metal, faulty welds, or slag, safety glasses with a face shield must be used.
2. Gloves must be worn to protect hands and wrists from flying chips. The danger to **other personnel in the area may require screening or shielding.**
3. When chipping or cleaning welds always chip away from the body.
4. When cleaning and brushing surfaces to be welded, use caution to avoid metal slivers and sharp edges.
5. Gauntlet style gloves are advisable during all chipping, cleaning and grinding operations.

HOUSEKEEPING

Housekeeping begins at the start of the project and should continue each day until the project ends. All material storage is to conform to OSHA 29 CFR 1926.250.

1. Large rocks, asphalt chunks, pieces of concrete and other materials should be picked up, cleaned up and stacked as the job progresses.
2. Broken pipe, manhole section, unused pipes, grates and frames, etc. should not be left scattered throughout the project.
3. When pea gravel, bedding material, sand or selected backfill material are stock piled, they should be located where they will not constitute a traffic hazard (driving or walking).
4. All barricades, cones, detour signs, etc. should be kept in good working condition, used properly, and stored in an orderly fashion.
5. **Maximum safe load limits shall be posted for all floor and surfaces in buildings where materials may be stored. These maximum limits shall be observed at all times.**
6. All passageways shall be kept free of materials and supplies to allow for the safe movement of employees and materials.
7. All materials shall be stored in such a manner as to prevent falling, shifting or collapse.
8. No material shall be stacked within six feet of any stairwell, hoist way or inside floor opening.
9. Materials shall not be stored on scaffolds in quantities greater than needed for one day's use.
10. All bagged materials shall be stacked with the layers stepped back and interlocked to prevent the stack from slipping or otherwise shifting.
11. Lumber shall be stacked on level and solid supports. Lumber shall not be piled higher than 20 feet, except in the case where the lumber is handled manually, where the maximum height shall be limited to 16 feet. All nails shall be removed from used lumber before storage.
12. Structural steel, poles, pipes, bars and similar materials shall be stored in racks or otherwise confined so as to prevent shifting, spreading or falling.
13. An enclosed chute or slide made of wood or equivalent, shall be used whenever materials are dropped more than 20 feet to any point outside the exterior walls of the building.

14. When material is dropped through openings in the floor without the use of chutes, the area onto which the material is dropped should be completely enclosed, with barricades not less than 42 inches high and not less than 6 feet back from the side of the opening above. Personnel shall be notified of the hazard of falling via posted signs at each affected level.
15. All scrap lumber, waste materials, and rubbish shall be removed from the immediate work areas on a **continuous basis.**

GENERAL RELEASE OF LIABILITY – VENDORS AND VISTORS (FORM 9)

In consideration of my being granted to enter the site of this construction project, I hereby for myself, my successors, assigns, executors, administrators and personal representatives, remise, release and forever discharge _____and its officers, agents, employees, consultants and CONTRACTORS and assigns, acting officially or otherwise, from any and all claims, demands, actions or cause of action, on account of my death or on account of injury to me which may occur from any cause while I am on this site.

I accept full responsibility for my safety and agree to fully comply with all safety rules and regulations while on the job site.

I HAVE READ THE ABOVE AND UNDERSTAND IT.

Signature: _____

Print Name: _____

Date: _____

Witness Signature: _____

ORIENTATION DOCUMENTATION (FORM 10)

1. Safety Program
    a. OWNER'S attitude
    b. CONTRACTOR'S attitude
    c. Project Safety Rules
    d. Evacuation Routes
    e. Substance Abuse and Weapons Policy
2. Fall Protection
    a. Training
    b. Identify walking and working surface
    c. Fall arrest systems are required to meet all compliance standards
    d. Inspection completed daily
    e. Plan prior to work
    f. Competent
3. Personal Protective Equipment
    a. Hard hat, substantial footwear, safety eye glasses and hearing protection
    b. Proper clothing
    c. Other protective equipment
    d. Material Handling
4. Hazard Communication Program
    a. Requirements of the law
    b. Location of inventory and SDS's
    c. Use of SDS
    d. Specific chemicals used on the site
5. Substance Abuse Policy Weapons Policy
    a. Drug and Alcohol Testing – Random & post-accident
    b. Weapons & Workplace Violence

I have received an initial job orientation as outlined above, to include a discussion of the hazard communication program and a copy of the safety rules pertinent to my area.

Employer: _____

Printed Name: _____

Employee Signature: _____

Date: _____

Trainer Signature: _____

Date: _____

HAZARD COMMUNICATION TRAINING DOCUMENTATION (FORM 12)

I hereby acknowledge that I have received hazard communication training as required by OSHA 1910.1200. The training explained the law; materials I may be exposed to (including the hazards and controls); how to use an MSDS; where the MDSD's chemical list and the written program may be found; and the proper detection, first air and spill control procedures.

Employee Signature: _____

Date: _____

Trainer Signature: _____

Date: _____

PURPOSE

The purpose of this program is to:

- Make all affected company workers aware of the potential hazards of crane operations on this project;
- Ensure that all affected company workers are provided with the knowledge they need to protect themselves from the potential hazards associated with crane operations; and
- Establish safe work practices and procedures for all affected company workers.

GENERAL REQUIREMENTS

Fatalities and serious injuries can occur if cranes are not inspected and used properly. Many fatalities can occur when the crane boom, load line or load contacts power lines and shorts electricity to ground. Other incidents happen when workers are struck by the load, are caught inside the swing radius or fail to assemble/ disassemble the crane properly.

- Crane operators qualified by training or experience shall be allowed to operate equipment and machinery by one of the following methods:

  1. Certification by an accredited crane operator testing organization
  2. Qualification by an audited employer program
  3. Qualification by the U.S. military
  4. Licensing by a government entity

- Only qualified and experienced employees should be used as spotters and crane signalers.
- A pre-lift meeting shall take place before any lift begins. This will be documented on the Pre-Lift Checklist.
- Cranes are to be operated only by qualified and trained personnel.
- A designated competent person must inspect the crane and all crane controls before use. A Competent person means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- Be sure the crane is on a firm/stable surface and level.
- During assembly/disassembly do not unlock or remove pins unless sections are blocked and secure (stable).
- Fully extend outriggers and barricade accessible areas inside the crane's swing radius.
- Watch for overhead electric power lines and maintain at least a 10-foot safe working clearance from the lines.
- Inspect all rigging prior to use; do not wrap hoist lines around the load.
- Be sure to use the correct load chart for the crane's current configuration and setup, the load weight and lift path.
- Do not exceed the Working Load Limit (WLL) or load chart capacity while making lifts.

- Raise load a few inches, hold, verify capacity/balance, and test brake system before delivering load.
- Do not move loads over workers.
- Be sure to follow signals and manufacturer instructions while operating cranes.

GROUND CONDITIONS

The designated competent person will ensure that appropriate ground preparations have been provided before crane operations begin.

ASSEMBLY / DISASSEMBLY

- When assembling or disassembling equipment or attachments, affected workers will comply with all applicable manufacturer's prohibitions.
- All crane assembly and disassembly will be directed by the designated competent person and the designated qualified person. **Qualified person** means a person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, successfully demonstrated the ability to solve/resolve problems relating to the subject matter, the work, or the project

POWER LINES

- The work zone shall be identified by demarcating boundaries such as flag and range limiting devices, or defining the work zone as 360 degrees around the equipment up to the maximum working radius. The hazard assessment must determine if any part of the equipment could get closer than 20 feet to a power line.
- If any part of the equipment will get closer than 20 feet from a power line pushing up to 1,000 kV during assembly, disassembly, or equipment operations,
- the line will be de-energized and visibly grounded at the worksite OR
- The appropriate table at 29 CFR 1926 Subpart CC will be used to determine the minimum safe distance based on the line's actual voltage).
- When working near power lines pushing over 1,000 kV, the minimum clearance distance will be established by the utility owner/operator or a registered professional engineer who is a qualified person with respect to electrical power transmission and distribution. The designated qualified person will verify and obtain documentation regarding the established safe distance.
- When traveling under or near power lines with no load, the boom, mast, and boom mast support system will be lowered sufficiently to meet the specified safe distance clearance requirements.

Voltage (nominal, kV, alternating current)	Minimum Clearance distance (feet)
Up to 50	10
Over 50 to 200	15
Over 200 to 350	20
Over 350 to 500	25

Over 500 to 750	35
Over 750 to 1,00	45
Over 1,000	(As established by utility owner / operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).

Note: The value that follows "to" is up to and includes that value. For example, over 50 to 200 means up to and including 200kV.

INSPECTIONS

- Modified and/or repaired equipment will be inspected by the designated qualified person after the modifications and/or repairs have been completed, but before initial use.
- Upon completion of assembly, the equipment will be inspected by the designated qualified person to assure that it is configured in accordance with manufacturer's equipment criteria.
- Prior to each shift, the designated competent person will perform a visual inspection of the equipment that will be used.
- Once each month, all of the equipment that is in service will be inspected by the designated qualified person in accordance with the crane inspection criteria established at 29 CFR 1926 Subpart CC.
- Once each year, the designated qualified person will conduct a comprehensive inspection of all equipment that is in service in accordance with the crane inspection criteria established at 29 CFR 1926 Subpart CC.
- Safety devices are required to be on all equipment and must be in proper working order before operations begin. If any of the devices are not in proper working order the equipment must be taken out of service and operations must not resume until the device is working properly again. Examples of safety devices may include: crane level indicator, boom stops, jib stops, foot pedal brake locks, horns, etc.
- When the equipment is used frequently enough that there is a reasonable possibility of damage or excessive wear, affected Winger workers will stop using the equipment and take it out of service until it passes inspection by the designated qualified person based on the inspection criteria established at 29 CFR 1926 Subpart CC.
- Equipment that has been idle for three (3) months or more must pass inspection by the designated qualified person based on the inspection criteria established at 29 CFR 1926 Subpart CC before it can be used.

QUALIFICATIONS OF MAINTENANCE & REPAIR EMPLOYEES

Maintenance, inspection and repair personnel are allowed to operate the equipment only under the supervision of the designated qualified person. Modifications or additions that may affect the capacity or safe operation of the equipment must not be made without written approval from the manufacturer or approval from a registered professional engineer.

WIRE ROPE INSPECTIONS

- Prior to each shift, the designated competent person will perform a visual inspection of any wire rope that is intended for use during the subsequent shift.
- Once each month, all of the wire rope that is in service will be inspected by the designated qualified person in accordance with the wire rope inspection criteria established at 29 CFR 1926 Subpart CC.
- Once each year, the designated qualified person will conduct comprehensive inspections of all wire rope that is in service in accordance with the wire rope inspection criteria established at 29 CFR 1926 Subpart CC.

WIRE ROPE SELECTION AND INSTALLATIONS

- The designated competent person will ensure that original equipment wire rope is selected and installed in accordance with the requirements established at 29 CFR 1926 Subpart CC.
- The designated competent person will ensure that selection of replacement wire rope is in accordance with the recommendations of the wire rope manufacturer, the equipment manufacturer, or the designated qualified person.

OPERATIONAL AIDS

All manufacturer procedures applicable to the operational functions of equipment, including its use with attachments, must be complied with. The operator shall have access to procedures applicable to the operation of the equipment. Procedures include rated capacities (load charts), recommended operating speeds, special hazard warnings, instructions and operator's manual. The designated competent person will ensure that the following operational aids, when applicable, are present on all equipment:

- Boom hoist limiting device;
- Luffing jib limiting devices;
- Boom angle or radius indicator;
- Jib angle indicator;
- Boom length indicator;
- Load weighing and similar devices.

All affected workers will comply with all manufacturer procedures applicable to the operational functions of equipment, including its use with attachments.

AUTHORITY TO STOP OPERATIONS

Whenever there is a concern about safety, the designated equipment operator has the authority to stop and refuse to handle loads until the designated competent person has determined that the safety concern has been resolved.

ORDINARY LIFT PLANNING

The designated leader shall ensure that the following pre-lift planning issues are addressed, as applicable, prior to the lift (a written plan beyond normal site work planning and control documents is not required, though may be desirable for more complex lifts). A Pre-Lift Checklist may be used as documentation that a pre-lift meeting and pre-lift plan is in place. Also, for construction lifts involving multiple mobile cranes or temporarily installed overhead cranes, a written lift plan is required (refer 29 CFR 1926.1432).

- Identify the item to be moved, its intrinsic characteristics (e.g., load integrity, loose materials, liquids), weight, dimensions, its center of gravity, its ability to support imposed lifting forces (both the load and any lift points), and whether it contains any hazardous or toxic materials.
- Validate the loads path and clearances.
- Identify lifting equipment and rigging to be used by type and rated capacity.
- Prepare rigging sketches, as necessary.
- Evaluate the work area for conditions impacting crane setup operations (e.g., weather, soil bearing capacity, underground utilities, clearances to power lines and other structures).
- Identify any special or site-specific operating procedures and special instructions.

CRITICAL LIFTS

Any time a critical lift takes place, all safety concerns must be addressed and controls in place to eliminate identified hazards. Permits, if required, must be completed and approved per customer procedures.

Critical Lift Determination

A designated person shall classify each lift into one of the categories (ordinary, critical, personnel or pre-engineered production) prior to planning the lift. A lift shall be classified critical if any of the following conditions are met:

- If loss of control of the item being lifted would likely result in the declaration of an emergency as defined by the facility's emergency plan or construction site emergency plan.
- The load item is unique and, if damaged, would be irreplaceable or not repairable and is vital to a system, facility or project operation.
- The cost to replace or repair the load item, or the delay in operations of having the load item damaged would have a negative impact on facility, organizational, or budgets to the extent that it would affect program commitments.
- If mishandling or dropping of the load would cause any of the above noted consequences to nearby installations or facilities.
- For steel erection, a lift shall be designated as a critical lift if:
  1. The lift exceeds 75 percent of the rated capacity of the crane or derrick OR
  2. The lift requires the use of more than one crane or derrick. (§1926.751)

- Further site-specific criteria may be developed to supplement those cited above and may include criteria imposed by site or project safety basis requirements as well as lifting loads which require exceptional care in handling because of size, weight, close-tolerance installation or high susceptibility to damage as well as lifts using multiple pieces of lifting equipment.
- Though lifting personnel may meet the above criteria, personnel lifts shall not be considered critical lifts and shall be conducted in accordance with 29 CFR 1926.1431 and ASME B30.23.

