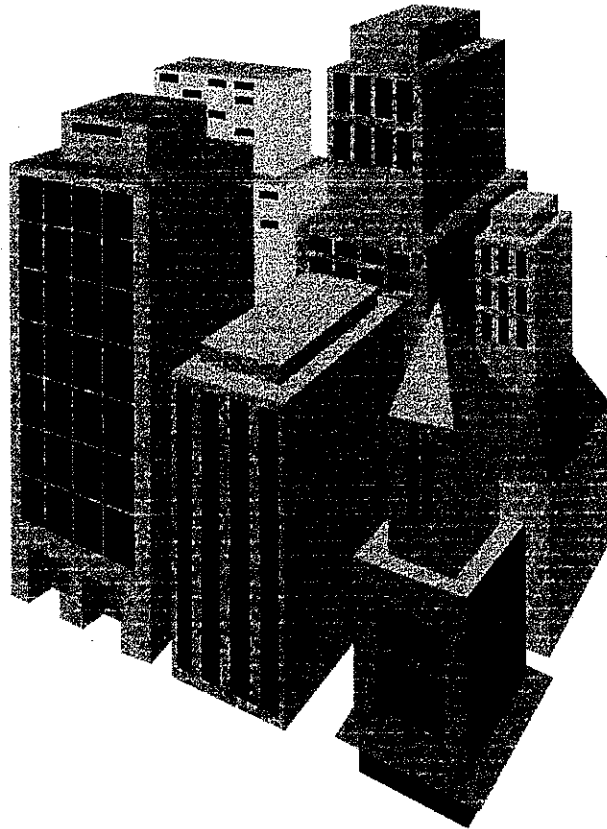


WORK SAFETY PROGRAM

for

CAM BUILDERS
Hatchechubbee, AL



**EMPLOYEES AFFIDAVIT OF ACKNOWLEDGEMENT OF
CAM BUILDERS SAFETY DRESS CODE REQUIREMENTS**

DATE: _____

EMPLOYEES: NAME: _____

SOCIAL SECURITY NO.: _____

I hereby acknowledge and attest to the fact that while working on any project or employed by CAM Builders it is required by me to do the following:

- A- Furnish and wear steel toed boots manufactured by a Company that produces OSHA approved boots.
- B- At all times wear appropriate long pants and shirt that is decent in appearance and provides adequate cover.
- C- It is understood that a OSHA approved safety helmet or hard hat is furnished and made available by CAM Builders. It is further understood that it is my responsibility to wear this hat at all times

I hereby acknowledge the above conditions and understand that should CAM Builders experience any liability as a result of my neglect to comply with these conditions that I hold them harmless and release them of any of any liability as a result of my neglect.

EMPLOYEE SIGNATURE:

CAM Builders

Work Safety Program

Table of Contents:

Section	Description	Page No's
1 -	Policy Statement	1
2 -	Company Safety Rules	2-3
3 -	Hazard Communications-Definitions	4-5
4 -	Safety and Health Program	
	I Policy	6
	ii- Applicability	6
	III Implementation	7
	IV Administration	7
	V Reporting of Injuries	8
	VI Notifications	8
	VII General Safety Rules	9-12
	VIII Enforcement of Safety Policy	12-13
	IX Record Keeping	13-14
	X Housekeeping and Sanitation	14
	IX Personal Protective Equipment	14
	XII Fire Protection	15
	XIII Hand and Powered Tools	15
	XIV Welding and Cutting	15
	XV Electrical	16
	XVI Ladders	16-17
	XVII Scaffolding	17
	XVIII Guardrails, Handrails and Covers	17-18
	XIX Material Hoists	18
	XX Motor Vehicles	18
	XXI Material and Storage Handling	19
	XXII Safety Meeting Report	19
	XXIII OSHA Poster	19
	XXIV Log and Summary--injuries	19
	XXV Emergency Telephone Numbers	20
	XXVI Safety Inspection Process	20
	XXVII Job Hazard Analysis	20-22
	XXVIII Training	22
5-	Supplements:	
	A- Heat Exposure	23-24
	B- Trench Safety	25-29
	C- Fall Protection	30-39
	D- Ground - Fault Protection	40-55
	E- Shocking	56-62
	F- Lockout-Tagout	63-64
6-	OSHA Inspections	65-69
7-	Record Keeping	70-71
8-	Consultation Services	72-82

Policy Statement

It is the policy of CAM Builders to provide a safe and healthy workplace for all employees, to plan and conduct all operations with a maximum of safety and to abide by all safety regulations applicable to our work.

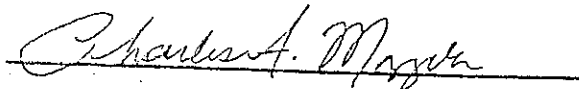
No aspect of administration or operation is more important than accident prevention. Our goal is to eliminate the personal injuries, property damage and needless waste that accompany unsafe practices.

Safety planning will begin with the bidding process and continue through all phases of purchasing, fabrication, preparation, operations, and maintenance. Operations planning will ensure that the proper equipment is provided and create the necessary conditions to ensure a safe working environment.

ALL MANAGERS have the responsibility for the prevention of accidents on work under their direction and for the instruction and training of employees under their supervision.

While safety is the responsibility of supervisory personnel the creation of a truly safe workplace requires the daily, active participation of every employee. Training programs and safe job procedures exist for every area of our operations. All employees are expected to participate in, read, understand and abide by these safe operating practices. Any employee who willfully disregards these procedures will be subject to strong disciplinary action.

We have adopted a Loss Control program that will ensure the highest standards of quality and safety in all aspects of the Company's work. I have assigned the administration of this program to the Director of Safety. He has my full support in ensuring compliance to the program's policies and procedures. As President, I encourage each of you to join me in actively supporting safe work habits.



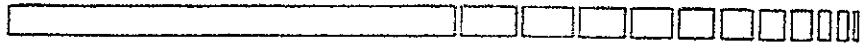
CAM Builders

CAM Builders Safety Program

Company Safety Rules

1. All company safety rules are designed for your protection. You are expected to obey them at all times while working for CAM Builders .
2. Report unsafe conditions to your immediate supervisor.
3. Promptly report all injuries to your immediate supervisor.
4. Use eye and face protection where there is danger from flying objects or particles, such as when grinding, cutting, chipping, burning and welding, etc.
5. Dress properly. Wear appropriate work clothes, gloves and shoes or boots. Loose clothing and jewelry must not be worn.
6. Never operate any machine unless all guards and safety devices are in place and in proper operating condition.
7. Keep all tools in safe working condition. Never use defective tools or equipment.
8. Properly care for, and be responsible for all personal protective equipment.
- 9a. OSHA and ANSI approved Hard Hats are required to be worn at all times on the jobsite.
- 9b. Reflectorized Safety Vests shall be worn at all times within 15 feet of any street or road designed and/or used by vehicular traffic.
10. Do not operate machinery if you are not an authorized operator.
11. Aisles, walkways, stairways, roads or other areas of movement are to be kept clear of trash, debris and work materials at all times.
12. All jobsite and other work areas are to be kept clean and clear of potential safety hazards.
13. Riding material hoists or other moving equipment is prohibited except on seats provided.
14. Passengers in trucks or other vehicles and equipment must be fully within the vehicle and seated with seat belts fastened at all times.

Florida Department of Labor and Employment Security



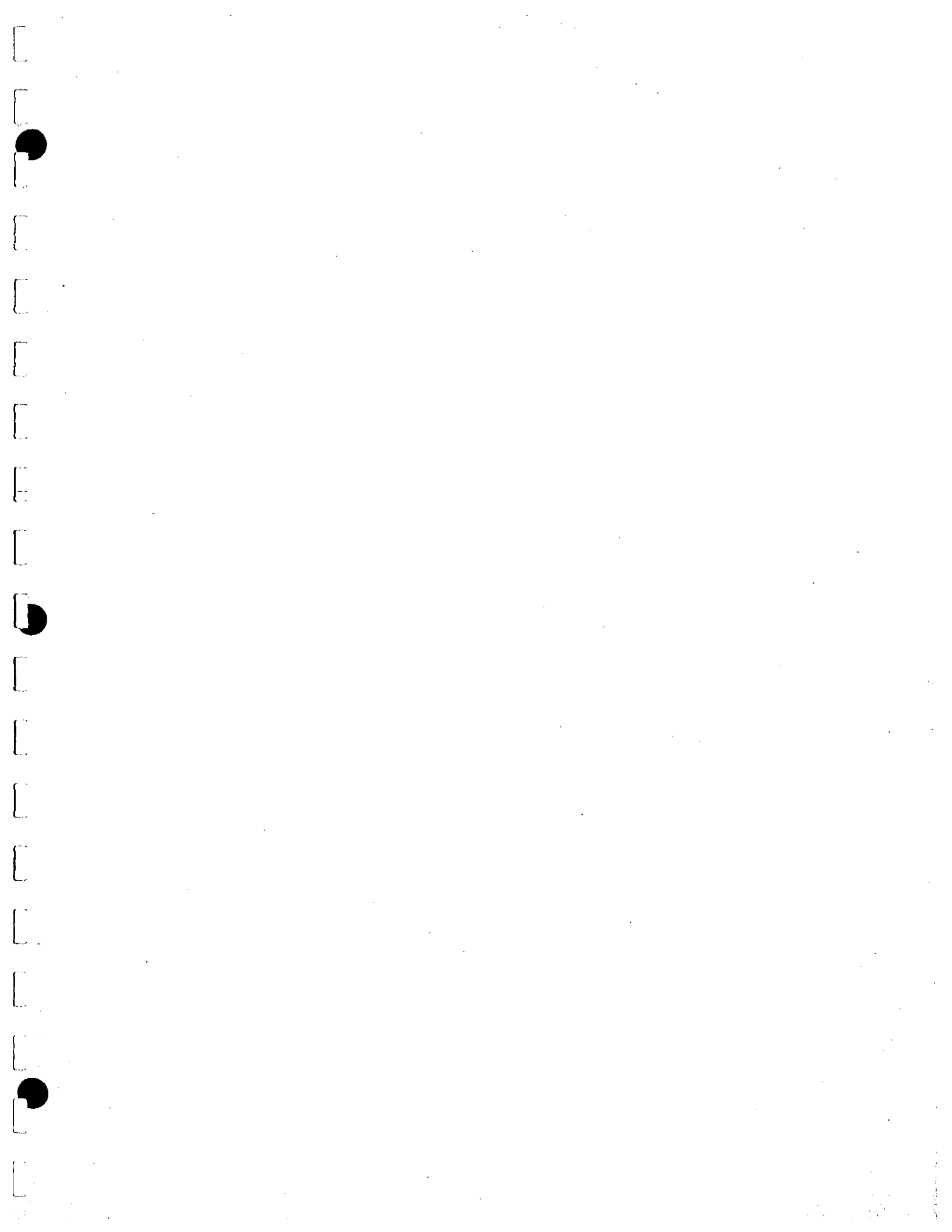
- Identify health & safety hazards
- Sampling
- OSHA written safety programs
- Safety and health training
- Record Keeping

Chitester Management Systems, Inc.

- * WILL TEST PRODUCTS FOR HAZARDOUS MATERIAL, SAMPLING ETC.
- * WILL INSPECT SITE
 - TRAIN PEOPLE
 - SHOW YOU HOW TO DO RECORD KEEPING

CAM Builders Safety Program
Company Safety Rules

15. Do not smoke cigarettes while fueling any type of equipment.
16. It is the employees responsibility to ask for guidance for safe work procedures before performing any task



CAM Builders Safety Program

SAFETY AND HEALTH PROGRAM

I. POLICY

It is the Safety and Health Policy of **CAM Builders** to comply with the standards of the Occupational Safety and Health Administration (OSHA) and State Health and Safety Standards, and to endeavor to have injury free jobs.

Compliance with the following Safety Policy and all items contained therein, is mandatory for all employees of **CAM Builders**.

The authorization and responsibility for enforcement has been given primarily to The on-site supervisors.

It is also the company policy that accident prevention be a prime concern to all of us. It includes, not only prevention of wasteful and inefficient operations, damage to property and equipment, but foremost, the safety and well being of all our employees.

II. APPLICABILITY

This policy applies to all employees of **CAM Builders** regardless

of position with the company. The safety rules apply to anyone who is on a **CAM Builders** site or premises.

III. **IMPLEMENTATION**

The company safety program has been designed for maximum employee involvement in four fundamental ways:

- A. Management's commitment to safety and health.
- B. Quarterly in-depth safety meetings.
- C. Effective job safety training for all categories of employees.
- D. Various incentive awards for exemplary safety performance.

IV. **ADMINISTRATION**

The safety and health program will be carried out according to guidelines established and published in this manual. Specific instructions and assistance will be provided by **CAM Builders**. Each manager will be responsible for meeting all requirements of the Safety and Health Program and for maintaining an effective accident prevention effort within his/her area of responsibility. It will be the manager's responsibility to see that all accidents are thoroughly investigated and reported to the on-site supervisors on the same day of the occurrence.

CAM Builders will review and update this program annually.

V. **REPORTING OF INJURIES**

A. All employees will be held accountable for failing to report an on-the-job injury immediately. Immediately means at or near the time of the injury and on the same day of the injury. Employees must report the injury, in detail, to their immediate supervisor, i.e. Foreman, Superintendent, or Manager, etc. The employee must let their supervisor know:

1. How they hurt themselves.
2. What they were doing at the time.
3. Who they were working with at the time.
4. When and where it happened.
5. Other pertinent information that will aid in the supervisor's investigation of the accident.

B. Anyone failing to report an on-the-job injury according to the above instructions is in violation of the **CAM Builders** Safety and Health Policy and may be subject to termination. Every employee of **CAM Builders**, their subcontractors and suppliers are expected to comply with the company policy and to comply with OSHA and Florida State Health and Safety standards.

VI. **NOTIFICATIONS**

A. **IN CASE OF SERIOUS INJURY OR DEATH**

After the injured has been taken to the hospital, notify the manager immediately. Fill out the accident report form and send it to the main office. Get statements from witnesses and make certain statements are signed by witnesses, dated and time noted. Take photographs of the area and anything relevant.

B. IN CASE OF INSPECTION BY FEDERAL, STATE OR LOCAL INSPECTORS

Notify the manager that the OSHA, Federal, State or Local inspectors are on the jobsite and be cooperative. The manager should immediately notify the on-site supervisors.

VII. GENERAL SAFETY RULES

- A. Compliance with applicable Federal, State, County, City, Client and CAM Builders safety rules and regulations is a condition of employment.
- B. All injuries, regardless of how minor, must be reported to your supervisor and the office immediately. An employee that fails to report an injury immediately will be issued a safety violation notice and may be subject to termination.
- C. Safety glasses, meeting the requirements of ANSI Z87.1, will be worn as the minimum required eye protection. Additional eye and face

protection such as mono-goggles and face shields are required for such operations as grinding, jack hammering, utilizing compressed air or handling of chemicals, acid and caustic materials. Burning goggles for cutting, burning or brazing and welding hoods for welding are required.

D. Fall protection

1. Safety belts/harnesses and lanyards shall be worn and secured at any time there is a fall hazard of more than six (6) feet.

2. Lifelines shall be erected to provide fall protection where work is required in areas where permanent protection is not in place.

Horizontal lifelines shall be minimum of $\frac{1}{2}$ inch diameter wire rope.

Vertical lifelines shall be $\frac{3}{4}$ inch diameter manila rope or equivalent and shall be used in conjunction with an approved type rope grab.

E. Clothing must provide adequate protection for the body. Shirt tails must be worn inside the trousers. Sturdy work boots with rigid, slip-resistant soles which give adequate protection to the feet and ankles are required. Sneakers, sandals and other light-weight footwear are prohibited.

F. Cameras, firearms, alcoholic beverages or illegal drugs are not allowed at the office or on site. Drugs prescribed by a physician must be registered with the supervisor. The use or possession of illegal drugs or alcoholic beverages will result in immediate termination.

G. Housekeeping shall be an integral part of every job. Supervisors and

employees are responsible for keeping their work areas clean and hazard free. Clean up is required when you finish a job, at the end of the day or as needed to maintain a safe work place.

- H. Burning and cutting equipment shall be checked daily before being used. All gas shall be shut off and hoses disconnected from bottles or manifolds at the end of each day. Caps shall be replaced on bottles when gauges are removed. All repairs shall be made in the tool room at the shop. Makeshift field repairs will not be allowed. Two sets of flashback arresters shall be installed on oxyacetylene outfits; one set at the regulators and one set at the torch handle.
- I. All tools, whether company owned or personal, must be in good working condition. Defective tools must not be used. Examples are: chisels with mushroomed heads; hammers with loose or split handles; and guards missing on saws or grinders, etc.
- J. All electrical tools shall be checked and color coded by a designated competent person each month. This shall be part of our assured grounding program.
- K. The speed limit is 10 miles per hour (MPH) within the plant area. No one is permitted to ride on a truck while standing up. Sitting on the outside edges is prohibited. You must be down inside the truck. Riding as a passenger on equipment is prohibited unless the equipment has the safe capability of transporting personnel.

- L. Adequate precautions must be taken to protect employees and equipment from hot work such as welding or burning. Fire extinguishing equipment shall be not further away than 50 feet from all hot work. Return used extinguishers to the office for recharging immediately.
- M. All scaffolding and work platforms must be in accordance with OSHA specifications. All ladders must be in a safe condition with no broken rungs or split side rails. Damaged ladders shall be removed from service. Ladders shall be secured at the top and bottom and extend three (3) feet above the working surface. Metal ladders around electrical work are prohibited.
- N. Report all unsafe conditions and near accidents to your supervisor so corrective action can be taken.
- O. All floor openings or excavations shall be barricaded on all sides to ensure that employees are aware of the hazard. Floor holes shall be covered with a secure cover and clearly marked.
- P. Warning signs, barricades and tags will be used to the fullest extent and shall be obeyed.
- Q. Respiratory protection is required for employees exposed to dust hazards or to other air contaminants that may be encountered.

VIII. **ENFORCEMENT OF SAFETY POLICY**

- A. Safety violation notices shall be issued to any CAM Builders employee, subcontractor or anyone on a CAM Builders site violating the safety rules or regulations.
1. Any violation of a safety rule can result in suspension or immediate termination.
 2. Any employee receiving three (3) written, general violations within a six (6) month period shall be terminated.
 3. Issuance of a safety violation notice for failure to use fall protection or for failure to report a job injury (at the time of injury) will result in immediate termination.
- B. It is understood that CAM Builders is not restricting itself to the above rules and regulations. Additional rules and regulations as dictated by the job will be issued and posted as needed.

