



Safety Manual

Revised 2011

Safety Manual

Table of Contents

1. Company's Commitment to Safety Statement	2
2. General Statement of Policy	3
3. Written Hazcom Program (MSDS Separate)	5
4. Drug and Alcohol Program	18
5. Safety Training Requirements	20
6. Recording and Reports Occupational Injuries	22
7. Emergency Action Plan	31
8. Activity Specific Guidelines (corresponds to OSHA 1926)	
A. General	34
B. Definitions	38
C. First Aid/CPR	51
D. Personal Protective and Life Saving Equipment	54
E. Fire Protection and Prevention	61
F. Signs, Signals, and Barricades	64
G. Materials Handling, Storage, House Keeping	68
H. Tools - Hand and Power	71
I. Welding and Cutting	76
J. Electrical	86
K-1. Scaffolds	87
K-2. Scaffolds (Aerial Work Platforms)	95
L. Fall Protection	97
M. Cranes, Derricks, Hoists, Elevators & Conveyors	110
N. Vehicles and Equipment	127
O. Excavations/Trenching	130
P. Concrete and Masonry Construction	134
Q. Steel Erection	139
R. Underground Construction, Caissons, Cofferdams and Compress Air	147
S. Demolition	153
T. Blasting and the use of Explosives	156
U. Rollover Protective Structures & Overhead Protection	159
V. Stairways and Ladders	161
W. Toxic and Hazardous Substances	171
X. Confined Spaces	173
9. Tailgate Talks	173
10. Safety Discussion Form	185



P.O. BOX 444
NEWBURGH, IN 47629
PHONE: (812) 853-9558 / FAX: (812) 853-9578

"Building Roads and Bridges for America"

January 15, 2010

Dear Ragle, Inc Employees,

Ragle, Inc. recognizes the ever growing need to create a safe and productive work environment for employees. It is our employees who will control the success of this company. We recognize through controlling accidental losses both on and off the job site; we can maintain a productive working atmosphere. Therefore it is everyone's responsibility to be safe. Management expects the full support of every employee in accomplishing this goal.

Our goal of providing a safe working environment, through proper safety activities will not be limited in scope, but will apply to all Ragle, Inc crews and anyone else that could be affected by potential safety hazards. Our line of work is constantly putting employees at risk of injury or death, but through your constant vigilance; crews, equipment, and jobsite efficiency will continue in a forward direction.

Ragle, Inc has developed safety policies and programs to address concerns, hazards, and potential loss on jobsites. The policies and programs will be conveyed through Management, the "Ragle, Inc. Safety Manual," and our daily activities to all levels of employees within the company. It is our responsibility as your employer to implement this safety policy, but it is also your responsibility to follow it.

The effective implementation of safety procedures into the daily conduct of our business will contribute to our future success. It is part of each employee to create and maintain the safe working environment while working for Ragle, Inc or any other company. We work in a fulfilling, but dangerous profession where accidents can happen daily. Here at Ragle, Inc we will strive to maintain the safest working conditions possible for our employees. Remember: Safety is part of the job.

Be safe,

Samuel R. Ragle
President



RAGLE, INC.
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Safety and Health Policy

Statement: Ragle, Inc, LLC believes that no job or no task is more important than worker Health and Safety. If a job represents a potential safety or health threat, every effort will be made to plan a safe way to do the task. Every course of action must be conducted in a safe procedure. Shortcuts in safety procedures by supervisors, foreman or employees will not be tolerated. If a worker observes any unprotected job, which may pose potential threat to their health or safety, he or she must inform their immediate supervisor and management must take adequate precautions. If a job cannot be done safely it will not be done. *Our futures are only built through our people, and we aim to protect the future.*

Supervisory Personnel Responsibility

- Develop an attitude and awareness of safety in their crew and seeing that individual safety responsibilities are fully carried out.
- Maintaining a safe work environment and taking corrective action on any potentially hazardous operation or condition.
- Ensuring that the personnel he/she directs are knowledgeable and trained in the tasks they are asked to perform.
- Ensuring that personnel are properly protected by means of instructions, personal protective equipment or other appropriate resources.
- Ensures that no employee assigned to potentially hazardous work appears to be fatigued, ill, emotionally disturbed, or under the influence of alcohol or any type of drugs.
- Remains accountable to higher management for any oversight or error that leads to injury, illness, or damage to property.

Employee Responsibility

- Individual employees are responsible for their own and their co-workers' safety.
- Never undertake a potentially hazardous operation without consulting with appropriate supervision.
- Stop any operation you believe to be hazardous and report it to your immediate supervisor.
- Immediately report any occupational injury or illness to your direct supervisor.
- Employee must attend a weekly safety tool box talk on the project.

- Suitable clothing and footwear must be worn at all times. The appropriate personal protective equipment (hardhats, respirators, eye protection, etc.) shall be worn whenever needed.
- Employees will avoid damage to property or equipment and injury to the public.
- Horseplay, scuffling, and other acts which tend to have an adverse influence on safety or well being or other employees are prohibited.
- Defective or broken tools or equipment may not be used. The employee preparing to use the item must make a pre-use inspection ensuring the item is not defective or broken. Any deficiencies are to be reported by the employee to the supervisor immediately.
- Drivers of company vehicles must be competent, have a valid license, and obey all traffic laws.
- Employees are to know the location of fire extinguishers, first-aid kits, and other emergency information.
- All employees are responsible for housekeeping on the jobsite and company issued equipment.
- Threatening or harassing of any company employee or the public for any reason will result in immediate disciplinary action, including termination of employment.
- Possession of consumption of intoxicating drugs and/or alcoholic beverages during work hours as is reporting to work under the influence is prohibited. Compliance with the company's Drug-Free Workplace Policy is mandatory.

Enforcement of Safety and Health Policy

- Depending upon the severity of the violation, a Supervisor, Manager, or Safety official may enforce the Safety Policies by immediate disciplinary action, up to and including discharge. Safety violations are as follows:
 1. First Violation: Verbal warning, Recorded in personnel file.
 2. Second Violation: Written warning, Recorded in personnel file.
 3. Third Violation: Written warning, One day suspension without pay.
 4. Fourth Violation: Written warning, One week suspension, or termination if warranted.
- Management may skip any level of discipline as deemed necessary. Some types of violations may warrant immediate discharge.

Supervisory Personnel Signature: _____

Employee Signature: _____

Date: _____

HAZARD COMMUNICATION PROGRAM for Ragle, Inc.

INTRODUCTION

A. Statement of Need

There are two primary reasons why Ragle, Inc, will implement a Hazard Communication Program (HCP). One, the employer must comply with the Federal OSHA standard 29 CFR 1910.1200 (general industry) or 29 CFR 1926.59 (construction). Additionally, a HCP will assist the company in achieving our overall goal of a safer work place.

B. Anticipated Benefits

Several benefits are anticipated with the implementation of the Hazard Communication Program.

1. 1. Prevention of chemical related illnesses and injuries.
2. 2. Overall improvement of the company safety program.
3. 3. Improvement of employer-employee relations by establishing regular lines of communications.
4. 4. Avoidance of OSHA citations, violations, and related problems.

C. Program Administrator

SAFETY MANAGER
JASON C. RAGLE
C: 812-305-5580

D. Locations and Contact Persons for the Written Program

1. Locations: Ragle, Inc. Office, each Ragle, Inc. Jobsite
2. Contact Person: Jason C. Ragle, Safety Manager
3. Telephone Number: 812-305-5580

E. Compliance Checklist

A checklist for ensuring compliance with OSHA standards can be found in [Appendix D](#)

F. Warning

Chemicals will not be used until the following requirements are met:

1. All affected employees are properly trained to use the chemicals;
2. A material safety data sheet (MSDS) is obtained for each chemical;
3. Each chemical is added to inventory list ([Appendix A](#));

4. Proper personal protective equipment has been selected and issued to affected employees.

Chemicals, which do not meet the four requirements, will be stored in Ragle, Inc.'s Jobsite Yards and marked "Do Not Use." Until Hazard Communication and Personal Protective Equipment Requirements are met by Hazard Communication Program Administrator:
SAFETY MANAGER

I. Purpose

The purpose of the Hazard Communication Program is to ensure that the hazards of chemicals located on the jobsite are evaluated and that information concerning physical and health hazards is transmitted to potentially exposed employees. It is not only the intent of the employer to fully comply with the OSHA Standard 1910.1200 and 1926.59, but also to improve the overall safety of our company. A successful Hazard Communication Program will reduce potential incidents of chemical source illnesses and injuries.

II. Authority

The Hazard Communication Program is required by the Indiana Occupational Safety and Health Administration; pursuant to Title 29 CFR Subpart Z part 1910.1200 and/or 29 CFR 1926.59.

III. Summary

The passage of OSHA's HCP Standard gives the employer the responsibility to establish a written, comprehensive program which includes provisions for container labeling, material safety data sheets, and employee information and training. The written program must contain a list of the hazardous chemical(s) in each work area, the means used to inform employees of hazards of non-routine tasks, the hazards associated with chemicals contained in unlabeled pipes in the work area, and methods used to inform contractors in the facilities of chemical hazards to which they may be exposed.

The written Hazard Communication Program outlines the plan to establish the objectives of the standard. Each objective will be defined and discussed in this document. Additionally, this written program shall be reviewed during employee training.

The written plan will be reviewed every (1 YEAR by January 31) for accuracy and completeness.

The written plan and its elements will be updated in the following situations:

1. New chemicals are introduced into the workplace.
2. When new processes involving chemicals are introduced.

3. When program job duties are changed.
4. When locations mentioned in the program are changed.
5. When any other elements are changed.

A record of the last change which includes the date and change will be recorded, and kept with this program by the hazard communication program administrator.

A. Objective 1 – List of Chemicals

The SAFETY MANAGER is required to maintain and update the list of chemicals purchased or used by this facility. The SAFETY MANAGER is required to maintain and update the hazard communication program list of chemicals. The list can be found in **Appendix A** of this program. Other locations of the list are: **RAGLE, INC. OFFICE, SAFETY MANAGER'S VEHICLE and UPPER MANAGEMENT VEHICLES.**

1. The SAFETY MANAGER will have a chemical list on file. New chemical products will be immediately reported to the SAFETY MANAGER by the purchase or use list employee.
2. As new chemicals are purchased, the SAFETY MANAGER will record chemical(s) on the list. Changes in the list will be noted on the hazard communication program list for **(Appendix A)**.

B. Objective 2 – Material Safety Data Sheets (MSDS)

Employee in charge of MSDS acquisition: **SAFETY MANAGER**

Material Safety Data Sheets are the keystone to a successful hazard communication program. MSDS are designed to provide the information needed to handle chemicals safely. They provide the necessary information for training, hazard evaluation, proper handling, emergency procedures, and employee personal protective equipment.

The following procedures will be implemented to ensure that the employer maintains a MSDS for all chemicals identified on the hazard communication chemical list and the chemical purchase list.

1. Chemical manufacturers, importers, or distributors supplying the employer with products are required by law to send MSDS with the first shipment. As MSDSs are checked off against the chemical inventory, missing MSDSs should be requested first by telephone from the manufacturer, importer or distributor of the chemical. A written record of the phone call, including the name of the contact person should be placed in a special file. IF the telephone request is not successful, a formal letter should be written to request the MSDS. A copy should be placed in the special file. A sample form letter can be found in **Appendix E**.
2. The SAFETY MANAGER will document all attempts to obtain all MSDSs.
3. This will require the SAFETY MANAGER to attain a MSDS for each new chemical purchased, as well as updated MSDSs for existing chemicals. This requirement will be indicated on all purchase orders.
4. If it is not possible to obtain a MSDS for a chemical, the following action will need to be taken by the SAFETY MANAGER: contact SAFETY MANAGER about using a new or alternate chemical which has an available MSDS.

5. MSDSs for chemicals which are part of an employee exposure record, but no longer used shall be filed by the SAFETY MANAGER. An exposure record concerns information when an employee is exposed to a chemical. A more complete definition can be found in 29 CFR 1910.20 (c)(8) and (10).

If the MSDS was involved with an employee exposure record, the MSDS must be handled in one of the following methods:

1. Kept in an “old MSDS” file with a reference to the exposure record; or
2. Kept with the exposure record with a reference, or copy in the “old MSDS” file.

Old MSDSs linked to an exposure record must be maintained for at least 30 years.

MSDSs for chemicals no longer used, and not linked to an employee exposure record will be maintained in one of two ways:

1. Place the old MSDS in a special “old MSDS” file; or
2. Make a record of the MSDS and maintain it for 30 years (as per 1910.20 (d)(1)(ii)(B) and referenced by 1926.33) with the following information:
 - a. Identity (chemical name if known)
 - b. Where used (site and building)
 - c. When used
 - d. A glossary of MSDS terms will be available with all copies of the MSDS and part of the HCP, and will be a training discussion item.
 - e. Updated MSDSs and new MSDSs will be immediately placed in binders.
6. The employer will rely on each chemical manufacturer’s testing and hazard evaluation of chemical products used throughout the facility. The MSDS acquisition and MSDS purchase request employees will ensure that MSDSs are supplied, and that information contained on all MSDSs is complete.

C. Objective 3 – Labeling

Hazard Labeling Administrator: SAFETY MANAGER

The SAFETY MANAGER will ensure proper labeling of primary and secondary containers.

1. Labeling

The employer will rely heavily on chemical suppliers to provide labeling on the products used in the facilities that meets the requirements of 29 CFR 1910.1200 (f), or 1926.59(f). There are three basic requirements of this section:

- A. Identity of the chemical
- B. Appropriate hazard warning – including target organs
- C. Name and address of the chemical manufacturer

2. Shipped and purchased containers

With the arrival of each chemical the SAFETY MANAGER will check all containers to ensure that all labels meet the requirements outlined in this program. The employer will not accept improperly labeled containers. If there is a problem with a container, the MSDS acquisition and MSDS purchase employees should be immediately notified. They will check the program chemical list and the chemical purchase list to ensure that the proper MSDSs and labels have been received and updated for the product.

3. Secondary container labeling

Secondary containers of chemicals should be marked in the following situations:

- A. More than one employee uses the container; or
- B. The container is used longer than one shift, or left in a work area. If one employee uses the chemical without exposing others, and either returns the contents to the original container, or disposes of the rest of it, labeling of the secondary container is not necessary.

The secondary label should contain the following information, which can be obtained from the original container, or the MSDS:

- A. Identity of the chemical as specified on the MSDS
- B. Hazard warning – physical hazard or illness
- C. Target organ of the body

The SAFETY MANAGER will provide secondary container labels, and make sure that they are properly marked. The SAFETY MANAGER will also develop special methods of identification where needed.

D. Objective 4 – Employee Training

Employee hazard communication training administrator: **SAFETY MANAGER**

The Hazard Communication Standard requires the employer to provide exposed employees with information and training on the following subjects:

1. Information:

- a. Requirements of the standard; and
- b. Operations in the work area where hazardous chemicals are present; and
- c. Location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by the standard.

2. Training:

- a. Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.); and
- b. The physical and health hazards of the chemicals in the work area; and
- c. The measure employees can take to protect themselves from these hazards, including specific hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and
- d. The details of the hazard communication program developed by the employer, including

an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information.

The SAFETY MANAGER will provide training to employees in the following situations:

- a. Prior to working with a chemical
- b. When job duties change with exposure to new chemicals.
- c. When new chemicals are introduced into the workplace.
- d. When job duties change which require special training for a special process with a chemical.
 - a. Date of training
 - b. Name and job title of trainer
 - c. Names of the trainees
 - d. Training topics
 - e. Any other information to document the validity of the training. Example: credentials of an outside trainer.

The methods of training are specified in **Appendix B** of the program. The training records will contain the following information: The training records form can be found in **Appendix C** of the written program. The training records can be found at **RAGLE, INC.'S OFFICE** or by contacting **SAFETY MANAGER**. A special publication, "Hazard Communication: A Key to Compliance" can be found in **Appendix D** of this program. This program explains in detail the intent of the Hazard Communication Standard.

E. Objective 5 – Hazard Assessment for Non-Routine Tasks

Hazard Communication non-routine task administrator: SAFETY MANAGER

Non-routine tasks are those tasks, which do not occur on a frequent basis, or those tasks, which are not identified as a normal production task. However, many of the tasks required of the maintenance employees will be evaluated on a case-by-case basis to determine if they are to be considered a non-routine task.

The SAFETY MANAGER should be consulted about non-routine tasks.

The hazard communication trainer will train employees about the chemical hazards on non-routine tasks.

F. Objective 6 – Work performed by outside contractors

1. The SAFETY MANAGER will provide contractors with a list of chemicals used in the work area(s). The contractors will also be provided with copies, or the location of the facility MSDSs.
2. The SAFETY MANAGER will find out what chemicals are being brought into the facility by outside contractors. Copies of the MSDSs, or location of the contractors' MSDSs will be obtained.

G. Objective 7 – Non-labeled pipes

The SAFETY MANAGER will provide special employee education and training for employees who may be involved with work on pipes and piping systems, which carry chemicals.

H. Multi-employer Worksites (construction)

1. At multi-employer worksites the SAFETY MANAGER will offer to the site general contractor or site safety director at >PHYSICAL SITE OR ADDRESS< the copies of the following elements of the RAGLE, INC. hazard communication program:
 - a. The list of chemicals at the site.
 - b. All MSDS sheets used at the site.
 - c. The physical location of the employer's HCP at the worksite: **PHYSICAL LOCATION**
 - d. The name of the employer's Hazard Communication Program Administrator at the worksite: **<JASON RAGLE, SAFETY MANAGER>**
 - e. The site phone number of the employer's Hazard Communication Program Administrator: **(812)305-5580**
2. Exposure to chemicals from other employers at the multi-employer worksite:

The Ragle, Inc. SAFETY MANAGER will contact the following personnel to obtain information about chemicals other employers are using which affect employees at the site:

- a. Site general contractor Hazard Communication Program Administrator; or
- b. Site Safety Director; or
- c. Hazard Communication Program Administrator(s) of the other employers.

The SAFETY MANAGER will obtain the following information from the site general contractor, site safety director or other hazard communication program administrator(s);

- a. A list of site chemicals for each employer to which the employees are exposed; and
- b. Copies of MSD sheets for chemicals to which the employer source.

The MSD Sheets and lists should be marked to indicate the employer source

The SAFETY MANAGER will use the information obtained from the other employers to provide additional training, update the site written hazard program for employees, and ensure that other elements of the program are update for the exposed employees.

Hazard Communication Training Program

Hazard Communication Training Administrator: Jason Ragle, SAFETY MANAGER

1. Ragle, Inc. falls into a construction category where OSHA regulations require four basic needs for hazard communication:
 - a. A written hazard communication program.
 - b. Material safety data sheets (MSDS) on each chemical.
 - c. Label all chemical containers.

d. Train employees about hazards of the chemicals they use.

1. Some employees work with or near hazardous chemicals, and the company wants those employees to be aware of this and the protective equipment use which may include face shields, glasses, splash goggles, respirators, gloves, rubber boots, full-body suits, aprons, or maybe only one or two of the above. Then in case of accident, the company wants the employees to know what to do to protect themselves from these hazardous chemicals. Special training and hazard assessment for the use of personal protective equipment will be conducted as specified in **29 CFR 1910.231 through .138**.

2. Many of you do not work with hazardous chemicals. Nevertheless, Ragle, Inc. wants to advise you about chemicals used by the company. Also, this information may be helpful in the use of chemicals in your homes, and in your yards and gardens. There are many hazardous chemicals used in the home.

3. Part of our program relates to what we call MSD sheets. MSDS stands for Material Safety Data Sheets. If you aren't a chemist, there will be much on this data sheet that you won't understand, and those parts deal with how we use the chemicals and the personal protective equipment in case of an accident. Therefore, discussing how to read an MSDS is vital part of this program.

4. You may breathe chemicals into your lungs. Chemicals can also enter through the skin, nose, mouth, eyes, and elsewhere.

5. Chemicals may affect you lungs, heart, skin, kidneys, brain, nervous system, liver, eyes, and other parts of your body.

6. If you work with chemicals, learn or post emergency procedures, emergency telephone numbers, and how to read labels. If you transfer to another work location with new chemicals, learn how to safely use those chemicals.

7. If new chemicals are brought into your work place, learn the hazards of these and how to safely handle them, what protective equipment to use and what to do in case of an emergency. If you encounter a new chemical that you are not familiar with, contact your supervisor about proper training before using the chemical.

8. Each of you has been presented with a MSD Sheet. We will discuss the information on this sheet. (Complete discussion on all data on the MSDS)

9. Safety Manager will discuss the location on the jobsite where hazardous chemicals are used and the proper and safe work procedures for these chemicals. The proper use of personal protection equipment will be discussed. Also, in case of an accident, you will be advised about safety precautions to be taken to protect yourself from serious injury.

10. Safety Manager will also advise you on the job site location where the MSD Sheets are kept, along with Ragle, Inc.'s written program for hazardous chemicals. You are entitled to look at this data at any time should you wish to know about the chemicals in your work place. Let me suggest that you contact your supervisor in these cases to see these records.