Critical Lift Requirements

Ensure that the requirements are met for ordinary lifts specified in each section of this standard for each particular equipment category. The operating organization shall appoint a Lift Supervisor for critical lifts. The Lift Supervisor shall be present at the lift site during the entire lifting operation. The Lift Supervisor shall:

- Have the necessary knowledge and experience of the specific type of equipment and assigned lifting operations.
- Understand the site rules and procedures addressing:
- Administrative requirements for lifting operations.
- Personnel assignments and responsibilities commensurate with job requirements.
- Selection of proper slings, rigging hardware, and lifting equipment.
- Recognition and control of hazardous or unsafe conditions.
- Job efficiency and safety.
- Critical-lift determination and documentation.

- The Lift Supervisor shall ensure that a documented pre-job plan or procedure is prepared by qualified person(s) that defines the operation and includes the following:
- Identify the item to be moved, its intrinsic characteristics (e.g., load integrity, loose materials, liquids), weight, dimensions, its center of gravity, its ability to support imposed lifting forces (both the load and any lift points), and whether it contains any hazardous or toxic materials. **
- Identification of operating equipment to be used by type and rated capacity (e.g., mobile crane, overhead crane, forklift).
- Rigging sketches and/or descriptions Operating procedures and special instructions to operators including rigging precautions and safety measures to be followed as applicable.
- All rigging equipment used in critical lifts (i.e., slings, below-the-hook lifting devices, and rigging hardware) shall be proof load tested in accordance with applicable ASME standards.
- Experienced operators who have been trained and qualified to operate the specific equipment to be used shall be assigned to make the lift.
- Only designated, qualified signalers shall give signals to the operator. However, the operator shall obey a STOP signal at all times, no matter who gives the signal.
- The procedure and rigging sketches shall be reviewed and approved by a qualified person, the responsible manager (or designee) and the responsible oversight organization (such as the safety or engineering departments) before the lift is made. Subsequent revisions shall be approved per site specific procedures.

- A pre-lift meeting involving participating personnel shall be conducted prior to making a critical lift. The critical lift plan/procedure shall be reviewed and questions shall be resolved.
- Prior to executing a critical lift, a qualified person shall verify that the as-installed rigging matches the configuration in the approved lifting plan.
- If required by the critical lift procedure, a practice lift shall be done before the critical lift. Conditions for a practice lift should closely simulate actual conditions involving: weight, rigging selection and configuration, load movement path, and other relevant factors. Practice lifts should be done by the same crew using the same lifting equipment that will be used in the lift.
- Although individual plans are generally prepared for critical lifts, multi-use plans may be employed to accomplish recurrent critical lifts. For example, a multi-use plan may be used to lift an item or series of similar items that are handled repeatedly in the same manner. However, if the lifting equipment or rigging must change to accomplish the lift, the critical lift plan must be revised and approved accordingly.

SIGNAL PERSON QUALIFICATIONS

- The designated competent person will obtain documentation from a third-party qualified evaluator showing that the signal person meets the qualification requirements before that signal person gives any signals to operators.
- The designated competent person will ensure that the signaler qualification documentation is always available at the jobsite. The documentation will specify each type of signaling the signal person is qualified to perform.
- Workers who do not meet the qualification requirements are not permitted to work as signal persons. This includes those who have signal person qualification credentials, but whose actions indicate that they are not performing signaling as required.

SIGNALING

- A qualified signal person will be used in each of the following situations:
- When the point of operation is not in full view of the operator;
- When the view in the direction of travel is obstructed when the equipment is traveling; and/or
- When site-specific safety concerns are an issue because either the operator or the person handling the load determines that it is necessary.

- Signals to the operator will be given by standard hand signals, unless, the signals cannot be seen by the operator.
- All directions given to the operator by the signal person will be given from the operator's direction perspective.
- When standard hand signals can't be used safely, radios will be used for communication.
- When radios are used, the operator and the signal person chosen for the project will be able to effectively communicate in the same language.
- The devices used to transmit signals will be tested on site before beginning operations to ensure that the signal transmission is effective, clear and reliable.

- Signal transmission will be performed through a dedicated channel, except where the crane is being operated on or adjacent to railroad tracks, and the actions of the equipment operator need to be coordinated with the movement of other equipment or trains on the same or adjacent tracks.
- All operators will use a hands-free system to receive signals and communicate with the signal person.
- Before beginning operations, the operator and signal person will contact one other and agree on the voice signals to will be used. Once the voice signals are agreed upon, further meetings are not needed unless: a worker is added or substituted, there is confusion about the voice signals, or a voice signal is to be changed.
- Each voice signal will contain the following three elements, given in the following order.
  1. Function (such as hoist, boom, etc.) direction;
  2. Distance and/or speed; and
  3. Function stop command.
- If the ability to transmit signals is interrupted during operations, the designated equipment operator will safely stop all operations until the ability to transmit is re-established and proper signals can be given and understood.
- If the designated equipment operator becomes aware of a safety problem and needs to communicate with the designated signal person, the designated equipment operator will safely stop all operations. Operations will not resume until both parties agree that the problem has been resolved.
- Only the designated signal person may give signals to the operator, except in the case of an emergency.
- Any worker may give the emergency stop signal if an emergency occurs. The designated equipment operator will safely stop all operations any time the emergency stop signal is given.
- Before lift operations begin, the designated competent person will post a hand signal chart on the equipment or in a conspicuous place close to hoisting operations.

THE SIGNALER MUST ALWAYS:

- Be in clear view of the crane operator.
- Have a clear view of the load at all times.
- Keep people outside the load travel path.
- Ensure the load does not pass above people.
- Keep the crane away from power lines.
- Watch for other potential hazards during the lift.
- There should be only one designated signaler at a time. More than one will only confuse the operator.
- Wear a bright vest, or different colored hard hat that will help the operator identify who is currently in charge of signaling.
- Communication between the crane operator and the signal person shall be maintained continuously during all crane movements.

- If at any time communication is disrupted, the operator shall stop all crane movements until communication is restored.
- If there are any concerns regarding the signal or needs to communicate with the signal person, the operator shall stop all crane movement.
- Crane movement shall not resume until the operator and the signal person agree the issue has been resolved.
- If it is desired to give instructions other than those provided by the established signal system, the crane movements shall be stopped.

BASICS WHEN USING RADIO COMMANDS:

- Discuss the lift plan with the operator and agree on signals to be used.
- All directions shall be given from the operator's direction perspective.
- Use a secure frequency, free of distracting chatter.
- Use specific names not just titles. (i.e. "Jim" or "Tom Smith" as opposed to just "operator").
- Command names should be same as the hand signal names, (i.e. "Use whip line", "Boom down", "Boom Up", etc.).
- Each series of voice signals shall contain three elements stated in the following order: ? Function and direction
- Distance and/or speed ? Function stop (i.e. "swing right 15 feet, 10 feet, 5 feet, 2 feet, swing stop)
- Once lift has begun, the signaler should never break communication with the operator. This is referred to as "constant communication".
- Never un-key the mic while the load is moving. The signaler should repeat the command to let the operator know everything is alright: (i.e. "slowly down, slow, slow....).
- If the signaler breaks communications (un-keys mic), the operator should stop immediately.

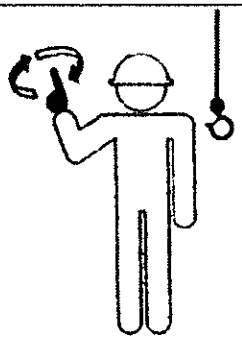
HAND SIGNALS

Hand signal charts must be either posted on the equipment or conspicuously posted in the vicinity of the hoisting operations

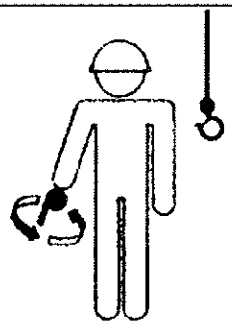
Hoist: With forearm vertical, forefinger pointing up, move the hand in a small horizontal circle.

Lower: With an arm extended downward, forefinger pointing down, move the hand in small horizontal circles.

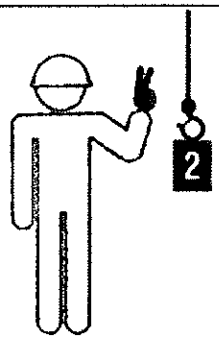
Multiple Trolleys: Hold up one finger for block marked "1" and two fingers for a block marked "2." Regular signals follow.



Hoist



Lower

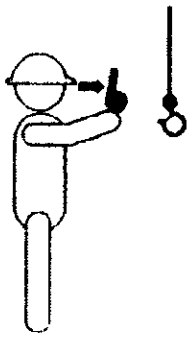


Multiple Trolleys

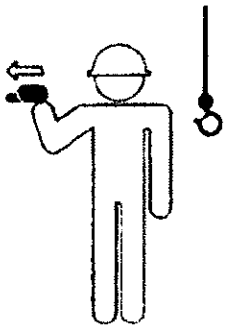
Bridge Travel: Arm extended forward, hand open and slightly raised, make a pushing motion in direction of travel.

Trolley Travel: Palm up, fingers closed, thumb pointing in direction of motion, jerk the hand horizontally.

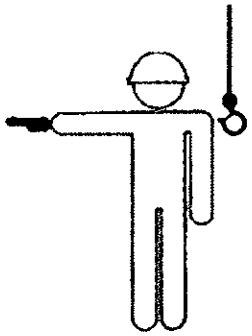
Stop: Arm extended, palm down, hold the position rigidly.



Bridge Travel



Trolley Travel

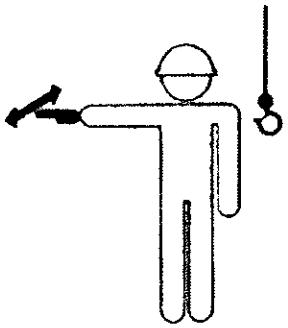


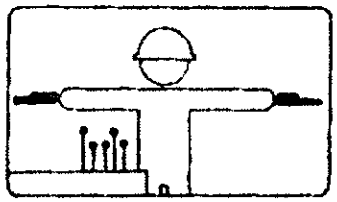
Stop

Emergency Stop: Arm extended, palm down, move the hand rapidly right and left.

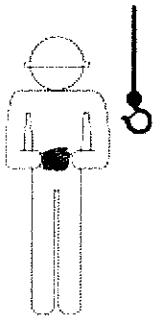
Magnet Is Disconnected! : Crane operator spreads both hands apart, palms up.

Dog Everything: Clasp hands in front of the body. Means **PAUSE**. This signal can be used on potentially risky occasions such as when it has started raining, when the load doesn't fit the space for which it was planned, or when a bystander gets too close to the action.





Magnet is Disconnected!



Emergency Stop

Dog Everything

What are some common hand signals for crawler, truck and locomotive cranes?

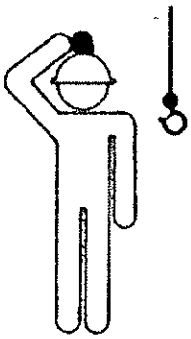
Use Main Hoist: Tap fists on head; then use regular signals.

Use Whip Line (Auxiliary Hoist): Tap elbows with one hand; then use regular signals.

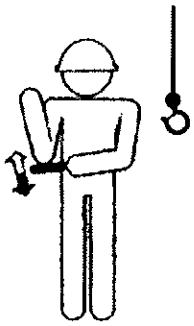
Raise Boom: Arm extended, fingers closed, thumb pointing upward.

Lower Boom: Arm extended, fingers closed, thumb pointing downward.

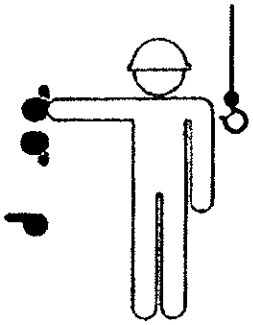
Swing: Point with a finger in direction of swing of a boom.



Use Main Hoist



Use Whip Line

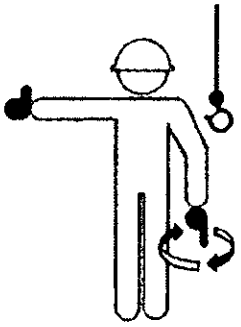


Raise Boom; Lower Boom; Swing

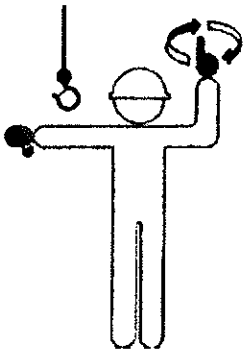
Raise the Boom and Lower the Load: Arm extended, fingers closed, thumb pointing upward, other arm bent slightly with forefinger pointing down and rotate hand in horizontal circles.

Lower the Boom and Raise the Load: Arm extended, fingers closed, thumb pointing downward, other arm with forearm vertical, forefinger pointing upward and rotate the hand in horizontal circles.

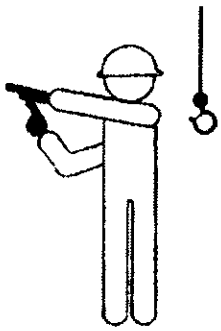
Move Slowly: Use one hand to give any motion signal and place the other hand motionless in front of the hand giving the motion signal. (Hoist slowly shown as example.)



Raise the Boom and Lower the Load



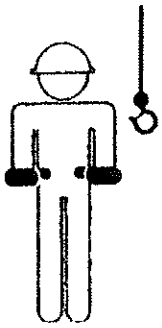
Lower the Boom and Raise the Load



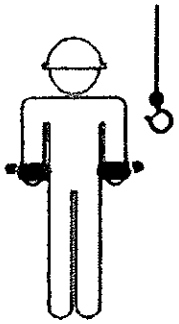
Move Slowly

Retract Boom (Telescoping Booms): Both fists in front of body with thumbs pointing toward each other.

Extend Boom (Telescoping Booms): Both fists in front of body with thumbs pointing outward.



Retract Boom



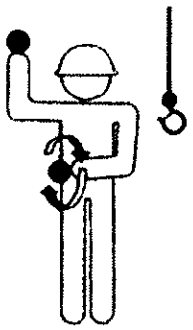
Extend Boom

What are some signals for crawler cranes only?

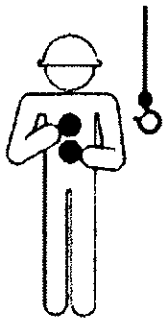
Lock Track: this side as indicated by raised fist.

Turn Travel Track: this side in direction shown by revolving fist.

Travel Both Tracks: forward or backward by revolving fists.



Lock Track
Turn Travel Track



Travel Both Tracks

RIGGER QUALIFICATIONS

- The designated competent person will ensure that any worker being considered for designation as a qualified rigger has the knowledge, experience and expertise to serve in that capacity.
- The designated competent person will ensure that the documentation used to help determine that a worker is a designated qualified rigger is always available at the jobsite. The documentation will specify the types of rigging that the rigger is qualified to perform.
- Workers who do not meet the qualification requirements are not permitted to work as qualified riggers, including those who have qualified rigger credentials, but whose actions indicate that they are not performing rigging operations as required.