IX. **RECORD KEEPING**

- A. OSHA poster "Safety and Health Protection on the Job" will be posted at all job sites.
- B. OSHA "Log of Occupational Injuries and Illnesses" will be maintained and posted during the month of February following the year it is completed for.
- C. Insurance poster, "Notice to Employees" indicating State Worker's Compensation coverage will be posted on all job sites.

D. Safety Meetings weekly and followed by sign-in log.

X. **HOUSEKEEPING AND SANITATION**

- A. General neatness.
- B. Regular disposal of trash.
- C. Passageways, driveways and walkways clear.
- D. Adequate lighting.
- E. Oil and grease removed.
- F. Waste containers provided and used.
- G. Sanitary facilities adequate and clean.
- H. Adequate ventilation.

XI. **PERSONAL PROTECTIVE EQUIPMENT**

- A. Hearing Protection.
- B. Eye and Face Protection.
 - a. Goggles where flying particles exist.
 - b. Face shields for dust.
 - c. Welding masks for welder and helper.
- C. Respirator Protection.
- D. Safety belts and lifelines
- E. Gloves, where required.

XII. **FIRE PROTECTION**

- A. Fire safety orientation to employees.
- B. Fire extinguishers - in proper location and charged.
- C. No smoking areas posted.
- D. Flammable and combustible material storage areas.
- E. Safety cans (containers) for gasoline or other flammable liquids.

XIII. **HAND AND POWER TOOLS**

- A. Inspect all tools for the proper operating condition.
- B. All tools stored properly and neatly.
- C. All power tools properly grounded.
- D. Inspect all tools for proper safety guards.

XIV. **WELDING AND CUTTING**

- A. Gas and oxygen cylinders secured in a vertical position.
- B. Hoses inspected regularly.
- C. Cylinders, caps, valves, couplings, regulators and hoses kept free of oil and grease.
- D. Cylinder caps shall be in place when ever cylinder is not being used.
- E. Maintain gauge pressures - oxygen 30-40 pounds, acetylene 5-10 pounds, when in use, small tip uses less.
- F. Two (2) sets of flash arresters (for oxyacetylene outfits). One (1) set at torch handle and one (1) set at regulators.

XV. **ELECTRICAL**

- A. All portable tools and cords will be properly grounded.
- B. Daily visual inspection of caps, ends and cords for deformed or missing pins, insulation damage and internal damage.
- C. Tests of cords, tools and equipment for continuity and correct attachment of the equipment grounding connector to the proper terminal shall be made every three months and:
 - 1. Prior to first use.
 - 2. Prior to return to service after repairs.
 - 3. Prior to return to service after incident which may have caused damage to cord or equipment.
- D. Cords and equipment which do not meet requirements shall be removed from service until repairs have been made.
- E. Maintain a written log of all test on cords, tool and equipment unless there are G.F.C.I.s installed.

XVI. **LADDERS**

- A. Inspect at regular intervals.
- B. No broken or missing rungs or steps.
- C. No broken or split side rails.
- D. Extend at least 36 inches above landing and secure.

E. Side rails of 2 X 4 up to 16 feet. Above 16 feet, side rails need to be at least 3 X 6s.

F. Cleats of 2 X 4 lumber and spaced 12 inches top to top.

XVII. **SCAFFOLDING**

A. Inspect at regular intervals.

B. Footings shall be sound and rigid and capable of carrying the maximum intended load.

C. Tied into buildings vertically and horizontally at 14 foot intervals.

D. Properly cross braced.

E. Proper guard rails and toeboards installed.

XVIII. **GUARDRAILS, HANDRAILS AND COVERS**

A. Guardrails, handrails and covers shall be installed where ever there is danger of employees or materials falling through floor, roof or wall openings and shall be guarded on all exposed sides.

B. Posts shall be of at least 2 X 4 stock spaced not more than eight (8) feet apart.

C. Top rail shall be 42 inches above the floor and of 2 X 4 stock.

D. The intermediate (mid) rail shall be approximately 21 inches above the floor and of at least 1 X 4 stock.

E. Guardrail assemblies around floor openings shall be equipped with toe

boards. The toe boards shall be a minimum of four (4) inches above the floor and shall not have more than ¼ inch clearance above the floor level, if there are employees below and conditions dictate.

- F. Guardrails must be capable of supporting 200 pounds in any direction.

XIX. **MATERIAL HOISTS**

- A. Inspect at regular intervals.
- B. Operating rules shall be posted at operator's station.
- C. "No Rider" signs posted at all stations.
- D. All entrances shall be properly protected.
- E. All entrance bars and grates shall be painted with diagonal contrasting stripes.
- F. Operator is experienced.
- G. Current crane certification inspection sticker and papers on rig.

XX. **MOTOR VEHICLES**

- A. Inspect all lights, brakes, tires, horn, etc at regular intervals.
- B. Do not overload vehicles.
- C. Trash trucks shall have covers.
- D. No riding on edge of pickup truck bed.
- E. No riding on concrete trucks, loaders, backhoes, etc.
- F. Back-up alarms on loaders, tractors, backhoes, etc.

XXI. **MATERIAL STORAGE AND HANDLING**

- A. Designate material storage area.
- B. Keep material, including spoil, at least two (2) feet from edge of excavation.
- C. Control water.
- D. Inspect frequently.

XXII. **SAFETY MEETING REPORT**

CAM Builders _____ has a Safety Meeting form. This form shall be filled out for each safety meeting that is held. After filling out the form, you shall return it to the office.

XXIII. **OSHA POSTER**

CAM Builders _____ has a job safety and health poster from OSHA. This poster must be posted on location in a conspicuous place, preferably on the employee bulletin.

XXIV. **LOG AND SUMMARY OF OCCUPATIONAL INJURIES AND ILLNESSES**

CAM Builders _____ has an OSHA log for injuries and illnesses. This must be posted in a conspicuous place and kept up to date as all illnesses and injuries occur. Preferably these are to be posted on the bulletin board at the office.

XXV. **EMERGENCY TELEPHONE NUMBERS**

- A. CAM Builders has a listing of emergency room and walk-in clinic phone numbers for each location.
- B. All employees must be made aware of the locations of the Emergency Rooms and Walk-in Clinics.

XXVI. **SAFETY INSPECTION PROCESS**

Periodic inspections, at least semi-annually, will be made of the area by the responsible supervisor.

XXVII. **JOB HAZARD ANALYSIS**

- A. Job hazard analysis will be performed on each job to determine the potential hazards and the type of protective equipment that is available, and what it can do; i.e., splash protection, impact protection, etc.;
- 1. It is the responsibility of The on-site supervisors to assess the workplace hazard situation, by identifying and evaluating equipment and processes.
- 2. In order to assess the need for PPE, a walk-through survey of the areas in question will be conducted. The purpose of the survey is to identify sources of hazards to workers and co-workers. Consideration should be given to the basic hazard categories: Impact; Penetration;

Compression (roll-over); Chemical; Heat; Harmful dust; Light (optical) radiation.

3. During the walk-through survey the safety officer should observe:
 - (a) sources of motion; where any movement of tools, machine elements or particles could exist, or movement of personnel that could result in collision with stationary objects;
 - (b) sources of high temperatures that could result in burns, eye injury or ignition of protective equipment, etc.;
 - (c) types of chemical exposures;
 - (d) sources of harmful dust;
 - (e) sources of light radiation, i.e., welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc.;
 - (f) sources of falling objects or potential for dropping objects;
 - (g) sources of sharp objects which might pierce the feet or cut the hands;
 - (h) sources of rolling or pinching objects which could crush the feet;
 - (i) layout of workplace and location of co-workers; and
 - (j) any electrical hazards. In addition, injury/accident data should be reviewed to help identify problem areas.

C. Following the walk-through survey, it is necessary to organize the data and information for use in the assessment of hazards. The objective is to prepare for an analysis of the hazards in the environment to enable proper

selection of protective equipment.

D. Having gathered and organized data on a workplace, an estimate of the potential for injuries should be made. Each of the basic hazards should be reviewed and a determination made as to the type, level of risk, and seriousness of potential injury from each of the hazards found in the area.

The possibility of exposure to several hazards simultaneously should be considered.

E. After completing the assessment, The on-site supervisors selects the protective equipment which ensures a level of protection greater than the minimum required to protect employees from the hazards.

F. It is the responsibility of The on-site supervisors to reassess the workplace hazard situation as necessary, by identifying and evaluating new equipment and processes, reviewing accident records, and reevaluating the suitability of previously selected PPE.

XXVIII. TRAINING

All employees of the CAM Builders will be trained on the requirements of this program.

TABLE III:4-2. PERMISSIBLE HEAT EXPOSURE THRESHOLD LIMIT VALUES

<u>Work/rest regimen</u>	----- Work Load* -----		
	<u>Light</u>	<u>Moderate</u>	<u>Heavy</u>
Continuous work	30.0°C (86°F)	26.7°C (80°F)	25.0°C (77°F)
75% Work, 25% rest, each hour	30.6°C (87°F)	28.0°C (82°F)	25.9°C (78°F)
50% Work, 50% rest, each hour	31.4°C (89°F)	29.4°C (85°F)	27.9°C (82°F)
25% Work, 75% rest, each hour	32.2°C (90°F)	31.1°C (88°F)	30.0°C (86°F)

*Values are in °C and °F, WBGT.

These TLV's are based on the assumption that nearly all acclimatized, fully clothed workers with adequate water and salt intake should be able to function effectively under the given working conditions without exceeding a deep body temperature of 38°C (100.4° F). They are also based on the assumption that the WBGT of the resting place is the same or very close to that of the workplace. Where the WBGT of the work area is different from that of the rest area, a time-weighted average should be used (consult the ACGIH 1992-1993 *Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices* (1992)).

These TLV's apply to physically fit and acclimatized individuals wearing light summer clothing. If heavier clothing that impedes sweat or has a higher insulation value is required, the permissible heat exposure TLV's in Table III:4-2 must be reduced by the corrections shown in Table III:4-3.

APPENDIX III:4-1. HEAT STRESS: GENERAL WORKPLACE REVIEW.

NOTE: Listed below are sample questions that the Compliance Officer may wish to consider when investigating heat stress in the workplace.

WORKPLACE DESCRIPTION.

- A. Type of business
- B. Heat-producing equipment or processes used
- C. Previous history (if any) of heat-related problems
- D. At "hot" spots:
 - Is the heat steady or intermittent?

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- Number of employees exposed?
- For how many hours per day?
- Is potable water available?
- Are supervisors trained to detect/evaluate heat stress symptoms?

ARE EXPOSURES TYPICAL FOR A WORKPLACE IN THIS INDUSTRY?

A. Weather at Time of Review

- Temperature
- Humidity
- Air velocity

B. Is Day Typical of Recent Weather Conditions? (Get information from the Weather Bureau)

C. Heat-Reducing Engineering Controls

- Ventilation in place?
- Ventilation operating?
- Air conditioning in place?
- Air conditioning operating?
- Fans in place?
- Fans operating?
- Shields or insulation between sources and employees?
- Are reflective faces of shields clean?

WORK PRACTICES TO DETECT, EVALUATE, AND PREVENT OR REDUCE HEAT STRESS.

A. Training program?

- Content?
- Where given?
- For whom?

* WATCH FOR EMPLOYEES THAT STOP SWEATING!

* IF PERSON IS HEAT STRESSED - COOL HIM WITH ICE!

B. Liquid replacement program?

C. Acclimatization program?

D. Work/rest schedule?

E. Scheduling of work (during cooler parts of shift, cleaning and maintenance during shut-downs, etc.)

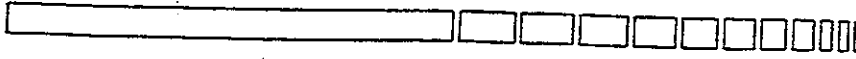
F. Cool rest areas (including shelter at outdoor work sites)?

G. Heat monitoring program?

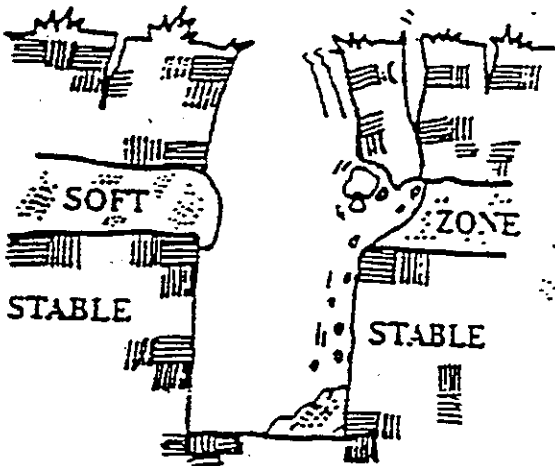
H. Personal Protective Equipment

- Reflective clothing in use?
- Ice and/or water-cooled garments in use?
- Wetted undergarments (used with reflective or impermeable clothing) in use?

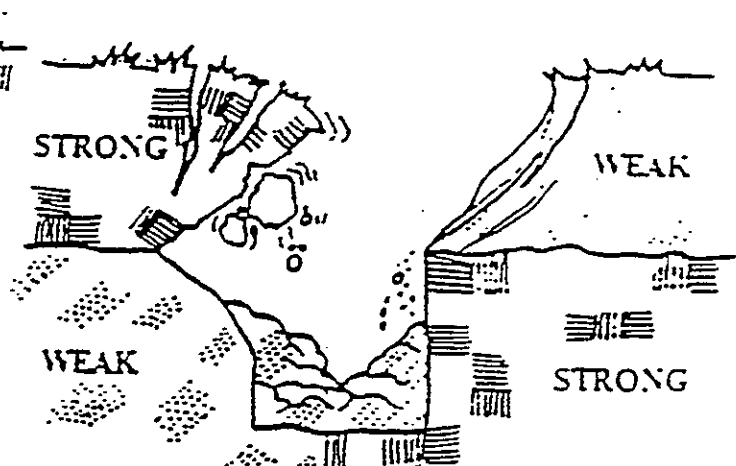
Trench Safety



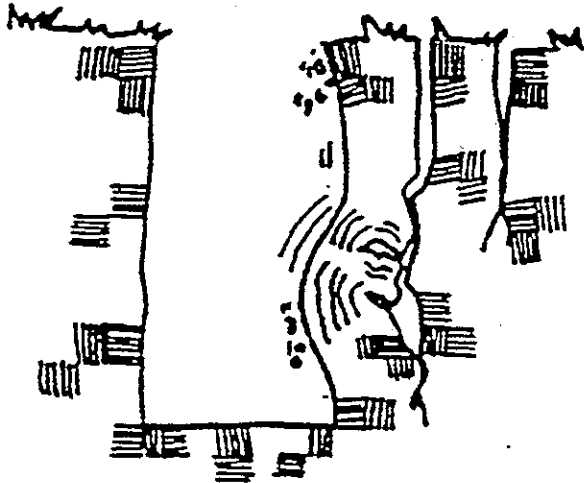
- Written program
- Training
- Trench failure
- Trench shoring
- Trench inspection



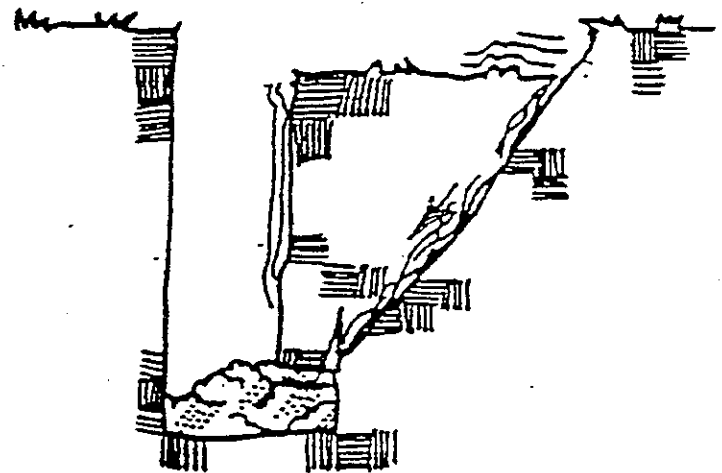
SOFT ZONE FAILURE



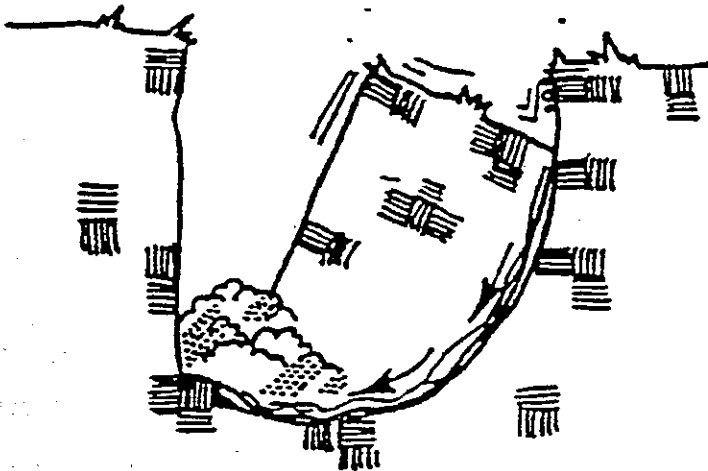
LAYERED SOILS



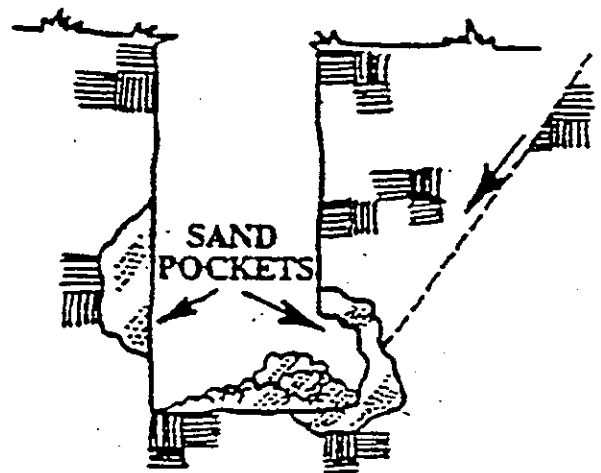
SLOUGHING (AIR DRYING)