11. Safety Manager will also advise you about how the SAFETY MANAGER for Ragle, Inc. is labeling these materials, and how to detect hazards by visibility and odors.

12. Generally speaking:

- a. Know if you are working with hazardous materials.
- b. Know how to recognize them by sight, by labels, by odors, etc.
- c. Know how to use the chemicals safely.
- d. Know what to do in case of a chemically related accident.

Appendix A: List of Chemicals (or Chemical Inventory)

RAGLE, INC. LIST OF CHEMICALS

#	CHEMICAL	DATE	#	CHEMICAL	DATE	#	CHEMICAL	DATE
			46			91		
			47			92		
			48			93		
			49			94		
			50			95		
			51			96		
			52			97		
			53			98		
			54			99		
			55			100		
			56			101		
			57			102		
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			72			117		
			73			118		
			74			119		
			75			120		
			76			121		
			77			122		
			78			123		
			79			124		
			80			125		
			81			126		
			82			127		
			83			128		
			84			129		

**Appendix
B:
Specific
Methods
of
Training**

RAGLE, INC. HAZCOM TRAINING

Date of Training	Name and Job Title of Trainer	Names of Trainees	Training Topics	Training Method	Other Information	Material Handed Out
		*PER ATTACHED SHEET				

Note: Date is the Date that Chemical was entered on Chemical Inventory List

Appendix C: Training Record RAGLE, INC. HAZCOM TRAINING				
Employee Name	Employee Title	Training Attended (Topic)	Trainer Name	Date of Training

Appendix D: Guidelines for Employer Compliance

The Hazard Communication Standard (HCS) is based on a simple concept—that employees have both a need and a right to know the hazards and identities of the chemicals they are exposed to when working. They also need to know what protective measures are available to prevent adverse effects from occurring. The HCS is designed to provide employees with the information they need.

Knowledge acquired under the HCS will help employers provide safer workplaces for their employees. When employers have information about the chemicals being used, they can take steps to reduce exposures, substitute less hazardous materials, and establish proper work practices. These efforts will help prevent the occurrence of work-related illnesses and injuries caused by chemicals.

The HCS addresses the issues of evaluating and communicating hazards to workers. Evaluation of chemical hazards involves a number of technical concepts, and is a process that requires the professional judgment of experienced experts. That's why the HCS is designed so that employers who simply use chemicals, rather than produce or import them, are not required to evaluate the importers of the materials. Producers and importers of chemicals are then required to provide the hazard information to employers that purchase their products.

Employers that don't produce or import chemicals need only focus on those parts of the rule that deal with establishing a workplace program and communicating information to their workers. This appendix is a general guide for such employers to help them determine what's required under the rule. It does not supplant or substitute for the regulatory provisions, but rather provides a simplified outline of the steps an average employer would follow to meet those requirements.

Appendix E: Material Data Safety Sheets (MSDS)

Appendix E: Form Letter for Obtaining a MSD Sheet

<DATE>

<MANUFACTURER NAME>

<ADDRESS>

RE: <REASON FOR LETTER>

Dear Mr. or Ms. <CONTACT>:

Ragle, Inc. recently purchased your product(s):

1. <LIST PRODUCTS>

2. The listed products arrived without a Material Safety Data Sheet (MSDS) upon their first delivery. Please send me the appropriate MSD Sheet which will meet the requirements set forth in the OSHA standards 29 CFR 1910.1200 and 29 CFR 1926.59.

Thank you for your time and energy in dealing with this matter.

Cordially,

Jason C. Ragle Safety Manager Ragle, Inc.

DRUG TESTING PROGRAM

Ragle, Inc. has established the following employee drug testing program.

Ragle, Inc. is subject to collective bargaining agreements which include drug testing programs for Ragle craft employees. These programs meet or exceed the Indiana Code 4-13-18-5 which is the minimum requirements for Ragle, Inc. drug testing program.

The collective bargaining agreements drug testing programs are attached and made part of Ragle, Inc. drug testing program. They require the following:

- (1) The program provides for the random testing of the contractor's employees.
- (2) The program contains a five (5) drug panel that tests for the substances identified in section 6(a) (3) of this chapter.
- (3) The program imposes disciplinary measures on an employee who fails a drug test. The disciplinary measures must include at a minimum, all the following:
 - (A) The employee is subject to suspension or immediate termination.
 - (B) The employee is not eligible for reinstatement until the employee tests negative on a five (5) drug panel test certified by a medical review officer.
 - (C) The employee is subject to unscheduled sporadic testing for at least one (1) year after reinstatement.
 - (D) The employee successfully completes a rehabilitation program recommended by a substance abuse professional if the employee fails more than one (1) drug test.

A copy of the relevant part of the collective bargaining agreement constitutes a written plan under this section.

All other employees are subject to the following drug testing requirements:

- 1 Each employee will be subject to a drug test at least one (1) time each year.
- 2 All employees shall be subject to random testing. At least (2%) of employees will be randomly selected each month for testing.
- 3 Every employee must take a mandatory drug test any time there is an injuring or doctor visit due to work related issues.
- 4 Drug testing will contain a minimum of a five (5) drug panel* including:
 - A Amphetamines
 - B Cocaine
 - C Opiates (2000 ng/ml)
 - D PCP
 - E THC

*Additional drugs may be added on advice of licensed professionals

5 Disciplinary action **which could include termination will follow collective bargaining agreements where applicable** or the following disciplinary action program will be followed at a minimum.*

A After the first positive test, an employee shall be:

- a suspended from work for thirty (30) days;
- b directed to a program of treatment and/or rehabilitation; and
- c subject to unannounced drug testing for one (1) year, beginning the day the employee returns to work.

B After a second positive test, an employee shall be:

- a suspended from work for ninety (90) days;
- b directed to a program of treatment and/or rehabilitation; and
- c subject to unannounced drug testing for one (1) year, beginning the day the employee returns to work.

C After a third or subsequent positive test, an employee shall be:

- a suspended from work for one (1) year;
- b directed to a program of treatment and/or rehabilitation; and
- c subject to unannounced drug testing for one (1) year, beginning the day the employee returns to work.

***More severe discipline may be issued, including termination after any positive test.**

Ragle, Inc. will advise any employee who tests positive of any program of treatment and/or rehabilitation covered by insurance provided by Ragle, Inc to that employee.

If Ragle, Inc. does not provide insurance that covers drug treatment and/or rehabilitation for that employee, they will advise the employee of agencies known to Ragle, Inc. that provide drug treatment and/or rehabilitation programs.

SAFETY TRAINING REQUIREMENTS

SUPERINTENDENTS TRAINING

10 HR OSHA

ATTSA Traffic Control Technician Course

First Aid

CPR

Confined Spaces

Excavations

Fall Protection

Scaffolds

Rigging

HAZCOM

Ragle, Inc. Safety Manual

FOREMAN

10 HR OSHA

First Aid

CPR

Confined Spaces

Excavations

Fall Protection

Scaffolds

Rigging

HAZCOM

Ragle, Inc. Safety Manual

CREW MEMBERS

Onsite Training for Specific Tasks

Ragle Inc. Safety Policy

If You Are Involved In An Incident:

1.

Stop at Once! Check for personal injuries and send for an ambulance, if needed. Do not leave the scene, but ask for the assistance of bystanders.

2.

If Fire or Smoke Is Present, evacuate vehicle occupants to a safe location. If stalled on a railroad track, evacuate occupants to a safe location away and at a right angle from the tracks.

3.

If Fire, Smoke or Spilled Fuel is Present, send for the fire department. Do not leave the scene; ask a bystander to call the fire department. If possible, use a spill kit to absorb the spill.

4.

Protect the Scene. Set emergency warning devices to prevent further injury or damage. Secure your vehicle and its contents from theft.

5.

Secure Assistance of the police whenever possible. Record names and badge numbers.

6.

Record Names, Addresses and Phone Numbers of all witnesses, injured and driver(s) and their passengers. Record vehicle license numbers.

7.

Do Not Argue! Make no statement except to the proper authorities. Sign only official police reports. Do not make statements regarding the operating condition of your vehicle and do not admit fault.

8.

Report the Incident to Your Dispatcher/Supervisor IMMEDIATELY after first aid has been given, authorities have been notified, the scene has been protected and you are able to do so.

9.

Complete the Incident Report at the scene as thoroughly as possible. Exchange insurance information only with other involved driver(s).

10.

If You Strike An Unattended Vehicle and cannot locate the owner, leave a note with your name and the company's address and phone number, get the vehicle description, VIN number and license plate number.

Phone or Online Claim Reporting

Please report your claims 24 hours a day, 365 days a year using the toll-free claim reporting numbers below:

Please call:

Business Insurance claims: 1.800.238.6225

National Accounts claims: 1.800.832.7839

Construction claims: 1.877.828.4132

ACCIDENT INFORMATION

Date _____ Time _____ A.M. Daylight
 P.M. Dark

LOCATION:
 Name of Street or Highway Number _____ (Closest Intersection or Landmark)
 City, Town, County _____ (State)

WEATHER:
 Clear Raining Snowing Fog
 Sleeting Dust/Smoke/Fog High Wind Other _____

AREA:
 Residential Commercial Rural Other _____

PAVEMENT
 Asphalt Concrete Gravel/Dirt Brick/Stone
 Steel Wood Other _____

CONDITION
 Dry Wet Slippery Pot Holes
 Other _____

DIRECTION:
 Yours N E S W Other _____
 Other N E S W _____

SPEED:
 Yours _____ Posted _____ Actual when danger noticed _____
 Other _____

TRAFFIC CONTROL:
 Stop sign:
 1 Way 2 Way
 3 Way 4 Way
 Yield Semaphore
 Police/Flag Person Railroad
 Uncont. Intersection _____
 Not an Intersection.

SEAT BELT:
 Used Not Used

AIR BAG INFLATED:
 Yes No

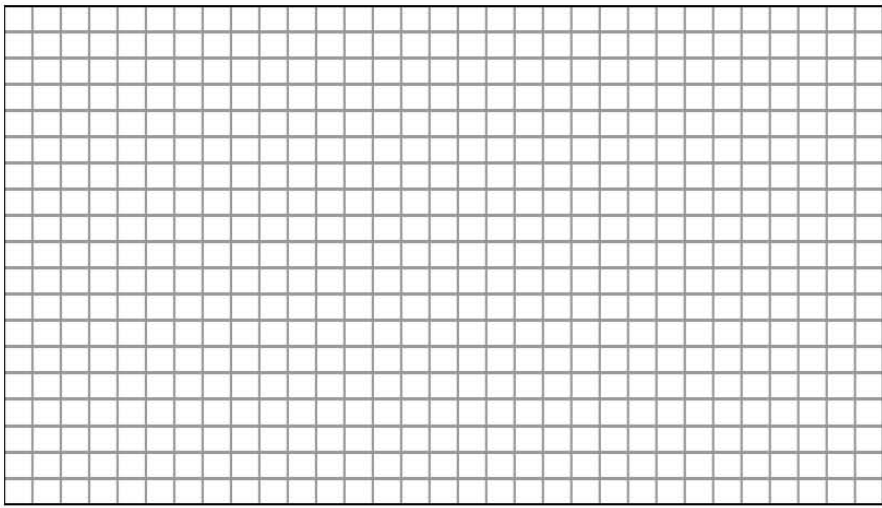
ACCIDENT DESCRIPTION

Briefly tell how the accident happened. Indicate movement of involved vehicles when hazard was first noticed, warning or evasive action taken and length and position of any skid marks.

ACCIDENT SKETCH

Draw an accident sketch. Show and label roadway, indicate number of lanes, direction of travel and signs. Number each vehicle and show direction of travel from point hazard was noticed to point of impact by a solid line and any travel after impact by a dotted line.

- SYMBOLS:**
- Your Vehicle **1**
 - Other Vehicle: **2**
 - 3**
 - Pedestrian
 - Stop Sign
 - Semaphore
 - Yield
 - Railroad
 - Point of Impact



Indicate direction _____

At what distance did you notice danger?
 _____ feet

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Category Ratings: 3 = Good 2 = Satisfactory 1 = Needs Improvement
Circle rating and develop average rating

Investigation conducted by: _____ Manager: _____

Injured Employee: _____ Incident Date: _____

Report completed within: Same day 2-5 days Greater than 5 days

Comments: _____

Comments: _____

(If employee carelessness was identified as the sole cause, deduct 1 point from overall grade)

1. _____

2. _____

Comments: _____

Overall Rating _____ Completed By: _____
(A+B+C)/3

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Accident Reporting & Treatment (ART) Form – Part 1: Supervisor’s Report of Injury

Employee’s Name		Marital Status		Date of Birth	
Home Address			Home Phone		
Emergency Contact #			Job Title		
Work Location			Reporting Supervisor		
Injury Date	Time	AM/PM	Date Reported	Last Day Worked	
Describe what employee was doing when injured and how the injury occurred (be specific about body part injured):					
When and to whom did the employee first report the incident:					
Witnesses:					
Supervisor Signature:				Date:	

Information Release

Any information related to this injury will be used for the purpose of evaluating and handling my claim for injury as a result of an incident occurring on or about the above noted date of injury and for no other purpose now or in the future. I hereby authorize (Employer) or any of its representatives to be furnished any information and facts regarding this injury including reports and records, results of diagnosis, treatment prognosis, estimates of disability and recommendations for further treatment.

Employee’s Signature:	Date:
-----------------------	-------

Name of Medical Provider:			Arrival Time:		
Nature of Injury:		New Injury	No injury/illness found	Recurrence/aggravation of existing condition	
Work-related	Non work-related	Not known			
Type of injury/illness:			Body part injured:		
Recommendations		Lifting	Pushing/Pulling	Position Limitation:	
FOR WORK:		1 – 5 lbs.	LIMITED TO:	No repetitive motion	
Regular Work		6 – 15 lbs.	1 – 5 lbs.	Body Part:	
Restricted Duty		16 – 25 lbs.	6 – 15 lbs.	No reaching above shoulder	
26 – 40 lbs.	16 – 25 lbs.	No reaching below waist			
41 – 50 lbs.	26 – 40 lbs.	No repetitive stooping, twisting or bending			
Over 50 lbs.	41 – 50 lbs.	No pinching or forceful gripping			
No Lifting	Over 50 lbs.	Standing limited to hrs.			
No Pushing/Pulling		Sitting limited to hrs.			
Treatment:					
Treatment Plan:					
Follow-up appointment on with .					
Comments:					
Patient	Return to supervisor; no restrictions			Return to supervisor; send home	
Disposition:	Return to supervisor; with restrictions for days.			Employee can return to work on (date).	
Medical Provider Signature:					
Print Name:					

Return-To-Work
The above mentioned restrictions (if applicable) have been reviewed and the employee:

Returned to full duty, no restrictions	Has been placed in an appropriate restricted duty position
Was sent home per medical instruction	Other
Supervisor Signature:	Date:
Employee Signature:	Date:

Note: To facilitate the best care for your employee, it is the Supervisor's responsibility to adhere to the above modifications.

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Accident Reporting & Treatment (ART) Form – Part 2: Accident Investigation

(To be completed within 24 hours)

(To be completed by the Supervisor / General Manager) Describe in detail the task the employee was doing at the time of injury (include vehicle, equipment or tools used):

Interview witnesses or co-workers for additional insights.			Attach sheet for additional Info/comments.		
Was this the employee's regular work assignment? Yes No If no, was person trained for assignment? Yes No					
		Causal Factors	Yes No	Comments	Corrective Action
		<u>Environment</u>			
1.1		Did the work area design contribute to the injury?			
1.2		Was the area cluttered?			
1.3		Did the employee have to be in this area to complete the job?			
1.4		Were other conditions (noise, air contaminants, extreme temperatures, etc.) a contributing factor?			
1.5		Other			
		<u>Equipment/Tools</u>			
2.1		Was the correct equipment being used?			
2.2		Was the correct equipment readily available?			
2.3		Did any defects or change in equipment/material contribute to hazardous conditions?			
2.4		Is regular maintenance done on machinery/equipment?			
2.5		Are there any maintenance logs?			
2.6		Was the employee using PPE (Shoes, apron, goggles)?			
		<u>Method</u>			
3.1		Was the employee performing according to SOP?			
3.2		Was there a better method to perform task?			
		<u>Employee</u>			
4.1		Was safety equipment specified for this job? (List all)			
4.2		Was this equipment being used?			
4.3		Have safety procedures been established for this task?			
4.4		Were safety procedures being followed? If no, why?			
4.5		Was the employee trained on necessary equipment?			
4.6		Was the employee authorized to operate the equipment?			
		<u>Management</u>			
5.1		Were the behaviors that caused the injury/illness observed before?			
5.2		If so, What was done?			

5.3	Does management require safe work practices related to this task? If yes, explain. How?			
5.4	Does management follow/support safety procedures?			
5.5	Have safety related changes been made/suggested in this area?			

To Correct Unsafe Acts	To Correct Unsafe Conditions	Corrective Actions
Review /change procedures	Eliminate condition	Action Assigned To Date
Instruct injured person	Install safety guard	1.
Instruct others	Warn others of hazards	2.
Process improvement	Implement inspections	3.
Explain: _____	Request repairs	4.
_____	Vendor: _____	5.
Other _____	Initiate Ergonomic Review	Corrective Actions completed Yes No
Discipline injured person	Other _____	
Oral Written		

Employee:		Date:	
Supervisor:		Date:	
General Manager:		Date:	

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<u>My name is:</u>			
<u>Date of injury:</u>		<u>Time of injury:</u>	
<u>This is what happened (include what, when, where, how and why):</u>			
<u>Do you recall anything unusual or unexpected that happened?</u>			
<u>Are there work conditions that contributed to this injury?</u>			
<u>How would you explain why you were injured?</u>			
<u>Did the supervisor ask you to perform an unsafe act?</u>			
<u>How would you prevent this injury from occurring again?</u>			
<u>When did you first notice the injury or illness?</u>			
<u>When did you tell your supervisor?</u>			
<u>When did you first notice the pain?</u>			
<u>Did pain develop suddenly or gradually?</u>			
<u>Have you ever had this pain</u>		<u>If yes, when & how often?</u>	
<u>Employee Signature</u>			

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Emergency Action Plan

Severe Weather/Natural Disasters

Severe weather can take many forms, including tornado, hurricane, earthquake, flood, or winter storm. All of these situations can impact the facility. Most severe weather situations provide some degree of warning or buildup, which will allow for necessary preparations to be implemented. Before the start of a project, Emergency Action Plan procedures and equipment are discussed and a plan is put into place for that specific job.

Employee Procedures for Severe Weather

Tornado Watch

- 1) Keep outdoor activities to a minimum. If outdoors, be observant for revolving, funnel-shaped clouds.
- 2) Listen to the facility radio for weather updates.
- 3) If a tornado is sighted, immediately take shelter and notify supervisor.

Tornado Warning

- 1) Immediately take shelter.
 - (i.) Your best protection is a reinforced concrete or steel-framed structure.
 - (ii) An interior hallway on the lowest level of the structure will be the safest.
- 2) Take action to protect yourself from being blown away or struck by falling or flying objects.
- 3) Stay away from windows to avoid flying debris.
- 4) If a tornado is rapidly approaching and you cannot reach a safe shelter, lie flat in the nearest depression or ditch and cover your head with your arms.

Emergency Medical Situations

Employee Procedures for Medical Emergency

Before the start of a project, Emergency Action Plan procedures and equipment are discussed and a plan is put into place for that specific job.

- a) Dial Supervisor.
- b) Inform of the nature of problem.
- c) Inform of your exact location.
- d) Inform of the severity of the problem.
- e) Render first aid if you have been trained to do so.
- f) If enough personnel are present, send another employee or bystander to the entrance to direct the emergency response team members.
- e) Render first aid as appropriate.

Fires

Employee Procedures for Fires

Before the start of a project, Emergency Action Plan procedures and equipment are discussed and a plan is put into place for that specific job.

Fire discovered by employee

- 1) Clear the area of all other personnel and visitors. Instruct all personnel to evacuate the facility.
- 2) Confine the fire by closing the door to the area (if applicable)
- 3) Call 911
- 4) Call Supervisor
- 5) Send one person to entrance to meet fire department.
- 6) Advise the emergency responders on arrival if all personnel are accounted for. If an employee or visitor is missing, advise response team as to the last known location of the individual.

Chemical Releases

Before the start of a project, Emergency Action Plan procedures and equipment are discussed and a plan is put into place for that specific job.

Chemical releases can be classified into two distinct categories: *incidental releases* and *emergency releases*.

• Incidental Releases

Incidental releases are small isolated releases of chemicals, such as cleaning solvents that do not present or have the potential to cause injuries or require evacuation other than from the immediate release area. Incidental spills can be cleaned up by personnel who have received proper training under the OSHA Hazard Communication Standard 29 CFR 1910.1200 and have the proper safety equipment.

This type of incident would not require the response of the supervisor or local fire department.

• Emergency Releases

Emergency releases are those incidents that involve large quantities of chemicals and/or have the potential to cause injuries. A release that requires the response of the supervisor and/or local fire department would be considered an emergency release. For the purpose of this Emergency Action Plan, only emergency releases will be addressed.