FALL PROTECTION

- The designated competent person will ensure that adequate fall prevention and/or protection is provided any time a worker is exposed to a fall of 6 feet or more to a lower level or to an object below.

WORK AREA CONTROL

- The designated competent person will take measures to protect workers from reasonably foreseeable risks of being struck by and/or pinched or crushed by the equipment's rotating superstructure.
- All affected workers will be trained to recognize struck-by and pinch/crush hazard areas posed by the rotating superstructure.
- The designated competent person will ensure that control lines, warning lines, railings or similar barriers are erected to mark the boundaries of the hazardous areas, unless it is infeasible to do so. Where it is infeasible to erect barricades, the hazard area will be marked by a combination of warning signs (such as "Danger-Swing/Crush Zone") and high visibility markings on the equipment. The designated competent person will ensure that all affected workers are trained with regard to what these markings signify.
- Before any worker goes to a location in the hazard area that is out of the view of the operator, the worker will ensure that the operator is informed that he is going to that location.

KEEPING CLEAR OF THE LOAD

- Where available, affected workers will use hoisting routes that minimize their exposure to hoisted loads.
- While a suspended load is not moving, only the following workers will be allowed in the fall zone.
  1. Workers engaged in hooking, unhooking or guiding a load; and
  2. Workers engaged in the initial attachment of the load to a component or structure.

- When affected workers must be in the fall zone the following will apply:
  1. The materials being hoisted will be rigged to prevent unintentional displacement;
  2. Hooks with self-closing latches or their equivalent will be used; and
  3. The rigging will be done only by the designated qualified rigger.

- Only workers receiving the load are allowed in the fall zone when the load is being landed.

- During tilt up or tilt down operations, the following will apply:
  1. No worker may be directly under the load; and
  2. Only workers who are essential to the operation can be in the fall zone, but may never be directly under the load. A worker is considered to be an "essential worker" only when it is infeasible for that worker to perform the operation from outside the fall zone and he is

physically guiding the load, closely monitoring and giving instructions regarding the loads movement, or must detach the load or initially attach the load to another component or structure.

FREE-FALL AND CONTROLLED LOAD LOWERING

- Use of equipment in which the boom is designed to free fall is prohibited when:
  1. A worker is in the fall zone of the boom or load;
  2. The load or boom is directly over a power line or other hazardous area;
  3. The load is over a shaft in which workers are present;
  4. The load is over a cofferdam in which workers are present; or Lifting operations are taking place in a refinery or a tank farm.

- Where the use of equipment with a boom that is designed to free fall is prohibited, the boom hoist will have a secondary mechanism or device designed to prevent the boom from falling in the event the primary system fails.
- Hydraulic telescoping booms will have an integrally mounted holding device to prevent the boom from retracting in the event of hydraulic failure.
- When a worker is directly under the load being hoisted, or when the load is directly over a power line or any other hazardous areas, controlled load lowering is required and free fall of the load line is prohibited.

HOISTING PERSONNEL - PERSONNEL PLATFORMS

- Lifting equipment will not be used to hoist workers.
- Personnel platforms will be used only as a last resort. All other avenues of elevated work should be explored and eliminated before working from a personnel platform.
- The number of employees occupying the personnel platform shall not exceed the manufacturer's load rating specification.
- Personnel platforms shall be used only for employees and their tools necessary to do their work, and shall not be used to hoist materials and/or equipment.
- Materials and tools for use during a personnel lift shall be secured to prevent displacement.
- Materials and tools for use during a personnel lift shall be evenly distributed within the confines of the platform while the platform is suspended.
- Employees shall keep all parts of the body inside the platform during raising, lowering, and positioning. This provision does not apply to an occupant of the platform performing the duties of a signal person.
- Before employees exit or enter a hoisted personnel platform that is not landed, the platform shall be secured to the structure where the work is to be performed, unless securing to the structure creates an unsafe situation.
- Hoisting of employees shall be promptly discontinued upon indication of any dangerous weather conditions or other impending danger.

OVERHEAD JIB AND GANTRY CRANES

- Overhead jib and gantry cranes will be installed per manufacturer's directions.
- Daily visual inspections before use will include:
  1. All functional operating mechanisms
  2. Operation of limit switch and associated components
  3. Host braking system for proper operation
  4. Deterioration or leakage in lines, tanks, valves, drain pumps, and other parts of air or hydraulic systems
  5. Hooks with deformation or cracks
  6. Hoist chains
  7. Cracks in welds or base structure

- Overhead cranes will be inspected monthly and documented by a competent person.
- Complete annual inspections will be performed by a qualified crane company.
- Any overhead jib or gantry crane/hoist that does not pass inspection will be immediately tagged out of service and reported to the appropriate supervisor.
- Repairs will be made by a qualified person.
- Before performing any maintenance or electrical maintenance on the equipment, de-energize the main switch supplying power to the equipment. Follow all pertaining lockout tag out procedures.
- Hoist operators shall read the operation manuals and head all instruction and warning labels. They will be required to be familiar with the hoist and hoist controls before being authorized to operate the hoist or lifting system.

TRAINING

The employer must train each operator and crew member assigned to work with the equipment on all of the following:

- The procedures to be followed in the event of electrical contact with a power line. Such training must include:
- Information regarding the danger of electrocution from the operator simultaneously touching the equipment and the ground.
- The importance to the operator's safety of remaining inside the cab except where there is an imminent danger of fire, explosion, or other emergency that necessitates leaving the cab.
- The safest means of evacuating from equipment that may be energized.
- The danger of the potentially energized zone around the equipment (step potential).
- The need for crew in the area to avoid approaching or touching the equipment and the load.
- Safe clearance distance from power lines.
- Power lines are presumed to be energized unless the utility owner/operator confirms that the power line has been and continues to be de-energized and visibly grounded at the worksite.
- (Power lines are presumed to be un-insulated unless the utility owner/operator or a registered engineer who is a qualified person with respect to electrical power transmission and distribution confirms that a line is insulated.

- The limitations of an insulating link/device, proximity alarm, and range control (and similar) device, if used.
- The procedures to be followed to properly ground equipment and the limitations of grounding.
- Employees working as dedicated spotters must be trained to enable them to effectively perform their task.
- Employees who may be exposed to fall hazards while on, or hoisted by equipment under this section.
- Signal persons. The employer must train each employee who will be assigned to work as a signal persons who does not meet the requirements of Sec. 1926.1428(c) in the areas addressed in that paragraph
- Competent persons and qualified persons. The employer must train each competent person and each qualified person regarding the requirements of this subpart applicable to their respective roles.
- Crush/pinch points. The employer must train each employee who works with the equipment to keep clear of holes, and crush/pinch points and the hazards pertaining to those tasks.
- Tag-out. The employer must train each operator and each additional employee authorized to start/energize equipment or operate equipment controls (such as maintenance and repair employees), in the tag-out and start-up procedures. Training administration:
  1. The employer must evaluate each employee required to be trained under this subpart to confirm that the employee understands the information provided in the training.
  2. The employer must provide refresher training in relevant topics for each employee when, based on the conduct of the employee or an evaluation of the employee's knowledge, there is an indication that retraining is necessary.
- Whenever training is required under subpart CC, the employer must provide the training at no cost to the employee.

Hazard Communication Program

Chapter 1
Introduction

About 32 million workers are potentially exposed to one or more chemical hazards. There are an estimated 575,000 existing chemical products, and hundreds of new ones are being introduced annually. This poses a serious problem for exposed workers and their employers. Chemical exposure may cause or contribute to many serious health effects such as heart ailments, kidney and lung damage, sterility, cancer, burns, and rashes. Some chemicals may also be safety hazards and have the potential to cause fires and explosions and other serious accidents.

Because of the seriousness of these safety and health problems, and because many employers and employees know little or nothing about them, the Occupational Safety and Health Administration *(OSHA)* issued, in 1983, a rule called "Hazard Communication" that applies to employers in the manufacturing sector industry. The scope of the rule was expanded in 1987 to include employers in the non-manufacturing *(including construction)* sector.

The basic goal of the standard is to ensure that employers and employees know about chemical hazards and how to protect themselves. This knowledge, in turn, should help to reduce the incidence of chemical source illnesses and injuries.

The Hazard Communication Standard establishes uniform requirements to assure that the hazards of all chemicals imported into, produced or used in U.S. workplaces are evaluated, and that the resultant hazard information and associated protective measures are transmitted to affected employers and potentially exposed employees.

Chemical manufacturers and importers must convey the hazard information they learn from their evaluations to downstream employers by means of labels on containers and Material Safety Data Sheets *(MSDS's)*. In addition, all covered employers must have a Hazard Communication Program to get this information to their employees through labels or containers, from MSDS's, and training.

This program developed for us ensures that the company receives the information they need to inform and train their employees properly and to design and put in place employee protection programs. It also provides necessary hazard information to employees, so they can participate in, and support, the protective measures in place at their workplaces.

Chapter 1A
Five preliminary steps to come into compliance.

1. Read the standard.

- Make sure you understand the provisions of the standard.
- Know your responsibility as an employer.

2. List the hazardous chemicals in the workplace.

- Walk around the workplace, read all container labels, and list the identity of all materials that may be hazardous; the manufacturer's product name, location, and telephone number; and the work area where the product is used. Be sure to include hazardous chemicals that are generated in the work operation but are not in a container *(e.g., welding fumes)*.
- Check with your purchasing department to ensure that all hazardous chemicals purchased are included on your list.
- Review your list and determine whether any substances are exempt.
- Establish a file on hazardous chemicals used in your workplace, and include a copy of the latest MSDS's, and any other pertinent information.
- Develop procedures to keep your list current. When new chemicals are used, add them to your list.

3. Obtain Material Safety Data Sheets for all chemical substances.

- If you do not have an MSDS for a hazardous substance in your workplace, request a copy from the chemical manufacturer, or distributor as soon as possible. An MSDS must accompany or precede the shipment and must be used to obtain identifying information such as the chemical name and the hazards of a particular substance.

- Review each MSDS to be sure that it is complete and clearly written. The MSDS must contain the following:
- Physical and chemical properties of a substance.
- Physical and health hazards.
- Routes of exposure.
    - Precautions for safe handling and use.
    - Emergency and first-aid procedures.
    - Control measures

- If the MSDS is incomplete or unclear, contact the manufacturer or distributor to get clarification of the missing information.
- Make sure the MSDS is available to employees, designated representatives, and to the Assistant Secretary for Occupational Safety and Health.

4. Make sure that all containers are labeled.

The manufacturer, importer, or distributor is responsible for labeling containers, but Associated Contractors must adhere to the following:

- Ensure that containers of hazardous substances in the workplace are labeled, tagged or marked and include the identity of the hazardous chemical, and the appropriate hazard warnings. Container labels for purchased chemicals must also include the name and address of the chemical manufacturer, importer, or other responsible party.
- Check all incoming shipments of hazardous chemicals to be sure they are labeled.
- If a container is not labeled, obtain a label or the label information from the manufacturer, importer, or other responsible party or prepare a label using information obtained from these sources. Employers are responsible for ensuring that containers in the workplace are labeled, tagged, or marked.
- Do not remove or deface existing labels on containers unless the container is immediately marked with the required information.
- Instruct employees on the importance of labeling portable containers into which they have poured hazardous substances. If the portable container is for their immediate use, then the container does not have to be labeled.

5. Develop and implement a written hazard communication program.

This program must include the following:

- Container labeling and other forms of warnings.
- Material Safety Data Sheets.
- Employee training based on the list of chemicals, MSDS's, and labeling information.
- Methods for communicating hazards and protective measures to employees and others *(such as other contractors or subcontractors onsite).*

Chapter 1B

Hazard Compliance Checklist

	Yes	No
1. Listed all of the hazardous chemicals in our workplace.	_____	_____
2. Established a file for information on hazardous chemicals.	_____	_____
3. Obtained an MSDS for each hazardous chemical in use.	_____	_____
4. Developed a system to ensure that all incoming hazardous chemicals are labeled.	_____	_____
5. Reviewed each MSDS to be sure it is complete.	_____	_____
6. Made sure that MSDS's are available where necessary.	_____	_____
7. Developed a written hazard communication program.	_____	_____
8. Developed a method to communicate hazards to employees and others *(contractors and subcontractors)*.	_____	_____
9. Informed employees of protective measures for hazardous chemicals used in the workplace.	_____	_____
10. Alerted employees to other forms of warning that may be used.	_____	_____

Chapter 2

Hazard Communication Program

General Policy of this Company

The purpose of this notice is to inform you that this company is complying with the OSHA Hazard Communication Standard, Title 29 Code of Federal Regulations 1910.1200, by the following actions:

- Compiling a hazardous chemicals list.
- By using MSDS's.
- By ensuring that containers are labeled.
- By providing you, the employee with training.

This program applies to all work operations in this company where you may be exposed to hazardous substances under normal working conditions or during an emergency situation.

The Responsible Safety Officer, is the program coordinator who has overall responsibility for the program. He will review and update the program, as necessary. Copies of the written program may be obtained from him.

Under this program, you will be informed of the following items:

- The Hazard Communications Standard.
- The hazardous properties of chemicals with which you work.
- Safe handling procedures.
- Measures to take to protect yourself from these chemicals.
- Hazards associated with non-routine tasks.
- Hazards associated with unlabeled containers.

List of Hazardous Chemicals

The Responsible Safety Officer, will make a list of all hazardous chemicals and related work practices used in the facility and on jobsites, and will update the list as necessary. Our master list of chemicals and substances identifies all chemicals and substances used throughout our work areas. MSDS's for your particular jobsite will be located in the field office. The master list of chemicals and substances will be maintained by a Responsible Safety Officer, and is available for review.

Material Safety Data Sheets (MSDS's)

MSDS's provide you, the employee with specific information on the chemicals you use. The Responsible Safety Officer, will maintain a binder with an MSDS on every chemical or substance used by this company. The MSDS will be a fully completed OSHA Form 174 or equivalent. The Responsible Safety Officer, will ensure that the shop and each jobsite maintains the appropriate MSDS's for that area. MSDS's will be made readily available to you in the field office during normal working hours.

The Responsible Safety Officer, is responsible for acquiring and updating MSDS's. He will contact the chemical manufacturer or vendor if additional research is necessary or if an MSDS has not been supplied with an initial shipment. All new procurements for the company must be cleared by the Responsible Safety Officer. The master list of chemicals and substances is available for review from him.

Labels and Other Forms of Warning

The Responsible Safety Officer, will ensure that all hazardous chemicals used in the facility and on jobsites are properly labeled and updated as necessary. Labels shall be legible, and in English, however, for non-English speaking employees, information shall be presented in their language as well. Labels should list at least the following items:

- The chemical identity.
- The appropriate hazard warnings.
- The name and address of the manufacturer, importer, or other responsible party.