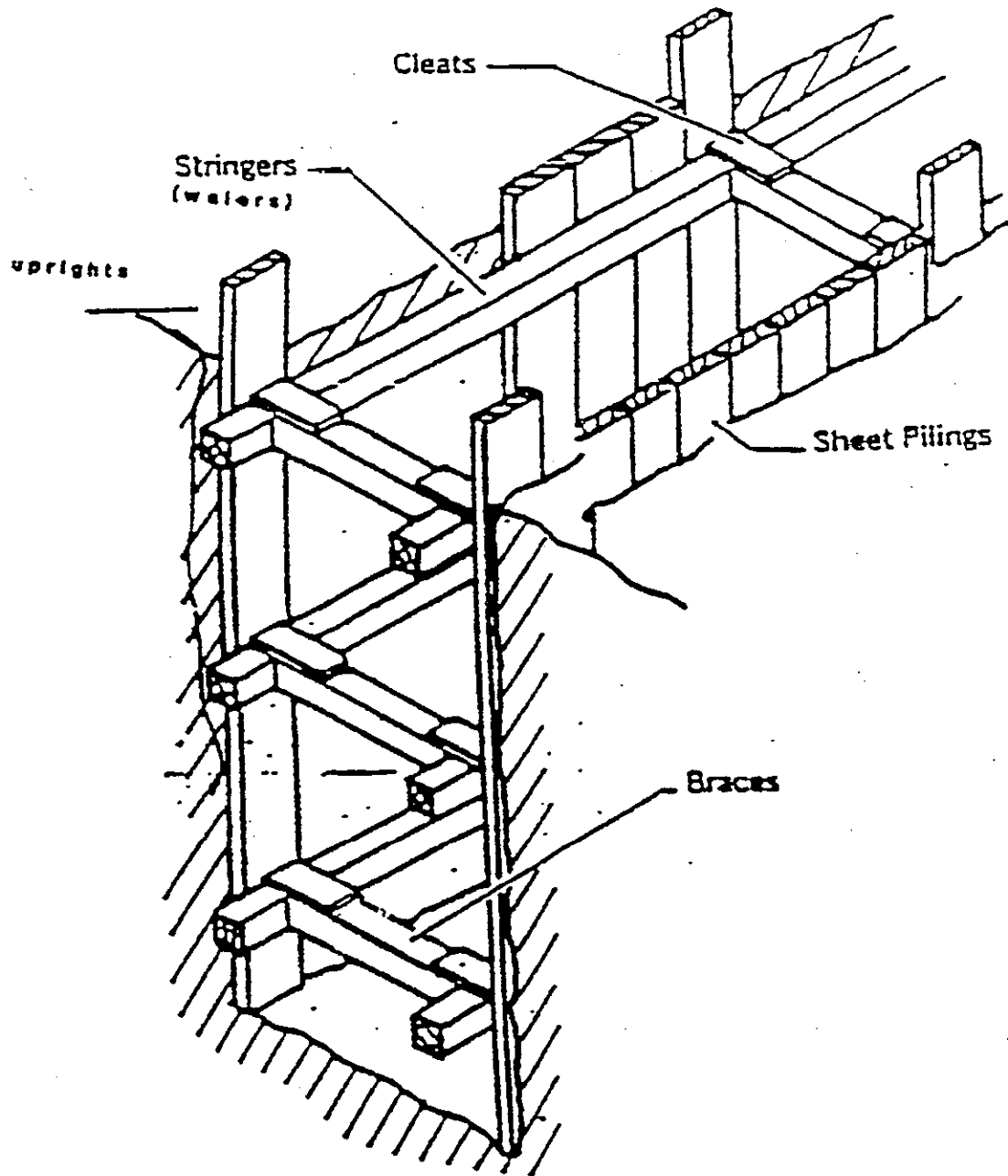
WEDGE FAILURE

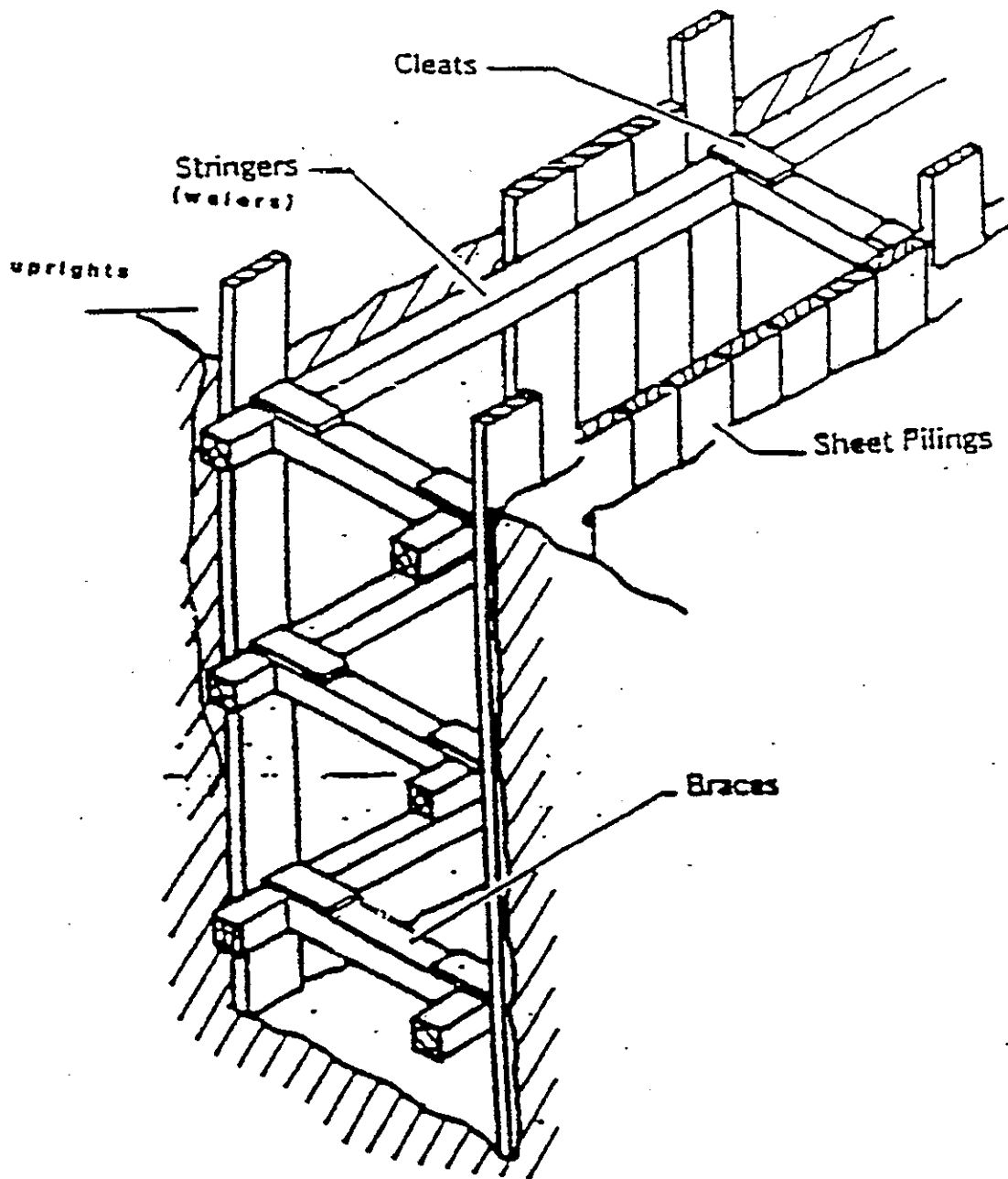


ROTATIONAL FAILURE



SOFT POCKETS





PHOTOGRAPHS, ILLUSTRATIONS and OTHER DOCUMENTS

GUIDE FOR THE DAILY INSPECTION OF TRENCHES/EXCAVATIONS^[30]

WARNING SIGNS OF FAILURE

- Tension Cracks (In Sidewalls, Slopes and Surface adjacent to Excavation)
- Ground Settlement or Subsidence
- Changes in Wall Slope or Bulge
- Increase in Strut Loads
- Bowing of Struts
- Spalling or Sloughing of Soils
- Excessive Seepage and Piping of Fine Soils
- Softening of Sidewalls
- Boiling of Trench Bottom
- Creaking or Popping Sounds
- Visual Deformation of Bracing System or Trench

SHORING/BRACING CHECKLIST

- Strict Adherence to Plans and Specifications
- Changes in Soil Condition
- Maintenance of Proper Slope Ratio
- Excessive Vibrations
- Location of Spoil Pile
- Equipment Location Relative to Excavation
- Secondary Soil/Rock Structure
- Presence of Water Seepage and Rainfall
- Location of Trees, Boulders, Structures and Existing Utilities
- Right-of-Way
- Signs of Distress

SLOPING/BENCHING CHECKLIST

- Strict Adherence to Plans and Specifications
- Changes in Soil Conditions
- Excessive Vibration
- Location of Spoil Pile
- Equipment Location Relative to Excavation
- Excessive Wear or Damage to Equipment
- Signs of Distress
- Improper Installation Procedures
 - Workers in unbraced trench
 - Improper system being used
 - Improper alignment of members
 - Improper installation of connections
- Location of Existing Utilities and Backfill

TRENCH SHIELD (BOX) CHECKLIST

- Strict Adherence to Plans and Specifications
- Changes in Soil Conditions
- Clearance Between Shield and Trench Sidewalls
- Adequate Freeboard at Top of Shield
- Proper Slope Above Shield
- Current Certification of Shield
- Excessive Wear or Damage of Shield
- Improper Use of Shield
 - Workers in unshielded trench
 - Improper shield being used
- Location of Existing Utilities

NOTE: These are only general warnings of failure and recommendations for daily inspections of most trenches and excavations. Every trench/excavation must be inspected by a competent person as per 1926.651(k)(1) for the items listed above and all other hazards which are unique to that site.

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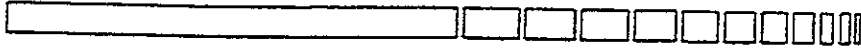
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Fall Protection



- Guardrails
- Safety nets
- Fall arrest systems
- Training

*

CAM Builders Safety Program

FALL PROTECTION PROGRAM

CAM Builders Safety Program

Fall Protection Program

I. Statement of Company Policy:

CAM Builders is dedicated to the protection of its employees from on-the-job injuries. All employees of CAM Builders have the responsibility to work safely on the job. The purpose of the plan is to supplement our existing safety and health program and to ensure that every employee who works for CAM Builders recognizes workplace fall hazards and takes the appropriate measures to address those hazards.

This Fall Protection Plan addresses the use of conventional fall protection at a number of areas on the project, as well as identifies specific activities that require non-conventional means of fall protection. During the construction of residential buildings under 48 feet in height, it is sometimes infeasible or it creates a greater hazard to use conventional fall protection systems at specific areas or for specific tasks. The areas or tasks may include, but are not limited to:

- a. Setting and bracing of roof trusses and rafters;
- b. Installation of floor sheathing and joists;
- c. Roof sheathing operations; and
- d. Erecting exterior walls.

In these cases, conventional fall protection systems may not be the safest. CAM Builders will evaluate the fall hazards associated with the job sites and establish the safest procedures that are to be followed in order to prevent falls to lower levels or through holes and openings in walking/working surfaces.

It is the responsibility of The on-site supervisors to implement the Fall Protection Plan. Continual observational safety checks on work operations and the enforcement of the safety policy and procedures shall be regularly enforced. The crew supervisor or foreman is responsible for correcting any unsafe practices or conditions immediately.

It is the responsibility of the CAM Builders to ensure that all employees understand and adhere to the procedures of this plan and to follow the instruction of the crew supervisor. It is also the responsibility of the employee to bring to management's attention any unsafe or hazardous conditions or practices that may cause injury to either themselves or any other employees. Any changes to this program must be approved by CAM Builders

II. Fall Protection Systems To Be Used on This Job

Installation of roof trusses/rafters, exterior wall erection, roof sheathing, floor sheathing and joist/truss activities will be conducted by employees who are specifically trained to do this type of work and are trained to recognize the fall hazards. The nature of such work normally exposes the employee to the fall hazard for a short period of time. The Plan details how CAM Builders will minimize these hazards.

Controlled Access Zones (CAZ)

When using the Plan to implement the fall protection options available, workers must be protected through limited access to high hazard locations. Before any non-conventional fall protection systems are used as part of the work plan, a controlled access zone (CAZ) shall be clearly defined by the competent person as an area where a recognized hazard exists. The demarcation of the CAZ shall be communicated by the competent person in a recognized manner, either through signs, wires, tapes, ropes or chains.

CAM Builders shall take the following steps to ensure that the CAZ is clearly marked or controlled by the competent person:

- * All access to the CAZ must be restricted to authorized entrants;
- * All workers who are permitted in the CAZ shall be listed in the appropriate sections of the Plan (or be visibly identifiable by the competent person) prior to implementation;
- * The competent person shall ensure that all protective elements of the CAZ be implemented prior to the beginning of work.

Installation Procedures for Roof Truss and Rafter Erection

During the erection and bracing of roof trusses/rafters, conventional fall protection may present a greater hazard to workers. On this job, safety nets, guardrails and personal fall arrest systems will not provide adequate fall protection because the nets will cause the walls to collapse, while there are no suitable attachment or anchorage points for guardrails or personal fall arrest systems.

On this job, requiring workers to use a ladder for the entire installation process will cause a greater hazard because the worker must stand on the ladder with his back or side to the front of the ladder. While erecting this truss or rafter the worker will need both hands to maneuver the truss and therefore cannot hold onto the ladder.

In addition, ladders cannot be adequately protected from movement while trusses are being maneuvered into place. Many workers may experience additional fatigue because of the increased in overhead work with heavy materials, which can also lead to a greater hazard.

Exterior scaffolds cannot be utilized on this job because the ground, after recent backfilling, cannot support the scaffolding. In most cases, the erection and dismantling of the scaffold would expose workers to a greater fall hazard than erection of the trusses/rafters.

On all walls eight feet or less, workers will install interior scaffolds along the interior wall below the location where the trusses/rafters will be erected. "Sawhorse" scaffolds constructed of 46 inch sawhorses and 2X10 planks will often allow workers to be elevated high enough to allow for the erection of trusses and rafters without working on the top plate of the wall.

In structures that have walls higher than eight feet and where the use of scaffolds and ladders would create a greater hazard, safe working procedures will be utilized when working on the top plate and will be monitored by the crew supervisor. During all stages of truss/rafter erection the stability of the trusses/rafter will be ensured at all times.

CAM Builders shall take the following steps to protect workers who are exposed to fall hazards while working from the top plate installing trusses/rafters:

- * Only the following trained workers will be allowed to work on the top plate during roof truss or rafter installation:

- * Workers shall have no other duties to perform during truss/rafter erection procedures.
- * All trusses/rafters will be adequately braced before any worker can use the truss/rafter as a support.
- * Workers will remain on the top plate using the previously stabilized truss/rafter as a support while other trusses/rafters are being erected.

- * Workers will leave the area of the secured trusses only when it is necessary to secure another truss/rafter.
- * The first two trusses/rafters will be set from ladders leaning on side walls at points where the walls can support the weight of the ladder.
- * A worker will climb onto the interior top plate via a ladder to secure the peaks of the first two trusses/rafters being set.

The workers responsible for detaching trusses from cranes and/or securing trusses at the peaks traditionally are positioned at the peak of the trusses/rafters. There are also situations where workers securing rafters to ridge beams will be positioned on top of the ridge beam.

CAM Builders shall take the following steps to protect workers who are exposed to fall hazards while securing trusses/rafters at the peak of the trusses/ridge beam:

- * Only the following trained workers will be allowed to work at the peak during roof truss or rafter installation:

- * Once truss or rafter installation begins, workers not involved in that activity shall not stand or walk below or adjacent to the roof opening or exterior walls in any area where they could be struck by falling objects.
- * Workers shall have no other duties than securing/bracing the trusses/ridge beam.
- * Workers positioned at the peaks or in the webs of trusses or on top of the ridge beam shall work from a stable position, either by sitting on a "ridge seat" or other equivalent surface that provides additional stability or by positioning themselves in previously stabilized trusses/rafters and leaning into and reaching through the trusses/rafters.
- * Workers shall not remain on or in the peak/ridge any longer than necessary to safely complete the task.

Roof Sheathing Operations

Workers typically install roof sheathing after all trusses/rafters and any permanent truss bracing is in place. Roof structures are unstable until some sheathing is installed. Workers installing roof sheathing cannot be protected from fall hazards by conventional fall protection systems until it is determined that the roofing system can be used as an anchorage point. At that point, employees shall be protected by a personal fall arrest system.

Trusses/rafters are subject to collapse if a worker falls while attached to a single truss with a belt/harness. Nets could also cause collapse, and there is no place to attach guardrails.

All workers will insure that they have secure footing before they attempt to walk on the sheathing, including cleaning shoes/boots of mud or other slip hazards.

To minimize the time workers must be exposed to a fall hazard, materials will be staged to allow for the quickest installation of sheathing.

CAM Builders shall take the following steps to protect workers who are exposed to fall hazards while installing roof sheathing:

- * Once roof sheathing installation begins, workers not involved in that activity shall not stand or walk below or adjacent to the roof opening or exterior walls in any area where they could be struck by falling objects.
- * The competent person shall determine the limits of this area. Limits shall be clearly communicated to workers prior to placement of the first piece of roof sheathing.
- * The competent person may order work on the roof to be suspended for brief periods to allow other workers to pass through such areas when this would not create a greater hazard.
- * Only qualified workers shall install roof sheathing.
- * The bottom row of roof sheathing may be installed by workers standing in truss webs.

- * After the bottom row of roof sheathing is installed, a slide guard extending the width of the roof shall be securely attached to the roof. Slide guards are to be constructed of no less than nominal 4" height capable of limiting the uncontrolled slide of workers. Workers should install the slide guard while standing in truss webs and leaning over the sheathing.
- * Additional rows of roof sheathing may be installed by workers positioned on previously installed rows of sheathing. A slide guard can be used to assist workers in retaining their footing during successive sheathing operations.
- * Additional slide guards shall be securely attached to the roof at intervals not to exceed 13 feet as successive rows of sheathing are installed. For roofs with pitches in excess of 9-in-12, slide guards will be installed at four foot intervals.
- * When wet weather (rain, snow, or sleet) are present, roof sheathing operations shall be suspended unless safe footing can be assured for those workers installing sheathing.
- * When strong winds (above 40 miles per hour) are present, roof sheathing operations are to be suspended unless wind breakers are erected.