Employee Procedures for Chemical Releases

- a) Clear the area of all personnel and visitors. Instruct personnel to evacuate the area.
- b) Confine the release.
- c) Notify fire department at 911.
- d) Dial for Supervisor.
- e) Inform of the nature of the problem.
- f) Inform of the exact location of the chemical release.
- g) If the situation appears to be a serious release, begin evacuation of the involved area.
- h) If possible, send one employee to meet the Emergency Response Team and lead them to the incident area.

- i) Advise the Emergency Response team on their arrival whether all personnel are accounted for. If an employee or visitor is missing, inform response team of the last known location of the individual.
- j) Provide assistance to the Emergency Response team as requested.

SECTION (A)

GENERAL INFORMATION

Ragle Inc. is a company that will only be successful if every aspect of the construction industry is addressed.

This safety manual is a guide for Ragle Inc. management staff and employees. Its primary function is to be a resource in creating a safe work environment.

Ragle Inc. Site Policy

100% of Ragle Inc. work related activities will require all employees, subs, suppliers, and other personnel associated with the project to wear the following PPE:

- **Hard Hats** – As needed. Employees will be issued one hard hat upon hiring. An employee shall keep a hard hat available at all times. If a hard hat is damaged or needs to be replaced, then another hard hat will be issued by Ragle Inc.
- **Safety Boots** – 100% of the time on Ragle Inc. associated job sites. All employees will be required to wear leather shoe wear that covers above the ankle. Has a safety toe and is slip resistant.
- **Vests (High Visibility)** – 100% of the time on Ragle Inc. associated job sites. The vest must be at a minimum a Class II Vest. As vests fade and are damaged, new ones will be issued. An employee will not be able to work without a vest.
- **PPE** – As needed, but Ragle Inc. encourages eye protection 100%.

Contact Information

- Safety Manager – Jason C. Ragle (812) 305-5580
- Ragle Inc. Office – (812) 853-9558
- IOSHA (Indiana OSHA) –

OSHA Inspection Procedure

1. **ASK** the OSHA Compliance Officer to wait at the site office while you contact the Project Manager and Safety Manager. The highest level of management available should meet the officer and review his credentials. Generally, this is a common practice.
2. **ASK** the following questions:
 - a. Name of the Compliance Officer and get his/her business card. Each officer must present his official OSHA credentials as well.
 - b. The reason for the visit.
 - i. Routine Inspection
 - ii. Focused Inspection
 - iii. Compliant
 - iv. Special Emphasis
3. **BE POLITE** and willing to show *only* what is asked for.
4. **DO NOT VOLUNTEER INFORMATION** or point out potential problem areas.
5. **FIX ANY PROBLEMS IMMEDIATELY** if possible
6. **DON'T DEMONSTRATE** how to do anything you don't have to
7. **DO NOT ADMIT** anything is not in compliance
8. **DO NOT ADMIT** you are aware of any alleged violation.
9. **DO NOT GIVE WRITTEN MATERIAL** to an inspector to take away
10. **TAKE PHOTOS** of anything s/he does
11. **TAKE NOTES** documenting what the inspector looked at, comments made, which employees he/she spoke to, etc.

Documentation during OSHA Inspection

Each project must have a camera immediately available for documentation purposes. Make sure the member of management that accompanies the inspector has a pad and pen to take notes as well. Take

photographs from the same location as the compliance officer. Document additional evidence that may serve Ragle Inc. interest, such as a photograph from a different angle that will show compliance.

Interviews

The OSHA inspector has the right to privately interview non-management employees of his/her choosing. You may make an office available for the interview, or the inspector may simply take the employee aside.

NOTE: Under no circumstances shall a member of management question the interviewed employees without authority from the Safety Manager.

When members of supervision are being interviewed, Ragle, Inc. representatives shall be present during the interview.

Written Statements

No written or recorded statements of any kind shall be given to the compliance officer without permission from the Safety Manager.

Vehicle (Company Owned) Information

Due the circumstances of many jobs, Ragle, Inc. understands that certain employees will either be assigned a vehicle or will use a jobsite vehicle at one time or another. Due to insurance and safety issues, only employees who have met the following requirements shall be able to drive a company owned vehicle.

Driving Requirements:

- Have a valid state issued Driver's License

- No DUI's in the past five years
- Be confirmed through our company's insurance provider.
- Pass a state CDL physical on a yearly basis

Responsibilities of Employee's assigned a vehicle

- Maintain vehicle in proper working order
- In case of accident
 - Fill out accident report form
 - Contact proper legal agencies
- No speeding
- Safe transportation of loads in bed of pickup trucks
- When towing
 - Properly secure load
 - Do not overload trailer
 - Check vehicle/trailer lights
 - Drive 55 MPH or below
- Not to be used for personal use
- **NO DRINKING AND DRIVING**
- Transportation of Alcohol and/or Illegal Items is strictly prohibited

SECTION (B)

DEFINITIONS

GENERAL CONSTRUCTION

ANSI: American National Standards Institute.

Approved: Sanctioned, endorsed, accredited, certified, or accepted as satisfactory by a duly constituted and nationally recognized authority or agency.

Authorized person: A person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the jobsite. See *designated person*.

Certified: Equipment is "certified" if it (a) has been tested and found by a nationally recognized testing laboratory to meet nationally recognized standards or to be safe for use in a specified manner; or (b) is of a kind whose production is periodically inspected by a nationally recognized testing laboratory; and (c) it bears a label, tag, or other record of certification.

Competent person: One who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Construction work: Work for construction, alteration, and/or repair, including painting and decorating.

Defect: Any characteristic or condition which tends to weaken or reduce the strength of the tool, object, or structure of which it is a part.

Designated person: See [Authorized person](#).

Employee: Every laborer or mechanic, regardless of the contractual relationship which may be alleged to exist between the laborer and mechanic and the contractor or subcontractor who engaged him. "Laborer" generally means one who performs manual labor or who labors at an occupation requiring physical strength; "mechanic" generally means a worker skilled with tools.

Employer: Contractor or subcontractor.

Equivalent: Alternative designs, materials, or methods to protect against a hazard which the employer can demonstrate will provide an equal or greater degree of safety for employees than the methods, materials or designs specified in the standard.

Hazardous substance: A substance which, by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, or otherwise harmful, is likely to cause death or injury.

Qualified Person: One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.

Safety factor: The ratio of the ultimate breaking strength of a member or piece of material or equipment to the actual working stress or safe load when in use.

SAE: Society of Automotive Engineers.

Shall: Mandatory.

Should: Recommended.

Suitable: That which fits and has the qualities or qualifications to meet a given purpose, occasion, condition, function, or circumstance.

ELECTRICAL INCIDENTS

Ampere: The unit by which the flow of current through a conductor is measured.

Arc: A discharge of electricity through a gas, such as air.

Attachment Cap: See [Plug](#).

Circuit: The path along which electric current flows from start to finish is called a circuit. The circuit includes the generator or battery which starts the current, the wires, and any electrical device that the current operates. If any part of the circuit is removed, the current cannot flow. The circuit is then broken or open. Because electric current seeks to complete its circuit, it will travel along any path that is presented (path of least resistance), which is why humans are at risk of electrocution when they handle damaged tools or cords, or

contact un-insulated wires. In effect, they become part of the circuit.

Circuit breaker: A protective device which automatically opens, or trips, a circuit, without damage to itself, when the current exceeds a predetermined level.

Conductor: A substance or body that allows a current of electricity to pass continuously along it. Metals, such as copper or aluminum, are good conductors. In a circuit, current-carrying wires are termed "conductors", as in a flexible cord.

Current: The flow of electrons through a conductor, measured in amperes (amps). If the current flows back and forth through a conductor, it is called alternating current (AC). If the current flows in one direction only, as in a car battery, it is called direct current (DC). AC is most widely used because it is possible to increase ("step up") or decrease ("step down") the current through a transformer. For example, when current from an overhead power line is run through a pole-mounted transformer, it can be stepped down to normal household current. Also, alternating current can travel enormous distances with little loss of voltage, or power.

Cycle: When alternating current flows back and forth through a conductor, it is said to cycle. In each cycle, the electrons flow first in one direction, then the other. In the United States, the normal rate for power transmission is 60 cycles per second, or 60 Hertz (Hz).

De-energize: To free from any electric connection and/or electric charge.

Electricity: The flow of an atom's electrons through a conductor.

Electrode: A conductor used to establish electrical contact with a nonmetallic part of a circuit.

Energize: To direct electric current through a conductor. Power lines and wires can be intentionally energized (or de-energized) to carry current to an electrical device. But conductive surfaces which are unintentionally energized, like the metal case of a tool, the metal housing of a circuit box, or a metal object such as an aluminum ladder, present a danger of electrocution.

Fault: An insulation failure that exposes electrified conductors, causing current to leak and possibly resulting in electric shock.

Fuse: A protective device which allows a piece of metal to become part of a circuit. The metal melts under heat created by excessive current, thereby interrupting the circuit and preventing the flow of electricity from exceeding the circuit's current-carrying capacity.

GFCI (Ground-fault circuit interrupter): A device that detects an insulation failure by comparing the amount of current flowing to electrical equipment with the amount of current returning from the equipment. Whenever the difference is greater than 5 milliamps, the GFCI trips and thereby interrupts the flow of electricity.

Ground: A conducting connection, intentional or unintentional, between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of the earth.

Ground-fault: A fault, or insulation failure, in the wire used to create a path to ground.

Grounding: To prevent the buildup of hazardous voltages in a circuit by creating a low-resistance path to earth or some other ground plane.

Guarding: Placement of live parts of electrical equipment where they cannot accidentally be contacted, such as in a vault, behind a shield, or on a raised platform, to which only qualified persons have access.

Impedance: Opposition to the flow of alternating (AC) electric current. See [Resistance](#).

Insulation: Non-conductive materials used to cover or surround a conductor, permitting it to be handled without danger of electric shock.

Insulator: Any material, such as glass or rubber that prevents the flow of electric current.

Kilowatt: One thousand watts.

Lockout: To lock a switch in the "off" position by means of a padlock, or to lock electrified equipment behind a locked door, to which only qualified persons have the key.

Low-Impedance: Low resistance to A/C current.

Milliampere: A unit of measurement equaling one thousandth (1/1000) of an ampere.

Ohm: The unit by which resistance to electrical current is measured. From Ohm's Law (Current=Voltage/Resistance, or in other words, Current=Voltage/Ohms), a mathematical expression of the relationship between these three elements.

Overcurrent: Any current in excess of the rated capacity of equipment or of a conductor.

Phase: In AC power systems, load current is drawn from a voltage source which typically takes the form of a sine wave. Ideally, the

current drawn by the loads in the system is also a sine wave. With a simple, resistive load such as a light bulb, the current sine wave is always aligned with the voltage sine wave. This is called single-phase. A single-phase power system normally uses three wires, called hot, neutral, and ground, and the voltage is typically 120/240. Most home and office outlets operate in this manner. With some loads, such as motors, and in high voltage systems, the current sine wave is purposely delayed and lags behind the voltage sine wave. The amount of this lag is expressed in degrees and is called a phase difference. A common example is three-phase power, where the system has three "hot" wires, each 120 degrees out of phase with each other.

Plug: A device to which the conductors of a cord are attached, which is used to connect to the conductors permanently attached to a receptacle.

Polarity: The relationship between poles of positive and negative charge, particularly with regard to wiring of conductors where the ungrounded (hot) conductor and grounded (neutral) conductor form a circuit.

Qualified Person: One familiar with the construction and operation of the equipment and the hazards involved.

Rating: The stated operating limit of a piece of equipment, expressed in a unit of measure such as volts or watts.

Raceway: A channel designed expressly for holding wires, cables, or bus bars, including conduit, tubing, wire ways, bus ways, gutters, or moldings.

Receptacle: A device, such as a jack or an outlet, to which conductors are attached, and where a plug makes contact with a source of electric current.

Resistance: Anything that impedes the flow of electricity, particularly in direct (DC) current. Resistance is measured in *ohms*.

Tag: To identify electric equipment by class, group, and the temperature range for which it is approved.

Volt: The unit by which electrical force or pressure is measured.

Voltage: The fundamental force or pressure that causes electricity to flow through a conductor. Measured in *volts*.

Watt: The unit by which *electric energy*, or the ability of electricity to do work, is measured. A thousand watts, or one *kilowatt*, equals 1.34 horsepower.

FALLS

Adjustable suspension scaffold: A suspension scaffold equipped with a hoist that can be operated by an employee on the scaffold.

Anchorage: A secure point of attachment for lifelines, lanyards, or deceleration devices.

Body belt: A strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device. (As of January 1, 1998 body belts are not acceptable as part of a [personal fall arrest system](#).)

Body harness: Straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders, with means for attaching it to other components of a personal fall arrest system.

Brace: A rigid connection that holds one scaffold member in a fixed position with respect to another member, or to a building or structure. See [Cross braces](#).

Cleat: A structural block used at the end of a platform to prevent the platform from slipping off its supports. Cleats are also used to provide footing on sloped surfaces such as crawling boards.

Connector: A device that is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabineer, or it may be an integral component of part of the system, such as a buckle or D-ring sewn into a body belt or body harness, or a snap hook spliced or sewn to a lanyard or self-retracting lanyard.

Controlled access zone (CAZ): An area in which certain work (e.g., overhand bricklaying) may take place without guardrail systems, personal fall arrest systems, or safety net systems, and access to the zone is controlled.

Cross braces: Two braces which cross each other in the form of an X.

Deceleration device: Any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyard, automatic self-retracting lifeline/lanyard, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.

Deceleration distance: The additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body belt or body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.

Fabricated frame scaffold: A scaffold consisting of platforms supported on fabricated end frames with integral posts, horizontal bearers, and intermediate members.

Failure: Load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.

Free fall: The act of falling before a personal fall arrest system begins to apply force to arrest the fall.

Free fall distance: The vertical displacement between onset of the fall and just before the fall arrest system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.

Guardrail system: A barrier erected to prevent employees from falling to lower levels.

Hole: A gap or void 2 inches (5.1 cm) or more in its least dimension, in a floor, roof, or other walking/working surface.

Hoist: A manual- or power-operated mechanical device to raise or lower a suspended scaffold.

Infeasible: Impossible to perform the construction work using a conventional fall protection system (i.e., guardrail system, safety net system, or personal fall arrest system) or technologically impossible to use any one of these systems to provide fall protection.

Ladder stand: A mobile, fixed-size, self-supporting ladder consisting of a wide flat tread ladder in the form of stairs.

Landing: A platform at the end of a flight of stairs.

Lanyard: A flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.

Leading edge: The edge of a floor, roof, or formwork for a floor or other walking/working surface (such as the deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed. A leading edge is considered to be an "unprotected side and edge" during periods when it is not actively and continuously under construction.

Lifeline: A component consisting of a flexible line connected vertically to an anchorage at one end (vertical lifeline), or connected horizontally to anchorages at both ends (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Low-slope roof: A roof having a slope less than or equal to 4 to 12 (vertical to horizontal).

Lower levels: Those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.

Maximum intended load: The total load of all persons, equipment, tools, materials, transmitted loads, and other loads reasonably anticipated to be applied to a scaffold or scaffold component at any one time.

Opening: A gap or void 30 inches (76 cm) or more high and 18 inches (48 cm) or more wide, in a wall or partition, through which employees can fall to a lower level.

Open sides and ends: The edges of a platform that are more than 14 inches (36 cm) away horizontally from a sturdy, continuous, vertical surface (such as a building wall) or a sturdy, continuous horizontal surface (such as a floor), or a point of access. Exception: For plastering and lathing operations the horizontal threshold distance is 18 inches (46 cm).

Overhand bricklaying: The process of laying bricks and masonry units such that the surface of the wall to be jointed is on the opposite side of the wall from the mason, requiring the mason to lean over the wall to complete the work. Related work includes mason tending and electrical installation incorporated into the brick wall during the overhand bricklaying process.

Personal fall arrest system: A system used to stop an employee in a fall from a working level. It consists of an anchorage, connectors, a body harness, and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. As of January 1, 1998, using a body belt for fall arrest is prohibited.

Platform: A work surface elevated above lower levels. Platforms can be constructed using individual wood planks, fabricated planks, fabricated decks, and fabricated platforms.

Positioning device system: A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.

Rated load: The manufacturer's specified maximum load to be lifted by a hoist or to be applied to a scaffold or scaffold component.

Rope grab: A deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.

Roof: The exterior surface on the top of a building. This does not include floors or formwork which, because a building has not been completed, temporarily become the top surface of a building.

Roofing work: The hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work, but not including the construction of the roof deck.

Safety-monitoring system: A safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.

Scaffold: Any temporary elevated platform (supported or suspended) and its supporting structure (including points of anchorage), used for supporting employees or materials or both.

Self-retracting lifeline/lanyard: A deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.

Snap hook: A connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snap hooks are generally one of two types: The locking type with a self-closing, self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection; or the non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection. As of January 1, 1998, the use of a non-locking snap hook as part of personal fall arrest systems and positioning device systems is prohibited.

Stair tower (Scaffold stairway/tower): A tower comprised of scaffold components and which contains internal stairway units and rest platforms. These towers are used to provide access to scaffold platforms and other elevated points such as floors and roofs.

Steep roof: A roof having a slope greater than 4 in 12 (vertical to horizontal).

Stilts: A pair of poles or similar supports with raised footrests, used to permit walking above the ground or working surface.

Toe board: A low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.

Tubular welded-frame scaffold: See [Fabricated frame scaffold](#).

Unprotected sides and edges: Any side or edge (except at entrances to points of access) of a walking/working surface, e.g., floor, roof, ramp, or runway, where there is no wall or guardrail system at least 39 inches (1.0 m) high.

Unstable objects: Items whose strength, configuration, or lack of stability may allow them to become dislocated and shift and therefore may not properly support the loads imposed on them. Unstable objects do not constitute a safe base support for scaffolds, platforms, or employees. Examples include, but are not limited to, barrels, boxes, loose bricks, and concrete blocks.

Walking/working surface: Any surface, whether horizontal or vertical, on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork, and concrete reinforcing steel, but not including ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.

Walkway: A portion of a scaffold platform used only for access and not as a work level.

Warning line system: A barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.

STRUCK-BY

Chock: A wedge, block, or large stone placed against the tires of a vehicle to prevent its moving, especially on an incline.

Formwork: The total system of support for freshly placed or partially cured concrete, including the mold or sheeting (form) that is in contact with the concrete as well as all supporting members including shores, reshores, hardware, braces, and related hardware.

Jacking operation: The task of lifting a slab (or group of slabs vertically from one location to another (e.g., from the casting location to a temporary (parked) location, or to its final location in the structure), during the construction of a building/structure where the lift-slab process is being used.

Lift slab: A method of concrete construction in which floor and roof slabs are cast on or at ground level and lifted into position using jacks.

Limited access zone: An area alongside a masonry wall that is under construction and clearly demarcated to limit access by

employees.

Pre-cast concrete: Concrete members (such as walls, panels, slabs, columns, and beams) which have been formed, cast, and cured before final placement in a structure.

Reshoring: The construction operation in which shoring equipment (also called reshores or reshoring equipment) is placed, as the original forms and shores are removed, to support partially cured concrete and construction loads.

Rollover protective structure (ROPS): Vehicle structures such as roll-bars, frames, roll-protective cabs etc., designed to prevent the vehicle operator from being crushed as a result of a rollover.

Seatbelt: A device, usually worn around the waist, consisting of a strap or straps anchored to a vehicle so as to hold a person in his seat.

Shore: A supporting member that resists a compressive force imposed by a load; or the operation by which a supporting member is placed.

Vertical slip forms: Forms that are jacked vertically during the placement of concrete.

TRENCHING AND EXCAVATION

Bell-bottom pier hole: A type of shaft or footing excavation, the bottom of which is made larger than the cross section above to form a belled shape.

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

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

Cross braces: The horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.

Excavation: Any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal.

Faces: The vertical or inclined earth surfaces formed as a result of excavation work.

Failure: The breakage, displacement, or permanent deformation of a structural member or connection so as to reduce its structural integrity and its supportive capabilities.

Hazardous atmosphere: An atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, may cause death, illness, or injury.

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

Ramp: An inclined walking or working surface that is used to gain access to one point from another, and is constructed from earth or from structural materials such as steel or wood.

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

Sheeting: The members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.

Shield (Shield system): A structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Additionally, shields can be either pre-manufactured or job-built in accordance with [29 CFR 1926.652\(c\)\(3\)](#) or [29 CFR 1926.652\(c\)\(4\)](#). Shields used in trenches are usually referred to as "trench boxes" or "trench shields."

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

Sides: See [Faces](#).

Sloping (Sloping system): A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

Spoil: The dirt, rocks, and other materials removed from an excavation and either temporarily or permanently put aside.

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

Structural ramp: A ramp built of steel or wood, usually used for vehicle access. Ramps made of soil or rock are not considered structural ramps.

Support system: A structure such as underpinning, bracing, or shoring that provides support to an adjacent structure, underground installation, or the sides of an excavation.

Tabulated data: Tables and charts approved by a registered professional engineer and used to design and construct a protective system.