The Responsible Safety Officer, or your immediate supervisor will refer to the corresponding MSDS to assist you in verifying label information. Containers

shipped from the shop or central office will be checked to make sure all containers are properly labeled.

If you transfer chemicals from a labeled container to a portable container that is intended for immediate use, no labels are required on the portable container. These portable containers shall not be allowed to remain in any work or storage areas overnight without emptying or labeling to prevent another person from coming in contact with the portable container.

Non-Routine Tasks

When you are required to perform hazardous non-routine tasks *(such as entering confined spaces)*, a special training session will be conducted to inform you regarding the hazardous chemicals to which you might be exposed and the proper precautions to take to reduce or avoid exposure.

Training

Anyone who works with or is potentially exposed to hazardous chemicals will receive initial training on the Hazard Communication Standard and the safe use of those hazardous chemicals by the Responsible Safety Officer, or a designated representative. This training shall be performed for present workers and for new hires at the time of their initial assignment.. The training program may use classroom style training materials and/ or audiovisual aids. Whenever a new chemical is introduced, additional training *(informal if appropriate)* will be provided. Regular safety meetings conducted year by the RSO, or a designated representative will also be used to review the information presented in the initial training. Foremen and other supervisors will be trained regarding jobsite hazards and appropriate protective measures so they will be able to answer questions from you and/ or other employees and to provide daily monitoring of safe work practices.

The training plan will emphasize these items:

- A summary of the OSHA Standard and details of this written program, including an explanation of the labeling system and MSDS's and how employees can obtain and use the appropriate hazard information.

- Chemical and physical properties of hazardous materials *(e.g. flash point, reactivity)* and methods that can be used to detect the presence or release of chemicals.

- Physical hazards of chemicals *(e.g. potential for fire, explosion, etc.)*.

- Any operation in their work area where hazardous chemicals are present.

- Physical and health hazards, including signs and symptoms of exposure, associated with exposure to chemicals in the workplace, and any medical condition known to be aggravated by exposure to the chemical.

- Methods and observations that may be used to detect the presence or release of hazardous chemicals by use of monitoring devices, visual appearance or odor.

- Procedures and appropriate work practices to protect against hazards.

- Personal protective equipment required

- Proper use and maintenance of personal protective equipment

- Work practices, or methods to assure proper use and handling of chemicals

- Procedures for emergency response.

- Work procedures to follow to assure protection when cleaning hazardous chemical spills and leaks, or other emergency procedures.

- Where the Hazard Communication Program, any applicable Lists of Chemicals, and MSDS's are located, how to read and interpret the information on both labels and MSDS's, and how employees may obtain additional information.

Other Employers

The Responsible Safety Officer, upon notification, will either meet with or have a designated agent meet with other contractors, subcontractors, or any other applicable parties on jobsites to discuss the following items:

- Chemical hazards that may be encountered in the normal course of our work on the premises.

- The labeling system that is in use.

- The protective measures to be taken by our employees.

- The safe handling procedures to be used by our employees.

- The location of the MSDS's.

In addition, each contractor bringing chemicals on-site must provide the company with the appropriate hazard information on these substances, the labels used, the precautionary measures to be taken in working with these chemicals, and the location of the MSDS's.

Additional information

All employees, or their designated representatives, can obtain further information on this written program, the Hazard Communication Standard, applicable MSDS's, and chemical information lists from the Responsible Safety Officer.

Chapter 3A

Guidelines for Identifying and Listing Hazardous Chemicals

How to Identify Hazardous Chemicals

The responsibility for determining whether a chemical is hazardous lies with the chemical manufacturer or importer of a chemical. As a user of chemicals, Associated Contractors may rely on the evaluation received from these suppliers through labels on containers and Material Safety Data Sheets *(MSDS's)*. To prepare a list of chemicals in our facility that is covered by the rule, walk around and write down the names of chemicals that have a label indicating a potential hazard *(e.g. "flammable", "inflammable", "causes skin irritation")*. Don't limit yourself to chemicals in containers, however. Be aware of substances generated in work operations such as fumes or dust as these may be covered too.

Chemicals Considered being Hazardous:

- Those regulated by OSHA in 29 CFR Part 1926, Subpart Z, Toxic and Hazardous Substances.

- Those included in the American Conference of Governmental Industrial Hygienists *(ACGIH)* latest edition of **Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment**.

- Those found to be suspected or confirmed carcinogens by the National Toxology Program in the latest edition of the **Annual Report on Carcinogens**.

- Those found to be suspected or confirmed carcinogens by the International Agency for Research on Cancer (IARC) in the latest edition of IARC **Monographs**.

Once you have complete list of chemicals, you'll want to review it to determine if any of the items are exempted. In paragraph (b)(6) of the Hazard Communication Standard, OSHA has listed a number of items that are excluded. For example, rubbing alcohol maintained in a first-aid station would be exempt under paragraph (b)(6)(vi) because it's intended for personal use by employees. To be prudent, some employers include all chemicals even if they are exempted. In general, if there is any question regarding a chemical, it's best to include that chemical in the Hazard Communication Program.

How to List Chemicals in the Workplace

All hazardous chemicals known to be present in your workplace should be listed using an identity that appears on the appropriate MSDS and label for the chemical. The list may also include common or trade names, Chemical Abstract Service *(CAS)* registry numbers, MSDS reference numbers, etc. The list can be compiled for the entire company's work areas, or for individual shop or jobsites.

The list is to be an inventory of everything for which a MSDS must be obtained. It will be part of the written program, and must be available to employees upon request.

The following list identifies some types of potentially hazardous chemicals that may be present in the workplace:

Acids
Adhesives
Aerosols
Asbestos
Battery Fluids
Benzene
Catalysts
Caustics
Cleaning Agents
Coal Tar Pitch
Coatings
Degreasing Agents
Detergents
Dusts
Etching Agents
Fiberglass
Flammables
Foaming Resins
Fuels
Fungicides
Gasoline
Glues
Greases
Industrial Oils
Inks
Insecticides
Herbicides
Janitorial Supplies
Kerosene
Lacquers
Lead
Lye
Oxalic Acid
Paints
Pesticides
Plastics
Process Chemicals
Resins
Sealers
Shellacs
Solders
Solvents
Strippers
Surfactants
Thinners
Varnishes
Water Treatments
Wood Preservatives
Zylene

Company List of Hazardous Chemicals and MSDS Index

PLEASE SEE COMPANY SDS MANUAL

Hazardous Has Chemical	Common Name	Product Name	Manufacturer	MSDS Been Rcvd

Hazardous Has Chemical	Common Name	Product Name	Manufacturer	MSDS Been Rcvd

Chapter 4A

MSDS Guidelines

Introduction

The Material Safety Data Sheet *(MSDS)* is a detailed information bulletin prepared by the manufacturer or importer of a chemical that describes the physical and chemical properties, physical and health hazards, routes of exposure, precautions for safe handling and use, emergency and first-aid procedures, and control measures. Information on an MSDS aids in the selection of safe products and helps and prepare the company and you, the employee to respond effectively to daily exposure situations as well as emergency situations.

The MSDS's are a comprehensive source of information for all types of employers. Therefore there may be information on the MSDS that is not particularly useful to you or not important to the safety and health in your operation. Concentrate on the information that is applicable to your situation. Generally, hazard information and protective measures should be the focus of your concern.

This Hazardous Communications Program contains a glossary of terms used on MSDS's *(see Chapter 7)*. You may find this helpful in reading and understanding MSDS's.

OSHA Requirements

The company will maintain a complete and accurate MSDS for each hazardous chemical that is used in the shop and on jobsites. All employers are entitled to receive MSDS's automatically upon purchase of the material. When new and significant information becomes available concerning a product's hazards or ways to protect against the hazards, chemical manufacturers, importers, or distributors must add to their MSDS within three months and provide it to their customers with the next shipment of chemical. The company has an MSDS for each hazardous chemical used in the workplace. When there are multiple suppliers of the same chemical, only one MSDS is retained.

While MSDS's are not required to be physically attached to a shipment, they must accompany or precede the shipment. When the manufacturer or supplier fails to send an MSDS with a shipment labeled as a hazardous chemical, Associated Contractors will obtain one from the manufacturer or supplier as soon as possible. Similarly, if the MSDS is incomplete, or unclear, the company will contact the manufacturer or supplier to get clarification or obtain missing information as soon as possible. See Chapter 4D for an MSDS Request Form.

If the company cannot obtain an MSDS from a manufacturer or supplier a written complaint shall be sent to the nearest OSHA area office. OSHA will then, at the same time, call and send a certified letter to the manufacturer or supplier to obtain the needed information. If the manufacturer or supplier still fails to respond within a reasonable time, OSHA will inspect the manufacturer or supplier and take appropriate enforcement action.

Sections of an MSDS and Their Significance

OSHA specifies the information to be included in an MSDS, but does not prescribe the precise format for an MSDS. A non-mandatory MSDS form *(See Chapter 4C)* that meets the Hazard Communication Standard requirements has been issued and can be used as-is or expanded as needed. The MSDS must be in English and must include at least the following information:

Section I. Identification

- The chemical and common name(s) must be provided for chemical substances.
- An identity on the MSDS must be cross-referenced to the identity found on the label.
- The manufacturer's name, address, and emergency information telephone number.
- The date prepared and the signature of the preparer.
-

Section II. Hazardous Ingredients

- For a hazardous chemical mixture that has been tested as a whole to determine its hazards, the chemical and common names of the ingredients that are associated with the hazards, and the common name of the mixture must be listed.

- If the chemical is a mixture that has not been tested as a whole, the chemical and common names of all ingredients determined to be health hazards and comprising one percent *(1%)* or greater of the composition must be listed.

- Chemical and common names of carcinogens must be listed if they are present in the mixture at levels of one-tenth percent *(0.1%)* or greater.

- All components of a mixture that have been determined to present a physical hazard must be listed.

- Chemical and common names of all ingredients determined to be health hazards and comprising less than one percent (one-tenth percent for carcinogens) of the mixture must also be listed if they can still exceed an established Permissible Exposure Limit *(PEL)*- that is, the limit a person may be safely exposed to a chemical, or Threshold Limit Value *(TLV)*- that is the concentration of a chemical that may breathed for a five consecutive 8 hour workday, or present a health risk to exposed employees in these concentrations.

- Any other limits recommended by any agency, scientific group, or organization should be included.

Section III. Physical and Chemical Characteristics

- The physical and chemical characteristics of the hazardous substance must be listed. These may include items such as :

- Boiling, Melting, and Freezing Points *(in degrees)*

- Vapor Density- *(in numerical values)* Values greater than 1.0 are heavier than air, and therefore will collect in low spots, displacing breathable air, and in the case of flammables, collecting in ignitable concentrations. Values less than 1.0 are lighter than air and will tend to rise and dissipate.

- Vapor pressure *(in mm Hg)*- measures a material's ability to evaporate. The higher the value, the faster evaporation will occur.

- Specific Gravity- *(in numerical values)* Values greater than 1.0 are heavier then water, and will sink in water. Values less than 1.0 will float on waterthis needs to be considered before extinguishing a material with water, or if washing a material away from an area.

- Solubility- the ability of a substance to mix with water.

- The product's general appearance and odor.

These characteristics provide important information for designing safe and healthful work practices.

Section IV. Fire and Explosion Hazard Data

- The compound's potential for fire and explosion must be described, such as:

- Flash Point *(in Degrees)*

- Lower Explosive Limit *(LEL)* The minimum concentration of a substance in the air which can be ignited.

- Upper Explosive Limit *(UEL)* The maximum concentration of a substance in the air which can continue to support fire.

- Extinguishing Agents- In accordance with the following table:

Type of Fire	***Extinguishing Agent***
Class A- Wood, Paper, Cloth	Water
Class B- Flammable/ Combustible Liquids	Carbon Dioxide, Dry Chem, Foam
Class C- Electrical	Carbon Dioxide, Dry Chem
Class D- Combustible Metals	Special Compounds

- Special Fire or Explosion Characteristics

- Special Fire Extinguishing Methods- such as if substances will re-ignite, etc.

Also, the fire hazards of the chemical and the conditions under which it could ignite or explode must be identified. Recommended extinguishing agents and fire-fighting methods must be described.

Section V. Reactivity Data

This section presents information about other chemicals, substances or conditions with which it reacts such as:

- Hazardous Decomposition- Any gases which may be released when the substance is heated, burned or decomposes.
- Hazardous Polymerization- What, if any different compounds develop when a substance is combined with other substances.
- Incompatibility- Materials the substance should not come in contact with.
- Instability- Conditions which would cause a reaction, such as heat, pressure, shock, etc.

Section VI. Health Hazards

- The acute and chronic health hazards of the chemical, together with signs and symptoms of exposure, must be listed. in addition, any medical conditions that are aggravated by exposure to the compound, must be included. the specific types of chemical health hazards defined in the Standard include carcinogens, corrosives, toxins, irritants, sensitizers, mutations, teratogens, and effects on target organs *(i.e. liver, kidney, nervous system, blood, lungs, mucous membranes, reproductive system, skin, eyes, etc.)*.

- The route of entry section describes the primary pathway by which the chemical enters the body. there are three principal routes of entry: inhalation, skin, and ingestion.

- This section of the MSDS supplies OSHA PEL, the ACGIH TLV, and other exposure levels used or recommended by the chemical manufacturer.

- If the compound is listed as a carcinogen *(cancer-causing agent)* by OSHA, the National Toxicology Program *(NTP)*, or the International Agency for Research on Cancer *(IARC)*, this information must be indicated on the MSDS.

Section VII. Precautions for Safe Handling and Use

- The Standard requires the preparer to describe the precautions for safe handling and use. These include recommended industrial hygiene practices, precautions to be taken during repair and maintenance of equipment, and for cleaning up spills and leaks. Some manufacturers also use this section to include useful information not specifically required by the standard, such as EPA waste disposal methods and state and local requirements.

Section VIII. Control Measures

The Standard requires the preparer of the MSDS to list any generally applicable control measures. These may include the following:

- Engineering Controls
- Safe Handling Procedures
- Personal Protective Equipment
- Ventilation

Employer Responsibilities

The company ensures by training that each employee has a basic knowledge of how to find information on an MSDS and how to properly make use of that information. This company also ensures the following:

- Complete and accurate MSDS's are made available during each work shift to employees when they are at their work areas.
- Information is provided for each hazardous chemical.