Installation of Floor Joists and Sheathing

During the installation of floor sheathing/joists (leading edge construction), the following steps shall be taken to protect workers:

- * Only the following trained workers will be allowed to install floor joists or sheathing:

- * Materials for the operations shall be conveniently staged to allow for easy access to workers.
- * The first floor joists or trusses will be rolled into position and secured either from the ground, ladders or sawhorse scaffolds.

- * Each successive floor joist or truss will be rolled into place and secured from a platform created from a sheet of plywood laid over the previously secured floor joists or trusses.
- * Except for the first row of sheathing which will be installed from ladders or the ground, workers shall work from the established deck.
- * Any workers not assisting in the leading edge construction while leading edges still exist (e.g. cutting the decking for the installers) shall not be permitted within six feet of the leading edge under construction.

Erection of Exterior Walls

During the construction and erection of exterior walls, CAM Builders shall take the following steps to protect workers:

- * Only the following trained workers will be allowed to erect exterior walls:

- * A painted line six feet from the perimeter will be clearly marked prior to any wall erection activities to warn of the approaching unprotected edge.
- * Materials for operations shall be conveniently staged to minimize fall hazards.
- * Workers constructing exterior walls shall complete as much cutting of materials and other preparation as possible away from the edge of the deck.

III. Enforcement

Constant awareness of and respect for fall hazards, and compliance with all safety rules are considered conditions of employment. The crew supervisor or foreman, as well as individuals in the Safety and Personnel Department, reserve the right to issue disciplinary warnings to employees, up to and including termination, for failure to follow the guidelines of this program.

IV. Accident Investigations

All accidents that result in injury to workers, regardless of their nature, shall be investigated and reported. It is an integral part of any safety program that documentation take place as soon as possible so that the cause and means of prevention can be identified to prevent a recurrence.

In the event that an employee falls or there is some other related, serious incident occurring, this plan shall be reviewed to determine if additional practices, procedures, or training need to be implemented to prevent similar types of falls or incidents from occurring.

V. Changes to Plan

Any changes to the plan will be approved by CAM Builders. This plan shall be reviewed by a qualified person as the job progresses to determine if additional practices, procedures or training needs to be implemented by the competent person to improve or provide additional fall protection. Workers shall be notified and trained. If necessary, in the new procedures. A copy of this plan and all approved changes shall be maintained at the jobsite.

NOTE: This plan will be filled out for each jobsite and employee training completed prior to the start of work presenting a fall hazard.

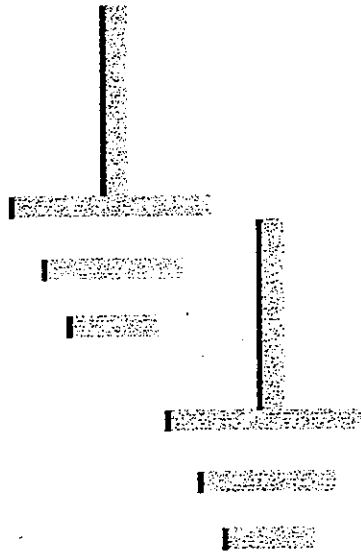
CAM Builders Safety Program

Ground-Fault Protection on Construction Sites



U.S. Department of Labor
Occupational Safety and Health Administration

OSHA 3007
1998 (Revised)



SECTION D

Ground-Fault Protection on Construction Sites



U.S. Department of Labor
Alexis M. Herman, Secretary

Occupational Safety and Health Administration
Charles N. Jeffress, Assistant Secretary

OSHA 3007
1998 (Revised)

This informational booklet is intended to provide a generic, non-exhaustive overview of a particular standards-related topic.

This publication does not itself alter or determine compliance responsibilities, which are set forth in OSHA standards themselves and the *Occupational Safety and Health Act*. Moreover, because interpretations and enforcement policy may change over time, for additional guidance on OSHA compliance requirements, the reader should consult current and administrative interpretations and decisions by the Occupational Safety and Health Review Commission and the Courts

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CAM Builders Safety Program
Latest revision dated August 8, 1999

Contents

iii

	Page
Why Does OSHA Have an Electrical Standard for Construction?	1
What is a GFCI?	3
What are Some Other Ways to Prevent Electrical Injury?	4
How Can Employers Protect Their Workers?	6
What is the Assured Equipment Grounding Conductor Program?	7
What Other Help Can OSHA Provide?	8
Safety and Health Program Management Guidelines	8
State Programs	8
Consultation Services	9
Voluntary Protection Programs	9
Training and Education	10
Electronic Information	10
Emergencies	11
Equipment Grounding Conductor Program	12
Appendix—29 CFR Part 1926 Safety and Health Regulations for Construction Subpart K (partial)	13
Related OSHA Publications	15
States with Approved Plans	16

Contents

With the wide use of portable tools on construction sites, the use of flexible cords often becomes necessary. Hazards are created when cords, cord connectors, receptacles, and cord- and plug-connected equipment are improperly used and maintained. Generally, flexible cords are more vulnerable to damage than is fixed wiring. Flexible cords must be connected to devices and to fittings so as to prevent tension at joints and terminal screws. Because a cord is exposed, flexible and unsecured joints and terminals become more vulnerable. Flexible cord conductors are finely stranded for flexibility, but the strands of one conductor may loosen from under terminal screws and touch another conductor, especially if the cord is subjected to stress or strain.

A flexible cord may be damaged by activities on the job, by door or window edges, by staples or fastenings, by abrasion from adjacent materials, or simply by aging. If the electrical conductors become exposed, there is a danger of shocks, burns, or fire. A frequent hazard on a construction site is a cord assembly with improperly connected terminals.

Also, when a cord connector is wet, hazardous leakage can occur to the equipment grounding conductor and to humans who pick up that connector if they also provide a path to ground. Such leakage is not limited to the face of the connector but also develops at any wet portion of it.

When the leakage current of tools is below 1 ampere, and the grounding conductor has a low resistance, no shock should be perceived. However, should the resistance of the equipment grounding conductor increase, the current through the body also will increase. Thus, if the resistance of the equipment grounding conductor is significantly greater than 1 ohm, tools with even small leakages become hazardous.

The Occupational Safety and Health Administration's (OSHA) electrical standard for construction, title 29 *Code of Federal Regulations Part 1926, Subpart K*, contains the requirements for ground fault circuit interrupters (GFCIs) and for assured equipment grounding conductor programs which are included in the Appendix of this booklet. These requirements will help reduce the number of injuries and accidents from electrical hazards. Work disruptions should be minor, and the necessary inspections and maintenance should require little time.

This booklet is intended to help employers and employees responsible for electrical equipment provide protection against 120-volt electrical hazards on the construction site—the most common being ground fault electrical shock—through the use of GFCIs or through the assured equipment grounding conductor program.

A GFCI is a fast-acting circuit breaker that senses small imbalances in the circuit caused by current leakage to ground and, in a fraction of a second, shuts off the electricity. The GFCI continually matches the amount of current going to an electrical device against the amount of current returning from the device along the electrical path. Whenever the amount “going” differs from the amount “returning” by approximately 5 milliamps, the GFCI interrupts the electric power within as little as 1/40 of a second. (See diagram.)

The GFCI, however, does not protect from line-to-line contact hazards—such as a worker holding two “hot” wires or a hot and a neutral wire in each hand. It protects against the most common form of electrical shock hazard—the ground fault, and protects against fires, overheating, and destruction of insulation on wiring.

GFCIs can be used successfully to reduce electrical hazards on construction sites. Tripping of GFCIs—interrupting current flow—is sometimes caused by wet connectors and tools. It is good practice to limit exposure of connectors and tools to excessive moisture by using watertight or sealable connectors.

Providing more GFCIs or shorter circuits can prevent tripping caused by the cumulative leakage from several tools or by leakages from extremely long circuits.

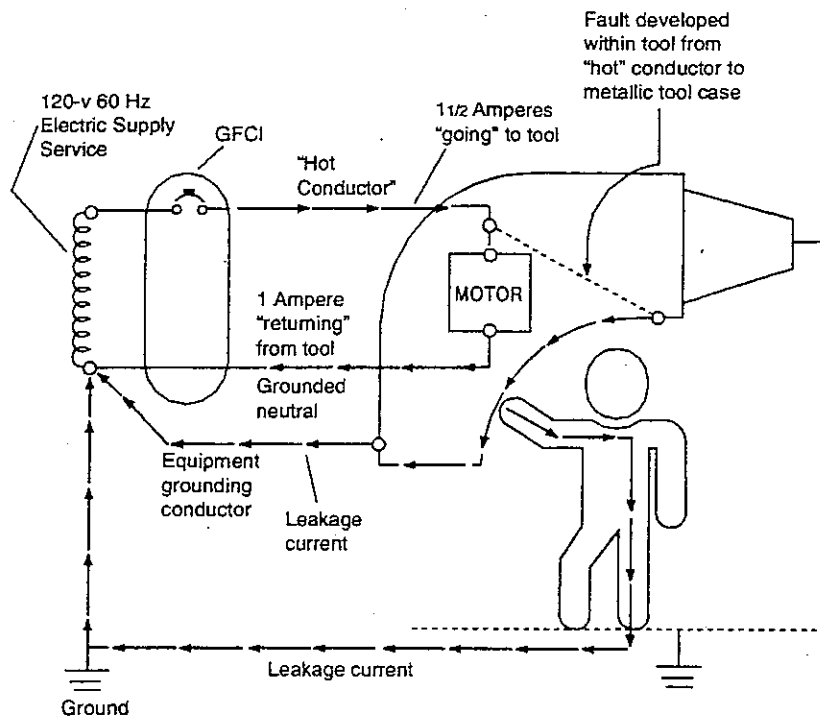
Insulation and grounding are two recognized means of preventing injury during electrical equipment operation. Conductor insulation may be provided by placing nonconductive material such as plastic around the conductor. Grounding may be achieved through the use of a direct connection to a known ground such as a metal, cold water pipe.

Consider, for example, the metal housing or enclosure around a motor or the metal box in which electrical switches, circuit breakers, and controls are placed. Such enclosures protect the equipment from dirt and moisture and prevent accidental contact with exposed wiring, however, there is a hazard associated with housings and enclosures. A malfunction within the equipment—such as deteriorated insulation—may create an electrical shock hazard. Many metal enclosures are connected to a ground to eliminate the hazard.

If a “hot” wire contacts a grounded enclosure, a ground fault results which normally will trip a circuit breaker or blow a fuse. Metal enclosures and containers are usually grounded by connecting them with a wire going to ground. This wire is called an equipment grounding conductor. Most portable electric tools and appliances are grounded by this means. There is one disadvantage to grounding: a break in the grounding system may occur without the user’s knowledge.

Insulation may be damaged by hard usage on the job or simply by aging. If this damage causes the conductors to become exposed, the hazards of shocks, burns, and fire will exist. Double insulation may be used as additional protection on the live parts of a tool, but double insulation does not provide protection against defective cords and plugs or against heavy moisture conditions.

Ground-Fault Circuit Interrupter



GFCI monitors the difference in current flowing into the "hot" and out to the grounded neutral conductors. The difference ($\frac{1}{2}$ ampere in this case) will flow back through any available path, such as the equipment grounding conductor, and through a person holding the tool, if the person is in contact with a grounded object.

What Are Some Other Ways to Prevent Electrical Injury?

OSHA ground-fault protection rules and regulations have been determined necessary and appropriate for employee safety and health. Therefore, it is the employer's responsibility to provide either: (a) GFCIs on construction sites for receptacle outlets in use and not part of the permanent wiring of the building or structure; or (b) a scheduled and recorded assured equipment grounding conductor program on construction sites, covering all cord sets, receptacles which are not part of the permanent wiring of the building or structure, and equipment connected by cord and plug which are available for use or used by employees.

The employer is required to provide approved GFCIs for all 120-volt, single-phase, 15- and 20-ampere receptacle outlets on construction sites that are not a part of the permanent wiring of the building or structure and that are in use by employees. If a receptacle or receptacles are installed as part of the permanent wiring of the building or structure and they are used for temporary electric power, GFCI protection shall be provided. Receptacles on the ends of extension cords are not part of the permanent wiring and, therefore the cord's receptacle, must be of the GFCI type whether or not the extension cord is plugged into permanent wiring. These GFCIs monitor the current-to-the-load for leakage to ground.

When this leakage exceeds 5 milliAmps plus or minus 1 milliAmp, the GFCI interrupts the current. They are rated to trip quickly enough to prevent electrocution. This protection is required in addition to, not as a substitute for, the grounding requirements of OSHA safety and health rules and regulations, 29 CFR 1926. The requirements which the employer must meet, if he or chooses the GFCI option, are stated in 29 CFR 1926.404(b)(1)(ii). (See appendix.)

The assured equipment grounding conductor program covers all cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and equipment connected by cord and plug which are available for use or used by employees. The requirements which the program must meet are stated in 29 CFR 1926.404(b)(1)(iii), but employers may provide additional tests or procedures. (See Appendix.) OSHA requires that a written description of the employer's assured equipment grounding conductor program, including the specific procedures adopted, be kept at the jobsite. This program should outline the employer's specific procedures for the required equipment inspections, tests, and test schedule. The required tests must be recorded, and the record maintained until replaced by a more current record. The written program description and the recorded tests must be made available, at the jobsite, to OSHA and to any affected employee upon request. The employer is required to designate one or more **competent persons** to implement the program.

Electrical equipment noted in the assured equipment grounding conductor program must be visually inspected for damage or defects before each day's use. Any damaged or defective equipment must not be used by the employee until repaired.

Two tests are required by OSHA. One is a continuity test to ensure that the equipment grounding conductor is electrically continuous. It must be performed on all cord sets, receptacles which are not part of the permanent wiring of the building or structure, and on cord- and plug-connected equipment which is required to be grounded. This test may be performed using a simple continuity tester, such as a lamp and battery, a bell and battery, an ohmmeter, or a receptacle tester.

The other test must be performed on receptacles and plugs to ensure that the equipment grounding conductor is connected to its proper terminal. This test can be performed with the same equipment used in the first test.

These tests are required before first use, after any repairs, after damage is suspected to have occurred, and at 3-month intervals. Cord sets and receptacles which are essentially fixed and not exposed to damage must be tested at regular intervals not to exceed 6 months. Any equipment which fails to pass the required tests shall not be made available or used by employees.

Safety and Health Program Management Guidelines

Effective management of worker safety and health protection is a decisive factor in reducing the extent and severity of work-related injuries and illnesses and their related costs. To assist employers and employees in developing effective safety and health programs, OSHA published recommended Safety and Health Program Management Guidelines (*Federal Register* 54 (18): 3908-3916, January 26, 1988). These voluntary guidelines apply to all places of employment covered by OSHA.

The guidelines identify four general elements that are critical to the development of a successful safety and health management program:

- Management commitment and employee involvement,
- Worksite analysis,
- Hazard prevention and control, and
- Safety and health training.

The guidelines recommend specific actions under each of these general elements to achieve an effective safety and health program. A single free copy of the guidelines can be obtained from the U.S. Department of Labor OSHA/OICA Publications, P.O. Box 37535, Washington, DC 20013-7535, by sending a self-addressed mailing label with your request.

State Programs

The *Occupational Safety and Health Act of 1970* encourages states to develop and operate their own job safety and health plans. States with plans approved under section 18(b) of the OSH Act must adopt standards and enforce requirements that are at least as effective as federal requirements. There are currently 25 state plan states: 23 of these states administer plans covering both private and public (state and local government) employees; the other states, Connecticut and New York, cover public sector employees only. OSHA-approved plan states must adopt safety and health standards comparable, but not necessarily identical to, the federal one within 6 months of a federal standard's promulgation. Until a state standard is promulgated,

OSHA provides interim enforcement assistance, as appropriate, in those states. A listing of approved state plan states appears at the end of this publication.

Consultation Services

Consultation assistance is available on request to employers who want help in establishing and maintaining a safe and healthful workplace. Largely funded by OSHA, the service is provided at no cost to the employer. Primarily developed for smaller employers with more hazardous operations, the consultation service is delivered by state government agencies or universities employing professional safety consultants and health consultants. Comprehensive assistance includes an appraisal of all mechanical, physical work practice, and environmental hazards of the workplace and all aspects of the employer's present job safety and health program.

The program is separate from OSHA's inspection efforts. No penalties are proposed or citations issued for any safety or health problems identified by the consultant. The service is confidential.

For more information concerning consultation assistance, see the list of consultation projects at the end of this publication.

Voluntary Protection Programs

Voluntary Protection Programs (VPPs) and onsite consultation services, when coupled with an effective enforcement program, expand worker protection to help meet the goals of the OSH Act. The three VPPs—Star, Merit, and Demonstration—are designed to recognize outstanding achievement by companies that have successfully incorporated comprehensive safety and health programs into their total management system. They motivate others to achieve excellent safety and health results in the same outstanding way, and they establish a cooperative relationship among employers, employees, and OSHA.

For additional information on VPPs and how to apply, contact the OSHA Area or Regional Office listed at the end of this publication.

Training and Education

OSHA's area offices offer a variety of informational services, such as publications, audiovisual aids, technical advice, and speakers for special engagements.

OSHA's Training Institute in Des Plaines, IL., provides basic and advanced courses in safety and health for federal and state compliance officers, state consultants, federal agency personnel, and private sector employers, employees, and their representatives.

OSHA also provides funds to nonprofit organizations, through grants, to conduct workplace training and education in subjects where OSHA believes there is a lack of workplace training. Grants are awarded annually, with a 1-year renewal possible. Grant recipients are expected to contribute 20 percent of the total grant cost.

For more information on grants, training, and education, contact the OSHA Training Institute, Office of Training and Education, 1555 Times Drive, Des Plaines, IL 60018, (847) 297-4810, Fax (847) 297-4874. For further information on any OSHA program contact your nearest OSHA area or regional office listed at the end of this publication.

The OSHA Training Institute also has established OSHA Training Education Centers to address the increased demand for its courses from the private sector and from other Federal agencies. These centers are nonprofit colleges, universities, and other organizations that have been selected after a competition for participation in the program.

Electronic Information

Internet—OSHA standards, interpretations, directives, technical advisors, compliance assistance, and additional information are now on the World Wide Web at <http://www.osha.gov/>.