Trench (Trench excavation): A narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m).

Trench box: See [Shield](#).

Trench shield: See [Shield](#).

Uprights: The vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not contact each other.

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

OSHA REFERENCE

E-Tools Construction Glossary

SECTION (C)

FIRST AID / CPR / BLOODBORNE PATHOGENS

Emergency measures to be taken when a person is suffering from overexposure to a hazardous material or situation, before regular medical help can be obtained.

All sites shall have competent employees trained in First Aid and CPR as required by OSHA.

When to dial 9-1-1

- Loss of consciousness
- Fall resulting in broken bones, internal injury, or back/neck injury
- Impalement
- Loss of limb
- Heat Stroke
- Unsure what to do
- THERE IS NO WRONG TIME TO CALL 911 DURING A MEDICAL EMERGENCY!

Procedure

CHECK-PROTECT-CALL-CARE

1. Check the scene's safety situation – if it is not safe, do not enter. Unless you have been properly trained.
2. Protect yourself, wear proper protective equipment
3. Act promptly, check for breathing, bleeding or broken bones
4. Call 9-1-1 if needed
 - a. Refer to employee emergency action plan for contact information or local medical facilities.

5. Do not move injured person in case there are internal injuries or broken neck/back.
6. Check for breathing, have a trained employee begin CPR
 - a. One you start CPR, you will have to continue until medical personnel arrive
7. Stop the bleeding, use a snug bandage or direct pressure. Do not use a tourniquet!
8. Immobilize broken bones. Use any rigid material to secure the break above and below the area.
9. Check for shock; pale, moist, and clammy skin are signs. Keep the injured person warm and lying down.
10. Bandage wounds, this will help prevent infection.
11. Never give liquids to an unconscious victim.

Superintendent's Responsibility

- Make sure the hazard has been neutralized
- Do not allow any additional employee to enter a dangerous situation
- Alert 9-1-1 and other medical personnel
- Stabilize employee
- Begin 1st Aid/CPR or have qualified employee begin treatment
- Fill out an incident report, once employee has been tended to or medical personnel have taken control of the situation. Report can be found in Appendix (A)

First Aid Kit Locations

All Ragle, Inc. Vehicles will have a First Aid Kit located behind the seat of the cab or in the truck toolbox.

All Ragle, Inc. tool/material storage units have large First Aid Kits located inside the door.

Training Requirements

To properly utilize first aid treatments and CPR techniques, all personnel shall successfully complete a certified training course over both activities.

Ragle, Inc. will provide the proper training for both CPR and First Aid. Please check with your crew members on previous training and expiration dates.

Blood borne Pathogens

Diseases are able to be spread through blood and/or saliva. During CPR and First Aid, the responders can be put at risk. OSHA requires these people to take "Universal Precautions," which means that all bodily fluids are to be treated as if they are carriers of blood borne pathogens.

All First Aid Kits are stocked with latex gloves and all River Town vehicles/storage units are stocked with one-way mouth barrier devices. These are to be used during the administration of First Aid and/or CPR.

If an employee is exposed to fluids while helping they should immediately inform the Safety Manager and have a proper medical check up. This medical check up will be at no cost to the employee.

OSHA Reference

Medical Services and First Aid – 1926.50

SECTION (D)

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Personal Protective Equipment is used for the protection of an employee's face/eyes, feet, hands, head, and hearing. These are critical to any job and therefore must be protected.

Ragle, Inc. will complete a hazard assessment of each individual job and provide appropriate PPE to complete hazardous tasks.

All employees are to be trained in the function and proper use of all PPE.

Objective

To ensure all employees are protected from hazards during the construction process.

Hazard Assessment

Prior to work starting on a project a qualified individual will complete a process known as a "Hazard Assessment."

The process should begin with a list of potential hazards in the following basic hazard categories:

- Impact
- Penetration
- Compression
- Chemical
- Heat/Cold
- Harmful Dust
- Light (optical) Radiation

- Biological
- Equipment

Once a list has been compiled the project supervisor and Safety Manager will designate the proper PPE for each hazard listed.

The hazard assessment is an ongoing process for the duration of the project.

Please utilize the hazard assessment form located in Appendix (?)

Face/Eye Protection

Safety glasses or face shields are to be worn any time work operations can cause foreign objects to get in the eye and or strike the face. All Face/Eye Protection must comply with ANSI Z87.1-1989.

- Common Types
 - Regular clear safety glasses
 - Tinted safety glasses
 - Prescription eye glasses (**Can only be used if approved for impact/safety use**)
 - Goggles
 - Face Shields
 - Full Helmets (Welding)
- Common Hazards
 - Unidentified Flying Objects
 - Particles from brushing, grinding, cutting, sawing, hammering
 - Invisible Hazards (welding or lasers)
 - Liquids

Ragle, Inc. provides eye protection for everyone including protection that will fit over prescription eye glasses.

All Superintendents' will maintain a constant supply of safety eye/face protection.

OSHA STANDARD for Face/Eye Protection:

- 1910.132 - General Requirements
- 1926.102 - Construction

Feet Protection

All employees entering any construction jobsite shall wear safety foot protection that has at a minimum:

- Steel Toe or safety toe work shoes/boots
- Slip-resistant shoes/boots
- Puncture-resistant shoes/boots

Additional protection could be: Leggings, Metatarsal Guards, Toe Guards, and specialty shoes designed for electrical hazards.

It is the responsibility that all employees are aware of the foot protection requirements.

Hand Protection

Due to hands on nature of the construction industry, hand protection is not be taken lightly. The proper hand protection will be provided by Ragle, Inc. to successfully complete the task at hand.

It is the responsibility of the management staff to ensure all safety measures have been taken.

There are many types of protective gloves for numerous hazards. If any question arises as to which glove is best suited for the activity, then please contact the Safety Manager to get the right information.

The following factors will influence the glove selection:

- Types of chemicals handles
- Nature of contact
- Duration of contact
- Area requiring protection
- Grip requirements
- Thermal protection
- Size and comfort
- Abrasion/resistance requirements

Gloves are made from a wide variety of materials, but generally fall into four categories:

- Gloves made of leather, canvas, or metal mesh
- Fabric and coated fabric gloves
- Chemical and liquid-resistant gloves
- Insulating rubber gloves (29 CFR 1910.137 for selection and care)

All jobsites will at a minimum have packages of rawhide leather gloves for employees to use during the working hours.

Head Protection

All employees are required by policy to wear hard hats at all times, with no exceptions unless agreed to by the Safety Manager and other precautions have been taken.

The following are a minimum requirement for all hard hats and head protection gear.

- Resist penetration by objects

- Absorb the shock of a blow
- Be water resistant and slow burning
- Have clear instructions explaining proper adjustment and replacement of the suspension and headband.

Hardhats must have a hard outer shell that incorporates a shock absorbing head liner with a minimum clearance of 1 to 1-1/4 inch from shell to head.

All protective headgear must meet ANSI Standard Z89.1-1986

Type of Hardhats:

- Class A Hardhats - Provide impact and penetrations resistance along with limited voltage protection (up to 2,200 volts)
- Class B Hardhats - Provide impact and penetration resistance. Provides the highest level of protection against electrical hazards, with high-voltage shock and burn protection (up to 20,000 volts).
- Class C Hardhats - Provide lightweight comfort and impact protection, but no protection from electrical hazards.
- Bump Hat - Designed for use in areas with low head clearance. Provides no protection from impact or penetration. Are not ANSI approved.

Routine maintenance and inspection are required on all hardhats. This is to be done weekly or after any impact or damage is done to any head protection.

Hardhats can be found in jobsite storage units or the Safety Manager.

Hearing Protection

Due to the high noise level of the construction industry, all employees will be trained and receive the proper hearing protection.

Factors that lead to hearing loss:

- The loudness of noise as measured in decibels (dB).
- The duration of each employee's exposure to the noise.
- Whether the employees move between work areas with different noise levels.
- Whether noise is generated from one or multiple sources.

Employees may be exposed to a noise level of 90 dB for 8 hours before hearing protection is required.

Noises are considered continuous if the interval between occurrences of maximum noise level is 1 second or less. Noises not meeting this are considered impact noises.

Permissible Noise Exposures Tables:

Duration per day, in hours	Sound Level in dB*
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
.5	110
.25 or less	115

* When measured on the A scale of a standard sound level meter at slow response

Source: 29 CFR 1910.95, Table G-16

Some Types of Hearing Protection:

- Single-use Earplugs - Self Forming Earplugs that are disposable
- Pre-formed or molded earplugs - Individually fitted and can be disposable or reusable
- Earmuffs - Fit entirely over the ears. Are used in conjunction with earplugs.

Training Requirements

All employees will be trained in the proper use of PPE. The training will cover at a minimum:

- When PPE is necessary
- What PPE is necessary
- How to properly put on, take off, adjust and wear the PPE.
- The limitations of PPE
- Proper care, maintenance, useful life and disposal of PPE.

Training will be held by a competent person and all employees will have to demonstrate an understanding of the PPE as well as the ability to properly wear the equipment.

Ragle, Inc. will provide the proper training for all PPE. Please check with your crew members on previous training and expiration dates.

OSHA REFERENCE

Medical services and first aid – 1926 Subpart E

SECTION (E)

FIRE PROTECTION AND PREVENTION

Flammable and Combustible Liquids

Only approved containers and portable tanks shall be used for storage and handling of liquids. Approved Metal Safety Cans will be acceptable for containment and transportation for any volume of liquid over 1 gallon. Certain items will be allowed to be transported in original containers.

Flammable Liquid means any liquid having a flash point below 140 deg F and having a vapor pressure not exceeding 40 psi at 100 deg F.

Combustible Liquid means any liquid having a flash point at or above 140 deg F and below 200 deg F.

OSHA Section 1926.152

Gasoline is Flammable / Diesel Fuel is Combustible

Labels and Warning Elements

All containers (greater than 5 gallons) for flammable or combustible liquids will have the following posted in a conspicuous location.

- Name of Contents (i.e. Diesel Off Road, Gasoline, Kerosene)
- No Smoking
- Liquid Type (Flammable or Combustible)
- Warnings

Fire Extinguishers

Fire Extinguishers will be located on all company vehicles, in all enclosed cab equipment, in all shops and offices.

All Extinguishers will be inspected annually and replaced once the contents have been discharged. Contact the Safety Manager to replace a used extinguisher.

Sizes and Classifications:

- 2.5, 5, 10, 20 - this number refers to pounds and the size of fire each can handle
- A,B,C,D - the letter refers to the type of ignition source
 - A - Used on ordinary combustibles like wood, cloth, and paper.
 - B - Used on fires involving liquids, greases, and gases.
 - C - Used on fires involving energized electrical equipment.
 - D - Used on fires involving metals such as magnesium, potassium.

For the transportation or storage of any liquids that are flammable or combustible, a minimum of 10# BC Fire Extinguisher is required.

All jobsite fuel tanks will have a 20# BC Fire Extinguisher located within a 25 FT to 75 FT range.

Procedure

Maintain fire extinguisher in good working condition, with all necessary tags and inspections.

When using a portable fire extinguisher, remember the word **PASS**.

- **P** - Pull the Pin from the Handle
- **A** - Aim the Fire Extinguisher towards the Base of the Fire
- **S** - Squeeze the Handle Down
- **S** - Sweep the Nozzle Back and Forth at the Base of the Fire

A portable fire extinguisher is useful for attacking a small fire. However, do not overestimate the power of a portable fire extinguisher. If necessary, evacuate the area and call for the fire department.

OSHA Reference

Fire Protection and Prevention – Subpart 1926.155

SECTION (F)

SIGNS, SIGNALS AND BARRICADES

Signs, Signals, and Barricades are important to maintaining a safe work environment.

Warning devices will be visible at all times while work is being performed.

Definitions

Barricades - Obstruction to deter the passage of person or vehicle

Signs - Warnings of hazards temporarily or permanently affixed or placed at locations where hazards exist.

Signals - Moving signs, provided by workers, such as flaggers or devices, to warn of possible or existing hazards.

Tags - Temporary signs, usually attached to a piece of equipment or structure to warn of existing or immediate hazards.

Danger Signs

Danger signs shall be used only where an immediate hazard exists.



Caution Signs

Caution signs shall be used to only warn against potential hazards or to caution against unsafe practices.



Safety Instruction Signs

Safety instruction signs, when used, shall be used to inform personnel of safe work habits or other safety related needs.

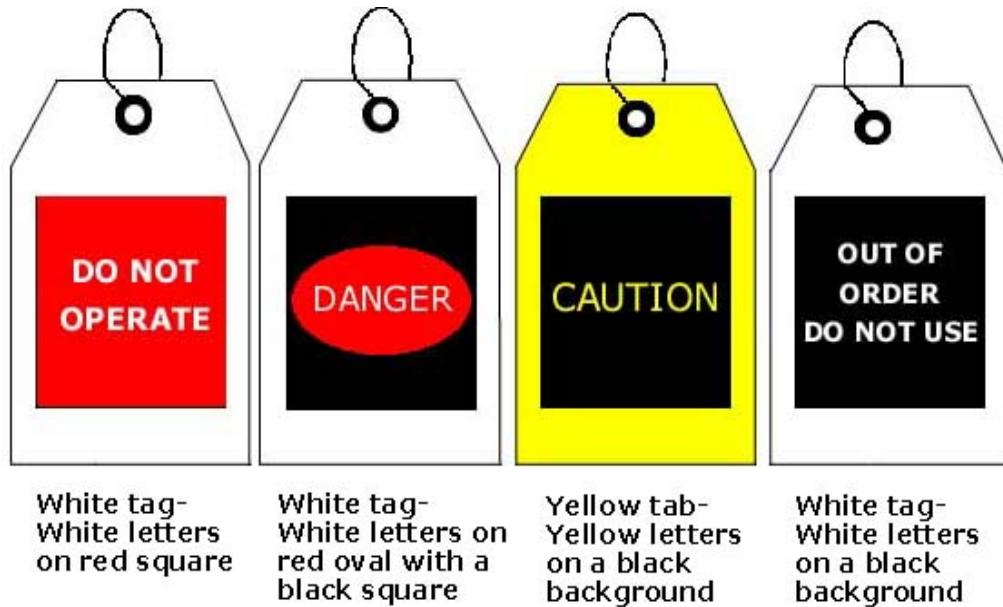


Traffic Signs

All traffic control signs and barricades will meet *Manual on Uniform Traffic Control Devices* MUTCD 2009 National Standards.

Accident Prevention Tags

Accident prevention tags shall be used as a temporary means of warning employees of an existing hazard, such as defective tools and equipment.



Basic Stock (Background)	Safety Colors (Ink)	Copy Specification (Letters)
White	Red	Do Not Operate
White	Black and Red	Danger
Yellow	Black	Caution
White	Black	Out of Order Do Not Use

Flaggers

When operations are such that sign, signal, and barricades do not provide adequate protection on or adjacent to roads, flaggers or other appropriate traffic controls will be provided.

All signals will conform to MUTCD 2009.

Flaggers will use Stop/Slow Paddles at least 24" across set on a pole with a length of 7'6".

Flaggers **MUST** wear a class II or better reflective vest when directing traffic.

For night time operations, supervision will dictate additional protective measures.

OSHA Reference

Signs, Signals, and Barricades – Subpart 1926.155

SECTION (G)

MATERIALS HANDLING, STORAGE AND HOUSE KEEPING

Materials handling covers a large list of activities. This section will cover everything from an employee picking something up off the ground to a crane setting a piece of steel.

Ergonomics is the term used to describe a person's motion and actions regarding materials and the proper handling of them.

Housekeeping refers to the organization and cleanliness of the jobsite.

Material Handling Proper Lifting Technique

1. Stretch prior to lifting
2. Bend at the knees
3. Keep back straight
4. Do not bend at the back
5. Use your legs to lift the load
6. Use two hands when lifting objects

Material Handling

- Single Person Capacity
 - Less than 80lbs
 - Use proper lifting technique
 - Avoid repetitive movement
 - Stretch prior to lifting
- Two Person Capacity
 - If object is too awkward or bulky use equipment
 - Use proper lifting technique

- Multiple Person Capacity
 - Any load that is too large or heavy for two people to safely move
- Equipment Capacity
 - Any object that is too large or heavy for people to move
 - Be sure load is secure before moving

Potential Hazards

- Strains and sprains from improperly lifting loads or carrying loads that are too heavy.
- Fractures and bruises caused by being struck by materials
- Cuts and bruises caused by falling or shifting materials that were improperly stored
- Back problems due to improperly lifting loads

Seek help when you are moving a load, do not over exert yourself to move a load.

Material Storage

The storage of materials is a process that with a little planning and thought, a job and activity can be accomplished easier.

Storage ideas:

- Pallets - use when ever possible, easily moved
- Dunnage - Any material such as 4x4's that will keep material off the ground
- Blocking - Similar to dunnage
- Shelves - Placing material back on shelves will allow it to be found easier in the future
- Plastic - Cover objects that need to be protected from the weather with 6 mil plastic black preferably
- Indoors - Storage of certain materials indoors will help protect from weather and thieves

House Keeping

All jobsites and indoor facilities utilized by our crews will take care to use proper staging and house keeping practices.

Staging – The act of placing material where it will not be handled more than once, be in the way, or placed without organization.

- Try to place materials near the final point of use (within 25 – 75 feet)
- Utilize racks or shelves when storing materials and tools in trailers and shops
- Position materials so that equipment can easily access it
- Preplan your yards and shops

House Keeping – The act of maintain a clean and organized jobsite and/or yard

- Preplan your yards and shops
- Try to maintain access for equipment and vehicles
- Make items easily accessible
- Pickup trash
- Leave work areas maintained and secure
- Equipment
 - Park together near lights
 - Park near fuel tanks

For material handling information utilizing slings and rigging refer to the cranes section N.

OSHA Reference

SECTION (H)

TOOLS – HAND AND POWER

This industry relies heavily on tools to complete projects. They are part of nearly every operation in the field and because of this; we forget they can be potential hazards.

Hand Tools

Non-powered and cover a wide range of tools.

Potential Hazards and Prevention

- Do not use tools in ways they are not intended
- If a tool is damaged, discard said tool immediately
- Be aware of sharp tools and the proper handling
- Wear proper PPE
- Be aware of potential ignition hazards from electrical or metal sparks

Power Tools

Power tools use electric, pneumatic, liquid fuel, hydraulic and powder-actuated fuel sources to function.

These tools require routine maintenance and proper care to be useful and safe on a daily basis.

Before an employee uses any power tool, they shall be trained by a competent person.

Precautions

- Never carry a tool by the cord or hose
- Never yank the cord or hose to disconnect
- Keep cords and hoses away from heat, oil, and sharp edges
- Disconnect tools when not in use, before servicing, and when changing accessories
- All observers should be kept a safe distance away from the work area

- Secure work with clamps or a vise, free both hands
- Avoid accidental starting
- Tools should be maintained with care. They should be kept sharp and clean.
- Follow tool's instruction manual for care and changing accessories.
- Be sure to keep good footing and maintain good balance.
- Wear the proper apparel. No Loose Clothing!
- All tools that are damaged shall be removed from use and tagged "Do Not Use."
- Be aware of hot parts on the tools.

Guards

Hazardous moving parts of a power tool need to be safeguarded. The guards are to remain in place without tampering to protect users from injury.

Protection from the following:

- Point of operation
- In-running nip points
- Rotating parts
- Flying Chips and Sparks

DO NOT REMOVE THE GUARDS FROM GRINDERS!!!!

Safety Switches

Following equipment to have Momentary "On-Off" Switch

- Drills
- Tappers
- Fastener Drivers
- Grinders with wheels larger than 2" diameters
- Disc and Belt Sanders
- Reciprocating Saws
- Saber Saws

- Similar Tools

Following equipment to have at minimum Positive “On-Off” Switches

- Platen Sanders
- Disc Sanders with disc 2” or less in diameter
- Grinders with wheels less than 2” diameters
- Routers
- Planers
- Nibblers
- Shears
- Scroll Saws
- Jig Saws

Following equipment to have a constant pressure switch

- Circular Saws
- Chain Saws
- Chop Saws
- Percussion Tools

Electric Tools

Care and Protection

- Tools must have a three-wired cord with ground or be grounded
- Double Insulated or powered by a low-voltage isolation transformer
- Ground must be connected to the tool’s metal housing and a prong to the plug
 - NEVER REMOVE THE THIRD PRONG FROM A PLUG!

General Practices

- Operate within their design limitations

- Gloves and safety footwear are recommended
- When not in use, tools should be stored in their original containers or a dry place
- Do not use in Damp or Wet locations

Powered Abrasive Wheel Tools

Powered abrasive tools create special safety problems because they may throw off flying fragments.

Prior to mounting abrasive wheels

1. Visually inspect for cracks and defects
2. Check wheel RPM rating
 - a. Make sure the tool does not spin faster than wheel is designed for
3. Gently tap wheel with non-metallic instrument
 - a. Listen to see if wheel is cracked or dead
4. Make sure spindle size fits the tool

Due to a wheel exploding during startup, do not stand in front of machine during startup.