Chapter 4B

MSDS Checklist

This company ensures that each SDS contains the following information:

1. Product or chemical identity used on label. ____
2. Manufacturer's name and address. ____
3. Chemical and common names of each hazardous ingredient. ____
4. Name, address, and phone number for hazardous and emergency information ____
5. Preparation or revision date. ____
6. The hazardous chemical's physical and chemical characteristics, such as vapor, pressure, and flashpoint. ____
7. Potential physical hazards, *(i.e. fire, explosion, and reactivity).* ____
8. Known health hazards. ____
9. OSHA Permissible Exposure Limit *(PEL)*, ACGIH Threshold Limit Value *(TLV)* or other exposure limits. ____
10. Emergency and first-aid procedures. ____
11. Whether OSHA, NTP, or IARC lists the ingredient as a carcinogen. ____
12. Precautions for safe handling and use. ____
13. Control measure such as engineering controls, work practices, hygiene practices or personal protective equipment required. ____
14. Primary routes of entry. ____
15. Procedures for spills, leaks, and cleanup. ____

***PLEASE SEE COMPANY'S SDS MANUAL**

Chapter 4D

MSDS Request Form

The Occupational Safety and Health Administration *(OSHA)* Hazard Communication Standard *(29 CFR 1926.59)* requires employers to be provided Material Safety Data Sheets *(MSDS's)* for all hazardous substances used in their facility, and to make these MSDS's available to employees potentially exposed to these substances.

We, therefore, request a copy of the MSDS for your product listed as:

_____

We did not receive and MSDS with the initial shipment. We also request any additional information, supplemental MSDS's, or any other relevant data that your company or supplier has concerning the safety and health aspects of this product.

Please consider this letter as a standing request to your company for any information concerning the safety and health aspects of using this product that may become known in the future.

The MSDS and any other relevant information should be sent to us within 10 working days of receipt of this notice. Delays in receiving the MSDS information may prevent use of your product. Please send the requested information to the attention of the Responsible Safety Officer.

Please be advised that if we do not receive the MSDS on the above chemical, we may have to notify OSHA or our inability to obtain this information. It is our intent to comply with all provisions of the Hazard Communication Standard *(29 CFR 1926.59)* and the MSDS's are integral to this effort.

Your cooperation is greatly appreciated. Thank you for your timely response to this request.

Sincerely,

_____

Training Program Guidelines

I. Introduction

The Occupational Safety and Health Act of 1970 does not address specifically the responsibility of employers to provide health and safety information and instruction to employees, although Section 5(a)(2) does require that each employer "...shall comply with occupational safety and health standards promulgated under this Act." However, more than 100 of the Act's current standards do contain training requirements

Therefore, the Occupational Safety and Health Administration has developed voluntary training guidelines to assist employers in providing the safety and health information and instruction needed for their employees to work at minimal risk to themselves, to fellow employees, and to the public.

The guidelines are designed to help employers to:

(1) Determine whether a worksite problem can be solved by training
(2) Determine what training, if any, is needed
(3) Identify goals and objectives for the training
4) Design learning activities
(5) Conduct training
(6) Determine the effectiveness of the training
(7) Revise the training program based on feedback from employees, supervisors, and others.

The development of the guidelines is part of an agency-wide objective to encourage cooperative, voluntary safety and health activities among OSHA, the business community, and workers. These voluntary programs include training and education, consultation, voluntary protection programs, and abatement assistance.

A. Training Model

The guidelines provide employers with a model for designing, conducting, evaluating, and revising training programs. The training model can be used to develop training programs for a variety of occupational safety and health hazards identified at the workplace. Additionally, it can assist employers in their efforts to meet the training requirements in current or future occupational safety and health standards.

A training program designed in accordance with these guidelines can be used to supplement and enhance the employer's other education and training activities. The

guidelines afford employers significant flexibility in the selection of content and training program design. OSHA encourages a personalized approach to the informational and instructional programs at individual worksites, thereby enabling employers to provide the training that is most needed and applicable to local working conditions. Assistance with training programs or the identification of resources for training is available through such organizations as OSHA full-service Area Offices, State agencies which have their own OSHA-approved occupational safety and health programs, OSHA-funded State onsite consultation programs for employers, local safety councils, the OSHA Office of Training and Education, and OSHA-funded New Directions grantees.

B. Review Commission Implications

OSHA does not intend to make the guidelines mandatory. And they should not be used by employers as a total or complete guide in training and education matters which can result in enforcement proceedings before the Occupational Safety and Health Review Commission. However, employee training programs are always an issue in Review Commission cases which involve alleged violations of training requirements contained in OSHA standards.

The adequacy of employee training may also become an issue in contested cases where the affirmative defense of unpreventable employee misconduct is raised. Under case law well established in the Commission and the courts, an employer may successfully defend against an otherwise valid citation by demonstrating that all feasible steps were taken to avoid the occurrence of the hazard, and that actions of the employee involved in the violation were a departure from a uniformly and effectively enforced work rule of which the employee had either actual or constructive knowledge.

In either type of case, the adequacy of the training given to employees in connection with a specific hazard is a factual matter which can be decided only by considering all the facts and circumstances surrounding the alleged violation. The general guidelines presented here are not intended, and cannot be used, as evidence of the appropriate level of training in litigation involving either the training requirements of OSHA standards or affirmative defenses based upon employer training programs.

II. Training Guidelines

OSHA's training guidelines follow a model that consists of:

A. Determining if Training is Needed
B. Identifying Training Needs
C. Identifying Goals and Objectives
D. Developing Learning Activities
E. Conducting the Training
F. Evaluating Program Effectiveness

G. Improving the Program

The model is designed to be one that even the owner of a business with very few employees can use without having to hire a professional trainer or purchase expensive training materials. Using this model, employers or supervisors can develop and administer safety and health training programs that address problems specific to their own business, fulfill the learning needs of their own employees, and strengthen the overall safety and health program of the workplace.

A. Determining if Training is Needed

The first step in the training process is a basic one: to determine whether a problem can be solved by training. Whenever employees are not performing their jobs properly, it is often assumed that training will bring them up to standard. However, it is possible that other actions *(such as hazard abatement or the implementation of engineering controls)* would enable employees to perform their jobs properly.

Ideally, safety and health training should be provided before problems or accidents occur. This training would cover both general safety and health rules and work procedures, and would be repeated if an accident or near-miss incident occurred.

Problems that can be addressed effectively by training include those that arise from lack of knowledge of a work process, unfamiliarity with equipment, or incorrect execution of a task. Training is less effective *(but still can be used)* for problems arising from an employee's lack of motivation or lack of attention to the job. Whatever its purpose, training is most effective when designed in relation to the goals of the employer's total safety and health program.

B. Identifying Training Needs

If the problem is one that can be solved, in whole or in part, by training, then the next step is to determine what training is needed. For this, it is necessary to identify what the employee is expected to do and in what ways, if any, the employee's performance is deficient. This information can be obtained by conducting a job analysis which pinpoints what an employee needs to know in order to perform a job.

When designing a new training program, or preparing to instruct an employee in an unfamiliar procedure or system, a job analysis can be developed by examining engineering data on new equipment or the safety data sheets on unfamiliar substances. The content of the specific Federal or State OSHA standards applicable to a business can also provide direction in developing training content. Another option is to conduct a Job Hazard Analysis *(see OSHA 3071, same title, 1987).* This is a procedure for studying and recording each step of a job, identifying existing or potential hazards, and determining the best way to perform the job in order to reduce or

eliminate the risks. Information obtained from a Job Hazard Analysis can be used as the content for the training activity.

If an employee's learning needs can be met by revising an existing training program rather than developing a new one, or if the employee already has some knowledge of the process or system to be used, appropriate training content can be developed through such means as:

1. Using company accident and injury records to identify how accidents occur and what can be done to prevent them from recurring.
2. Requesting employees to provide, in writing and in their own words, descriptions of their jobs. These should include the tasks performed and the tools, materials and equipment used.
3. Observing employees at the worksite as they perform tasks, asking about the work, and recording their answers.
4. Examining similar training programs offered by other companies in the same industry, or obtaining suggestions from such organizations as the National Safety Council (which can provide information on Job Hazard Analysis), the Bureau of Labor Statistics, OSHA-approved State programs, OSHA full-service Area Offices, OSHA-funded State consultation programs, or the OSHA Office of Training and Education.

The employees themselves can provide valuable information on the training they need. Safety and health hazards can be identified through the employees' responses to such questions as whether anything about their jobs frightens them, if they have had any near-miss incidents, if they feel they are taking risks, or if they believe that their jobs involve hazardous operations or substances.

Once the kind of training that is needed has been determined, it is equally important to determine what kind of training is not needed. Employees should be made aware of all the steps involved in a task or procedure, but training should focus on those steps on which improved performance is needed. This avoids unnecessary training and tailors the training to meet the needs of the employees.

C. Identifying Goals and Objectives

Once the employees' training needs have been identified, employers can then prepare objectives for the training. Instructional objectives, if clearly stated, will tell employers what they want their employees to do, to do better, or to stop doing.

Learning objectives do not necessarily have to be written, but in order for the training to be as successful as possible, clear and measurable objectives should be thought-out before the training begins. For an objective to be effective it should identify as precisely as possible what the individuals will do to demonstrate that they have learned, or that the objective has been reached. They should also describe the important conditions under which the individual will demonstrate competence and define what constitutes acceptable performance.

Using specific, action-oriented language, the instructional objectives should describe the preferred practice or skill and its observable behavior. For example, rather than using the statement: "The employee will understand how to use a respirator" as an instructional objective, it would be better to say: "The employee will be able to describe how a respirator works and when it should be used." Objectives are most effective when worded in sufficient detail that other qualified persons can recognize when the desired behavior is exhibited.

D. Developing Learning Activities

Once employers have stated precisely what the objectives for the training program are, then learning activities can be identified and described. Learning activities enable employees to demonstrate that they have acquired the desired skills and knowledge. To ensure that employees transfer the skills or knowledge from the learning activity to the job, the learning situation should simulate the actual job as closely as possible. Thus, employers may want to arrange the objectives and activities in a sequence which corresponds to the order in which the tasks are to be performed on the job, if a specific process is to be learned. For instance, if an employee must learn the beginning processes of using a machine, the sequence might be

(1) To check that the power source is connected
(2) To ensure that the safety devices are in place and are operative
(3) To know when and how to throw the switch, and so on.

A few factors will help to determine the type of learning activity to be incorporated into the training. One aspect is the training resources available to the employer. Can a group training program that uses an outside trainer and film be organized, or should the employer personally train the employees on a one-to-one basis? Another factor is the kind of skills or knowledge to be learned. Is the learning oriented toward physical skills *(such as the use of special tools)* or toward mental processes and attitudes? Such factors will influence the type of learning activity designed by employers. The training activity can be group-oriented, with lectures, role play, and demonstrations; or designed for the individual as with self-paced instruction.

The determination of methods and materials for the learning activity can be as varied as the employer's imagination arid available resources will allow. The employer may want to use charts, diagrams, manuals, slides, films, viewgraphs *(overhead transparencies),* videotapes, audiotapes, or simply blackboard and chalk, or any

combination of these and other instructional aides. Whatever the method of instruction, the learning activities should be developed in such a way that the employees can clearly demonstrate that they have acquired the desired skills or knowledge.

E. Conducting the Training

With the completion of the steps outlined above, the employer is ready to begin conducting the training. To the extent possible, the training should be presented so that its organization and meaning are clear to the employees. To do so, employers or supervisors should:

(1) Provide overviews of the material to be learned

(2) Relate, wherever possible, the new information or skills to the employees goals, interests, or experience

(3) Reinforce what the employees learned by summarizing the program's objectives and the key points of information covered.

These steps will assist employers in presenting the training in a clear, unambiguous manner.

In addition to organizing the content, employers must also develop the structure and format of the training. The content developed for the program, the nature of the workplace or other training site, and the resources available for training will help employers determine for themselves the frequency of training activities, the length of the sessions, the instructional techniques, and the individual(s) best qualified to present the information.

In order to be motivated to pay attention and learn the material that the employer or supervisor is presenting, employees must be convinced of the importance and relevance of the material. Among the ways of developing motivation are

(1) Explaining the goals and objectives of instruction
(2) Relating the training to the interests, skills, and experiences of the employees
(3) Outlining the main points to be presented during the training session(s)
(4) Pointing out the benefits of training *(e.g., the employee will be better informed, more skilled, and thus more valuable both on the job and on the labor market; or the employee will, if he or she applies the skills and knowledge learned, be able to work at reduced risk).*

An effective training program allows employees to participate in the training process and to practice their skills or knowledge. This will help to ensure that they are learning the required knowledge or skills and permit correction if necessary. Employees can become involved in the training process by participating in discussions, asking questions, contributing their knowledge and expertise, learning through hands-on experiences, and through role-playing exercises.

F. Evaluating Program Effectiveness

To make sure that the training program is accomplishing its goals, an evaluation of the training can be valuable. Training should have, as one of its critical components, a method of measuring the effectiveness of the training. A plan for evaluating the training session(s) should be developed when the course objectives and content are developed. It should not be delayed until the training has been completed. Evaluation will help employers or supervisors determine the amount of learning achieved and whether an employee's performance has improved on the job. Among the methods of evaluating training are:

(1) Student opinion Questionnaires or informal discussions with employees can help employers determine the relevance and appropriateness of the training program
(2) Supervisors' observations. Supervisors are in good positions to observe an employee's performance both before and after the training and note improvements or changes
(3) Workplace improvements. The ultimate success of a training program may be changes throughout the workplace that result in reduced injury or accident rates.

However it is conducted, an evaluation of training can give employers the information necessary to decide whether or not the employees achieved the desired results, and whether the training session should be offered again at some future date.

G. Improving the Program

If, after evaluation, it is clear that the training did not give the employees the level of knowledge and skill that was expected, then it may be necessary to revise the training program or provide periodic retraining. At this point, asking questions of employees and of those who conducted the training may be of some help. Among the questions that could be asked are:

(1) Were parts of the content already known and, therefore, Unnecessary?
(2) What material was confusing or distracting?
(3) Was anything missing from the program?
(4) What did the employees learn, and what did they fail to learn?

It may be necessary to repeat steps in the training process, that is, to return to the first steps and retrace one's way through the training process. As the program is evaluated, the employer should ask:

(1) If a job analysis was conducted, was it accurate?
(2) Was any critical feature of the job overlooked?
(3) Were the important gaps in knowledge and skill included?
(4) Was material already known by the employees intentionally omitted?
(5) Were the instructional objectives presented clearly and concretely?
(6) Did the objectives state the level of acceptable performance that was expected of employees?
(7) Did the learning activity simulate the actual job?
(8) Was the learning activity appropriate for the kinds of knowledge and skills required on the job?
(9) When the training was presented, was the organization of the material and its meanings made clear?
(10) Were the employees motivated to learn?
(11) Were the employees allowed to participate actively in the training process?
(12) Was the employer's evaluation of the program thorough?