CD-ROM—A wide variety of OSHA materials, including standards, interpretations, directives, and more, can be purchased on CD-ROM from the U.S. Government Printing Office. To order, write to the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 or telephone (202) 512-1800. Specify OSHA Regulations, Documents, and Technical Information on CD-ROM

(ORDT), GPO Order No. S/N 729-013-00000-5. The price is \$43 per year (\$53.75 foreign); \$17 per single copy (\$21.25 foreign).

Emergencies

For life-threatening situations only, call (800) 321-OSHA. Complaints will go immediately to the nearest OSHA area or state office for help.

For further information on any OSHA program, contact your nearest OSHA area or regional office listed at the end of this publication.

Employer Must Provide:

- Written Description of Program
- Competent Person to Implement the Program
- Inspection and Testing
- Records of Test Results

Inspections

- **Frequency of Inspections:**
 - Before each day's use.
- **Visual inspection of the following equipment is required:**
 - Cord sets.
 - Cap, plug and receptacle of cord sets.
 - Equipment connected by cord and plug.
- **Exceptions:**
 - Receptacles and cord sets that are fixed and not exposed to damaged.

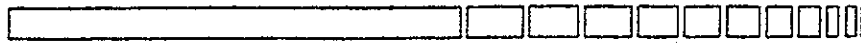
Tests

- **Frequency of tests:**
 - Before first use.
 - After repair and before placing back in service.
 - Before use after suspected damage.
 - Every 3-months except that cord sets and receptacles exposed to damage must be tested at regular intervals not to exceed 6 months.
- **Conduct tests for:**
 - Continuity of equipment of grounding conductor.
 - Proper terminal connection of equipment grounding conductor.

XXXI

CAM Builders Safety Program


Shocking



- Direct contact with live wire
- Crane boom with power line
- Materials hit power line
- Ladder contact with power line

CAM Builders Safety Program

Request for Assistance in...



Preventing Electrocutions During Work with Scaffolds Near Overhead Power Lines

NIOSH ALERT: August 1991
DHHS (NIOSH) Publication No. 91-110

WARNING!

Workers may be electrocuted when erecting, moving, or working from metal or conductive scaffolds near overhead power lines.

The National Institute for Occupational Safety and Health (NIOSH) requests assistance in preventing electrocutions of workers who contact overhead power lines when erecting or moving scaffolds, or when using conductive tools or materials from scaffolds. Recent NIOSH investigations conducted under the Fatal Accident Circumstances and Epidemiology (FACE) Program suggest that many employers, contractors, and workers may be unaware of the hazards of working with scaffolds near uninsulated overhead power lines.

This Alert describes 13 deaths that occurred in six separate incidents when workers erected or moved scaffolds that came into contact with energized, overhead power lines, or when they contacted overhead power lines while using conductive tools or materials from scaffolds. To prevent such electrocutions, the recommendations in this Alert should be followed by every employer, manager, supervisor, and worker where scaffolds and conductive tools or materials are used near overhead power lines. Editors of appropriate trade journals, safety and health officials, and other persons (especially those in the building trades) are requested to bring this Alert to the attention of employers, contractors, and workers.

BACKGROUND

When scaffolds, conductive tools, or other materials contact overhead power lines (see Figure 1), workers receive serious and often fatal injuries. Data from the NIOSH National Traumatic Occupational Fatalities (NTOF) data base indicate that nearly 6,500 traumatic work-related deaths occur each year in the United States; an estimated 7% of these fatalities are electrocutions [NIOSH 1991]. The NTOF data base also shows that from 1980 through 1986, at least 25 deaths resulted when workers contacted overhead power lines while erecting or moving scaffolds or while using conductive tool on scaffolds.

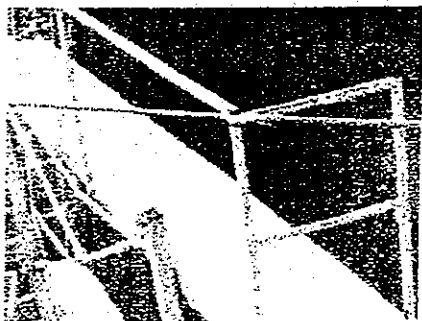


Figure 1. Metal scaffold contacting an overhead power line.

A review of the NTOF data has revealed that many occupational groups (e.g., brickmasons, carpenters, painters, construction laborers, and plasterers) are at risk of electrocution because their jobs involve working from scaffolds near overhead power lines [NIOSH 1991]. Through the FACE program, NIOSH investigated 13 scaffold-related electrocutions occurring over a 39-month period (June 1986 through September 1989). Because the FACE program is active in only 11 states, these fatalities represent only a small proportion of the scaffold-related electrocutions that occur each year in the United States.

CURRENT OSHA REGULATIONS

Current Occupational Safety and Health Administration (OSHA) regulations for the construction industry require employers to do the following:

- Instruct each worker to recognize and avoid unsafe conditions [29 CFR* 1926.21(b)(2)]
- Provide prompt medical attention in case of serious injury [29 CFR 1926.50]
- Advise workers exposed to electrical hazards and protect against electric shock by de-energizing the circuit or by guarding it effectively with insulation or other means [29 CFR 1926.416(a)(1) and (a)(3)]
- Lock panels (scaffold sections or tiers) together vertically with pins or other equivalent means where uplift (separation of panels) may occur [29 CFR 1926.451(d)(6)]

OSHA has proposed revisions to the current safety regulations to prevent workers from placing scaffolds where they might contact overhead power lines or other energized circuits [51 Fed. Reg. 42706 (1986)]. These proposed regulations require that the following minimum clearances be maintained between scaffolds and exposed, energized power lines:

- 2 feet for insulated power lines of less than 300 volts
- 10 feet for insulated power lines of 300 volts or more and for all uninsulated power lines

CASE REPORTS

As part of the FACE Program, NIOSH investigated 13 electrocutions in six incidents that occurred between June 1986 and September 1989. Each incident involved electrical contact with conductive tools or materials used by workers on scaffolds, or workers who erected or moved scaffolds near overhead power lines.

Case No. 1--Two Fatalities

On June 17, 1986, a 28-year-old painter and a 33-year-old carpenter were painting church windows from a tubular, welded-frame scaffold approximately 25 feet high and mounted on rubber casters. After the workers had completed one side of the church, they attempted to move the scaffold to another location to continue painting. The workers passed the scaffold under a 12,000-volt power line that was approximately 30 feet above ground level. They then changed direction and tried to pass the scaffold under the same power line at a point that was only 24 feet above ground level. The scaffold contacted one phase of the power line, providing a path to the ground for the electric current. The two workers grasping the scaffold were electrocuted [NIOSH 1986e].

Case No. 2--One Fatality

On August 27, 1986, a company owner and six workers were painting a concrete silo. A 5- by 7-foot tubular, welded-frame scaffold was erected to reach the top of the silo approximately 6 feet across from a 7,200-volt power line. Workers were using 8-foot aluminum poles with rollers to paint the side of the silo. A 19-year-old laborer who was painting from the scaffold pulled the aluminum pole back onto the scaffold to load more paint onto the roller. In doing so, he contacted the power line with the aluminum pole and was electrocuted [NIOSH 1986g].

Case No. 3--Four Fatalities

On October 31, 1986, a crew of four painters (aged 56, 37, 37, and 31) completed painting one side of a three-story structure. The crew was using a five-tier, tubular, welded-frame scaffold mounted on 5-inch, rubber-clad aluminum wheels. The painters and the crew chief attempted to move the 28.5-foot scaffold to the other side of the structure. The scaffold contacted one phase of a 12,000-volt power line that was approximately 27.5 feet above the ground. The contact created a path to the ground for the electric current. The four painters were electrocuted and the crew chief was severely burned [NIOSH 1986a].

Case No. 4--One Fatality

On November 24, 1986, seven employees of a masonry company were erecting a brick wall from a tubular, welded-frame scaffold approximately 24 feet high. The scaffold had been constructed approximately 21 inches across from a 7,620-volt power line. A laborer carried a piece of wire reinforcement (10 feet long by 8 inches wide) along the top section of the scaffold and contacted the power line with it. The laborer, who was wearing leather gloves, received an electric shock and dropped the wire reinforcement, which fell across the power line and simultaneously contacted the metal rail of the scaffold, energizing the entire scaffold. A 20-year-old bricklayer standing on the work platform in contact with the main scaffold was electrocuted [NIOSH 1986f].

Case No. 5--Two Fatalities

On June 5, 1987, a seven-tier, tubular, welded-frame scaffold (31 feet high) was erected to paint a 33-foot-high sign at the entrance of a new shopping mall. After the sign had been partially painted, the scaffold was moved to allow concrete to be placed in the area around the sign. The scaffold was positioned approximately 10 feet horizontally from a 13,750-volt overhead power line. Several days later,

the crew of seven workers (carpenters, laborers, and painters) were instructed to replace the scaffold and finish painting the sign. The crew positioned themselves around the scaffold and attempted to lift it approximately 5 inches onto the newly constructed concrete pad. As they were lifting the scaffold, the top section partially separated from the adjoining section, toppled over, and contacted the power line. A 28-year-old carpenter and a 31-year-old laborer were electrocuted. The other five workers were hospitalized with electrical burns [NIOSH 1987b].

Case No. 6--Three Fatalities

On September 25, 1989, six workers were using a mobile, elevated work platform to install aluminum siding on a warehouse under construction. The platform measured 25.5 feet from ground level to the top guardrail. Approximately 3 days before the incident, the crew had passed the platform under a 69,000-volt overhead power line located 34 feet above the ground. On the day of the incident, the crew tried to pass the platform under the same power line at a different location where the power line was only 27 feet above ground level. In addition, fill dirt brought into this location for landscaping caused the ground level to slope upward approximately 1.5 feet. As the crew passed the platform under the power line, the top guardrail contacted the bottom phase of the power line. Three crew members (a 30-year-old laborer and two steel workers aged 34 and 38) were electrocuted; three others were seriously burned [NIOSH 1990b].

CONCLUSIONS

Many employers, contractors, and workers may be unaware of the hazards of working with scaffolds near overhead power lines. If the current and the proposed OSHA regulations had been followed, particularly with regard to minimum clearances, the electrocutions reported here could have been prevented.

RECOMMENDATIONS

The following precautions should be taken to prevent electrocutions and injuries resulting from contact between overhead power lines and conductive tools, materials, or scaffolds:

- Employers, contractors, and workers should comply with the current OSHA regulations for working with scaffolds near energized power lines [29 CFR 1926.21(b)(2), 1926.50, 1926.416(a)(1), 1926.416(a)(3), 1926.451(d)(6)].
- In accordance with the proposed OSHA regulations [51 Fed. Reg 42706 (1986)], scaffolds should not be used or moved within the following minimum clearance distances from exposed, energized power lines:
 - 2 feet for insulated power lines of less than 300 volts
 - 10 feet for insulated power lines of 300 volts or more and for all uninsulated power lines
- Employers should review existing safety programs and revise them where needed to address work with scaffolds around power lines.
- Employers should develop and implement safety programs where none exist. Comprehensive safety

programs should include, but not be limited to, safety training in the hazards of scaffolds and power lines, with special emphasis on avoiding inadvertent contact.

- Managers and workers should conduct initial and daily surveys at the worksite before beginning any job; managers should then implement appropriate control measures and training to address hazards identified at the site.
- Employers should inform workers about the hazards of erecting, moving, or working from scaffolds near overhead power lines or other energized circuits. These instructions should emphasize that most overhead, high-voltage power lines are not insulated and that workers should assume that such lines are not insulated if there is any doubt.
- Employers should notify the utility company when scaffolds must be erected or moved in areas with overhead power lines where the required clearances cannot be maintained. In such situations, utility companies should de-energize the power lines or cover them with insulating hoses or blankets before any work is initiated.
- Before a scaffold is erected or moved, employers should ensure that workers consider the following factors:
 - Distance from overhead power lines
 - Vertical clearance between the ground and any sagging power lines
 - Scaffold height and weight
 - Wheel condition
 - Obstacles
 - Ground slope or changes in elevation that may alter clearance distance
 - Other ground or floor conditions
- Clearance between the power lines and scaffold should be monitored. If a scaffold is to be moved in the vicinity of overhead power lines, a competent worker should be assigned to observe the clearance and warn others if the minimum distance is not maintained.
- Electrically conductive tools or materials should not be used where they may contact overhead power lines. Nonconductive tools or materials should be substituted.
- Manufacturers should consider developing scaffolds made of nonconductive materials.
- Employers should establish procedures to be followed in emergencies (for example, if a scaffold contacts an electric power line, keep all unauthorized personnel away from the area).
- All employers and workers should be trained in cardiopulmonary resuscitation (CPR) [NIOSH 1986c, 1989a, 1989b, 1990a].
- Manufacturers or purchasers of scaffolds should affix conspicuous decals to each scaffold section warning about the hazards of contacting overhead power lines.

NIOSH urges safety and trade associations, electric utility companies, product manufacturers, and OSHA

State consultative services to bring these recommendations to the attention of all employers and workers using scaffolds.

ACKNOWLEDGMENTS

Richard W. Braddee, Division of Safety Research, NIOSH, was the principal author of this Alert.

Comments or questions about this document should be directed to Thomas R. Bender, M.D., Director, Division of Safety Research, National Institute for Occupational Safety and Health, 944 Chestnut Ridge Road, Morgantown, West Virginia 26505-2888; telephone (304) 291-4595.

Further information about electrical hazards is available in seven previously published NIOSH Alerts [NIOSH 1984, 1985, 1986b, 1986c, 1987a, 1989a].

[signature]

J. Donald Millar, M.D., D.T.P.H. (Lond.)

Assistant Surgeon General

Director, National Institute for Occupational Safety and Health
Centers for Disease Control

NOTE

* Code of Federal Regulations. See CFR in references. [\[Return to main text\]](#)

REFERENCES

29 CFR 1926.21(b)(2). Code of Federal regulations. Washington, DC: U.S. Government Printing Office, Office of the Federal Register.

29 CFR 1926.50. Code of Federal regulations. Washington, DC: U.S. Government Printing Office, Office of the Federal Register.

29 CFR 1926.416(a)(1), (3). Code of Federal regulations. Washington, DC: U.S. Government Printing Office, Office of the Federal Register.

29 CFR 1926.451(d)(6). Code of Federal regulations. Washington, DC: U.S. Government Printing Office, Office of the Federal Register.

51 Fed. Reg. 42706 [1986]. Occupational Safety and Health Administration: safety standards for scaffolds used in the construction industry; proposed rulemaking.

Lockout/Tagout (29 CFR 1910.147)



- Written program
- Provide training
- Differentiate between authorized and affected employee



HYDRAULICS, COMPRESSED AIR, ELECTRICAL ETC



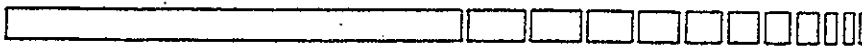
ANYTHING THAT PROVIDES ENERGY

Lockout



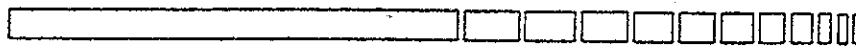
- Blocking flow of energy from source to a piece of equipment

Tagout



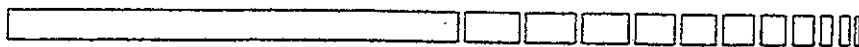
- Sign or tag that gives warning "Do Not Operate"

How to Survive an OSHA Inspection



- Focused Inspection
- Attitude - Proactive (OF SUPERINTENDENT) (WILLINGNESS TO CORRECT)
- Record Keeping -
- LWDIR rate (LOST WORK DAY INCIDENT RATE)
SHOULD BE ON JOB (BT OSHA 200 LAW)

Focused Inspection

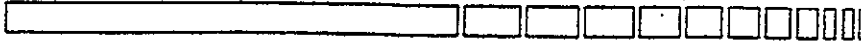


- Falls
 - Struck by
 - Caught in Between
 - Electrical
 - HEAT STRESS
- ~~TELL THEM YOUR COMPETENT PERSON (NOT THE OWNER OR PROJECT MAN)~~

CAM Builders Safety Program

HELP TO A
GC + IS ~~ASO~~ HIGHER LEVEL - STANDARD OF CARE.

Penalties exceeding \$5,000



- Scaffolding
- Excavations
- General Duty clause
- Safety training & education
- Cranes & derricks
- Safety nets
- Floor Openings
- Protective Equipment
- Power distribution

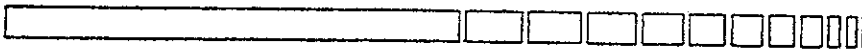
■ ANATOMY OSHA FINE \$ 7,000⁰⁰10.
■ GENERAL CAN BE FOUND FAULT FOR
SUBCONTRACTOR

SAFETY PROGRAMS

GC + IS HELP TO A HIGHER STANDARD
OF CARE.

GROSS NEGLIGENCE: COULD RESULT IN PIERCING
THE CORPORATE VEIL.