Protection/Prevention of Injuries

- Always wear eye protection
- Turn off the power when not in use
- Never clamp a hand-held grinder in a vise

Pneumatic Tools

Tools that are powered with compressed air.

Hazards

- Getting hit by a tool, an attachment, or a fastener being used
- Noise – Wear proper PPE
- Damage to eyes and face – Wear proper PPE
- Never point an air nail gun towards another person

Procedure

1. Wear proper PPE
2. Check tool for any damage
3. Hook tool up to a dead line
 - a. Use wire or locking pin to lock hose, tool, and air source together
4. Check that safety clips are in and working on tools
5. Setup screens if need be to prevent other workers from being struck by debris

Powder-Actuated Tools

NO POWDER ACTUATED TOOLS ARE ALLOWED ON ANY COMPANY JOBSITE!

OSHA Reference:

SECTION (I)

HOTWORK – WELDING & CUTTING

Proper precautions should be taken in areas where hot work is being done. No welding, cutting, or heating shall be done where the application of flammable paints, or other compounds and dust could create a hazard.

There shall be a 10# BC Fire Extinguisher within 25' of all hot work. When needed, a fire watcher will be provided to assist with fire prevention.

Proper PPE shall be worn at all times.

Ventilation

Ventilation shall be deemed adequate if it is of sufficient capacity and so arranged as to remove fumes and smoke at the source and keep their concentration in the breathing zone within safe limits as defined in Subpart D of Part 1926.

- Contaminated air shall be discharged clear of the source of intake air.
- Oxygen shall not be used for ventilation purposes, comfort cooling, blowing dust from clothing, or for cleaning work area.
- All air replacing that withdrawn shall be clean and repairable.
- Except where air line respirators are required or allowed, adequate mechanical ventilation shall be provided.
- Employees working in the general vicinity or enclosed space as welders/cutters shall have same respiratory protection

Welding, Cutting, or Heating of Metals of Toxic Significance

- Zinc-bearing base or filler metals
- Lead base metals
- Cadmium-bearing filler metals
- Chromium-bearing metals
- Beryllium-containing base or filler metals
 - Will use ventilation and air line respirators

Gas Welding and Cutting

Transporting, Moving, and Storage of Compressed Gas Cylinder

- Valve protection caps shall be in place and secured when cylinder is not in use.
- When cylinders are hoisted, they shall be secured to an approved cylinder container. Never use slings or magnets to hoist cylinders.
- Do not strike, drop, or bang a cylinder.
- When transported in a vehicle, cylinders shall be in the vertical position
- During transport, all valves and gauges are to be removed from cylinders and protection caps in place.
- A suitable cylinder truck, chain, or other steadying device should be used to secure cylinders during use.
- Cylinder valves to be closed at all times when not being used.
- Compressed gas cylinders to be secured in upright position at all times.
- Oxygen cylinders in storage shall be separated from fuel-gas cylinders (acetylene) or combustible materials, a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high and having a fire resistance rating of at least one-half hour.

Cylinder Placement

- Keep far enough away from work so that sparks, slag, or flame can not reach them.
- When it is impossible to separate cylinders far enough away from work, then a fire resistant shield shall be used.

- Do not place where cylinders can become part of an electrical circuit.
- Fuel gas cylinders shall be placed in a location that is free of flame, hot metal, or other sources of heat.
- Cylinders containing oxygen and acetylene or other fuel gas shall not be taken into confined spaces.

Proper Use of Fuel Gas

- All employees will be properly trained prior to working with compressed gas
- No cutting or welding will be allowed until proper regulator gauges are install on cylinders.
- Before attaching a regulator to a cylinder the valve shall be opened slightly and closed immediately (“cracking”). The person “cracking” shall stand to the side and clear the area of any heat, flame, spark, or electrical sources.
- Cylinder valves shall be opened slowly to prevent damage to regulators. Fuel gas cylinders shall not be opened more than 1 turn. If a special wrench is required, then that wrench is to remain in place on the cylinder valve.
- Before removing a regulator, completely close the cylinder valve and release the gas from the regulator.
- If, when a valve on a fuel gas cylinder is opened, there is found to be a leak around the valve stem, the valve shall be closed and the gland nut tightened. If this does not correct the leak then the cylinder shall be discontinued. The supplier shall be contacted and instructed to come and get the cylinder.
- If a leak occurs at the valve stem and gas can not be shut off, the cylinder is to be tagged and removed from the work area to a safe location. If a regulator stops the leak then the cylinder can remain in operation.
- If a leak occurs at a fuse plug or other safety device, the cylinder shall be removed from the work area.

Cutting Tools

- Hoses
 - Fuel gas and oxygen hoses shall be easily distinguishable from each other.

- Fuel gas and oxygen hoses shall not be interchangeable
- When parallel fuel gas and oxygen hoses are taped together no more than 4" in 12" shall be taped.
- All hoses shall be inspected prior to each use for damage
- Hoses which are subject to flashback, show wear or damage shall be tested to twice the normal pressure, but in no case less than 300 psi, for failure.
- Couplings shall be the type that cannot be disconnected by means of a straight pull.
- Boxes used for the storage of gas hoses shall be ventilated.
- Hoses, cables, and other equipment shall be kept clear of passageways, ladders, and stairs.
- Torches
 - Clogged tips shall be cleaned with suitable wires, drills, or other approved devices.
 - Torches in use shall be inspected at the beginning of each working shift.
 - Defective torches shall be tagged and not used.
 - Torches shall be lighted by friction lighters or other approved devices.
 - Torches can not be lighted with match or from hot work.
- Regulators and Gauges
 - Shall be in good working order to be used.

Arc Welding and Cutting

Operating Instructions

- All employees shall be instructed on the safe means to arc weld and cut.
- When electrode holders are to be left unattended, the electrodes shall be removed and the holders shall be so placed or protected that they cannot make electrical contact with employees or conducting objects.
- Hot electrode holders shall not be dipped in water. To do so may expose the arc welder or cutter to electric shock.

- When work is stopped or the welding/cutting machine has to be moved, the power supply switch to the equipment shall be opened.
- Any faulty or defective equipment shall be reported to the supervisor.
- A disconnecting means shall be provided in the supply circuit for each motor generated arc welder, and for each AC transformer and DC rectifier arc welder which is not equipped with a disconnect mount as an integral part of the welder.
- A switch or circuit breaker shall be provided by which each resistance welder and its control equipment can be isolated from the supply circuit. The ampere rating of the disconnecting means shall not be less than the supply conductor ampacity.
- Whenever practicable, all arc welding cutting operations shall be shielded by noncombustible or flameproof screen which will protect employees and other persons working in the vicinity from the direct rays of the arc.

Manual Electrode Holders

- Only manual electrode holders which are specifically designed for arc welding and cutting, and are of a capacity capable of safely handling the maximum rated current required by the electrodes, shall be used.
- All current carrying parts that shall be gripped by hand shall be fully insulated against the maximum voltage encountered to ground.

Welding Cables and Connectors

- All arc welding and cutting cables shall be of the completely, insulated, flexible type, capable of handling the maximum current requirements of the work in progress, taking into account the duty cycle under which the arc welder or cutter is working.
- Only cable which is free from repair or splice a minimum of 10 feet from the cable end to which the electrode holder is connected shall be used.
- Cables in need of repair shall not be used. When a cable becomes worn to the extent of exposing bare conductors, the portion shall be protected by means of rubber and friction tape or other equivalent insulation.

- When connecting or splicing cables, substantial insulated connectors of a capacity at least equivalent to that of the cable shall be used. All exposed connectors shall be completely insulated.

Ground Returns and Machine Grounding

- A ground return cable shall have a safe current-carrying capacity equal to or exceeding the specified maximum output capacity of the arc welding or cutting unit which it services.
- No container which contains flammable or combustible material is to be used as a ground.
- When a structure or pipeline is continuously employed as a ground return circuit, all joints shall be bonded, and periodic inspections shall be conducted to ensure that no condition of electrolysis or fire hazard exists.
- The frames of all arc welding and cutting machines shall be grounded either through a third wire in the cable containing the circuit conductor or through a separate wire which is grounded at the source of the current.
- All ground connections shall be inspected to ensure that they are mechanically strong and electrically adequate for the required current.

Hazards

I. CHEMICAL AGENTS

ZINC

Zinc is used in large quantities in the manufacture of brass, galvanized metals, and various other alloys. Inhalation of zinc oxide fumes can occur when welding or cutting on zinc-coated metals. Exposure to these fumes is known to cause metal fume fever. Symptoms of metal fume fever are very similar to those of common influenza. They include fever (rarely exceeding 102° F), chills, nausea, dryness of the throat, cough, fatigue, and general weakness and aching of the head and body. The victim may sweat profusely for a few hours, after which the body temperature begins to return to normal. The symptoms of metal fume fever have rarely, if ever, lasted beyond 24 hours. The subject can then appear to be more susceptible to the onset of this condition on Mondays or on weekdays following a holiday than they are on other days.

CADMIUM

Cadmium is used frequently as a rust-preventive coating on steel and also as an alloying element. Acute exposures to high concentrations or cadmium fumes can produce severe lung irritation, pulmonary edema, and in some cases, death. Long-term exposure to low levels of cadmium in air can result in emphysema (a disease affecting the ability of the lung to absorb oxygen) and can damage the kidneys. Cadmium is classified by OSHA, NIOSH, and EPA as a potential human carcinogen.

BERYLLIUM

Beryllium is sometimes used as a alloying element with copper and other base metals. Acute exposure to high concentrations of beryllium can result in chemical pneumonia. Long-term exposure can result in shortness of breath, chronic cough, and significant weight loss, accompanied by fatigue and general weakness.

IRON OXIDE

Iron is the principal alloying element in steel manufacture. During the welding process, iron oxide fumes arise from both the base metal and the electrode. The primary acute effect of this exposure is irritation of nasal passages, throat, and lungs. Although long-term exposure to iron oxide fumes may result in iron pigmentation of the lungs, most authorities agree that these iron deposits in the lung are not dangerous.

MERCURY

Mercury compounds are used to coat metals to prevent rust or inhibit foliage growth (marine paints). Under the intense heat of the arc or gas flame, mercury vapors will be produced. Exposure to these vapors may produce stomach pain, diarrhea, kidney damage, or respiratory failure. Long-term exposure may produce tremors, emotional instability, and hearing damage.

LEAD

Welding and cutting of lead-bearing alloys or metals whose surfaces have been painted with lead-based paint can generate lead oxide fumes. Inhalation and ingestion of lead oxide fumes and other lead compounds will cause lead poisoning. Symptoms include metallic taste in the mouth, loss of appetite, nausea, abdominal cramps, and insomnia. In time, anemia and general weakness, chiefly in the muscles of the wrists, develop. Lead adversely affects the brain, central nervous system, circulatory system, reproductive system, kidneys, and muscles.

FLUORIDES

Fluoride compounds are found in the coatings of several types of fluxes used in welding. Exposure to these fluxes may irritate the eyes, nose, and throat. Repeated exposure to high concentrations of fluorides in air over a long period may cause pulmonary edema (fluid in the lungs) and bone damage. Exposure to fluoride dusts and fumes has also produced skin rashes.

CHLORINATED HYDROCARBON SOLVENTS

Various chlorinated hydrocarbons are used in degreasing or other cleaning operations. The vapors of these solvents are a concern in welding and cutting because the heat and ultraviolet radiation from the arc will decompose the vapors and form highly toxic and irritating phosgene gas. (See Phosgene.)

PHOSGENE

Phosgene is formed by decomposition of chlorinated hydrocarbon solvents by ultraviolet radiation. It reacts with moisture in the lungs to produce hydrogen chloride, which in turn destroys lung tissue. For this reason, any use of chlorinated solvents should be well away from welding operations or any operation in which ultraviolet radiation or intense heat is generated.

CARBON MONOXIDE

Carbon monoxide is a gas usually formed by the incomplete combustion of various fuels. Welding and cutting may produce significant amounts of carbon monoxide. In addition, welding operations that use carbon dioxide as the inert gas shield may produce hazardous concentrations of carbon monoxide in poorly ventilated areas. This is caused by a "breakdown" of shielding gas. Carbon monoxide is odorless, colorless and tasteless and cannot be readily detected by the senses. Common symptoms of overexposure include pounding of the heart, a dull headache, flashes before the eyes, dizziness, ringing in the ears, and nausea.

OZONE

Ozone (O₃) is produced by ultraviolet light from the welding arc. Ozone is produced in greater quantities by gas metal arc welding (GMAW or short-arc), gas tungsten arc welding (GTAW or heli-arc), and plasma arc cutting. Ozone is a highly active form of oxygen and can cause great irritation to all mucous membranes. Symptoms of ozone exposure include headache, chest pain, and dryness of the upper respiratory tract. Excessive exposure can cause fluid in the lungs (pulmonary edema). Both nitrogen dioxide and ozone are thought to have long-term effects on the lungs.

NITROGEN OXIDES

Ultraviolet light of the arc can produce nitrogen oxides (NO, NO₂), from the nitrogen (N) and oxygen (O₂) in the air. Nitrogen oxides are produced by gas metal arc welding (GMAW or short-arc), gas tungsten arc welding (GTAW or heli-arc), and plasma arc cutting. Even greater quantities are formed if the shielding gas contains nitrogen. Nitrogen dioxide (NO₂), one of the oxides formed, has the greatest health effect. This gas is irritating to the eyes, nose and throat but dangerous concentrations can be inhaled without any immediate discomfort. High concentrations can cause shortness of breath, chest pain, and fluid in the lungs (pulmonary edema).

II. PHYSICAL AGENTS

ULTRAVIOLET RADIATION

Ultraviolet radiation (UV) is generated by the electric arc in the welding process. Skin exposure to UV can result in severe burns, in many cases without prior warning. UV radiation can also damage the lens of the eye. Many arc welders are aware of the condition known as "arc-eye," a sensation of sand in the eyes. This condition is caused by excessive eye exposure to UV. Exposure to ultraviolet rays may also increase the skin effects of some industrial chemicals (coal tar and cresol compounds, for example).

INFRARED RADIATION

Exposure to infrared radiation (IR), produced by the electric arc and other flame cutting equipment may heat the skin surface and the tissues immediately below the surface. Except for this effect, which can progress to thermal burns in some situations, infrared radiation is not dangerous to welders. Most welders protect themselves from IR (and UV) with a welder's helmet (or glasses) and protective clothing.

INTENSE VISIBLE LIGHT

Exposure of the human eye to intense visible light can produce adaptation, papillary reflex, and shading of the eyes. Such actions are protective mechanisms to prevent excessive light from being focused on the retina. In the arc welding process, eye exposure to intense visible light is prevented for the most part by the welder's helmet. However, some individuals have sustained retinal damage due to careless "viewing" of the arc. At no time should the arc be observed without eye protection.

OSHA Reference: 1926.350

SECTION (J)

ELECTRICAL

Electrical hazards can cause burns, shocks, electrocution, and death.

Overhead/In Ground Power Lines

Assume that all lines are energized unless the utility company has come out and inspected the line.

Never touch a fallen power line, in the event that one has been struck, clear the area and contact the local utility company.

Overhead Lines Clearance Distances

- To 50 kV - 10 FT
- Over 50 kV to 200 kV - 15 FT
- Over 200 kV to 350 kV - 15 FT
- Over 350 kV to 500 kV - 25 FT
- Over 500 kV to 700 kV - 35 FT
- Over 700 kV to 1000 kV - 45 FT

kV = 1000 volts

OSHA Reference

Electrical - 1926.400

SECTION (K-1)

SCAFFOLDS

Scaffold shall refer to any temporary elevated platform and its supporting structure used for supporting workmen or materials, or both.

There are numerous types of scaffolding found in the construction industry, but at Ragle, Inc. the following will be utilized:

- **Wood Pole Scaffolds**
- **Tubular Welded Frame Scaffolds**
- **Manually Propelled Mobile Scaffolds**
- **Carpenters' Bracket Scaffolds**

All scaffolding erected shall be **designed by a qualified person**

All scaffolds are to be **erected, moved, dismantled, or altered** only under the **supervision of a competent person**.

NEVER remove components of a scaffold system while scaffold is in use!

Employees shall not work on scaffolds during storms or high winds.

General Requirements (OSHA Section 1926.451)

Design

- Scaffolds and their components shall be capable of supporting without failure 4 times the maximum load.
- Where persons are required to work or pass under scaffold, scaffolds shall be provided with a screen between the toe board and guardrail.
 - o Screen shall be No. 18 gauge U.S. Standard Wire inch mesh, or equivalent.
- Guardrails and toe boards shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor.
- All scaffolds 4 feet to 10 feet in height, with a minimum horizontal dimension in either direction of less than 45 inches, shall have standard guardrails installed on all open sides and ends.
- The use of shore or lean-to scaffolds is prohibited
- Scaffold becomes inherently unstable once its height is four times its minimum base dimension.
 - o Once a scaffold reaches a height of 4:1 of its base dimension; guys, ties, and braces must be installed according to the manufacturer's recommendation or the closest horizontal member to the 4:1 height ratio.
 - o This bracing shall be repeated every 20 vertical feet (3 feet or less in width)
 - o This bracing shall be repeated every 26 vertical feet (greater than 3 feet).
 - o For most activities, there is to be no more than a 14 inch gap between the scaffold platform and the structure being worked on.

Inspection

- Scaffolds and components shall be inspected for visible defects prior to each shift.
- The inspection must be done by a competent person.
- Scaffold is to be inspected after any occurrence which could damage or weaken the structure.
- Check to see if power lines near scaffold are de-energized or that the scaffolds are at least 10 feet away from energized power lines.
- Verify scaffold is correct type for activity.
- Check footing to ensure they are level, sound, rigid, and capable of supporting scaffold loads.
- Check legs, posts, frames, and uprights to see if they are on base plates and mudsills.

Footing

- The footing or anchorage shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement.
- Scaffolds must be set on base plates, mud sills, or other adequate firm foundation.

Structure/Base

- Any parts or accessories to a scaffold that are damaged or weakened from any cause shall be immediately repaired or replaced.
- Supported scaffold poles, frames, uprights, etc. must be plumb and braced to prevent swaying and displacement.
- Frames and panels must be connected by cross, horizontal, or diagonal braces, alone or in combination.
- As frames are stacked, cross braces must be of such length as will automatically keep the scaffold plumb, level, and square.
- All brace connections must be secured to prevent dislodging
- Frames and panels must be joined vertically by coupling or stacking pins.
- Frames and panels must be locked together to prevent uplift, where uplift can occur.
 - o *Uplift can occur in high winds, or when workers climb end frames, overload the platform, or strike the scaffold with tools, materials, equipment.*
- **Do not intermix scaffold components from different manufacturers**
- **Do not modify scaffold components to fit**
- Components made of dissimilar metals must not be used together unless a competent person has determined that galvanic action will not reduce the strength.

Platform

- **All planking shall be Scaffold Grades, or equivalent, as recognized by approved grading rules for the species of wood used.**
- Planks shall extend over their end supports not less than 6 inches or more than 12 inches.
- Each platform must be fully planked or decked between the front uprights and the guardrail supports.

- Platforms used solely as walkways, or during erection or dismantling, require only the planking that the employer establishes as necessary.
- No gaps greater than 1 inch are permitted between adjacent planks or deck units, or between the platform and uprights, unless a wider space is necessary. In special cases the gap shall be no greater than 9.5 inches.
- Wooden planking shall not be coated with anything that obscures the wood surface.
- Scaffold platforms and walkways must be at least 18 inches wide.
- Nothing that could cause a slip, trip or fall is allowed to accumulate on the platform.
- When moving platforms to the next level, the existing platform must be left undisturbed until the new end frames have been set in place and braced.
- Platforms must be cleated or otherwise restrained at each end, or else overlap support at least 6 inches.
- Each end of a platform may not exceed over its support more than 12 inches (for platforms 10 feet or shorter in length) or more than 18 inches (for platforms more than 10 feet long).
- Where platforms are overlapped to create a long platform, the overlap may only occur over supports and may not be less than 12 inches.
- On scaffolds where platforms are abutted to create a long platform, each abutted end must rest on a separate support surface.
- **When platforms are to change direction, consult with a competent person.**

Guardrail

- Guardrails shall be 2x4 inches, or equivalent, approximately 42 inches high, with a mid-rail, when required.
- Supports shall be at intervals not to exceed 8 feet.
- Toe boards shall be a minimum of 4 inches in height.
- Guardrail shall be capable of withstanding, without failure, a force of at least 200 pounds applied within 2" of the top edge, in any outward or downward direction at any point along the top edge.