A critical examination of the steps in the training process will help employers to determine where course revision is necessary.

III. Matching Training to Employees

While all employees are entitled to know as much as possible about the safety and health hazards to which they are exposed, and employers should attempt to provide all relevant information and instruction to all employees, the resources for such an effort frequently are not, or are not believed to be, available. Thus, employers are often faced with the problem of deciding who is in the greatest need of information and instruction.

One way to differentiate between employees who have priority needs for training and those who do not is to identify employee populations which are at higher levels of risk. The nature of the work will provide an indication that such groups should receive priority for information on occupational safety and health rules.

A. Identifying Employees at Risk

One method of identifying employee populations at high levels of occupational risk *(and thus in greater need of safety and health training)* is to pinpoint hazardous occupations. Even within industries which are hazardous in general, there are some employees who operate at greater risk than others. In other cases the hazardousness of an occupation is influenced by the conditions under which it is performed, such as noise, heat or cold, or safety or health hazards in the surrounding area. In these situations, employees should be trained not only on how to perform their job safely but also on how to operate within a hazardous environment.

A second method of identifying employee populations at high levels of risk is to examine the incidence of accidents and injuries, both within the company and within the industry. If employees in certain occupational categories are experiencing higher accident and injury rates than other employees, training may be one way to reduce that rate. In addition, thorough accident investigation can identify not only specific employees who could benefit from training but also identify company-wide training needs.

Research has identified the following variables as being related to a disproportionate share of injuries and illnesses at the worksite on the part of employees:

(1) The age of the employee (younger employees have higher Incidence rates).
(2) The length of time on the job (new employees have higher incidence rates).
(3) The size of the firm (in general terms, medium-size firms have higher incidence rates than smaller or larger firms).
(4) The type of work performed (incidence and severity rates vary significantly by Standard Industrial Classification, or SIC, Code).
(5) The use of hazardous substances (by SIC Code).

These variables should be considered when identifying employee groups for training in occupational safety and health.

In summary, information is readily available to help employers identify which employees should receive safety and health information, education and training, and who should receive it before others. Employers can request assistance in obtaining information by contacting such organizations as OSHA Area Offices, the Bureau of Labor Statistics, OSHA-approved State programs, State onsite consultation programs, the OSHA Office of Training and Education, or local safety councils.

B. Training Employees at Risk

Determining the content of training for employee populations at higher levels of risk is similar to determining what any employee needs to know, but more emphasis is placed on the requirements of the job and the possibility of injury. One useful tool for determining training content from job requirements is the Job Hazard Analysis described earlier. This procedure examines each step of a job, identifies existing or potential hazards, and determines the best way to perform the job in order to reduce or eliminate the hazards. Its key elements are:

(1) Job description
(2) Job location
(3) Key steps preferably in the order in which they are performed
(4) Tools, machines and materials used
(5) Actual and potential safety and health hazards associated with these key job steps
(6) Safe and healthful practices, apparel, and equipment required for each job step.

Material Safety Data Sheets *(MSDS)* can also provide information for training employees in the safe use of materials. These data sheets, developed by chemical manufacturers and importers, are supplied with manufacturing or construction materials and describe the ingredients of a product, its hazards, protective equipment

to be used, safe handling procedures, and emergency first-aid responses. The information contained in these sheets can help employers identify employees in need of training *(i.e., workers handling substances described in the sheets)* and train employees in safe use of the substances. Material Safety Data Sheets are generally available from suppliers, manufacturers of the substance, large employers who use the substance on a regular basis, or they can be developed by employers or trade associations. MSDS are particularly useful for those employers who are developing training on chemical use as required by OSHA's Hazard Communication Standard.

IV. Conclusion

In an attempt to assist employers with their occupational health and safety training activities, OSHA has developed a set of training guidelines in the form of a model. This model is designed to help employers develop instructional programs as part of their total education and training effort. The model addresses the questions of who should be trained, on what topics, and for what purposes. It also helps employers determine how effective the program has been and enables them to identify employees who are in greatest need of education and training. The model is general enough to be used in any area of occupational safety and health training, and allows employers to determine for themselves the content and format of training. Use of this model in training activities is just one of many ways that employers can comply with the OSHA standards that relate to training and enhance the safety and health of their employees.

Chapter 5B

Training Program Checklist

	Complete	Incomplete
1. Established a thorough training program.	_____	_____
2. Identified employees who need training.	_____	_____
3. Training program ensures that new employees are trained before their first assignment.	_____	_____
4. Informed employees of the specific information and training requirements of the Hazard Communication Standard.	_____	_____
5. Informed employees of the requirements of the Standard, and their rights under the law.	_____	_____
6. Informed employees of our written program and training requirements.	_____	_____
7. Informed employees of the different types of chemicals and the hazards associated with them.	_____	_____
8. Informed employees of specific hazards of the chemicals and processes they work with and their proper use and handling.	_____	_____
9. Informed employees of the hazards associated with performing non-routine tasks.	_____	_____
10. Employees know how to detect the presence or release of hazardous chemicals in the workplace.	_____	_____
11. Trained employees in the use of proper work practices, personal protective equipment and clothing, and other controls to reduce or eliminate their exposure to the chemicals in their work areas.	_____	_____

12. Trained employees in emergency and first-aid procedures and signs of exposure. _____ _____

13. Listed all hazardous chemicals in our workplace. _____ _____

14. Employees know when and how to update our hazardous chemical list. _____ _____

15. Obtained or developed a Material Safety Data Sheet for each hazardous chemical in our workplace. _____ _____

16. Explained how to use an MSDS. _____ _____

17. Informed employees of the list of hazardous chemicals & MSDS's and where they are located. _____ _____

18. Explained labels and their warnings to employees. _____ _____

19. Developed a system to ensure that all incoming hazardous chemicals are checked for proper labels and data sheets. _____ _____

20. Established procedures to ensure proper labeling or warning signs for containers that hold hazardous chemicals. _____ _____

21. Developed a way to identify and inform employees of new hazardous chemicals before they are introduced into a work area. _____ _____

22. Established a way to inform employees of new hazards associated with the chemicals they already use. _____ _____

23. Developed a way to evaluate the effectiveness of the training program and to keep track of who has received training. _____ _____

Chapter 5C

Company Training Program

Introduction

Training is an integral part of your hazard communication program, as identified in Chapter 2. Under the Hazard Communication Standard effective May 23,1988, This company is required to inform and train employees at the time of their initial assignment to a work area where hazardous chemicals are present and whenever a new hazard is introduced into the work area.

While the outline of topics to be presented in employee information and training programs is the same for all employers, the actual information presented must be based on the specific hazard information conveyed by labels and MSDS's for our particular workplace or work area.

These are the topics to be covered in our information and training programs:

(1) The provisions of the Hazard Communication Standard.

(2) Any operations in employees' work areas where hazardous chemicals are present.

(3) The location and availability of the written hazard communication program, including the required list of hazardous chemicals and MSDS's required by the Hazard Communication Standard.

(4) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area.

(5) The physical and health hazards of the chemicals in the work area.

(6) The measures employees can take to protect themselves from these hazards, including information on work practices, emergency procedures and personal protective equipment required by the employer.

(7) The details of the written hazard communication program, including an explanation of the labeling system used by this company, MSDS's, and how employees can obtain and use the appropriate hazard information on the labels and in the MSDS's.

Identify Employees to be Trained

(1) Assess actual and potential employee exposure to hazardous chemicals.

(2) Determine training needs based on this exposure during both normal use of hazardous chemicals and during emergencies.

(3) Determine appropriate way in which to train new employees and supervisors.

(4) Train employees and supervisors on the specific chemicals in our workplace and their hazards.

Provisions of the Hazard Communication Standard

(1) Show the requirements of the standard.
(2) Show this company's responsibilities under the law.
(3) Inform our employees of the law and their rights under the law.

Hazardous Chemicals in Our Workplace

(1) Define hazardous chemicals: Any chemical that is a physical or health hazard.

(2) `Physical hazard" is one for which there is scientifically valid evidence that the chemical is a combustible liquid, a compressed gas, an explosive, a flammable substance, an organic peroxide, an oxidizer, a pyrophoric, or an unstable *(reactive)* or water-reactive substance.

(3) Health hazard" is one that includes cancer-causing, toxic, or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents that act on hematopoietic system, and agents that damage the lungs, skin, eyes, or mucous membranes. *(Include additional information from Appendices A and B of the standard; see Chapter 6 for further explanations.)*

List of Hazardous Chemicals in Our Workplace

(1) Show that the list includes the names of the chemicals, their hazards, any protective measures to be taken, and emergency and first-aid procedures.

(2) Identify the process or operation where the chemicals are used, and the name and address of the manufacturer.

(3) Show there is a material safety data sheet *(MSDS)* for each chemical and that the list references the corresponding MSDS for each chemical.

(4) Make the list readily available to our employees *(or to other employers, contractors, or subcontractors at our worksite at their request).*

(5) Make sure our employees understand the information regarding the chemicals listed in the workplace.

Instruct Employees on How to Use and interpret MSDS's

(1) Show you have an MSDS for each hazardous chemical product you package, handle, or transfer. *(See Chapter 10B)*

(2) Show how to check each MSDS you receive to ensure that it contains all the information required by the standard. *(See checklist Chapter 4B).*

(3) Show how to obtain MSDS's or information where necessary *(i.e., when MSDS not received from manufacturer, importer or supplier, or when MSDS is incomplete. See Chapter 4D for sample letter requesting MSDS information.)*

Instruct Employees on Labeling Requirements

(1) Show how to check each container entering the workplace for appropriate labeling *(i.e., identity of chemicals, hazard warnings; name and address of manufacturer/ importer/ responsible party).*

(2) Explain the importance of reading labels and of following directions for the safe handling of chemicals.

(3) Show how to label, tag, or mark containers into which hazardous chemicals are transferred with the chemical identity and hazard warnings.

(4) Show how a hazard warning must convey specific physical and health hazards of the chemicals. Explain that words such as "caution," "danger," "harmful if absorbed by skin," etc. are precautionary statements and do not identify specific hazards.

(5) Explain the labeling exemptions for portable containers.

(6) Show how to label portable containers when they are not for "immediate use." *(Note: Portable containers require no labels when chemicals are transferred into*

them from labeled containers and when the chemicals will be used immediately by the employee transferring the chemicals.)

(7) Show how in lieu of labels: process sheets, batch tickets, standard operating procedures, or other written materials may be used on stationary process equipment if they contain the same information as a label and are readily available to employees in the work area or station.

(8) Show how to cross-reference chemical identifiers on labels to MSDS's and the lists of hazardous chemicals.

(9) Ensure the our employees are aware of other hazardous chemicals that may have specific labeling requirements under other standards (e.g., asbestos, lead, etc.).

Review & Demonstrate Existing Methods of Controlling Workplace Exposures

(1) Review and demonstrate any engineering controls: changes in machinery, work operations, or shop layout that reduce or eliminate the hazard *(e.g., ventilation controls process enclosures/hoods, isolation, etc.).*

(2) Review and demonstrate any administrative controls: good housekeeping procedures, safe work practices, personal and medical monitoring, shortened shifts, or changed work schedules.

(3) Show how to use Personal Protective Equipment: safety glasses, goggles, face shields, earplugs, respirators, gloves, hoods, boots, and full body suits.

Review Our Current Procedures for Handling Chemicals and Compare with Recommended Practices Identified on MSDS's and Labels
Written Emergency Action Plan

(1) Train in any applicable procedures such as:
emergency controls and phone numbers
evacuation plans, alarm systems
reporting and shut-down procedures
first-aid
personal protection.

(2) Show how and when to report leaks and spills.

Record of Employee/ Supervisor Training

(1) Follow-up and evaluate your training program to make sure employees know how to handle the chemicals they are using and are applying the training you have given them.

Chapter 5D

Hazard Communication Training Record

PLEASE SEE COMPANY'S PROOF OF TRAINING RECORDS

Employee Name: _____ Date: _____

Discussed and Trained in the Following Items:

Discussed the Hazard Communication Standard, including the company's rights and employees' rights under the law.

Discussed definitions of Physical and Health hazards of chemicals in our workplace.

Reviewed Hazard Chemicals List, including availability and use.

Use, availability and interpretation of MSDS's.

Reviewed labeling requirements including how-to, when, importance, checking-in materials, and cross-referencing.

Reviewed methods of controlling workplace exposures.

Reviewed hazardous chemical handling procedures.

Reviewed Emergency Action Plan

Employee agrees to cooperate fully with the safety efforts of the employer, follow all safety rules and use good judgment concerning safe work behavior.

Remarks: _____

_____

_____

Signed: _____ Signed: _____

Supervisor Employee

SUPERVISORS FIRST REPORT OF INCIDENT (FORM 13)

Date: _____

Company Name: _____

Supervisor: _____

Date of Incident: _____ Time of Incident: _____ AM/PM

Type of Incident:

D Near Miss; D Employee Injury; D Property Damage; D Spill; D SWPPP

Name of employee involved or injured: _____

Description of Incident: _____

Nature of Injury, Damage, or Spill: _____

Contributing Causes: _____

Initial Plan to prevent recurrence of incident: _____

Signed By: _____ Title: _____

SAFETY EMPHASIS POINTS (FORM 14)

Date: _____ Auditor: _____ Sub: _____

Carpentry Trade	Yes	No	Not Observed
Personnel use pneumatic tools, such as nail guns, at <100 psi or with a safety device requiring the weight of the tool plus 5lb to fire.			
Personnel lower tools with ropes or other devices (rather than by electrical cords or pneumatic hoses).			
Personnel using power tools (e.g. saws, drill motors, sidegrinders, fasteners, etc.) with positive pressure switches.			
Personnel usingpower tools with guards in place.			
Personnel remove nails from scrap lumber immediately.			
When lifting equipment and materials, personnel lift with their legs and keep the load close to the body.			

Electrical – General	Yes	No	Not Observed
Personnel using portable electrical tools and appliances with a ground fault circuit interrupter.			
Personnel using portable extension cords used with no breaks in their insulation and protect them from damage.			
Personnel using portable extension cords that are approved for construction (types SO, ST, STO, SJ, SJT, SJO, or SJTO).			

PPE – General	Yes	No	Not Observed
Personnel wear hardhats in construction areas.			
Personnel wear safety glasses with sideshields in construction areas.			

Fall Protection – General	Yes	No	Not Observed
When exposed to falls of >6' and no standard guardrails or safety nets are installed, personnel use a personal fall arrest system.			