Perception



- People react according to their perceptions
- Behavioral factors are elements of Safety Programs

Example - Progressive Discipline

Safety Enforcement Procedures

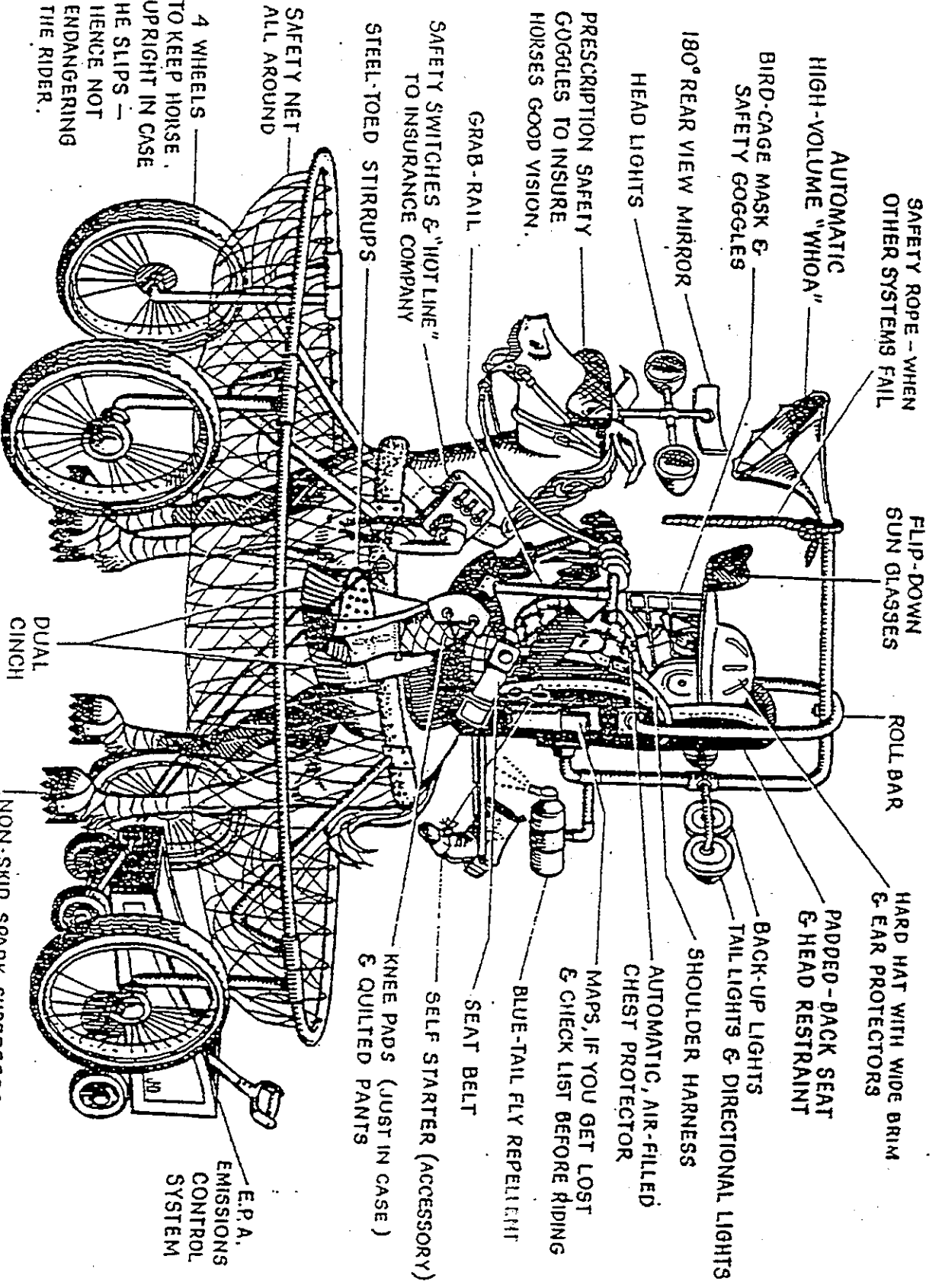
The purpose of these enforcement procedures is to create safeguards for every employee. It is our intent to create safety awareness and the willingness to perform the tasks of our work safely and within the guidelines of the company safety policy.

1. The Safety Director, or other Company manager designated by the President will carry out regular safety inspections.
2. During these inspections, the Safety Director or designated manager has the authority to endorse the Company Safety Program by citing employees for violations.

**IF A VIOLATION IS FOUND, THE FIRST PRIORITY WILL BE TO
CORRECT THE VIOLATION.**

3. The types of violations and penalties for employee citations are as follows:
 - a. Serious Violations: An unsafe act by any employee that causes or could cause serious injury, a major accident, or death.
 - b. Non-Serious Violations: An unsafe act by any employee that causes or could cause personal injury requiring medical treatment and/or minor property damage.
 - c. Simple Violations: Any unsafe condition or act that does not meet the above criteria for serious or non-serious violations.
 - d. **ANY EMPLOYEE CITED FOR A SAFETY VIOLATION WILL BE SUBJECT TO DISCIPLINARY ACTION THAT MAY INCLUDE, BUT IS NOT LIMITED TO THE FOLLOWING:**

Simple Violations	First Offense	- Verbal warning
	Second Offense	- Written warning
	Third Offense	- One day suspension and employment review
	Fourth Offense	- Dismissal
Non-Serious Violations	First Offense	- Written warning
	Second Offense	- One week suspension and employment review
Serious Violations	First Offense	- One week suspension and employment review
	Second Offense	- Dismissal



Cowboy after O.S.H.A.

U.S. Department of Labor

Occupational Safety and Health Administration
Ribault Building - Suite 227
1851 Executive Center Drive
Jacksonville, Florida 32207-2350
Telephone: 904-232-2895
Facsimile: 904-232-1294



Reply to the Attention of the Area Director

Dear Employer:

Under a law passed by Congress in 1996, the Small Business Administration (SBA) has established an SBA Ombudsman and SBA Regional Fairness Boards to investigate small business complaints about federal agency enforcement actions.

If you are a small business and believe you have been treated unfairly by the Occupational Safety and Health Administration (OSHA), you may file a written, signed complaint with the Ombudsman at:

SBA Ombudsman
300 South Riverside Plaza
Suite 1975 South
Chicago, IL 60606-6617

or call Toll Free: 1-888-REGFAIR.

NOTE: FILING A COMPLAINT WITH THE SBA OMBUDSMAN DOES NOT AFFECT ANY OBLIGATION YOU MAY HAVE TO COMPLY WITH AN OSHA CITATION OR OTHER ENFORCEMENT ACTION. NOR DOES IT MEAN YOU NEED NOT TAKE OTHER AVAILABLE LEGAL STEPS TO PROTECT YOUR INTERESTS.

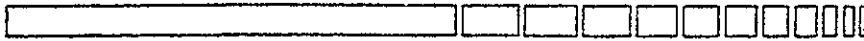
Your support in occupational safety and health is appreciated.

Sincerely,

JAMES D. BORDERS
Area Director

CAM Builders Safety Program

Record keeping



- OSHA 200 Log (11X17 POSTED ON JOBS)
- OSHA Poster
- Programs - training IN ADDITION TO POUCH (OTHER ~~FIELD~~ EXAMPLES: FALL TRAINING PROGRAM)
- Competent trained person (CAN'T BE MIE) - OWNERS
- MSDS Sheets - ON JOBS



Reply to the Attention of: Area Director

FREEDOM OF INFORMATION ACT Opportunity to Designate Records

You are being inspected by an agent of the Occupational Safety and Health Administration (OSHA). During this inspection, the OSHA representative may be requesting various records from you. Some of these records will be included in the inspection case file. All OSHA inspection case files are subject to disclosure to the public under the Freedom of Information Act.

The Freedom of Information Act (FOIA) generally provides that any person has a right, enforceable in court, of access to federal agency records, except to the extent that such records (or portions thereof) are protected from disclosure by one of nine exemptions or by one of three special law enforcement record exclusions.

One of the disclosure exemptions of the FOIA protects "trade secrets and commercial or financial information obtained from a person [that is] privileged or confidential." This exemption affords protection to those submitters who are asked to furnish trade secrets, commercial or financial information to the government by safeguarding them from the competitive disadvantages that could result from disclosure. The exemption covers two broad categories of information in federal agency records: (1) trade secrets; and (2) information which is (a) commercial or financial, and (b) obtained from a person, and (c) privileged or confidential.

When you provide records to OSHA, you are hereby given the opportunity to designate the records or specific information as confidential commercial information as discussed above. This designation must be in writing, and your claim of confidentiality must be supported by you or an officer or authorized representative of yours that the identified information is, in fact, confidential commercial or financial information and has not been disclosed to the public. You should also state why the information is confidential commercial information.

If you do not take this opportunity to designate or mark the records as confidential commercial information, it will be assumed that the information or records may be disclosed when they have been requested under the FOIA.

If you have any questions or need more information regarding this matter, you should discuss it further with the OSHA representative or call the area director at the OSHA office listed above.

CAM Builders Safety Program

Consultation Services for the Employer



U.S. Department of Labor
Occupational Safety and Health Administration

OSHA 3047
1997 (Revised)

CAM Builders Safety Program

Introduction	1
Good News in an Attractive Package	1
Free	1
Smaller Businesses	2
No Penalty	2
Confidential	2
Full Service Consultation	2
SHARP (Safety and Health Achievement Recognition Program)	2
Benefits	3
Consultation in Action: Five Steps to Success	3
Requesting Assistance	3
The Opening Conference	4
The Walkthrough	5
The Closing Conference	6
Hazard Correction After the Visit	6
Summary	7
Additional Information	8
Other Sources of OSHA Assistance	9
Safety and Health Program Management Guidelines	9
State Programs	9
Voluntary Protection Programs (VPP)	10
Training and Education	10
Electronic Information	11
Emergencies	11
OSHA Related Publications	12
OSHA Consultation Project Directory	13
States with Approved Plans	21
OSHA Area Offices	24

Introduction

Are you an employer who wants to protect your employees' safety and health, but who needs some expert assistance? Are you concerned that your business cannot afford the cost of professional help? The Occupational Safety and Health Administration (OSHA) is sensitive to the difficulties faced by employers who are genuinely concerned with their employees' safety and health and who wish to comply with OSHA regulations. Therefore, in addition to vigorously enforcing the regulations issued to protect Americans on-the-job, the agency operates various voluntary compliance programs that address the need for employer assistance. Foremost among these programs is OSHA Consultation, a free source of vital information and technical assistance. You may be eligible for this free consultation service, which helps employers evaluate and prevent the hazardous workplace conditions and work practices that can cause injuries and illnesses.

OSHA Consultation is a broad network of occupational safety and health services funded primarily by federal OSHA but delivered by the 50 state governments, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands. The states offer the expertise of highly qualified occupational safety and health professionals to employers who request help to establish and maintain a safe and healthful workplace. The comprehensive assistance that is available goes well beyond the minimum requirements of OSHA regulations. It includes an appraisal of all mechanical systems, physical work practices, and environmental hazards of the workplace, and all aspects of the employer's present job safety and health program. Assistance is also available to employers wishing to develop and implement an effective workplace safety and health program that corrects and continuously addresses safety and health concerns.

Good News in an Attractive Package

Free - The price is right! OSHA Consultation assistance is *free of charge* to eligible employers. Federal OSHA, in partnership with the states, designed and funded this program to provide expert advice to more hazardous, smaller businesses that want help in establishing a safe and healthful workplace. *You, the employer, pay absolutely nothing.*

Smaller Businesses - OSHA Consultation is specifically designed for small and medium-sized businesses — *no more than 250 employees* — in high-hazard industries or involved in hazardous operations. Small employers sometimes find it difficult to identify their worksite's hazards and to interpret complex federal and state safety and health standards. Moreover, small employers often lack the financial resources to hire outside private consultants to help them meet their obligations under the *Occupational Safety and Health Act of 1970* and state workplace safety and health laws. For these reasons, small employers receive priority for consultation services.

No Penalty - The fact that the service is funded by OSHA is no reason for concern. *No citations* are issued for hazards identified by the consultant, and *no penalties* are ever proposed.

Confidential - OSHA Consultation is a *confidential service* that is completely separate from OSHA enforcement operations. Your request for consultation will not trigger a federal or state OSHA inspection. The consultant will not provide the owner's name, the company's name, or any information about the workplace to OSHA's inspection staff, so long as the employer agrees to correct in a timely manner any serious hazards uncovered during the consultation visit. Only if an employer fails or refuses to eliminate or control a serious hazard or imminent danger situation within the agreed upon time frames will OSHA enforcement staff be notified. Such instances are very rare.

Full Service Consultation - A full range of consultation services is available in all states, and OSHA encourages employers to request full service consultation. Full service consultation covers all working conditions and includes assistance in establishing effective workplace safety and health programs, with an emphasis on *preventing worker injuries and illnesses*. Assistance may also include training and education for you, your supervisors, and your other employees. *Limited service consultation* also is available. You have the option of limiting the consultation visit to a discussion of fewer, more specific problems.

SHARP (Safety and Health Achievement Recognition Program) - If you take special pride in your workplace and think it

deserves special recognition for joint employer-worker safety and health efforts, you'll want to look at the SHARP program. *Special recognition*, in the form of a certificate issued by OSHA granting a *one-year exemption* from OSHA general schedule inspections, may be awarded to eligible employers who receive a full service consultation visit, correct all identified hazards, and demonstrate that an effective safety and health program is in operation. SHARP recognizes employers who operate exemplary safety and health programs that result in the immediate and long-term prevention of job-related injuries and illnesses.

Benefits - First and foremost, your increased understanding of workplace hazards and remedies will enable you to protect your workers from injury and illness. You may even prevent loss of life at your worksite. With this knowledge, you also will be in a better position to comply with federal and state job safety and health requirements. Moreover, management experts believe that the company with a well-managed safety and health program enjoys better management overall. An effective safety and health program not only promotes the conservation of human lives and resources, but also can improve employee morale and increase productivity and product quality. In addition to direct savings from lowered injury and illness rates, you can expect financial savings from decreased workers' compensation costs, fewer product losses, and reductions in lost work time. You will find that effective workplace safety and health management is *good business* because the cost of accidents can far exceed the cost of prevention.

Consultation in Action: Five Steps to Success

Requesting Assistance - How do you begin this process? Consultation starts with your request, which may be a telephone call, a letter, or a personal contact. (See list of consultation projects at the end of this publication.) The consultation office will determine the priority of your request for services according to the nature and size of your workplace. More hazardous sites receive top priority. The consultant assigned to your request will contact you to set up a visit date based on the priority assigned to it, your work schedule, and the time needed for the consultant to prepare adequately to assist you. The consultant may encourage you to

include within the scope of your request all working conditions and the site's entire safety and health program. You may choose, however, to limit the consultation visit to a discussion of fewer, more specific problems. During the visit, if the consultant observes hazards that are outside the scope of the request, he/she must inform you, and you must correct any hazards that OSHA deems serious or that pose an "imminent danger" to employees.

Most requests for OSHA Consultation assistance can best be handled by a worksite visit. Some services, however, such as safety and health reviews of proposed or new production processes, or educational workshops delivered to groups of employers and workers, may be conducted away from the worksite.

The Opening Conference - Upon arriving at the worksite for a scheduled visit, the consultant will briefly review with you the ground rules of the visit, including your obligation to protect employees in the event that serious hazardous conditions are identified. The consultant's right to privately interview individual employees and to speak with workers at their work stations, explained during the initial contact, will be reviewed again. You must agree to permit such contact before the visit may proceed.

OSHA's experience with thousands of worksites, from the very best to the very worst, has taught us the value of extensive employee involvement in all aspects of workplace safety and health. Informed and alert employees who are actively involved in protecting themselves and their fellow workers can more effectively cooperate with you to identify, analyze, and correct potential hazards. Therefore, the consultant will strongly encourage you to allow employee participation at each step of the consultative visit, from opening conference to site walkthrough and closing conference. In unionized work areas, the employer must afford employee representatives the opportunity to participate fully in the consultation visit, from start to finish. Employers at unionized sites must agree to this involvement before the consultant's walkthrough of the worksite may occur. If a written safety and health program exists, the consultant will want to review this and other related documents.

The Walkthrough - During the walkthrough, you will accompany the consultant as he/she either studies your entire operation or focuses on those areas, conditions, or hazards for which you have requested assistance. Other safety and health hazards that may not be covered by current federal or state OSHA standards, but that still pose a risk to safety or health, also will be discussed.

The consultant will conduct a complete review of company operations from the perspective of safety and health. This includes looking for physical hazards by examining the structural condition of the building, the condition of the floors and stairs, and the exits and fire protection equipment. He/she will review the layout for adequate space in aisles and between machines and will check for proper control of electrical and mechanical hazards. The consultant will survey the controls used to limit worker exposure to occupational health hazards, including toxic and corrosive substances and especially air contaminants. He/she will check whether all necessary personal protective equipment is available and functioning properly, and whether employees know how to use

and care for this equipment. Attention will be given to problems associated with worker exposure to noise, vibration, extreme temperatures, lighting, or other environmental factors. The consultant will be interested in work practices, including general housekeeping and the use and maintenance of hand and portable power tools, as well as forklifts and other heavy equipment.

Throughout the walkthrough, the consultant will not merely note problems but also will discuss prevention and control and, if you request, may provide on-the-spot education and training for your employees and supervisory personnel. The consultant will want to discuss with both you and your employees aspects of safety and health management such as job training (including safety and health orientation and ongoing training), supervision, accountability for safety and health, equipment maintenance and repair, inspections, first-aid and emergency procedures, hazard reporting procedures and other means of communicating about safety and health, prevailing attitudes among managers and other workers, and current injury and illness data.

The consultant will offer advice and technical assistance for addressing each of the observed hazards within the framework of an effective safety and health program. Upon your request, he/she

will work with you to develop or improve a worksite safety and health program that addresses your site's particular needs and conditions.

The Closing Conference - Following the walkthrough, the consultant will meet with you in a closing conference. This session offers the consultant an opportunity to discuss safety and health measures that are already in place at your worksite and that are particularly effective, and also any practices that warrant improvement. The consultant may make suggestions, for example, concerning worker training, work practices, methods for holding supervisors and employees accountable for safety and health, and ways to promote safety and health. At this time, you and the consultant can discuss problems, possible solutions, and time frames for eliminating or controlling any hazards identified during the walkthrough. If the consultant believes it necessary, he/she will recommend other sources for specialized technical help.

In rare instances, the consultant may find an "imminent danger" situation during the walkthrough. If this occurs, the employer must take immediate action to protect all affected workers. If the consultant finds a hazard that is considered a "serious violation" under OSHA criteria, he/she will work with you to develop a mutually acceptable plan and schedule to eliminate or control that hazard. During this time, OSHA encourages you to advise all affected employees of the hazards, provide adequate interim protective measures, and to notify them when the hazards are ultimately corrected.

Hazard Correction After the Visit - Following the closing conference, the consultant will send you a written report explaining the findings and confirming any correction periods to which you have agreed. The report also will include suggested means or approaches for eliminating or controlling hazards as well as recommendations for making your safety and health program more effective. You are, of course, free to contact the consultant for additional assistance at any time.

The consultant may decide that a follow up visit to your worksite is needed to assure that any required corrections have been made or to provide continuing assistance.

Remember, consultation can go beyond the usual physical survey of the workplace that focuses on violations of federal or state OSHA standards. The consultant may point out work practices not yet covered by OSHA standards that are likely to cause illness or injury and may then advise and assist you in correcting them. The consultant may propose other measures that will improve your company's occupational injury and illness experience. For example, he/she may suggest that you conduct self-inspections, emphasize supervisory responsibility in promoting safety, identify safety and health training needs, alert your workers to hazards, and hold regular safety and health meetings with employees.

Summary

OSHA Consultation is a voluntary approach to designing safety and health in the workplace. By building upon labor-management participation in the onsite consultative survey, consultation can bring workers and employers together to develop and implement continuing programs to control hazards and prevent worker injuries and illnesses. Through such pooled resources and periodic, joint self-inspections, employers and employees together can work to make their jobsite a safer and more healthful environment.