Access/Egress

- Employees must be able to safely access any level of a scaffold that is 2 feet above or below an access point.
- **OSHA standards forbid climbing cross braces as a means of access.**
- Portable, hook on, and attachable ladders must be positioned so as not to tip the scaffold.
- Hook-on and attachable ladders must be specifically designed for use with the type of scaffold on which they are used.
- Hook-on and Attachable **Ladder Rungs:**
 - Be positioned so that their bottom rung is not more than 24 inches above the scaffold supporting level.
 - Have uniform spacing between rungs of a maximum 16.75 inches.
 - Have a minimum rung length of 11.5 inches.
 - Have rest platforms provided at a maximum of 35 foot vertical intervals.
- Stairway type ladders shall:
 - Be positioned so that their bottom step is not more than 24 inches above the scaffold supporting level.
 - Have rest platforms at maximum intervals of 12 feet
 - Have a minimum step width of 16 inches, except for mobile scaffold stairway-type ladders, which shall have a minimum step width of 11.5 inches.
 - Have slip-resistant treads on all steps and landings.
- Steps and rungs of ladders and stairway-type ladders shall line up vertically with each other between rest platforms.
- **Integral (Built-in) Access (Job Built)**
 - **Be specifically designed and constructed for use as ladder rungs.**
 - **Not to be used as work platforms when rungs are less than 11.5 inches in length, unless each affected employee uses appropriate fall protection.**
 - **Have rungs which are uniformly spaced and a length of at least 8 inches, with a maximum space between rungs of 16.75 inches.**
 - **Have rest platforms provided at a maximum of 35 foot vertical intervals.**
- Stair towers (scaffold stairway/towers) - Consult with Safety Manager prior to constructing.

- Ramps
 - Ramps and Walkways 6 feet or more above lower levels must have guardrails that comply with Subpart M - Fall Protection
 - No ramp or walkway shall incline more than 1:3.
 - If a ramp or walkway has a slope of more than 1:8, it must have cleats securely fastened to the planks not more than 14 inches apart.
- Direct access to or from another surface is permitted only when the scaffold is not more than 14 inches horizontally and not more than 24 inches vertically.
- Erectors and Dismantlers - operations shall be coordinated with Competent Person.

Type of Scaffold

Wood Pole Scaffold

Pole scaffolds are a type of supported scaffold in which every structural component, from uprights to braces to platforms, is made of wood.

OSHA has standards for two types

1. Single pole - which are supported on their interior side by a structure or wall.
2. Double pole - which are supported by double uprights independent of any structure.

Prior to constructing a wood pole scaffold - consult with a competent person.

Tubular Welded Frame Scaffold

Tubular Welded Frame scaffolds are a type of supported scaffold in which the parts and accessories are made up of welded tube steel.

All previous requirements shall apply to its use.

Manually Propelled Mobile Scaffold

Manually Propelled Mobile scaffolds are a type of supported scaffold in which the scaffold tower is able to be moved by two people.

- When free-standing mobile scaffold towers are used, the height shall not exceed four times the minimum base dimensions.
- Casters shall be properly designed for strength and dimensions to support four times the maximum intended load.
- Casters shall be provided with a positive locking device to hold the scaffold in position.
- Employees are prohibited from riding the scaffold unless the following conditions exist:
 - The floor or surface is with 3 degree of level
 - The floor or surface is free from pits, holes, or obstructions.
 - The minimum dimension of the scaffold base when ready for rolling is at least one-half of the height.
 - Outriggers, if used, shall be installed on both sides of staging
 - The wheels are equipped with rubber or similar resilient tires
 - All tools and materials are secured or removed from the platform before the mobile scaffold is moved.

Carpenters' Bracket Scaffold (Bridge Overhang Jacks)

Carpenters' Bracket scaffolds are a type of supported scaffold in which the platform is supported by triangular support braces off the side of a structure or wall.

All Carpenters' Bracket scaffold shall be designed by a qualified individual.

- Each bracket shall consist of a triangular wood frame not less than 2 x 3 inches in cross section, or of metal of equivalent strength.
- Each bracket shall be attached to the structure by means of one of the following:
 - o A bolt, no less than five-eighths inch in diameter, which shall extend through to the inside of the structure.
- Do not field weld any scaffold products unless the product has been designed to be field welded.
- A 6"x2" piece of lumber is attached to the top of various overhang brackets and is part of the bracket design. Never use an overhang bracket with out having a 6" x 2" lumber attached.
- **Engineered Drawings are available for all bridges and the required bridge overhang installation.**

OSHA Reference

Scaffolding - Subpart 1926.451

SECTION (K-2)

SCAFFOLDS (AERIAL WORK PLATFORMS)

Aerial Lifts include boom-supported aerial platforms such as cherry pickers or bucket trucks.

Aerial Lifts include the following types of vehicle-mounted aerial devices used to elevate personnel to job-sites above ground.

- Extensible boom platforms
- Aerial Ladders
- Articulating Boom Platforms
- A combination of any such vehicles.

On extensible boom platforms, lift controls shall be tested each day prior to use to determine that such controls are in safe working condition.

ALL WORKERS WILL BE TRAINED PRIOR TO OPERATING AERIAL LIFTS BY A QUALIFIED PERSON

Only authorized personnel shall operate an aerial lift

Tying off to an adjacent object or structure while working from an aerial platform shall not be permitted.

Employees shall stand firmly on the platform floor.

Employees shall not climb, stand, or sit on edge of basket or use planks, ladders, or other devices for a work position.

A fall protection harness shall be worn and a lanyard attached to the boom or basket when working from and aerial lift.

Boom and basket load limits specified by the manufacturer shall not be exceeded

Wheel chocks shall be installed before using an aerial lift on an incline, provided they can be safely installed

Never move the equipment with workers in the an elevated platform unless this is permitted by the manufacturer

Maintain a minimum clearance of 10 feet away from the nearest overhead power lines!

Do not exceed the load limit

OSHA Reference:

Scaffolding - Aerial Lifts - Subpart 1926.453

SECTION (L)

FALL PROTECTION

Falls are a leading cause of injury in the construction industry

Definitions

Anchorage - A secure point of attachment for lifelines, lanyards or deceleration devices.

Body Belt - A strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline or deceleration device.

Body Harness - Straps that may be secured about the person in a manner that distributes the fall-arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with a means for attaching the harness to other components of a personal fall arrest system.

Connector - A device that is used to couple (connect) parts of a personal fall arrest system or positioning device system together.

Controlled access zone - A work area designated and clearly marked in which certain types of work (such as overhand bricklaying) may take place without the use of conventional fall protection systems—guardrail, personal arrest or safety net—to protect the employees working in the zone.

Deceleration device - Any mechanism—such as rope, grab, ripstitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards—which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limits the energy imposed on an employee during fall arrest.

Deceleration distance - The additional vertical distance a falling person travels, excluding lifeline elongation

and free fall distance, before stopping, from the point at which a deceleration device begins to operate.

Guardrail system - A barrier erected to prevent employees from falling to lower levels.

Hole - A void or gap 2 inches (5.1 centimeters) or more in the least dimension in a floor, roof or other walking/working surface.

Lanyard - A flexible line of rope, wire rope, or strap that generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.

Leading edge - The edge of a floor, roof, or formwork for a floor or other walking/working surface (such as the deck) which changes location as additional floor, roof, decking or formwork sections are placed, formed or constructed.

Lifeline - A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline) and that serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Low-slope roof - A roof having a slope less than or equal to 4 in 12 (vertical to horizontal).

Opening - A gap or void 30 inches (76 centimeters) or more high and 18 inches (46 centimeters) or more wide, in a wall or partition, through which employees can fall to a lower level.

Personal fall arrest system - A system including but not limited to an anchorage, connectors, and a body belt or body harness used to arrest an employee in a fall from a working level. As of January 1, 1998, the use of a body belt for fall arrest is prohibited.

Positioning device system - A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning

backwards.

Rope grab – A deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest a fall.

Safety – monitoring system—A safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.

Self-retracting lifeline/lanyard – A deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under minimal tension during normal employee movement and which, after onset of a fall, automatically locks the drum and arrests the fall.

Snap hook – A connector consisting of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released automatically closes to retain the object.

Steep roof – A roof having a slope greater than 4 in 12 (vertical to horizontal).

Toe board – A low protective barrier that prevents material and equipment from falling to lower levels and which protects personnel from falling.

Unprotected sides and edges – Any side or edge (except at entrances to points of access) of a walking/working surface (e.g. floor, roof, ramp, or runway) where there is no wall or guardrail system at least 39 inches (1 meter) high.

Walking/working surface – Any surface, whether horizontal or vertical, on which an employee walks or works, including but not limited to floors, roofs, ramps, bridges, runways, formwork, and concrete reinforcing steel. Does not include ladders, vehicles, or trailers on which employees must be located to perform their work duties.

Warning line system – A barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.

Supervision and the safety department are required to assess a project's needs for fall protection.

Fall Protection Categories

Fall Arrest

- Used any time a working height of 6 ft or more is encountered
- Will only come into service should a fall occur
- A full body harness with a shock absorbing lanyard or a retractable lifeline is the only product recommended

Positioning

- Holds the worker in place while keeping feet/hands free to work.
- Whenever the worker leans back the system is activated.
- Is **not** specifically designed for fall arrest purposes.

Suspension

- Equipment lowers and supports the worker while allowing a hands-free work environment
- Widely used in window washing and painting industries
- Not designed to arrest free fall
- Backup fall arrest system should be used in conjunction with this system.

Retrieval

- System used to rescue an employee who has fallen

Areas Requiring Fall Protection

- Ramps
- Runways
- Walkways
- Excavations
- Hoist Areas
- Holes
- Formwork
- Leading Edge Work
- Unprotected Sides/Edges
- Pre-cast Concrete Erection
- Wall Openings

Any area where there is a height of 6 feet above a lower surface level.

Any equipment that presents a hazard.

Controlled Access Zones

A work area designated and clearly marked in which certain types of work may take place without the use of conventional fall protection systems.

Utilize control lines to define the restricted area.

- Flagged or otherwise clearly marked at not more than 6 foot intervals.
- Rigged and supported in such a way that the lowest point (including sag) is not less than 39 inches from the walking/working surface and the highest point is not more than 45 inches.
- Strong enough to sustain stress of not less than 200 pounds.
- Extend along the entire length of the unprotected or leading edge.
- Approximately parallel to the unprotected edge

- Erected not less than 6 feet and no more than 25 feet from unprotected edge

Excavations

Protection must be provided at the edge of an excavation that is 6 FT or deeper.

Formwork and Reinforcing Steel

Rebar

- When moving horizontally or vertically on the face of rebar assemblies built in place, fall protection is not required when employees are moving. OSHA considers the multiple hand holds and foot holds to be providing similar protection as that provided by a fixed ladder.
- Consequently, no fall protection is necessary while moving point to point for heights below 24 feet.
- Fall protection must be used when climbing or otherwise moving at a height greater than 24 feet.

Fall Protection Systems

Guardrail Systems Criteria

- Top edge height of top rails must be between 39 and 45 inches above the walking/working level.
- Mid-rails, screen, mesh, intermediate vertical members, or equivalent must have the top edge at least 21 inches high.
 - Screens and mesh must extend from the top rail to the walking/working level and along the entire guardrail system length.
 - Intermediate members between posts must be no more than 19 inches apart.
 - Other structural members must be installed so as to leave no openings wider than 19 inches.
- Must be capable of withstanding at least 200 pounds of force applied within 2 inches of the top edge, in any direction and at any point along the edge, and without causing the top rail to deflect to less than 39 inches from the working surface.

- Mid-rails, screens, mesh, and other intermediate members must be capable of withstanding at least 150 pounds of force applied in any direction along the entire length of the system.
- Can not have rough or jagged surfaces
- Must have a Toe Plate installed along the bottom of the system.
- Ends of top rails and mid-rails must not overhang terminal posts

Personal Fall Arrest Criteria

Consists of an anchorage, connectors, and a body harness (body belts are no longer allowed for fall protection of heights greater than 6') and a deceleration device, lifeline, or suitable combination.

If a personal fall arrest system is used for fall protection it must do the following:

- Limit maximum arresting force on an employee to 1800 pounds when used with a body harness.
- Be rigged so that an employee can neither free fall more than 6 feet nor contact any lower level
- Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet
- Have sufficient strength to withstand twice the potential impact energy of an employee free-falling a distance of 6 feet or the free fall distance permitted by the system, whichever is less.

As of January 1, 1998, the body belt fall arrest system is prohibited.

Inspect the fall arrest system and components before each use.

If components have been subject to a fall, remove from service immediately.

Rescue employees immediately after a fall!

Do not attach fall arrest system to guardrail systems or hoists.

Rig fall arrest systems to allow movement of the worker only as far as the edge of the walking/working surface

Positioning Device Criteria

These body belt or body harness systems are to be set up so that workers can free fall no farther than 2 feet.

They shall be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or 3,000 lbs, whichever is greater.

Warning Line Systems

Consist of ropes, wires, or chains, and supporting posts and are set up as follows:

- Flagged at not more than 6' Intervals
- Rigged and supported so that the lowest point is no less than 34 inches from the walking/working surface and its highest point is no more than 39 inches from the working surface.
- Posts after being rigged with warning lines, shall be capable of resisting a force of at least 16 pounds, applied horizontally 30 inches above the working surface.
- The rope, wire, or chain shall have a minimum tensile strength of 500 pounds, and must support without breaking the force applied to the posts.
- The rope, wire, or cable shall be attached to the posts in such a way that pulling on one section of the line between posts will not result in slack being taken up in the adjacent section.
- Erected no less than 6 ft from an edge.

Covers

- Must be able to support twice the maximum load
- Roadway covers must be able to withstand twice the maximum axle load

- Must be secured from moving, displacement, wind
- Color coded or bear markings “HOLE” or “COVER”

Fall Protection Equipment

Class 1

Body Belts (single or double D-ring) are designed to restrain a person in a hazardous work position and to reduce the possibility of falls. They should not be used when fall potential exists; **positioning only**.

Class 2

Chest harnesses are used when there are only limited fall hazards (no vertical free fall hazard), or for retrieving persons such as removal of persons from a tank or a bin.

Class 3

Full body harnesses are designed to arrest the most severe free falls.

Class 4

Suspension belts are independent work supports used to suspend a worker, such as boatswain's chairs or raising or lowering harnesses.

Anchorage

Used for attachment of personal fall arrest systems; must be capable of supporting at least 5,000 pounds per employee attached; designed with a safety factor of 2; used under the supervision of a qualified person.

Body Harness

Use approved body harness for both the application and for the body size and weight.

Rope Lanyard

Offers some elastic properties for all arrest; used for restraint purposes

Web Lanyard

Ideal for restraint purposes where fall hazards are less than 2 feet.

Rip stitch Lanyards

Must be capable of sustaining a minimum tensile load of 5,000 pounds when in fully extended position

Cable Positioning Lanyards

Designed for corrosive or excess heat environments and must be used in conjunction with shock absorbing devices.

Shock Absorbers

When used, the fall arresting force will be greatly reduced if a fall occurs.

Rope Grabs

A deceleration device which travels on a lifeline, used to safely ascend or descend ladders or sloped surfaces and automatically, by friction, engages lifeline and locks so as to arrest the fall of an employee.

Retractable Lifeline Systems

Gives fall protection and mobility to the user when working at height or in areas where there is a danger of falling. Self-retracting vertical lifelines and lanyards automatically arrest free fall distance to 2 feet or less and must be capable of withstanding a minimum tensile load of 3,000 pounds.

Safety Nets

Can be used to lessen the fall exposure when working where temporary floor and scaffolds are not used, and the fall distance exceeds 25 feet.

Rail Systems

When climbing a ladder, rail systems can be used on any fixed ladder as well as curved surfaces as a reliable method of fall prevention.

Vertical Lifelines/Lanyards

Must have a minimum breaking strength of 5,000 lbs, and be protected against cuts or abraded. Each employee must be attached to a separate lifeline.

Connectors

Includes D-rings and snap hooks, must be made from drop-forged, pressed or formed steel, or equivalent materials. They must have a corrosion resistant finish.

- D-Rings - must have a minimum tensile strength of 5,000 pounds and be proof tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or permanently deforming.
- Snap hooks - Must have a minimum tensile strength of 5,000 pounds and be proof tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or permanently deforming. They must also be locking-type, double-locking. Designed and used to prevent the disengagement of the snap hook with the connected member.
 - Must not be engaged to the following, unless designed to:
 - Directly to the webbing, rope, or wire
 - To each other
 - To a D-ring to which another snap hook or other connector is attached.
 - To a horizontal lifeline
 - To any object which is incompatibly shaped in relation to the snap hook such that the connected object could depress the snap hook keeper and itself.

Equipment Maintenance and Inspection

All pieces of a fall protection system shall be inspected on a daily basis. Visual inspection should be done prior to each use.

Harness Inspection

- Belts and Rings – Bend the belt in six to eight inch lengths and look for frayed edges, broken fibers, pulled stitches, cuts or chemical damage. Check D-rings and d-ring metal wear pads for distortion, cracks, breaks, and rough or sharp edges. Check to make sure the D-ring pivots freely.
- Attachments of Buckles and D-rings – Note any unusual wear, frayed or cut fibers, or distortion of buckles. Rivets should be tight and unremovable with fingers. Body side rivet base and outside rivets should be flat against material. Bent rivets will fail.
- Inspect frayed and broken strands. Broken webbing appears as tufts on the webbing surface.
- Tongue Buckle – Be free of distortion in shape and motion. Should move freely in their socket. Rollers should turn freely on the frame.
- Friction Buckle – Inspect for distortion, the outer bar or center bars must be straight. Pay special attention to corners and attachment points of the center bar.

Lanyard Inspection

- Hardware – Snaps: Inspect closely for hook and eye distortion, cracks, corrosion, or pitted surfaces. Keeper or latch should seat into the nose without binding and should not be distorted. The keeper spring should exert sufficient force to firmly close the keeper. Keeper locks must provide the keeper from opening when the keeper is closed.
- Hardware – Thimbles: The thimble (protective plastic sleeve) must be firmly seated in the eye of the splice, and the splice should have no loose or cut strands.
- Steel Lanyards – While rotating a steel lanyard, watch for cuts, frays, or unusual wear pattern on the wire. These are not recommended without a shock absorbing device.
- Web Lanyards – While bending the webbing over a piece of pie, observe each side of the webbed lanyard. Look for cuts or breaks. These are not recommended without a shock absorbing device.
- Rope Lanyard – Rotation of the rope lanyard will bring to light any fuzzy, worn, broken or cut fibers. Weakened areas will appear with a noticeable change in diameter. The rope diameter should be uniform throughout. These are not recommended without a shock absorbing device.

- Shock-Absorbing Packs - The outer portion should be examined for burn holes and tears. Stitching on areas where the pack is sewn to the D-ring, belt or lanyard should be examined for loose strands, rips and deterioration.

Training

All employees shall be trained in the proper use and setup of fall protection systems.

A qualified person shall be directly responsible for all fall protection systems put into use in the field.

OSHA Reference

Fall Protection - Subpart M 1926.502

SECTION (M)

CRANES, DERRICKS, HOISTS, ELEVATORS, AND CONVEYORS

Objective

To ensure all supervisors and employees working directly with cranes are trained and informed of the proper techniques and requirements regarding the safe operations of cranes.

NO CRANE SHALL BE LOADED BEYOND THE RATED LOAD!

Regulations

New OSHA Rules

Employee Certification or Qualified Employee

- Any person engaged in a construction activity who is operating a crane covered by the new rules

Testing and certification requirements

- Certification has two parts:
 - A written examination that includes the safe operating procedures for the particular type of equipment the applicant will be operating and technical understanding of the subject matter criteria required in 1926.147(j).
 - A practical exam showing the applicant has the skills needed to safely operate the equipment. Including, among other skills, the ability to properly use load chart information and recognize items required in the shift inspection.

How to become qualified / certified and meet OSHA requirements:

1. A certificate from an accredited crane operator testing organization
2. Qualification from the employer through an audited employer program

3. Qualification by the US Military (only applies to employees of Department of Defense or Armed Forces and does not include private contractors)
4. Licensing by a state or local government (if that licensing meets the minimum requirements set forth by OSHA)

OSHA Regulations

All employees and operators shall comply with the manufacturer's specifications and limitations applicable to the operation of any and all cranes and derricks.

Attachments used with cranes shall not exceed the capacity, rating, or scope recommended by the manufacturer.

Rated load capacities, and recommended operating speeds, special hazard warnings, or instruction, shall be conspicuously posted on all equipment.

Instructions or warnings shall be visible to operators while they are at their control stations.

Hand signals to crane operators shall be those prescribed by ANSI standard for the type of crane in use.

Annual inspections shall be completed by a qualified individual certified to inspect cranes.

Accessible areas within the swing radius or the rear of a crane, either permanently or temporary mounted, shall be barricaded in such a manner as to prevent an employee from being struck or crushed by the crane

No hoisting, lowering, swinging, or traveling shall be done while anyone is on the load or hook.

Loads will not be permitted to swing above working people, unless no alternative exists.