Ladders & Scaffolds – General	Yes	No	Not Observed
Personnel set ladders on secure footing and tie them off at the top.			
Personnel place ladders such that they are equally supported on each rail and set at a 4:1 minimum pitch.			
Personnel use scaffolds only when complete with guardrails and toeboards.			
Personnel use correct ladders to access scaffolds.			
Personnel maintain three point contact when climbing ladders or scaffolds.			
Personnel using stepladders have spreaders locked and use the top step only for balancing/bracing.			
Personnel using ladders are facing the ladders at all times.			

CONCRETE & MASONRY SAFETY EMPHASIS POINTS

Date: _____ Auditor:_____ Sub:_____

Concrete & Masonry Trade	Yes	No	Not Observed
Protective caps are in place when personnel work over re-bar.			
Personnel using masonry saws only use them with the guard in place.			
Personnel barricade the area below block laying operations.			
Personnel keep from underneath hoisted concrete buckets.			
Personnel stand out of vicinity of jacks during tensioning operations.			
Personnel applying concrete with pressurized hose systems wearing faceshields.			
Personnel pouring/finishing/forming concrete wearing long sleeved shirts, gloves, and rubber boots.			
When lifting equipment and materials, personnel lift with their legs and keep the load close to the body.			
Electrical – General	**Yes**	**No**	**Not Observed**
Portable electrical tools and appliances used with a ground fault circuit interrupter.			
Portable extension cords used with no breaks in their insulation and protect them from damage.			
Portable extension cords in use are approved for construction (types SO, ST, STO, SJ, SJT, SJO, or SJTO).			
PPE – General	**Yes**	**No**	**Not Observed**
Personnel wear hardhats in construction areas.			
Personnel wear safety glasses with sideshields in construction areas.			
Fall Protection – General	**Yes**	**No**	**Not Observed**
When exposed to falls of >6' and no standard guardrails or safety nets are installed, personnel use a personal fall arrest system.			
Ladders & Scaffolds – General	**Yes**	**No**	**Not Observed**
Personnel set ladders on secure footing and tie them off at the top.			
Personnel place ladders such that they are equally supported on each rail and set at a minimum 4:1 pitch.			
Personnel use scaffolds only when complete with guardrails and toeboards.			
Personnel use correct ladders to access scaffolds.			
Personnel maintain three point contact when climbing ladders or scaffolds.			
Personnel using stepladders have spreaders locked and use the top step only for balancing/bracing.			
Personnel using ladders are facing the ladder at all times.			

DRYWALL/PLASTERING SAFETY EMPHASIS POINTS

Date: _____ Auditor:_____ Sub:_____

Drywall/Plastering Trade	Yes	No	Not Observed
Personnel use pneumatic tools, such as nail guns, at <100 psi or with a safety device requiring the weight of the tool plus 5lb to fire.			
Personnel use rolling scaffolds that are fully decked with wheels locked and all guard rails and toeboards in place.			
Personnel use step ladders or stools to reach work areas (as opposed to inverted buckets, etc.)			
Personnel use power tools (e.g. saws, drill motors, sidegrinders, fasteners, etc.) with positive pressure switches.			
Personnel use power tools with guards in place.			
When lifting equipment and materials, personnel lift with their legs and keep the load close to the body.			
Electrical – General	**Yes**	**No**	**Not Observed**
Personnel use portable electrical tools and appliances with a ground fault circuit interrupter.			
Personnel use portable extension cords with no breaks in their insulation and protect them from damage.			
Portable extension cords in use that are approved for construction (types SO, ST, STO, SJ, SJT, SJO, or SJTO).			
PPE – General	**Yes**	**No**	**Not Observed**
Personnel wear hardhats in construction areas.			
Personnel wearing safety glasses with sideshields in construction areas.			
Fall Protection – General	**Yes**	**No**	**Not Observed**
When exposed to falls of >6' and no standard guardrails or safety nets are installed, personnel use a personal fall arrest system.			
Ladders & Scaffolds – General	**Yes**	**No**	**Not Observed**
Personnel set ladders on secure footing and tie them off at the top.			
Personnel place ladders such that they are equally supported on each rail and set at a 4:1 minimum pitch.			
Personnel use scaffolds only when complete with guardrails and toeboards.			
Personnel use correct ladders to access scaffolds.			
Personnel maintain three point contact when climbing ladders or scaffolds.			
Personnel using stepladders have spreaders locked and use the top step only for balancing/bracing.			
Personnel using ladders are facing the ladder at all times.			

ELECTRICAL SAFETY EMPHASIS POINTS

Date: _____ Auditor:_____ Sub:_____

Electrical Trade	Yes	No	Not Observed
Personnel using tools with insulated handles and non-conductive ladders when working around live equipment.			
Personnel using double insulated or grounded electrically powered tools.			
Personnel remove metal jewelry and other metallic objects from the body when working with live circuits.			
Personnel place equipment in a zero energy state prior to installation or maintenance work.			
Electrical – General	**Yes**	**No**	**Not Observed**
Personnel using portable electrical tools and appliances with a ground fault circuit interrupter.			
Personnel use portable extension cords with no breaks in their insulation and protect them from damage.			
Personnel using portable extension cords that are approved for construction (types SO, ST, STO, SJ, SJT, SJO, or SJTO).			
PPE – General	**Yes**	**No**	**Not Observed**
Personnel wearing hardhats in construction areas.			
Personnel wearing safety glasses with sideshields in construction areas.			
Fall Protection – General	**Yes**	**No**	**Not Observed**
When exposed to falls of >6' and no standard guardrails or safety nets are installed, personnel use a personal fall arrest system.			
Ladders & Scaffolds - General	**Yes**	**No**	**Not Observed**
Personnel set ladders on secure footing and tie them off at the top.			
Personnel place ladders such that they are equally supported on each rail and set at a 4:1 minimum pitch.			
Personnel use scaffolds only when complete with guardrails and toeboards.			
Personnel use correct ladders to access scaffolds.			
Personnel maintain three point contact when climbing ladders or scaffolds.			
Personnel using stepladders have spreaders locked and use the top step only for balancing/bracing.			
Personnel using ladders are facing the ladder at all times.			

EXCAVATION AND LAND DEVELOPMENT SAFETY EMPHASIS POINTS

Date: _____ Auditor:_____ Sub:_____

Excavation & Land Development Trade	Yes	No	Not Observed
Personnel entering confined spaces have obtained the necessary permits and documented training.			
Personnel enter trenches only when shored or sloped.			
Personnel enter trenches only when the spoil pile is kept at least two feet from the edge of the trench.			
Personnel do not enter trenches without access/egress at least every 25 feet.			
Personnel entering confined spaces have obtained the necessary permits.			
Personnel do not enter or remain in a confined space without an authorized attendant present.			
Personnel working in or crossing site-clearing operations wear flagging garments.			
Personnel operating earth-moving equipment with ROPS wear seat belts.			
PPE – General	**Yes**	**No**	**Not Observed**
Personnel wear hardhats in construction areas.			
Personnel wear safety glasses with sideshields in construction areas.			
Fall Protection – General	**Yes**	**No**	**Not Observed**
When exposed to falls of >6' and no standard guardrails or safety nets are installed, personnel use a personal fall arrest system.			
Ladders – General	**Yes**	**No**	**Not Observed**
Personnel set ladders on secure footing and tie them off at the top.			
Personnel place ladders such that they are equally supported on each rail and set at a 4:1 minimum pitch.			
Personnel maintain three point contact when climbing ladders or scaffolds.			
Personnel using stepladders have spreaders locked and use the top step only for balancing/bracing.			

MECHANICAL SAFETY EMPHASIS POINTS

Date: _____ Auditor: _____ Sub: _____

Mechanical Trades	Yes	No	Not Observed
Personnel entering confined spaces have obtained the necessary permits and training.			
Personnel do not enter or remain in a confined space without an authorized attendant present.			
Personnel use power tools (e.g. drill motors, sidegrinders, fasteners, etc.) with positive pressure switches.			
Personnel use power tools with guards in place.			
When lifting equipment and materials, personnel lift with their legs and keep the load close to the body.			
Personnel place equipment in a zero energy state prior to installation or maintenance work.			
Welding & Cutting	**Yes**	**No**	**Not Observed**
Personnel employ firewatches during each operation.			
Personnel obtain permits for each operation.			
Personnel use rated eye protection for flash burn.			
Personnel remove or cover combustibles.			
Personnel have a fire extinguisher on hand during operations.			
Electrical – General	**Yes**	**No**	**Not Observed**
Personnel use portable electrical tools and appliances with a ground fault circuit interrupter.			
Personnel use portable extension cords with no breaks in their insulation and protect them from damage.			
Portable extension cords in use that are approved for construction (types SO, ST, STO, SJ, SJT, SJO, or SJTO).			
PPE – General	**Yes**	**No**	**Not Observed**
Personnel wear hardhats in construction areas.			
Personnel wear safety glasses with sideshields in construction areas.			
Fall Protection – General	**Yes**	**No**	**Not Observed**
When exposed to falls of >6' and no standard guardrails or safety nets are installed, personnel use a personal fall arrest system.			
Ladders & Scaffolds – General	**Yes**	**No**	**Not Observed**
Personnel set ladders on secure footing and tie them off at the top.			
Personnel place ladders such that they are equally supported on each rail and			

set at 4:1 minimum pitch.			
Personnel use scaffolds only when complete with guardrails and toeboards.			
Personnel use correct ladders to access scaffolds.			
Personnel maintain three point contact when climbing ladders or scaffolds.			
Personnel using stepladders have spreaders locked and use the top step only for balancing/bracing.			
Personnel using ladders are facing the ladder at all times.			

PAINTING SAFETY EMPHASIS POINTS

Date: _____ Auditor:_____ Sub:_____

Painting Trade	Yes	No	Not Observed
Personnel wear respiratory protective equipment when painting.			
Personnel do not paint in the vicinity of ignition sources.			
When lifting equipment and materials, personnel lift with their legs and keep the load close to the body.			
Electrical – General	**Yes**	**No**	**Not Observed**
Personnel use portable electrical tools and appliances with a ground fault circuit interrupter.			
Personnel use portable extension cords with no breaks in the insulation and are protect them from damage.			
Portable extension cords in use that are approved for construction (types SO, ST, STO, SJ, SJT, SJO, or SJTO).			
PPE – General	**Yes**	**No**	**Not Observed**
Personnel wear hardhats in construction areas.			
Personnel wear safety glasses with sideshields in construction areas.			
Fall Protection – General	**Yes**	**No**	**Not Observed**
When exposed to falls of >6' and no standard guardrails or safety nets are installed, personnel use a personal fall arrest system.			
Ladders & Scaffolds – General	**Yes**	**No**	**Not Observed**
Personnel set ladders on secure footing and tie them off at the top.			
Personnel place ladders such that they are equally supported on each rail and set at a 4:1 minimum pitch.			
Personnel use scaffolds only when complete with guardrails and toeboards.			
Personnel use correct ladders to access scaffolds.			
Personnel maintain three point contact when climbing ladders or scaffolds.			
Personnel using stepladders have spreaders locked and use the top step only for balancing/bracing.			
Personnel using ladders are facing the ladder at all times.			

PLUMBERS & PIPEFITTERS SAFETY EMPHASIS POINTS

Date: _____ Auditor: _____ Sub: _____

Plumbers & Pipefitters Trade	Yes	No	Not Observed
Personnel use power tools (e.g. drill motors, sidegrinders, fasteners, etc.) with positive pressure switches.			
Personnel use power tools with guards in place.			
When lifting equipment and materials, personnel lift with their legs and keep the load close to the body.			
Electrical – General	**Yes**	**No**	**Not Observed**
Personnel use portable electrical tools and appliances with a ground fault circuit interrupter.			
Personnel use portable extension cords with no breaks in their insulation and are protect them from damage.			
Portable extension cords in use that are approved for construction (types SO, ST, STO, SJ, SJT, SJO, or SJTO).			
PPE – General	**Yes**	**No**	**Not Observed**
Personnel wear hardhats in construction areas.			
Personnel wear safety glasses with sideshields in construction areas.			
Fall Protection – General	**Yes**	**No**	**Not Observed**
When exposed to falls of >6' and no standard guardrails or safety nets are installed, personnel use a personal fall arrest system.			
Ladders & Scaffolds – General	**Yes**	**No**	**Not Observed**
Personnel set ladders on secure footing and tie them off at the top.			
Personnel place ladders such that they are equally supported on each rail and set at a 4:1 minimum pitch.			
Personnel use scaffolds only when complete with guardrails and toeboards.			
Personnel use correct ladders to access scaffolds.			
Personnel maintain three point contact when climbing ladders or other approved access for scaffolds.			
Personnel using stepladders have spreaders locked and use the top two steps only for balancing/bracing.			
Personnel using ladders are facing the ladder at all times.			
Welding, Cutting & Brazing	**Yes**	**No**	**Not Observed**
Personnel employ firewatches during each operation.			
Personnel obtain permits for each operation.			
Personnel use rated eye protection for flash burn.			
Personnel remove or cover combustibles.			

ROOFING SAFETY EMPHASIS POINTS

DATE: _____ **AUDITOR:** _____

SUB: _____

Roofing Trade	Yes	No	Not Observed
Personnel working on a low-sloped roof, if not protected by guardrails, safety nets or personal fall arrest systems, are protected by a warning line and safety monitoring system.			
Personnel serving as safety monitors on a low-sloped roof have no other job duties and continuously observe other workers for potential activities that could result in a fall.			
Personnel cover and mark holes in a roof or protect them with standard guardrails and toeboards.			
When lifting equipment and materials, personnel lift with their legs and keep the load close to the body.			
Electrical – General	**Yes**	**No**	**Not Observed**
Personnel use portable electrical tools and appliances with a ground fault circuit interrupter.			
Personnel use portable extension cords with no breaks in their insulation and are protect them from damage.			
Personnel use portable extension cords that are approved for construction (types SO, ST, STO, SJ, SJT, SJO, or SJTO).			
PPE – General	**Yes**	**No**	**Not Observed**
Personnel wear hardhats in construction areas.			
Personnel wear safety glasses with sideshields in construction areas.			