OSHA Consultation provides several benefits, all at not cost to you, the employer. Onsite consultants **will do** the following:

- Help you recognize hazards in your workplace.
- Suggest approaches or options for solving a safety or health problem.
- Identify sources of help available to you if you need further assistance.
- Provide you with a written report that summarizes these findings.
- Assist you in developing or maintaining an effective safety and health program.
- Offer training and education for you and your employees at your workplace and, in some cases, away from the site.
- Under specified circumstances, recommend you for recognition by OSHA's SHARP program and a 1-year exemption from general schedule enforcement inspections.

Consultants will not:

- Issue citations or propose penalties for violations of federal or state OSHA standards.
- Routinely report possible violations to OSHA enforcement staff except for unabated serious conditions.
- Guarantee that any workplace will "pass" a federal or state OSHA inspection.

If you have requested the broadest form of assistance, full service consultation, by the completion of the process you will have received:

- An appraisal of all mechanical and environmental hazards and physical work practices.
- An appraisal of the present job safety and health program or the establishment of one.
- A conference to review findings.
- A written report of recommendations and agreements.
- Training and assistance with implementing recommendations.
- Follow up by the consultant to ensure that any required corrections have been made.

Take the first step toward building long-term cooperative safety and health management in your workplace. Talk to your State Consultation Program Office. Why not do it today? We are ready to serve you.

Additional Information

For more information about the benefits of consultation, contact your State Consultation Program, your OSHA Regional Office, or in States that operate their own worker safety and health program, the appropriate State agency. Phone numbers and addresses are listed in the back of this booklet. You can also find information about OSHA Consultation on OSHA's Home Page on the Internet (www.osha.gov).

CAM Builders Safety Program

FILENAME: ASSIST

KBL
08/24/95

OCCUPATIONAL SAFETY ASSISTANCE AT NO CHARGE

To assist Florida's employers in decreasing the incidence of injuries and illnesses in their workplaces, the Florida Department of Labor and Employment Security, Division of Safety, offers occupational safety and health education, training and consultation to both public and private sector employers. There is no charge to the employer for any of the division's services.

Services include classroom and on-site training, hazard identification, consultation on hazard correction, injury trend analysis, safety program development and implementation assistance, and workplace safety awards.

The division's private sector consultation programs, "7(c)(1) Consultation" and "State Case"

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The division's private sector consultation programs, "7(c)(1) Consultation," and "State Consultation and Program Development," have been designed to help private sector employers comply with federal occupational safety standards, not only preventing injuries, but also avoiding possible fines in case of an OSHA inspection. The state's programs are entirely separate from OSHA's enforcement activities. Moreover, through the 7(c)(1) Consultation Program (primarily funded by the federal government), an eligible employer can obtain a one year exemption from general scheduled OSHA inspections. Consultants working out of either program can also assist the employer in qualifying for a workers' compensation premium credit. Employer participation in these programs is voluntary; services are provided only at the employer's request.

For further information, or to request services or brochures and other information on occupational safety issues, call the division's Tallahassee Central Office 800/367-4378 (in Florida), 904/488-3044; or one of the division's five district offices:

Jacksonville	904/346-5180
Miami	305/470-5800
Orlando	407/893-3077
Tallahassee	904/922-0246
Tampa	813/930-7626

VI. Co-worker Safety (Addendum to version 2.0.3)

16. Addendum to Safety Rules For Workers Assigned To The Pump.

16.17

⚠ WARNING! When backing in ready mix trucks, use clear and concise hand signals (Figure 1 - addendum).

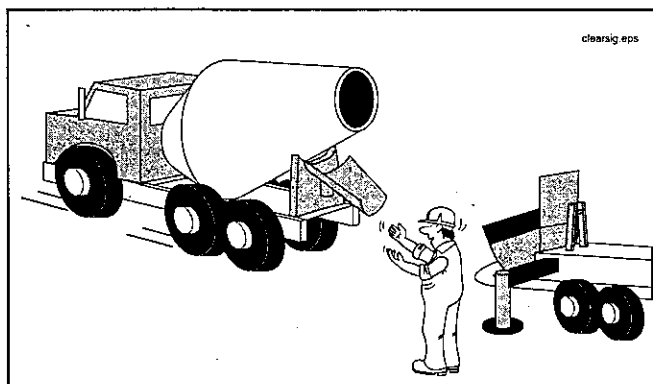


Figure 1 - addendum
Use clear and concise hand signals

16.18

⚠ WARNING! Do not allow the ready mix driver to put concrete in the pump hopper until the pump operator gives him the OK. Filling the hopper early can cause the pump to plug.

16.19

⚠ WARNING! Keep unauthorized personnel off of the pump.

16.20

⚠ WARNING! Never lift or remove the hopper grate for any reason (Figure 2 - addendum).



Figure 2 - addendum
Lifting hopper grate exposes the agitator and the concrete valve

16.21

WARNING! Do not remove the water box covers or grates (Figure 3 - addendum). If the water box covers must be removed for any reason, push an E-stop to prevent the pump from being operated until the covers are replaced.

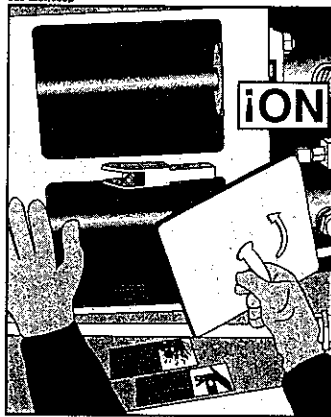


Figure 3 - addendum
Do not remove the water box covers

17.17

WARNING! The hose man should not hug the hose, but hold it with both hands, to allow the hose to move freely (Figure 4 - addendum).

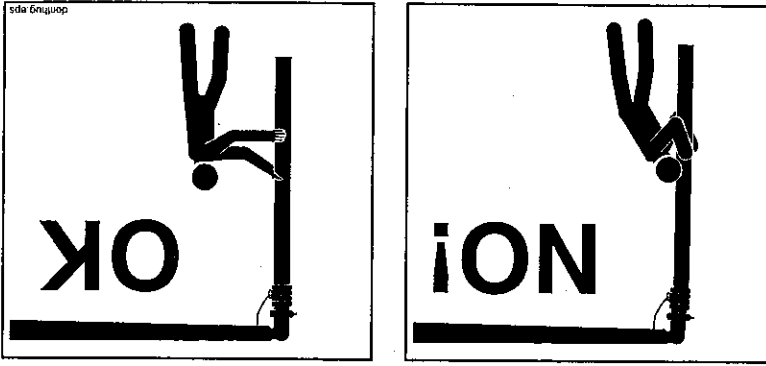


Figure 4 - addendum
Do not hug the boom hose

17.18

WARNING! Do not allow the boom hose to get lower than two feet above the deck to prevent the boom hose from hitting the feet of the hose man.

SAFETY MANUAL

17.19

- WARNING!** The hose man should not walk backwards (Figure 5 - addendum). Walking forward will allow him to see obstacles and avoid tripping.

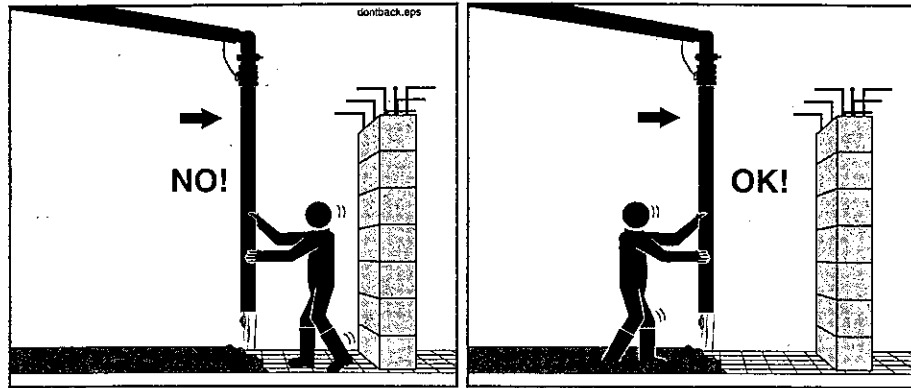


Figure 5 - addendum
Do not walk backwards, stay out of the path of the boom.

17.20

- WARNING!** The hose man should never position himself between the boom or boom hose and any fixed object like a wall or column (Figure 5 - addendum).

17.21

- WARNING!** When directing the hose or tremie pipe down into the wall, the hose man must keep his hands from coming between the clamp, hose, or pipe and any fixed object.

17.22

- WARNING!** Any time the boom will be in close proximity to obstacles such as buildings, trees, red iron, etc., a spotter must be used to warn the operator if he nears the obstruction.

17.23

- WARNING!** If the boom can contact overhead wires a spotter must be used to warn the operator if he nears the wires. (Figure 6 - addendum).

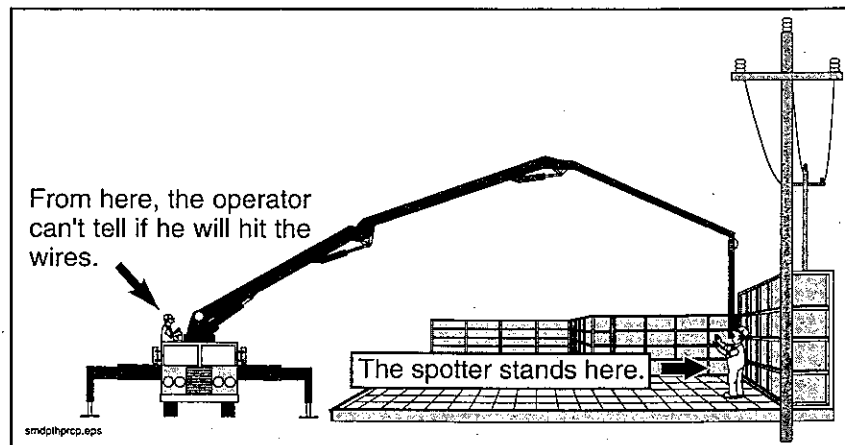
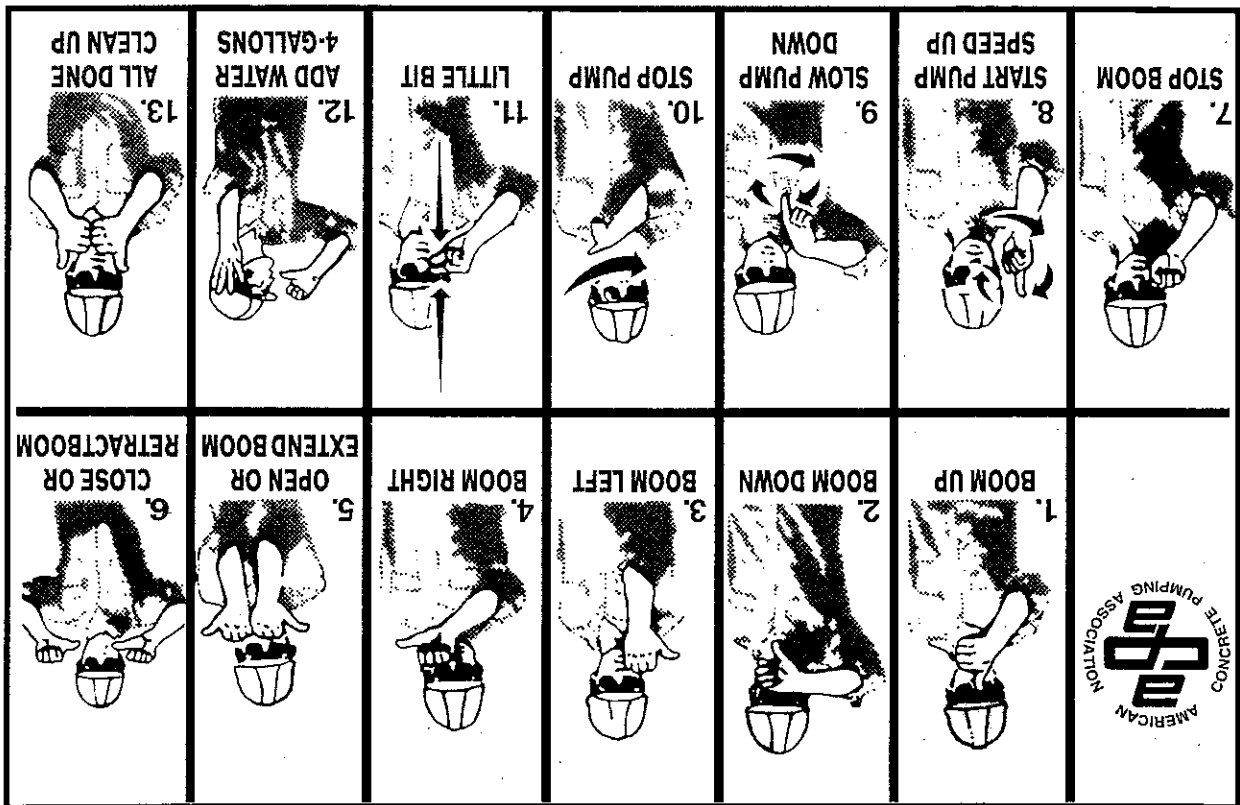


Figure 6 - addendum
Use a spotter near obstructions or wires

Figure 7 - addendum
ACPA recommended hand signals



- 17.24 **WARNING!** To avoid confusion and conflicting signals, only one person should signal the pump operator.
- 17.25 **WARNING!** Before the pour begins, the hose man, the operator and the spotter should agree on the hand signals (Figure 7 - addendum).

VI. Co-worker Safety

16. Safety Rules For Workers Assigned To The Pump.

- 16.1 **⚠ WARNING!** You must know how to stop the pump and boom. Have the operator show you the locations of the emergency stop switches.
- 16.2 **⚠ WARNING!** You should wear the same personal safety equipment as the operator. Goggles, hard hat, ear protection, and rubber gloves are especially important when working near the hopper (Figure 65).

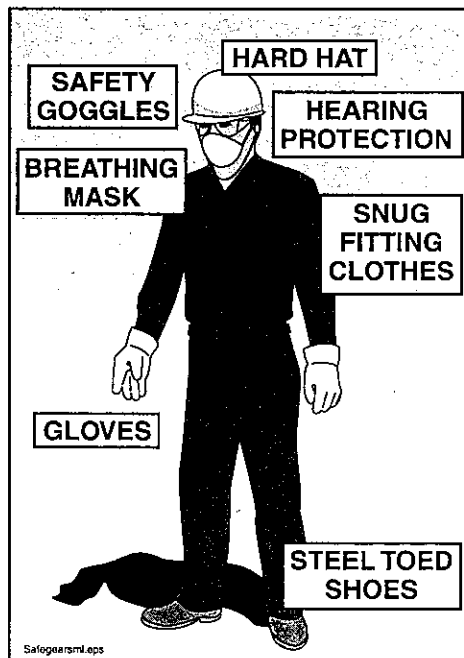


Figure 65

Wear the same protective clothing as the operator

- 16.3 **⚠ WARNING!** Crushing hazard. Never, ever position yourself between the ready mix truck and the pump! Stand to the side, where the driver can see you (Figure 66).

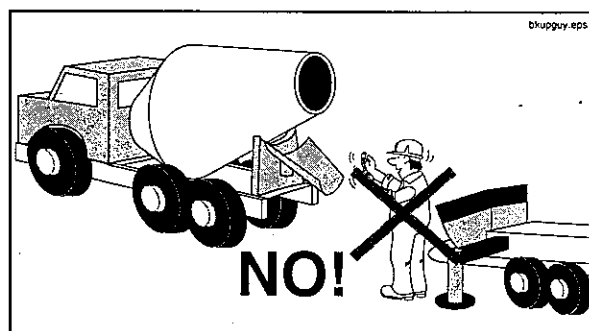


Figure 66

Never stand between the ready mix truck and the pump

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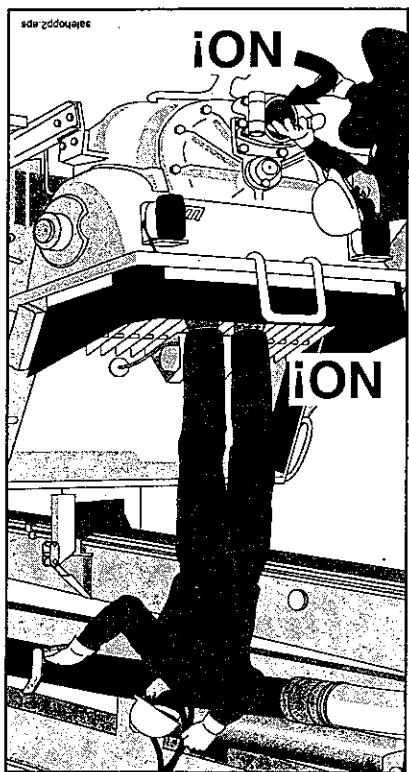
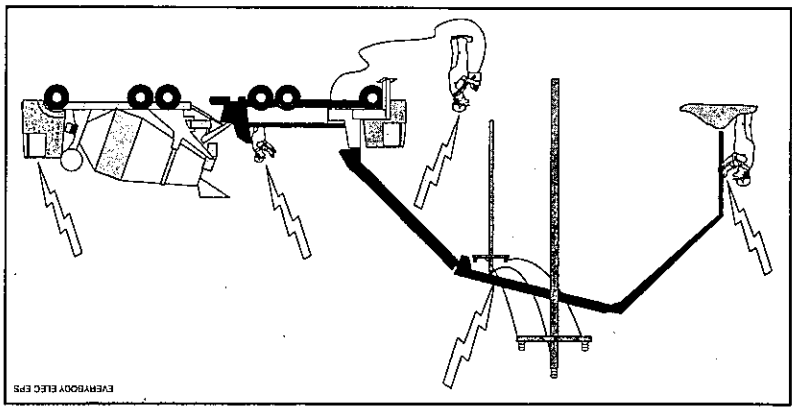


Figure 68
Never put your body in the machine!

WARNING! Crushing/amputation hazard! Never put your hands, feet, or any other body part into the water box, concrete valve, or hopper when the hydraulic system is operational or ready to operate! Never stand on the hopper grate! (See Figure 68.)

16.5

Figure 67
If the pump becomes energized, everything that touches the pump is also energized



DANGER! Electrocution hazard! If the pump or boom becomes energized with high voltage and you are in contact with any part of it, you are at risk of electrocution! You should monitor the movement of the boom and alert the operator if he allows the boom to come within 17 feet of an electrical wire. (See Figure 67.)