An approved fire extinguisher shall be kept in the vicinity of the crane

Equipment

- **Inspection**

- Inspection procedures for cranes in regular service is divided in to two categories
 - “Frequent”
 - Daily intervals
 - “Periodic”
 - 1 to 12 month intervals, or as specified by the manufacturer
- Items such as the following shall be inspected:
 - All control mechanisms for maladjustment interfering with proper operation, **DAILY**
 - All control mechanisms for excessive wear of components and contamination by lubricants or other foreign matter
 - All safety devices for malfunction
 - Deterioration or leakage in air or hydraulic systems, **DAILY**
 - Crane hooks with deformations or cracks.
 - More than 15 percent in excess of normal throat opening
 - More than 10 percent degree twist from the plane of the unbent hook
 - Rope reeving for noncompliance
 - Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, and moisture accumulation.
 - Deformed, cracked, or corroded members in the crane structure and boom,
PERIODIC
 - Loose bolts or rivets, **PERIODIC**
 - Cracked or worn sheaves and drums, **PERIODIC**
 - Worn, cracked, or distorted parts such as pins, bearings, shafts, gears, rollers and locking devices, **PERIODIC**
 - Excessive wear on brake and clutch system parts, linings, pawls, and ratchets,
PERIODIC

- Load, boom angle, and other indicators over their full range, for any significant inaccuracies, **PERIODIC**
 - Gasoline, diesel, electric, or other power plants for improper performance or noncompliance with safety requirements, **PERIODIC**
 - Excessive wear or chain drive sprockets and excessive chain stretch, **PERIODIC**
 - Travel steering, braking, and locking devices, for malfunction, **PERIODIC**
 - Excessively worn or damaged tires, **PERIODIC**
- Cranes which have been idle for a period of six months shall be given a thorough inspection prior to use.
- Inspection records
 - Include date of inspection
 - Signature of person performing inspection
 - Serial number
 - Other identifiers
 - Done monthly on critical items
 - Shall be kept readily available

- **Safety Devices**

- Boom-angle Indicators
- Boom Stops
- Boom Kick-out Devices
- Anti-two Block Devices
- Load Moment Indicators
- Safety devices are not limited to these listed

- **Types**

- Crawler Cranes
- Truck Mounted Cranes

- Overhead and Gantry Cranes
- Tower Cranes

- **Proper Use**

- Assembly/Disassembly
 - Work is to be directed by an A/D (Assembly/Disassembly) Director
 - The A/D Director must be both a “qualified person” and a “competent person”
 - The A/D Director will review the procedures with the crew prior to beginning work
 - All hazards will be discussed with the crew prior to beginning work
 - The A/D director must verify all capacities of support equipment, including rigging, lifting lugs, etc.
 - The A/D must address hazards associated with operation: site and ground conditions, block material, proper location of blocking, verifying assist crane loads, boom & jib pick points, center of gravity, stability upon pin removal, snagging, struck by counterweights, boom hoist brake failure, loss of backward stability, and wind speed and weather.
 - Upon completion of assembly, equipment must be inspected by a “qualified person” prior to use. Inspection information can be found in the inspection area of this section.
 - A crew member who moves out of the operator’s view where injury could occur must inform the operator of move. The equipment will not be moved until the crew member has informed the operator of return or safe clearance.
 - **Employees must never be under the boom or jib when pins (or similar devices) are being removed!**
 - Component weights must be available
 - All rigging must be done by a “qualified rigger”
 - Pins may not be removed during disassembly when the pendants are in tension

- Components selection and equipment configuration that affects the capacity or safe operation must be in accordance with manufacturer's recommendation
- Outriggers, stabilizers, or tracks
 - Must be fully extended or deployed as specified in the load chart
 - Outriggers must be set to remove equipment weight from the wheels
 - Each outrigger or stabilizer must be visible to the operator or to a signal person during extension and setting
 - Blocking must be placed under the float/pad of the jack or, if there is no jack, under the outer bearing surface of the outrigger or stabilizer beam.
- Do not unlock or remove pins unless sections are blocked and secured (stable).
- Traveling
 - The boom shall be carried in line with the direction of motion
 - The superstructure shall be secured against rotation, except when negotiating turns when there is an operator in the cab or the boom is supported on a dolly.
 - The empty hook shall be lashed or otherwise restrained so that it cannot swing freely.
- Traveling with load
 - A designated person will be responsible for determining and controlling safety.
 - Position of load
 - Boom location
 - Ground support
 - Travel route
 - Speed of movement
- Operating
 - Operator shall not be permitted to leave his position at the controls while the load is suspended

- If the load must remain suspended for any considerable time, the positive controllable means to hold the drum from rotating in the lowering direction will be activated
- Electrical
 - Contact the responsible electric provider to discuss lines and proper precautions
 - “Prohibited Zone” – The area of clearance around an energized power line. See Table under clearances
 - Nearby power lines may require de-energizing prior to work starting
 - Insulating barriers may be erected to prevent physical contact with lines
 - Use warning signs, flags, or other highly visible devices to provide a reminder of overhead lines
 - No one is to touch the crane or load if crane is in the “prohibited zone”
 - **Response to Contact**
 - **If the crane does come into contact with power line REMAIN IN THE CAB**
 - **DO NOT PANIC.** You should be safe so long as you stay at a constant voltage within the cab
 - Instruct all personnel to **KEEP AWAY** from the crane and load.
 - The ground around the crane is also likely energized
 - Try and disengage the crane from contact, and move it at least 10–15 feet from the power line.
 - If contact cannot be broken, the operator should remain in the cab until the lines can be deenergized.
 - The crane must be inspected prior to commencing work operations.
 - **Emergency Evacuation**
 - If you have to leave the crane cab before the lines are deenergized (such as in the case of fire), **do not climb down – JUMP!** Making contact with the crane and the ground at the same time could be fatal

- Do not run or take long strides – electric current goes to ground in gradients and the voltage differential between gradients can kill. Instead, slowly shuffle away or take short jumps with your feet firmly together.
 - Once you are safely clear of the crane, seek medical attention.
 - **REPORT THE CONTACT TO THE RESPONSIBLE AUTHORITIES!**
- **Charts & Loads**
 - **Load Rating Chart shall be located in cab of crane at all times!**
 - Crane shall be located on grade within 1 % slope
 - Load Ratings shall not exceed 85%
 - The weight of all auxiliary handling devices such as hoist blocks, hooks, and slings shall be considered a part of the load
 - **The load chart will also be influenced by:**
 - **Freely Suspended Loads**
 - **Wind Conditions**
 - **Ground Conditions**
 - **Condition and Inflation of Tires**
 - **Boom Lengths**
 - **Proper Operating Speeds for Existing Conditions**
 - **Careful and Competent Operation**
- **Wire Rope**
 - Inspection
 - “Running ropes” – A thorough inspection of all wire ropes in use shall be performed at least once a month.
 - Date of inspection
 - Signature of person inspecting
 - Identifier for the ropes inspected

- Kept on file
- Potential signs indicating loss of strength:
 - Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.
 - A number of broken outside wires and the degree of distribution of concentration of such broken wires
 - Worn outside wires
 - Corroded or broken wires at end connections
 - Corroded, cracked, bent, worn, or improperly applied end connections
 - Severe kinking, crushing, cutting, or un-stranding
- Check wires at sheaves
- All rope which has been idle for over a month shall be inspected with the same procedure when “running ropes”

Signaling

The qualification requirements for signal persons go into effect on November 8, 2010.

A signal person will be required to be a “qualified person”

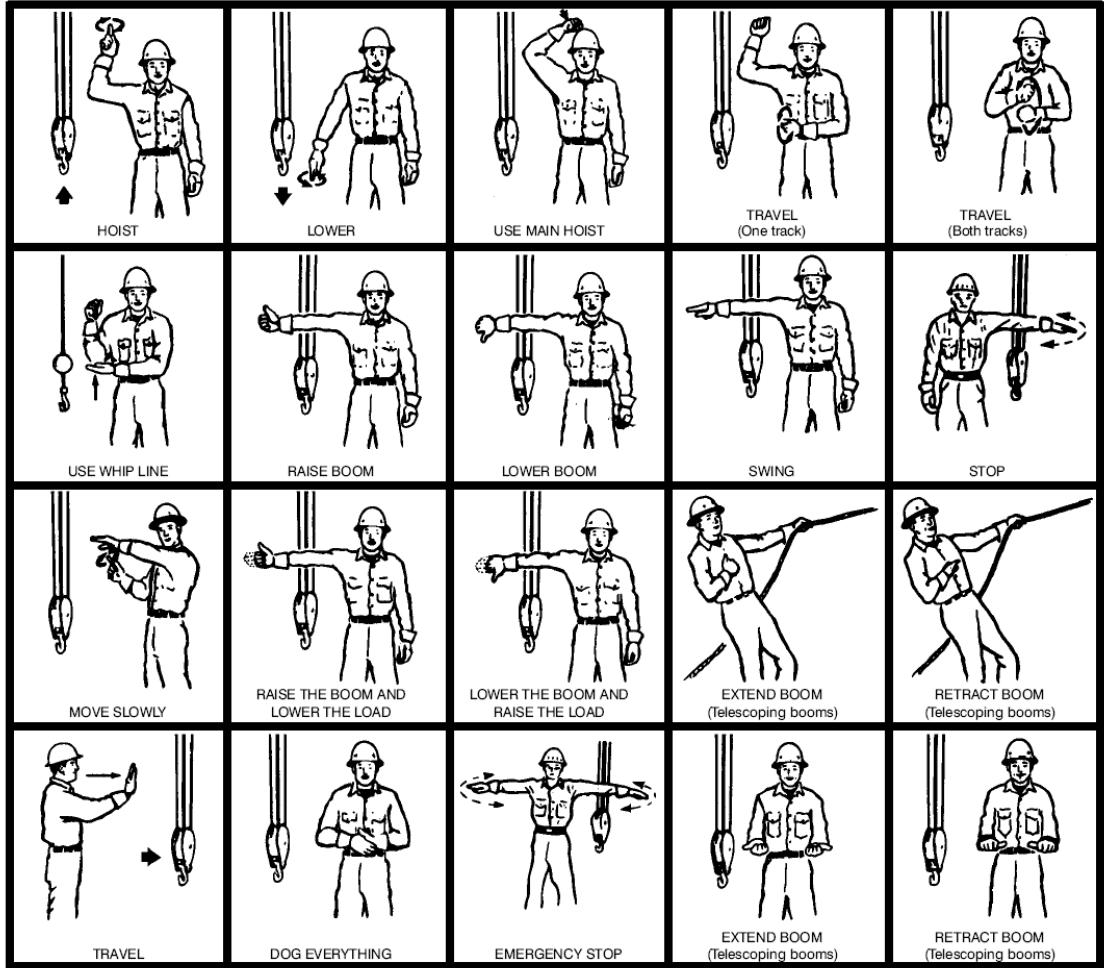
TWO OR MORE CRANES

- When two or more cranes are used to lift one load, one designated person shall be responsible for the operation.
- The designated person shall be responsible for the operation
- The designated person shall be required to analyze the operation and instruct all personnel involved in the proper positioning, rigging of the load, and movements to be made.
- Qualifications
 - Knows and understands the type of signals used at the worksite
 - Is competent in using these signals

- Understands the operations and limitations of the equipment, including the crane dynamics involved in swinging, raising, lowering and stopping loads and in boom deflection from hoisting loads
- Knows and understand the relevant signal person qualification requirements in subpart CC
- Passes an oral or written test and a practical test
- Becoming Qualified
 - Third Party Qualified Evaluator - The signal person has documentation from a third party qualified evaluator showing that he or she meets the qualification requirements
 - Employer's Qualified Evaluator - The employer's qualified evaluator assess the individual, determines the individual meets the qualification requirements, and provides documentation of that determination.
- The proof of qualified signal person shall be maintained at the worksite, either in paper form or electronically.

- Chart

Standard Hand Signals For Controlling Crane Operations



Extracted from the American National Standard, Crawler, Locomotive and Truck Cranes, ANSI B30.5b-1985, with the permission of the Publisher the American Society of Mechanical Engineers, 345 E. 47th Street, New York, New York 10017.

Rigging

The crane operator has the authority to halt operations due to unsafe working conditions

- OSHA Regulations
- Types
 - Multiple Lift (Christmas Treeing)
 - May only be performed if the following criteria is met
 - A multiple-lift rigging assembly is used
 - A maximum of five members are hoisted per lift
 - Only beams and similar structural members are lifted
 - All employees engaged in the multiple lift have been trained in these procedures
 - No crane is permitted to be used for a multiple lift where such use is contrary to the manufacturer's specifications and limitations
 - Rigging assembly capacity
 - Be certified by the manufacturer
 - Be based on manufacturer's specifications
 - Have a 5-to-1 safety factor for all components
 - Assembly must be rigged with members
 - Attached at their center of gravity and maintained reasonably level
 - Rigged from top down
 - Rigged at least 7 feet apart
 - Assembly must be set from bottom up
- Inspection
 - A qualified rigger must inspect the rigging prior to each shift for deficiencies
- Proper Use
 - No person shall be permitted to stand or pass under a load on the hook, except for
 - Employees engaged in the initial connection of the material

- Employees necessary for the hooking or unhooking of the load
- When employees have to work under suspended loads
 - Materials being hoisted must be rigged to prevent unintentional displacement
 - Hooks with self closing safety latches or their equivalent must be used to prevent components from slipping out of the hook
 - All loads must be rigged by a qualified rigger
- The headache ball, hook or load must not be used to transport personnel.
- Safety latches on hooks must not be deactivated or made inoperable except;
 - When a qualified rigger has determined that the hoisting and placing of purlins or single joists can be performed more safely by doing so
 - When equivalent protection is provided in a site-specific erection plan

Clearance

- Electrical - Working

Required clearances for operations near high voltage power lines:	
To 50 kV	10 ft. (3.05M)
Over 50 to 200 kV	15 ft. (4.60M)
Over 200 kV to 350 kV	15 ft. (4.60M)
Over 350 kV to 500 kV	25 ft. (7.62M)
Over 500 kV to 700 kV	35 ft. (10.67M)
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- Electrical - Transit

Required clearances for operations near high voltage power lines:	
To .75 kV	4 ft. (1.22M)
0.75 kV to 50 kV	6 ft. (1.83M)
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Over 345 to 750 kV	16 ft. (4.87M)
Over 750 kV to 1000 kV	20 ft. (6.10M)

Training

Awaiting new OSHA regulation publications

- CCO
- Locations

Critical Lifts

Currently decided by committee.

Company Vice President must sign off on any critical lifts

- Description
- Requirements
- Form

Suspended Personnel Platforms

The use of personnel platforms hoisted by crane will be used as a last resort. When personnel platforms are required, the following will govern

- Regulations
 - Personnel hoisting is permitted (only if conventional means, ladders..., are not considered safe.
 - If conventional means of access/egress exists, then no employee will be permitted in the suspended personnel platform during hoisting, lowering, and swinging.

- Cranes used to hoist personnel must be placed on solid foundations with a tolerance of less 1 % grade.
- The crane operator must always be at the controls while the personnel platform is occupied.
- When the occupied personnel platform is in a stationary position, all brakes and locking devices on the crane must be set.
- The combined weight of the loaded personnel platform and its rigging must not exceed 50 percent of the rated capacity of the crane.
- Each platform must be provided with a standard guardrail system that is enclosed from the toeboard to the midrail.
- A plate or other permanent marking that clearly indicates the platform's weight and rated load capacity or maximum intended load.
- When employee's are exposed to falling objects, overhead protection on the platform and use of hard hats is required
- An access gate, if provided, must not swing outward during hoisting and must have a restraining device to prevent accidental opening
- All welding on the personnel platform and its components must be performed by a qualified welder
- Rigging
 - When a wire rope bridle is used to connect the platform to the load line, the bridle legs must be connected to a master link or shackle so that the load is evenly positioned among the bridle legs.
 - Bridles and associated rigging for attaching the personnel platform to the hoist line must not be used for any other purpose.
 - Attachment assemblies such as hooks must be closed and locked to eliminate the hook throat opening
 - "Mousing" (wrapping wire around a hook to cover the hook opening) is not permitted
- Inspection and Testing

- A trial lift of the unoccupied personnel platform must be made before any employees are allowed to be hoisted.
- During the trial lift, the personnel platform must be loaded at least to its anticipated lift weight
- The lift must start at ground level or at the location where employees will enter the platform and proceed to each location where the personnel platform is to be hoisted and positioned.
- **The trial lift must be performed immediately prior to placing personnel on the platform**
- If the crane is moved to a new location or returned to a previously used one, the trial lift must be repeated before hoisting personnel
- After the trial lift, the platform must be hoisted a few inches and inspected to ensure that it remains secured and is properly balanced
- Before employees are hoisted, check:
 - Hoist ropes are free of kinks
 - Multiple part lines are not twisted around each other
 - The primary attachment is centered over the platform
 - There is no slack in the wire rope
 - All ropes are properly seated on drums and in sheaves
- Initially after arriving at the job and after any repair or modification, and prior to hoisting personnel, the platform and rigging must be proof tested to 125 percent of the platform's rated capacity.
- This initial test is to be held in position for 5 minutes.
- Then the platform must be inspected by a competent person.
- Pre-lift Meeting
 - The employer must hold a meeting with all employees involved in personnel hoisting operations, to review the OSHA requirements and the procedures to be followed
 - This meeting must be held before the trial lift at each new work site and for any new employees
- Safe Work Practices
 - Use tag lines unless their use creates an unsafe condition
 - Keep all body parts inside the platform during movement

- Make sure the platform is secured to the structure where work is to be performed before entering or exiting it, unless such securing is unsafe
- Wear a body harness with a lanyard. The lanyard must be attached to the lower load block or overhaul ball or to a structural member within the personnel platform.
- Stay in view of, or in direct communication with, the operator or signal person
- Do not make any lifts on another load line of a crane that is being used to hoist personnel.
- **TRAVELING WITH CRANE WHILE PLATFORM IS OCCUPIED IS PROHIBITED UNLESS DIRECTED BY SAFETY MANAGER**

- Form

PERSONNEL PLATFORM INSPECTION AND TESTING FORMS CAN BE FOUND IN THE OFFICE OF THE SAFETY MANAGER

OSHA REFERENCE

[Crane – OSHA 1926.550](#)

SECTION (N)

VEHICLES AND EQUIPMENT

Personnel Vehicles

1. Any employee who drives a company vehicle must have a current driver's license and be approved to drive through our insurance company.
2. All employees who drive company vehicles must pass a DOT physical every year.
3. Limit personal use of vehicle without permission
4. Follow all traffic and road laws and restrictions.
5. Any employee found to have received a ticket or accident during personal hours will be responsible financially for the incident.
6. No alcohol is to be transported in a company vehicle.
7. No one is allowed to drive a company vehicle after consuming alcohol.
8. Report all accidents (Contact Safety Manager for Report Form)
9. Maintain all services as need be.
10. Vehicle is to be maintained in good working order and condition.

Accident Procedure

1. Stop at Once! Check for personal injuries and send for an ambulance, if needed. Do not leave the scene, but ask for the assistance of bystanders.
2. If Fire or Smoke Is Present, evacuate vehicle occupants to a safe location. If stalled on a railroad track, evacuate occupants to a safe location away and at a right angle from the tracks.
3. If Fire, Smoke or Spilled Fuel is Present, send for the fire department. Do not leave the scene; ask a bystander to call the fire department. If possible, use a spill kit to absorb the spill.

4. Protect the Scene. Set emergency warning devices to prevent further injury or damage. Secure your vehicle and its contents from theft.

5. Secure Assistance of the police whenever possible. Record names and badge numbers.

6. Record Names, Addresses and Phone Numbers of all witnesses, injured and driver(s) and their passengers. Record vehicle license numbers.

7. Do Not Argue! Make no statement except to the proper authorities. Sign only official police reports. Do not make statements regarding the operating condition of your vehicle and do not admit fault.

8. Report the Incident to Your Dispatcher/Supervisor IMMEDIATELY after first aid has been given, authorities have been notified, the scene has been protected and you are able to do so.

9. Complete the Incident Report at the scene as thoroughly as possible. Exchange insurance information only with other involved driver(s).

10. If You Strike An Unattended Vehicle and cannot locate the owner, leave a note with your name and the company's address and phone number, get the vehicle description, VIN number and license plate number.

Equipment

An Equipment Operating Zone (EOZ) is the area around an operating piece of mobile equipment that can be affected by the equipment. In other words, the EOZ is an area of higher risk to pedestrians, other equipment and vehicles.

Train equipment operators and workers in the following:

1. Keep clear of starting equipment to avoid being hit by sudden-jerking movements
2. Stay out of the EOZ - unless you have to be there to do your task.
3. Approach equipment from Operator's side.
4. Make 2-way eye contact with operators before going into EOZ's
5. Don't go where you can get crushed.
6. Don't allow vehicles to park in an EOZ.

Be aware of pinch areas! That is any place between equipment and another piece of equipment or a hard object.

OSHA Reference

Medical Services and First Aid - 1926.50

SECTION (O)

EXCAVATIONS & TRENCHING

The prevention of accidents in and around excavations will be our company's goal.

A "Competent Person" is qualified by training and/or experience to identify workplace hazards relating to the specific operation underway, is knowledgeable of the applicable standards, is designated by the employer and has the authority to take appropriate actions to correct deficiencies, including stoppage of work.

BEFORE ANY LAND DISTURBING ACTIVITIES CALL YOUR LOCATES IN!!