IRON WORKER/MILLWRIGHT SAFETY EMPHASIS POINTS

Date: _____ Auditor: _____ Sub: _____

Iron Worker & Millwright Trades	Yes	No	Not Observed
Personnel working in steel erection at heights over 6' use personal fall arrest systems.			
Rigging and other personnel walk around suspended loads.			
Personnel use tag lines are used on all loads			
Personnel secure solid web structural members with at least two bolts before they are released			
Personnel secure containers, bolts and pins are against displacement when aloft.			
Personnel use safety wires on pneumatic tools used aloft.			
Electrical – General	**Yes**	**No**	**Not Observed**
Personnel use portable electrical tools and appliances with a ground fault circuit interrupter.			
Personnel use portable extension cords with no breaks in their insulation and are protect them from damage.			
Portable extension cords in use that are approved for construction (types SO, ST, STO, SJ, SJT, SJO, or SJTO).			
PPE – General	**Yes**	**No**	**Not Observed**
Personnel wear hardhats in construction areas.			
Personnel wear safety glasses with sideshields in construction areas.			
Ladders & Scaffolds – General	**Yes**	**No**	**Not Observed**
Personnel set ladders on secure footing and tie them off at the top.			
Personnel place ladders such that they are equally supported on each rail and set at a 4:1 minimum pitch.			
Personnel use scaffolds only when complete with guardrails and toeboards.			
Personnel use correct ladders to access scaffolds.			
Personnel maintain three point contact when climbing ladders or scaffolds.			
Personnel using stepladders have spreaders locked and use the top step only for balancing/bracing.			
Personnel using ladders are facing the ladder at all times.			
Welding & Cutting	**Yes**	**No**	**Not Observed**
Personnel employ firewatches during each operation.			
Personnel obtain permits for each operation.			
Personnel use rated eye protection for flash burn.			
Personnel remove or cover combustibles.			

Personnel have a fire extinguisher on hand during operations.			
Cranes	**Yes**	**No**	**Not Observed**
Personnel use approved hand signals during lifts.			
Personnel maintain minimum distances from live power lines.			
Personnel use an observer when the operator can't see power lines.			
Personnel barricade the swing radius of the crane.			

WELDING AND BURNING PERMIT

APPENDIX A

(Work is not permitted unless this card is filled and posted in work area.)

DATE____/____/____ TIME_____ AM__ PM__

BUILDING_____

DEPT._____ FLOOR____

WORK TO BE DONE_____

_____

SPECIAL PRECAUTIONS_____

_____

FIREWATCH REQUIRED?_____

The location where work is to be done has been examined by me, the necessary precautions taken (see back of permit) and permission is granted for this work.

PERMIT EXPIRES____/____/____ TIME_____ AM__ PM__

SIGNED_____
INDIVIDUAL RESPONSIBLE FOR WORK AUTHORIZATION

TIME STARTED_____ COMPLETED_____

FINAL CHECK
(where fire watch is required)

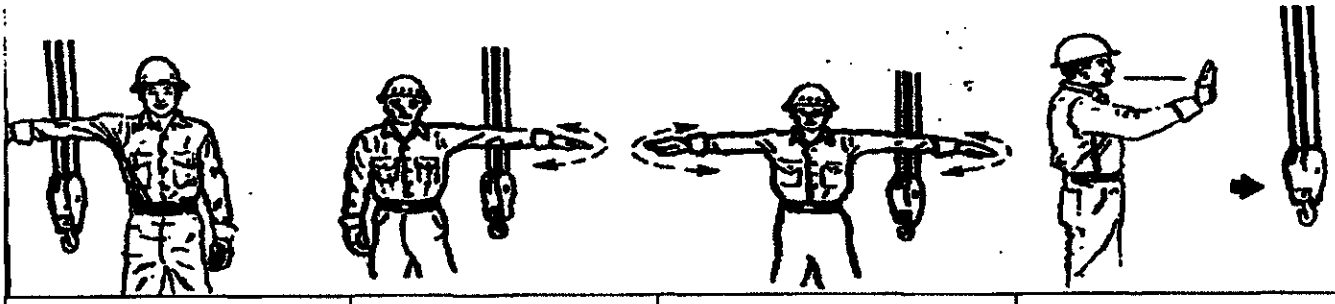
Work area and all adjacent areas where sparks might have spread were inspected for at least 30 minutes after the work was completed and no fire conditions were noted.

SIGNED_____

After work is completed, return this permit to The Project Safety Coordinator for filing and review by insurance representative.

CRANE SIGNALS

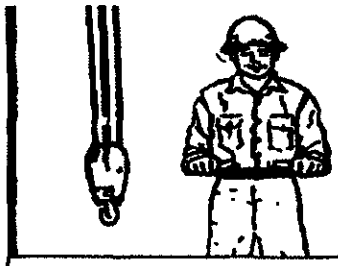
APPENDIX B



SWING. Arm extended, point with finger in direction of swing boom.	**STOP.** Arm extended, palm down, move arm horizontally.	**EMERGANCY STOP.** Both arms extended, palms down, move arms back and forth horizontally.	**TRAVEL.** Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.

DOG EVERYTHING. Clasp hands in front of body.	**TRAVEL (Both Traccks).** Use both fists in front of body, making a circular motion about each other, indicating direction of travel, forward or backward. *(for land cranes only)*	**TRAVEL (One Track).** Lock the track on side indicated by raised fist. Travel opposite track in direction indicated by circular motion of other fist, rotated vertically in front of body.	**EXTEND BOOM (Telecoping Booms).** Both fists in front of body with thumbs pointing outward.

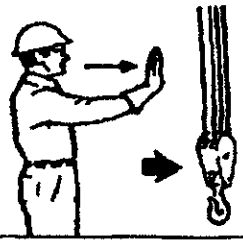
APPENDIX B – CRANE SIGNALS



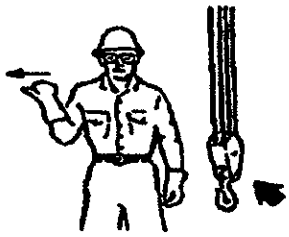
RETRACT BOOM (Telescoping Boom) Both fists in front of body with thumbs pointing toward each other.

HOIST. With forearm vertical, and forefinger pointing up, move hand in small horizontal circle.

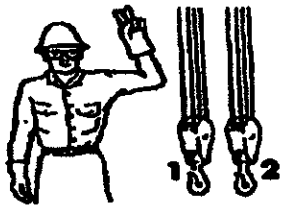
TRAVEL (One Track). With arm extended downward, forefinger pointing down, move hand in a small horizontal circle.



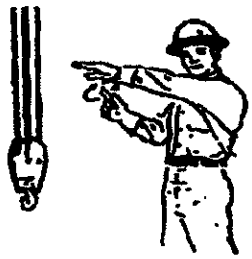
BRIDGE TRAVEL. Arm extended forward, hand open, and slightly raised, making pushing motion in direction of travel.



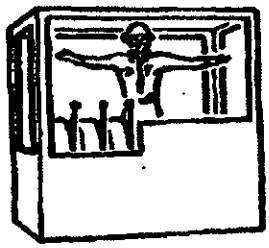
RETRACT BOOM (Telescoping Boom) Both fists in front of body with thumbs pointing toward each other.



HOIST. With forearm vertical, and forefinger pointing up, move hand in small horizontal circle.



TRAVEL (One Track). With arm extended downward, forefinger pointing down, move hand in a small horizontal circle.



BRIDGE TRAVEL. Arm extended forward, hand open, and slightly raised, making pushing motion in direction of travel.

CONFINED SPACE ENTRY PERMIT

Date and Time Issued: _____

Date and Time Expires: Job site/Space I.D.: _____

Job Supervisor: _____

Equipment to be worked on: _____

Work to be performed: _____

Stand-by personnel: _____

1. Atmospheric Checks:			
Time:	Oxygen: %		
Explosive: % L.F.L	Toxic: PPM		
2. Tester's signature:			
3. Source isolation (No Entry):	N/A	Yes	No
Pumps or lines blinded	☐	☐	☐
disconnected, or blocked	☐	☐	☐
4. Ventilation Modification:	N/A	Yes	No
Mechanical	☐	☐	☐
Natural ventilation only	☐	☐	☐
5. Atmospheric check after isolation and ventilation:			
Oxygen: %	> 19.5 %		
Explosive: % L.F.L	< 10 %		
Toxic PM	< 10 PPM H (2) S		
Time:			
Testers signature:			
6. Communication procedures:			
7. Rescue procedures:			

8. Entry, standby, and back up persons:	Yes	No	
Successfully completed required training?	☐	☐	
Is it current?	☐	☐	
9. Equipment:	**N/A**	**Yes**	**No**	
Direct reading gas monitor - tested	☐	☐	☐	
Safety harnesses and lifelines for entry and standby persons	☐	☐	☐	
Hoisting equipment	☐	☐	☐	
Powered communications	☐	☐	☐	
SCBA's for entry and standby persons	☐	☐	☐	
Protective Clothing	☐	☐	☐	
All electric equipment listed	☐	☐	☐	
Class I, Division I, Group D and Non-sparking tools	☐	☐	☐	
10. Periodic atmospheric tests:	☐	☐	☐	

Oxygen:	%	Time:	Oxygen:	%	Time:
Oxygen:	%	Time:	Oxygen:	%	Time:
Explosive:	%	Time:	Explosive:	%	Time:
Explosive:	%	Time:	Explosive:	%	Time:
Toxic:	%	Time:	Toxic:	%	Time:
Toxic:	%	Time:	Toxic:	%	Time:

We have reviewed the work authorized by this permit and the information contained here-in. Written instructions and safety procedures have been received and are understood. Entry cannot be approved if any squares are marked in the "No" column. *This permit is not valid unless all appropriate items are completed.*

Permit Prepared By: (Supervisor)_____

Approved By: (Unit Supervisor)_____

Reviewed By (Cs Operations Personnel):

_____ _____

(printed name) (signature)

This permit to be kept at job site. Return job site copy to Safety Office following job completion.

Copies: White Original (Safety Office), Yellow (Unit Supervisor), Hard(Job site)

Appendix D - 2

CONSTRUCTION ELECTRICAL INSPECTION

Company Name: _____

Job site Address: _____

Superintendent: _____

Inspector(s): _____

Date/Time: _____

Yes	No	NA	Corr Date	Area Inspected
☐	☐	☐		Electrical devices have current inspection and coding?
☐	☐	☐		Electrical equipment properly maintained?
☐	☐	☐		Equipment properly grounded?
☐	☐	☐		Assured equipment grounding program established?
☐	☐	☐		GFCI used and tested where required?
☐	☐	☐		Fuses provided?
☐	☐	☐		Electrical dangers posted?
☐	☐	☐		Proper fire extinguisher(s) provided?
☐	☐	☐		Are terminal boxes equipped with required covers (cover used)?
☐	☐	☐		Are circuits labeled in terminal boxes?

Note: This general construction safety Inspection checklist is not designed to supersede existing safety inspection checklists, rather it should be used only as a general guideline. You are encouraged to customize this general guideline to accommodate your specific operations.

HOT ELECTRICAL WORK PERMIT

List Service/Maintenance Electrician (s) performing Hot Electrical Work:	Supervisor Requesting Hot Electrical Work:
Project: Yes _____ No_____	Service: Yes _____No _____
Customer is aware of Hot Electrical Work Being preformed:	(Requires only a Journeyman Electrician to Complete Hot Electrical Work)
Job Name and Number:	Signature of Person Completing Form:
Hot Electrical Work is being performed on :	Date: Time:
1. Description of Work: Explain work to be performed (e.g. trouble shooting 120-208, Pulling wire into panel, etc.):	
2. Safety Considerations and Personal Protective Equipment (PPE) Required	
(Check all that apply) Check Type of PPE REQUIRED and Used	(Check all that apply) Check Type of PPE REQUIRED and Used
☐ Hot Work Gloves	☐ Barriers and Guards are in workable condition and are properly placed.
☐ Face Shields	☐ Hot Work Tools. (Insulated Tools Required.)
☐ Blankets	☐ Meters are in operational condition and have been tested.
☐ Safety Glasses	☐ Other employees in the area have been informed of the Hot Electrical Work being performed.
☐ Signage or Barricading	☐ All employees assigned to perform work assist have been briefed
☐ Lockout/Tagout Equipment placed on all other circuits	☐ Other Considerations (Explain on back of form, if applicable
☐ Hearing Protection ☐ Flash Suit ☐ Cotton Underwear ☐ Cotton Shirt	Flame Resistant: ☐ Long Sleeve Shirt ☐ Long Pants ☐ Coverall ☐ Flash Suit ☐ Flash Hood
3. Note: Refer to the matrix to determine if a second person is required.)	Authorization & Approval (All involved parties must sign below)

Printed Name:	Signature:	Date
Service/Maintence Technician Signature:	FORM IS NOT VALID FOR MORE THAN 30 DAYS FROM THE DATE APPROVED.	

CONSTRUCTION LADDERS & SCAFFOLDS INSPECTION

Jobsite Address:

Company Name: _____

Superintendent: _____ **Date/Time:** _____

Inspector(s): _____

Yes	No	NA	Corr Date	Area Inspected
				Ladders
				1. Ladders inspected and in good condition?
				2. Ladders used properly for type of exposure?
				3. Ladders secured to prevent slipping, sliding, or falling?
				4. Do siderails extend 36" above top of landing?
				5. Are ladders spliced?
				6. Rungs or cleats not over 12" on center?
				7. Proper maintenance and storage?
				8. Are ladders painted?
				9. Do ladders in excess of 20 feet have fall protection?
				10. Are aluminum ladders of sufficient strength for the task?
				Scaffolds
				1. Erection properly supervised?
				2. All structural members free from defects and meet safety factor?
				3. Are all connections secure?
				4. Are scaffolds erected on solid footing?
				5. Is scaffold tied to structure?
				6. Are working areas free of debris, snow, ice, grease, etc.?
				7. Are workers protected from falling objects?
				8. Is scaffold plumb and square, with cross-bracing?
				9. Are guard rails, intermediate rails, and toeboards in place?
				10. Are ropes and cables in good condition?
				11. Fall protection available and in use?

CONSTRUCTION EXCAVATION & SHORING INSPECTION

Company Name: _____ **Jobsite Address:** _____
Superintendent: _____ **Date/Time:** _____
Inspector(s): _____

Yes	No	NA	Corr Date	Area Inspected
				1. Are holes, trenches, and cuts over 5 feet deep shored, sloped or trench boxes used? 2. Operation supervised by competent person? 3. Spoil banks at least 2 feet from edges of cut? 4. Ladders placed to ensure no greater than 25 feet of lateral travel by worker? 5. Ladder properly secured? 6. Are adjacent structures properly shored? 7. Is shoring and sheathing correct for soil and depth? 8. Are roads and sidewalks supported and protected? 9. Evacuation barricaded and lighting provided? 10. Are equipment ramps adequate? 11. Have underground utility installations been identified? 12. Registered professional engineer design/approval accomplished? 13. Confined space permit required plan established? <u>Tunneling</u> 1. Testing of atmosphere accomplished? 2. Adequate ventilation? 3. Electrical approved for hazardous locations? 4. Adequate fire prevention? 5. Rescue plan? 6. Confined space entry permit program?