16.4

16.6

- ▲ **WARNING!** Mount or dismount the pump or truck using the *3 point rule*. One hand and two feet or two hands and one foot are to be in contact with a secure surface at all times (Figure 69).

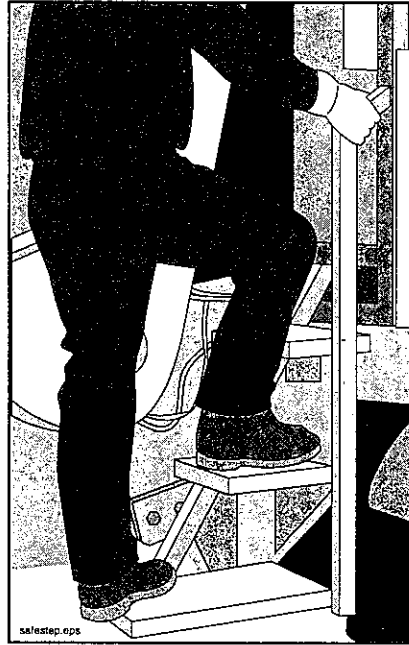


Figure 69
The 3 point rule

16.7

- ▲ **WARNING!** If you see foreign material that could create a blockage coming from the ready mix truck, alert the operator to stop the pump. Do not attempt to remove the material from the hopper or grate while the hydraulic system is ready to work. (See point 16.5 on page 58).

16.8

- ▲ **WARNING!** Do not operate the pump or boom unless you are also a trained operator and the regular operator has released the controls to you. **There must not be more than one operator at a time.** This does not apply to stopping the pump or boom if there is a need to do so.

16.9

- ▲ **WARNING!** Never allow the ready mix driver to clean out in the hopper, because it can create a blockage. (Water will wash the cement and fine sand from the course aggregate causing segregation).

16.10

- ▲ **WARNING!** Keep an eye on the movements of the boom, even when there are no electrical wires nearby. Alert the operator if he is nearing any obstruction or hazard. Where job site safety is concerned, two sets of eyes and ears are better than one.

- 16.11** **▲ WARNING!** Do not let the concrete level in the hopper become low! If air is sucked into the material cylinders, the pump will compress the air. Compressed air always poses a hazard as it is expelled from the hopper or the delivery pipeline (Figure 70). If air is taken into the material cylinders, take the following steps to minimize the hazard:
1. Stop the pump immediately. Hit the emergency stop button if that is the quickest way to stop the pump. There will be an expulsion of compressed air the next time the concrete valve shifts, which can be safely absorbed by filling the hopper with concrete.
 2. Alert the operator of the problem. It is his job to know the procedures for safe removal of air from the pump and delivery system. These procedures include pumping in reverse for a couple of strokes.
 3. Persons standing at the discharge end or near the delivery system must be warned to move away from the discharge until all of the air has been purged. Warn them to stay back at least fifty (50) feet.
 4. When the pump is restarted, the slowest possible speed should be used until all air is removed from the pipeline. Don't assume that the first little air bubble is the end of the compressed air.
 5. Do not allow anyone near the discharge until concrete runs steadily from the end and there is no movement of the delivery system.
- If workers are positioned in high or precarious places, warn them to expect a loud sound as the air escapes the pipeline. (Warn them even if they are well away from the discharge.) That way, we can prevent the worker from falling as a result of being startled by the noise.
- 16.12** **▲ WARNING!** When initially priming the delivery system, when restarting after moving, or when restarting after adding or removing hoses, warn everyone to stay away from the discharge until concrete runs steadily and there is no movement of the delivery system. The distance that personnel should stay back from the discharge is at least fifty (50) feet (Figure 70). Air will be in the line when first starting, when restarting after moving, and after the line has been taken apart or opened for any reason.
- 16.13** **▲ WARNING!** Never use compressed air to clear a blockage! The operator is responsible for knowing the safe blockage removal procedures. It is unsafe and unnecessary to use compressed air. If the pump pressure can't move it, air pressure won't either.
- 16.14** **▲ CAUTION!** Be careful when handling pipeline or any other heavy object. Learn how to lift without using your back. Get assistance if needed.

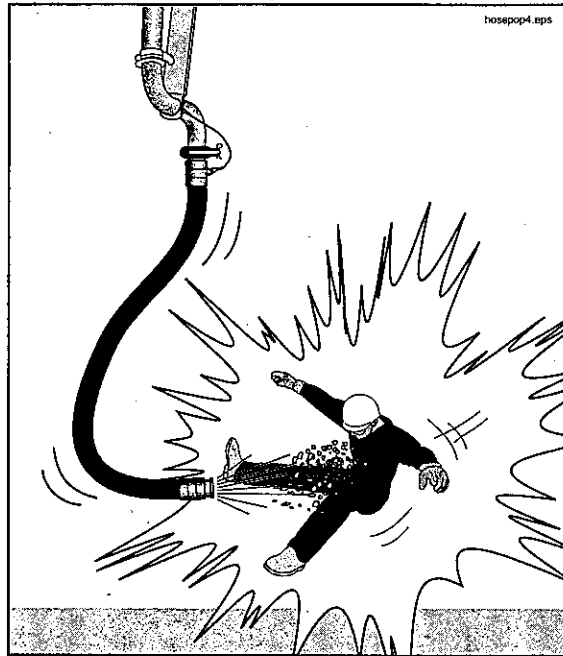


Figure 70

Remove everyone from the discharge area whenever the pump is first starting, restarting after moving, or if air has been introduced into the line

16.15

⚠ WARNING! Never stand on, sit on, or straddle a pipeline while it's in use, or whenever it is pressurized. Pipeline wears out with each stroke of the pump. If the pipe bursts, you want to be to the side of it, not on top of it (Figure 71).

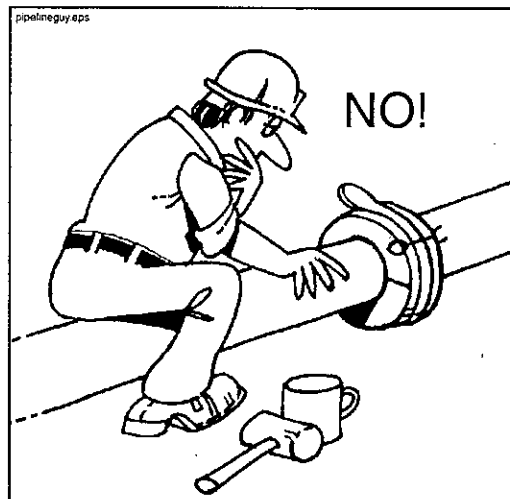


Figure 71

Never straddle or sit on a pressurized pipeline

16.16

WARNING! Explosion hazard! (See Figure 72.) Never open a pipeline that is under pressure. The pump must be run in reverse for at least two strokes and then stopped before opening a pipeline. If you don't know how to reverse the pump, have the operator do it. If the pipeline is pressurized with air, do not open it. The operator is responsible for knowing how to safely release the air pressure.

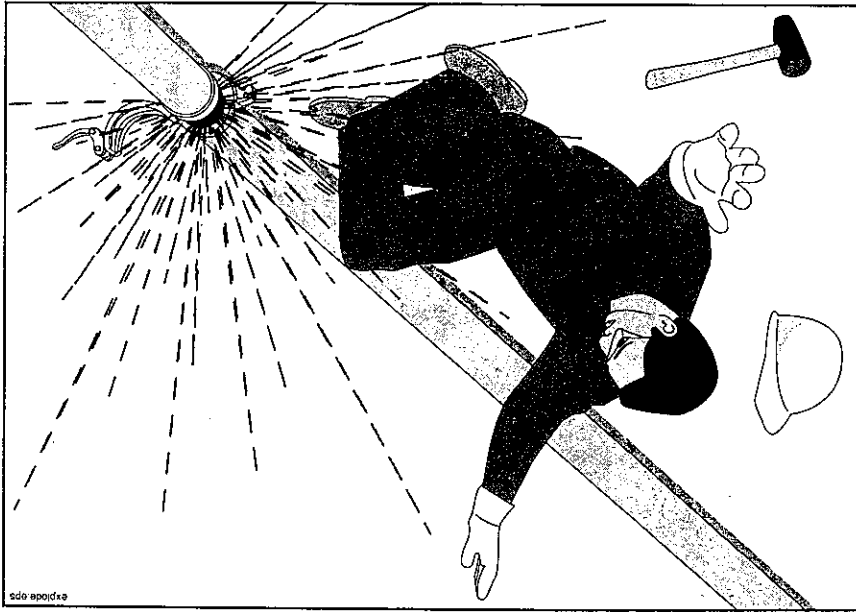


Figure 72
Never open a pressurized pipeline.

16.17

17. Safety Rules For The Placing Crew

17.1

- ⚠ WARNING! Electrocutation hazard!** If the pump or boom becomes energized with high voltage and you are in contact with **any** part of it, you are at **risk of electrocution!** You should monitor the movement of the boom and **alert the operator** if the boom comes within 17 feet of an electrical wire. (See Figure 73.)

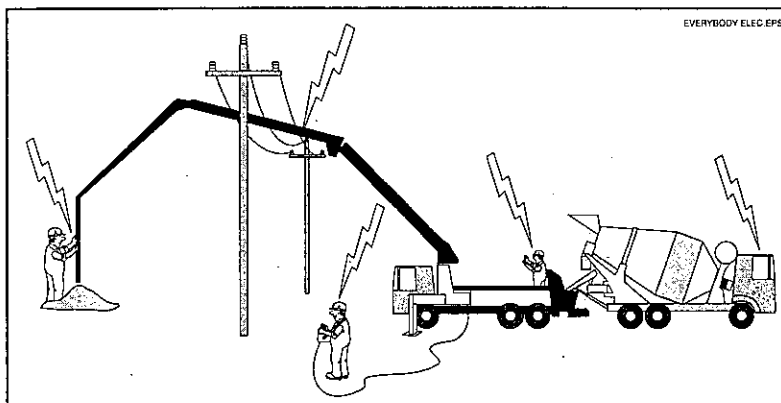


Figure 73

If the pump becomes energized, everything that touches the pump is also energized

17.2

- ⚠ WARNING!** Wear personal protective clothing when working around a concrete pump (Figure 74). The gloves should resist concrete lime burns. If you will be working **in** the concrete, protect your feet and hands with rubber boots and gloves.

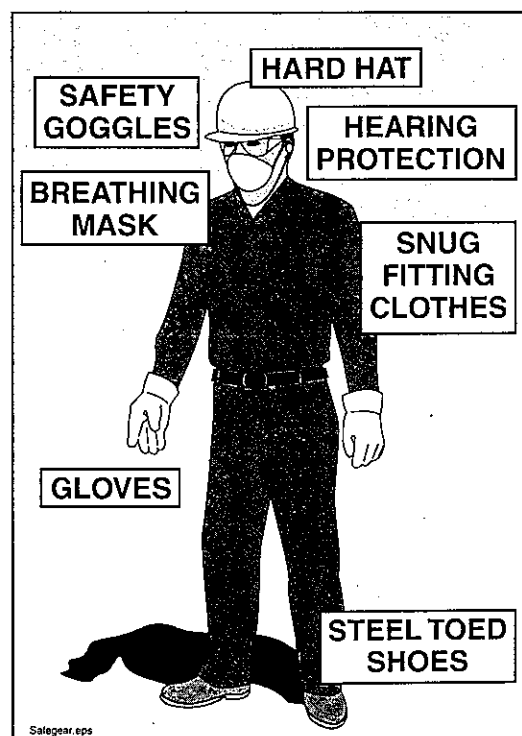


Figure 74
Wear protective clothing

17.3

WARNING! Falling hazard! When pouring columns, slabs, or walls above ground, secure yourself from falling.

17.4

WARNING! Do not kink the end hose. Kinking will cause the pump to create maximum concrete pressure. The pump may unkink the hose by force! (See Figure 75.)



Figure 75

Never kink the hose; Never hold the hose with your shoulder

17.5

WARNING! Never try to support the tip hose with your back or shoulders. Let the hose hang from the boom (Figure 75).

17.6

WARNING! Never stand on, sit on, or straddle a pipeline while it's in use, or whenever it is pressurized (Figure 76). Pipeline wears out with each stroke of the pump. If the pipe bursts, you want to be to the side of it, not on top of it.

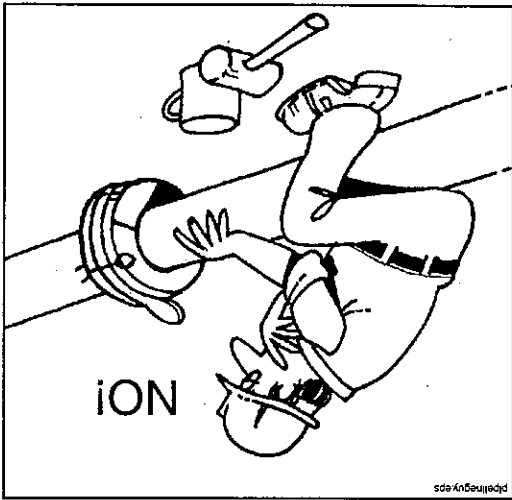


Figure 76

Never straddle or sit on a pressurized pipeline

17.7

WARNING! Concrete is being moved through the delivery system by pressure. Failure of a pipe, clamp, hose, or elbow is possible. For this reason, spend as little time as possible standing under the boom, and wear protective clothing.

17.8

⚠ WARNING! When the operator is initially priming the delivery system, restarting after moving, restarting after adding or removing hoses, or any time that there is air in the delivery pipeline, you should stand away from the tip hose or point of discharge. Do not get near the discharge until concrete runs steadily and there is no movement of the material pipeline. The distance that you should stay back is fifty (50) feet (Figure 77). Compressed air in the line can cause rubber hose to move violently. If the operator tells you that air is coming, proceed as follows:

- Get to ground level (if in a high place) and remain at least fifty feet away from the discharge or at least take cover.
- Stay away from the discharge. Be sure that **all** the air is gone before getting near the point of discharge again. It is the operator's job to know when it's safe to go back to pumping.

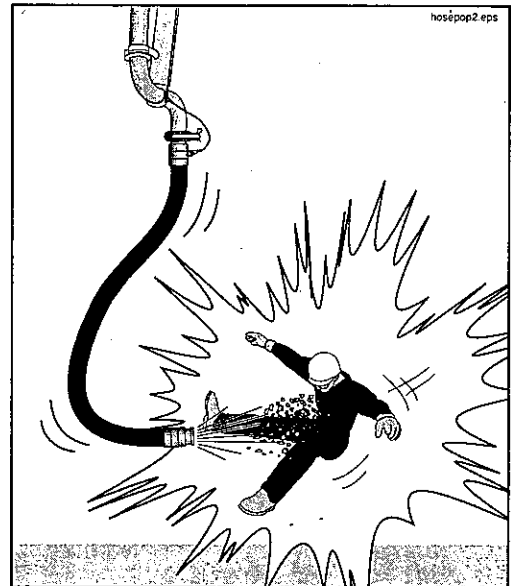


Figure 77
Stay away from the point of discharge when starting or restarting, and when there's air in the pipeline

17.9

⚠ CAUTION! Be careful when handling pipeline or any other heavy object. Learn how to lift without using your back. Get assistance if needed.

17.10

⚠ WARNING! After removing pipe sections you must **reassemble using gaskets and clamps**. Pipelines assembled without gaskets will leak cement and water, which can cause a blockage.

17.11

⚠ WARNING! When the pump crew is using compressed air to clean the boom or system pipeline, stay away from the discharge area. **Never try to hold down a pipe or hose that is being cleaned with air.**

17.12

⚠ WARNING! Do not look into the end of a plugged hose or pipe!

17.13

⚠ WARNING! Never use compressed air to clear a blockage! It is unsafe and unnecessary. If the pump pressure can't move it, air pressure won't either. Stand away from anyone that is attempting to use compressed air in this manner.

17.14

▲ WARNING! Never open a pressurized pipeline (Figure 78). The pump operator must release the pressure before you open the line. If the line is pressurized with compressed air, let the operator release the pressure and verify that the air has escaped before you proceed.

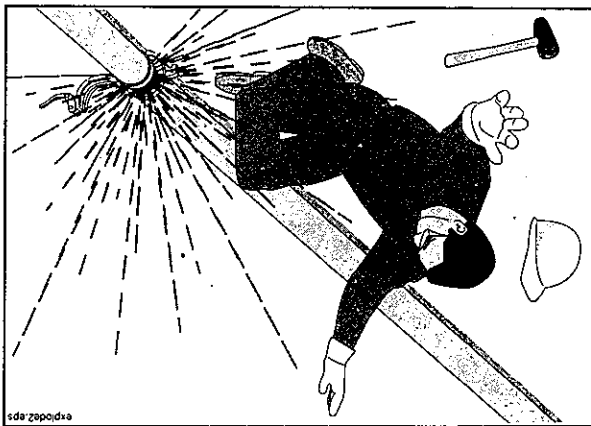


Figure 78
Never open a pressurized pipeline

17.15

▲ WARNING! Crushing hazard! Never position your hands or any body part between the end of the delivery system and a fixed object (e.g., between the tip of hose and the concrete form) (Figure 79).

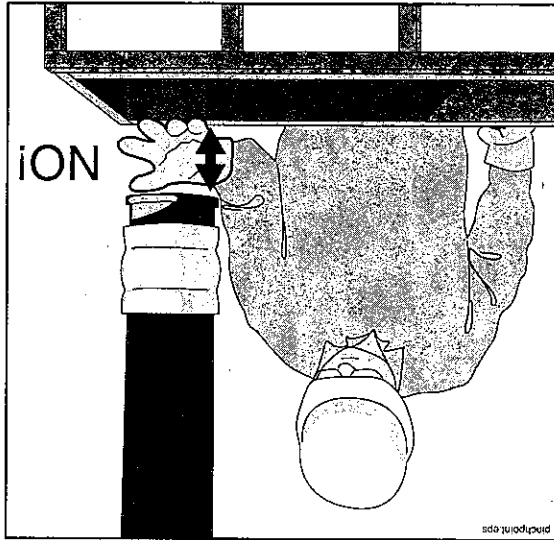


Figure 79
Watch out for the pinch points

17.16

▲ WARNING! Keep an eye on the movements of the boom, even when there are no electrical wires nearby. Alert the operator if he is nearing any obstruction or hazard. Where job site safety is concerned, two sets of eyes and ears are better than one.