8-1-1 INDIANA'S UNDERGROUND CALL CENTER

Procedure

1. Plan the excavation. Consider environment, soil classification and characteristics, depth of cut, surface and ground water, the water table, utilities, weather, access/egress, spoil placement/handling, dangerous circumstances, and nearby structures.
2. Call in your locates. Call 8-1-1. Must be maintained every two weeks while work is going on.
3. Train Employees in the hazards of excavations and the use of protective systems and ladders.
4. Protect employees from cave-ins. For excavation 5-20 feet deep there are only four methods:
 - a. All sides of excavations to be sloped at 1.5:1 or flatter.
 - b. Classify the soil (A, B, C or stable rock) and slope the sides per OSHA regulations.
 - c. Provide a trench box, hydraulic shoring or timber shoring in accordance with OSHA regulations.
 - d. Have a Registered Professional Engineer design the excavation. Must be in writing, with design, and stamped. This is common for caffer dams.

5. Provide safe access and egress for all excavations deeper than 4 feet, such as a ladder or a ramp where employees are able to walk out upright. Ladders are to be spaced 25 feet at a maximum from the point of work.
6. Wear proper PPE
7. Keep soil/spoil at least 2 feet away from the top of the excavation.
8. Keep the excavation dry
9. Do not let employees stand or rest under loads coming into excavation.
10. Barricade the excavation to protect the public and other employees.
11. Inspect prior to allowing employees to enter each day and after each rain.

Utilities

Before starting work, the OSHA standard requires you to do the following:

Determine the approximate location of utility installations—sewer, telephone, fuel, electric, and water lines; or any other underground installations;

Contact the utility companies or owners involved to inform them of the proposed work within established or customary local response times; and

Ask the utility companies or owners to find the exact location of underground installations. If they cannot respond within 24 hours (unless the period required by state or local law is longer) or cannot find the exact location of the utility installations, you may proceed with caution.

If your excavation work exposes underground installations, OSHA regulations require you to protect, properly support, or remove them.

Soil Classifications

1. Stable rock means natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.
2. Type A means cohesive soils with an unconfined, compressive strength of 1.5 ton per square foot (tsf) (144 kPa) or greater. Examples of cohesive soils are: clay, silty clay, sandy clay, clay loam

and, in some cases, silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A. However, no soil is Type A if:

- a. The soil is fissured; or
 - b. The soil is subject to vibration from heavy traffic, pile driving, or similar effects; or
 - c. The soil has been previously disturbed; or
 - d. The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater; or
 - e. The material is subject to other factors that would require it to be classified as a less stable material.
3. Type B means:
- a. Cohesive soil with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa); or
 - b. Granular cohesionless soils including: angular gravel (similar to crushed rock), silt, silt loam, sandy loam and, in some cases, silty clay loam and sandy clay loam.
 - c. Previously disturbed soils except those which would otherwise be classed as Type C soil.
 - d. Soil that meets the unconfined compressive strength or cementation requirements for Type A, but is fissured or subject to vibration; or
 - e. Dry rock that is not stable; or
 - f. Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V), but only if the material would otherwise be classified as Type B.
4. Type C means:
- a. Cohesive soil with an unconfined compressive strength of 0.5 tsf (48 kPa) or less; or
 - b. Granular soils including gravel, sand, and loamy sand; or
 - c. Submerged soil or soil from which water is freely seeping; or
 - d. Submerged rock that is not stable, or

- e. Material in a sloped, layered system where the layers dip into the excavation or a slope of four horizontal to one vertical (4H:1V) or steeper.

Protective Systems for Trenching/Shoring

- Steel Trench Shields
- Slide Rail Systems
- Brace Systems
- Beam and Plate Systems
- Shoring
- Water Systems
- Aluminum Panel Shields
- Benching

Contact the safety manager prior to utilizing any of the above mentioned systems.

OSHA Reference

Excavations - 1926.652

SECTION (P)

CONCRETE AND MASONRY

The following performance-oriented requirements are designed to help protect all construction workers from the hazards associated with concrete construction operations at construction, alteration, and repair worksites.

General Requirements

Placing Concrete

All employees involved in the process of placing ready-mixed concrete shall wear the proper PPE at all times.

Do not allow concrete to remain on bare skin, wash off immediately. If concrete begins to “burn” the skin, wash off with white vinegar.

All MSDS information sheets are located in the office.

When sawing green concrete, always wear proper respiratory and hearing protection.

Construction Loads

No construction load shall be placed on a concrete structure or portion of a concrete structure unless the employer determines, based on information received from a person who is qualified in structural design, that the structure or portion of the structure is capable of supporting the loads.

Rebar

All protruding reinforcing steel, onto and into which employees could fall, shall be guarded to eliminate the hazard of impalement.

- Guard all ends of vertical protruding rebar/impalement hazard with rebar caps that have a metal plate in them.
- Guard all ends of horizontal protruding rebar/impalement hazards with mushroom style rebar caps.
- **NEVER USE A MUSHROOM STYLE REBAR CAP TO CAP VERTICAL REBAR!** Mushroom style caps provide scratch protection only.
- Rebar caps must be a minimum of 4" x 4" or 4.5" diameter.
- Form pins with over 3" exposure above forms must be capped with approved impalement cap.
- If impalement hazard cannot be protected, then the area must be restricted using safety fence, until a time that the hazard can be removed.
- All reinforcing steel (rebar) for walls, piers, columns, and similar vertical structures shall be adequately supported to prevent overturning and collapse.

Anchor bolts protruding greater than should be protected.

Post-Tensioning Operations

Employees (except those essential to the post-tensioning operations) must not be permitted behind the jack during tensioning operations.

Signs and barricades must be erected limit employees access to the post-tensioning area during tensioning operations.

Concrete Buckets

No employee shall be allowed to ride concrete buckets

Operator will not move concrete bucket until signaled by the designated person.

Employees will not be permitted to work under concrete buckets while the buckets are being elevated or lowered into position.

To the extent practicable, elevated concrete buckets must be routed so that minimal employees are exposed to the hazards associated with falling concrete buckets.

Personal Protective Equipment

Employees are not permitted to apply cement, sand, and water mixture through a pneumatic hose unless they are wearing protective head and face equipment.

Employees/subcontractors are not permitted to place or tie reinforcing more than 6 feet above any adjacent working surfaces unless they are protected by the use a safety belt or equivalent fall protection.

Equipment and Tools

Power Concrete Trowels

- Machines that are manually guided shall be equipped with a control switch that will automatically shut off the power whenever the hands of the operator are removed from the equipment handles.

All Finish machines

- Must have working emergency stop switches located where employees not operating the machine can easily access and stop.

Concrete Buggies

- Handles shall not extend beyond the wheels on either side of the buggy.

Concrete Pumping Systems

- Using discharge pipes shall be provided with supports designed for 100 percent overload.

- Using compressed air hoses shall be provided with positive fail-safe joint connectors to prevent separation of pressurized sections.

Concrete Buckets

- Equipped with hydraulic or pneumatic gates shall have positive safety latches or similar safety devices installed to prevent premature or accidental dumping.
- Shall be designed to prevent concrete from hanging up on top and the sides.

Tremies

- Sections of Tremies and similar concrete conveyances shall be secured with wire rope (or equivalent materials) in addition to the regular couplings or connections.

Bull Floats

- Handles used where they might contact energized electrical conductors, shall be constructed of nonconductive material or insulated with a nonconductive sheath whose electrical and mechanical characteristics provide the equivalent protection of a nonconductive handle.

Masonry/Chop Saws

- Shall be guarded with a semicircular enclosure over the blade.
- A method of retaining blade fragments shall be incorporated in the design of the semicircular enclosure.

Lockout/Tag out Procedure

- No employee shall be permitted to perform maintenance on any energized piece of equipment unless all potential energy sources have been locked out and tagged.
- Tags shall read "Do Not Start" or similar language to indicate that the equipment is not to be operated.
- Tags are located at the office or with the Shop Foreman.

Formwork for Cast-in-Place Concrete

- Formwork must be designed, fabricated, erected, supported, braced, and maintained so that it will be capable of supporting without failure all vertical and lateral loads that might be applied to the formwork.
- Drawings and Plans including revisions shall be available at the jobsite at all times.
- Formwork Pins (Nail pins) shall be driven to an exposed length of 3" or less. If not then the nail pin must have the approved impalement protection installed immediately.

Removal of Forms

- Forms and shores shall not be removed until it is proven by approved testing measures that the concrete has gained sufficient strength to support its weight and any loads placed on it.

Training Requirements

Ragle, Inc. will provide the proper training to all employees in regards to working with concrete. Please check with your crew members on previous training and dates.

OSHA Reference

Subpart Q - Concrete and Masonry 1926.700, 1926.701, 1926.702, 1926.703

SECTION (Q)

STEEL ERECTION

Objective

To prevent accidents and address hazards associated with steel erection and beam setting.

This section will also be governed by the Crane Section and Regulations as stated by OSHA

NO CRANE SHALL BE LOADED BEYOND THE RATED LOAD!

Regulations

OSHA Regulations

All employees and operators shall comply with the manufacturer's specifications and limitations applicable to the operation of any and all cranes and derricks.

Rated load capacities, and recommended operating speeds, special hazard warnings, or instruction, shall be conspicuously posted on all equipment.

Instructions or warnings shall be visible to operators while they are at their control stations.

Hand signals to crane operators shall be those prescribed by ANSI standard for the type of crane in use.

No hoisting, lowering, swinging, or traveling shall be done while anyone is on the load or hook.

Loads will not be permitted to swing above working people, unless no alternative exists.

Fall Protection

ONLY when erecting steel does the following apply:

- Employees who are on a walking/working surface with an unprotected edge more than 15 feet above a lower level must be protected by conventional fall protection
- Perimeter safety cables must be installed at the final interior and exterior perimeters of multi-story structures as soon as the decking has been installed
- Connectors and employees working in **controlled decking zones** must be protected from fall hazards
- Connectors must:
 - Be protected by conventional fall protection when working on a surface with an unprotected edge more than two stories or 30 feet above a lower level.
 - Have completed the connector training
- While working at heights over 15 feet and up to 30 feet
 - Be provided with a complete personal fall arrest system other allowable fall protection, and
 - Wear the equipment necessary for tying off

Controlled Decking Zone (CDZ)

A CDZ can be established as a substitute for fall protection where metal decking is initially being installed and forms the leading edge of a work area over 15 and up to 30 feet above a lower level

- Leading edge workers in a CDZ are required to:
 - Be protected from fall hazards above 2 stories or 30 feet
 - Have completed CDZ training
- Employees who are not engaged in leading-edge work and properly trained in the hazards involved are **prohibited from entering** the CDZ.
- The CDZ is required to:
 - Be no more than 90 feet wide and 90 feet deep
 - Not exceed 3,000 square feet of unsecured decking

- Have designated and clearly marked boundaries with control lines or the equivalent

Note: Control lines are commonly used as a marker because they create a highly visible boundary

All fall protection equipment must meet the requirements of Section M of this manual.

Signaling

The qualification requirements for signal persons go into effect on November 8, 2010.

A signal person will be required to be a “qualified person”

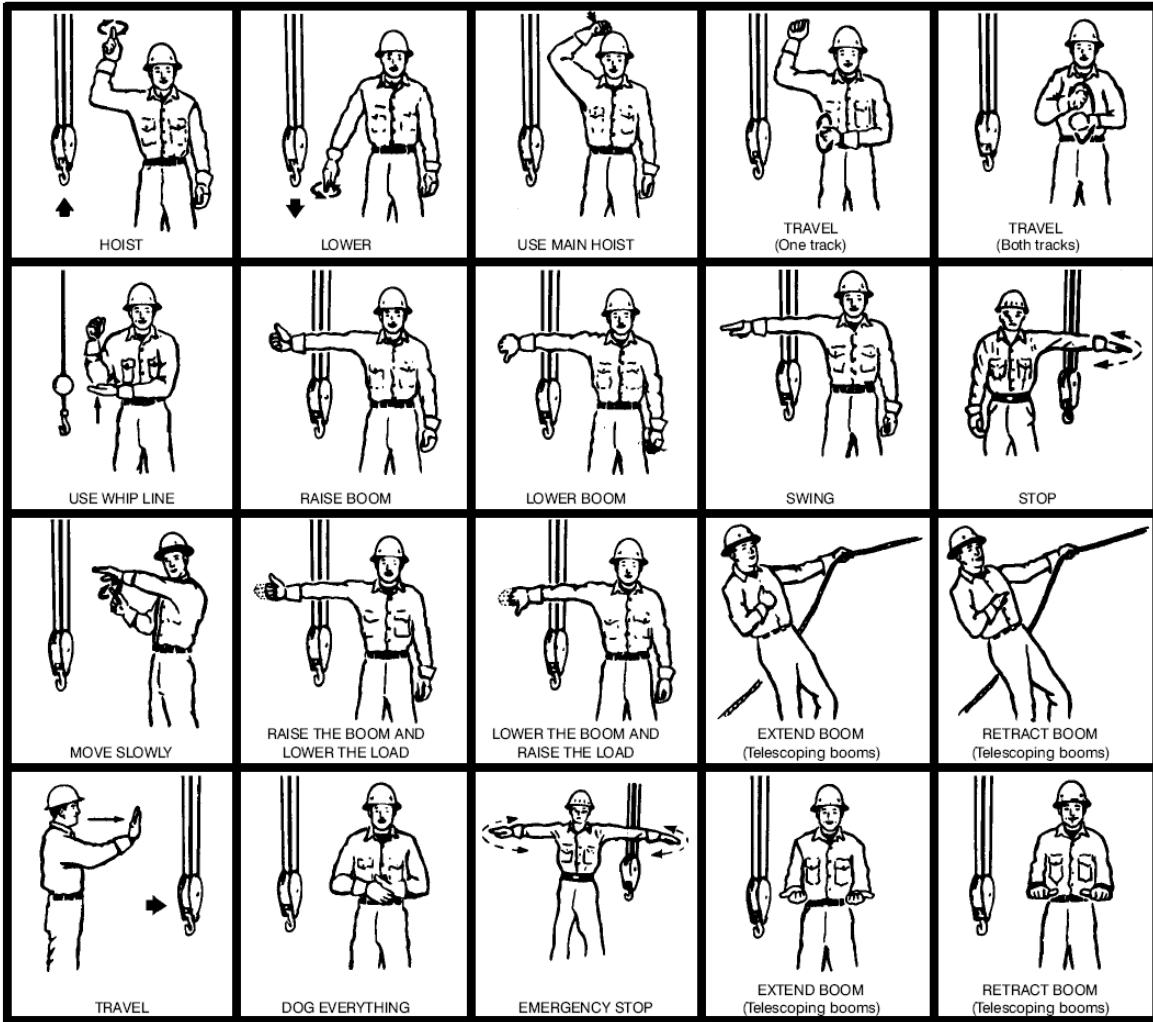
TWO OR MORE CRANES

- When two or more cranes are used to lift one load, one designated person shall be responsible for the operation.
 - The designated person shall be responsible for the operation
 - The designated person shall be required to analyze the operation and instruct all personnel involved in the proper positioning, rigging of the load, and movements to be made.
-
- Qualifications
 - Knows and understands the type of signals used at the worksite
 - Is competent in using these signals
 - Understands the operations and limitations of the equipment, including the crane dynamics involved in swinging, raising, lowering and stopping loads and in boom deflection from hoisting loads
 - Knows and understand the relevant signal person qualification requirements in subpart CC
 - Passes an oral or written test and a practical test
 - Becoming Qualified

- Third Party Qualified Evaluator - The signal person has documentation from a third party qualified evaluator showing that he or she meets the qualification requirements
 - Employer's Qualified Evaluator - The employer's qualified evaluator assess the individual, determines the individual meets the qualification requirements, and provides documentation of that determination.
- The proof of qualified signal person shall be maintained at the worksite, either in paper form or electronically.

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- Types
 - Multiple Lift (Christmas Treeing)
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 - A maximum of five members are hoisted per lift
 - Only beams and similar structural members are lifted
 - All employees engaged in the multiple lift have been trained in these procedures
 - No crane is permitted to be used for a multiple lift where such use is contrary to the manufacturer's specifications and limitations
 - Rigging assembly capacity
 - Be certified by the manufacturer
 - Be based on manufacturer's specifications
 - Have a 5-to-1 safety factor for all components
 - Assembly must be rigged with members
 - Attached at their center of gravity and maintained reasonably level
 - Rigged from top down
 - Rigged at least 7 feet apart
 - Assembly must be set from bottom up
- Inspection
 - A qualified rigger must inspect the rigging prior to each shift for deficiencies
- Proper Use
 - No person shall be permitted to stand or pass under a load on the hook, except for
 - Employees engaged in the initial connection of the material

- Employees necessary for the hooking or unhooking of the load
- When employees have to work under suspended loads
 - Materials being hoisted must be rigged to prevent unintentional displacement
 - Hooks with self closing safety latches or their equivalent must be used to prevent components from slipping out of the hook
 - All loads must be rigged by a qualified rigger
- The headache ball, hook or load must not be used to transport personnel.
- Safety latches on hooks must not be deactivated or made inoperable except;
 - When a qualified rigger has determined that the hoisting and placing of purlins or single joists can be performed more safely by doing so
 - When equivalent protection is provided in a site-specific erection plan

Clearance

- Electrical - Working

Required clearances for operations near high voltage power lines:	
To 50 kV	10 ft. (3.05M)
Over 50 to 200 kV	15 ft. (4.60M)
Over 200 kV to 350 kV	15 ft. (4.60M)
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- Electrical - Transit

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Suspended Personnel Platforms

The guidelines and regulations can be found under Section N - Cranes of this Safety Manual

OSHA REFERENCE

Steel Erection – OSHA 1926.752

SECTION (R)

UNDERGROUND CONSTRUCTION

CAISSONS, COFFERDAMS, AND COMPRESSED AIR

EXCAVATIONS WILL ALSO FOLLOW GUIDELINES AND REQUIREMENTS STATED IN SECTION P OF THIS SAFETY MANUAL

FALL PROTECTION WILL ALSO FOLLOW GUIDELINES AND REQUIREMENTS STATE IN SECTION M OF THIS SAFETY MANUAL

Objective

To inform of the necessary means of safe construction activities during underground operations.

Excavation

The estimated location of utility installations, such as sewer, telephone, fiber-optic, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work, shall be located prior to start of excavation.

CALL 8-1-1 BEFORE YOU DIG

Hazardous Atmosphere

Testing equipment is located at the main office. Contact the Safety Manager for more information.

Hazardous Atmospheres

- Will be tested and maintained as necessary

If a hazardous atmosphere exists, then the proper safety measures will be in place prior to personnel entering the excavation.

Dewatering

Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation.

- These precautions vary with jobs and will be site specific

If water is controlled or prevented from accumulating by the use of water removal equipment, then the equipment shall be monitored by a competent person.

Ingress/Egress

All means of ingress and egress from excavations and cofferdams shall follow the requirements found in the **Scaffolds** section of this manual

Information on job built ladders, stairs, and ramps can be found in the Scaffold Section (L) of this manual.

Means of egress from trench excavations.

- A stairway, ladder, ramp, or other safe means of egress shall be located in trench excavations that are 4 feet or more in depth
- A stairway, ladder, ramp, or other safe means of egress shall be located in trench excavations at 25 feet intervals.

Stability of Adjacent Structures

Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems shall be provided to ensure the stability of such structures

Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted except when:

- A support system is provided to ensure the safety of employees and the stability of the structure
- The excavation is in stable rock
- A registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity; or
- A registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees

Fall Protection

All cofferdams that require an excavated floor deeper than 5' shall have safety measures in place to prevent falls.

- Horizontal cables to tie off to
- Handrails around the perimeter to prevent falling or walking into excavation
- Decking the entire cofferdam or excavation

For further information, please review the Fall Protection Section (L) of this Manual.

Protection

ALL OPEN EXCAVATIONS (INCLUDING COFFERDAMS AND DRILLED SHAFTS) SHALL BE PROTECTED WITH ORANGE CONSTRUCTION FENCE, WARNING SIGNS, AND CAUTION TAPE AS NEEDED.

WHEN AREA IS AVAILABLE MAINTAIN A MINIMUM OF 6' DISTANCE FROM THE EDGE OF OPENING

Installation/Removal Shoring Systems

Prior to installation of the approved system, a meeting with the Superintendent and Safety Manager is required.

During this meeting:

- All necessary specifications and information on the specific shoring system shall be provided.
- Any load charts, engineered drawings, or other calculations shall be provided.
- The instruction of proper installation and removal will be given.
- Site conditions that could become hazardous
- Equipment necessary to operations
- Crew members necessary to operations
- Proper training requirements

All paperwork relevant to the shoring system in use will be kept on site in the supervisor's truck. All employees will be informed on the location of paperwork.

Members of support systems shall be securely connected together to prevent sliding, falling, kick outs, or other predictable failures.

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

Backfill shall progress together with the removal of support systems from excavations.

Excavation of material to a level no greater than 2 feet below the bottom of the members of a support system shall be permitted, but only if the system is designed to resist the forces calculated for the full depth of the trench, and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the support system.

Equipment and Materials

Materials and equipment used for protective systems shall be free from damage or defects that might impact their proper function.

When damage occurs a competent person shall inspect the damage and make a determination on the damaged item. If a competent person can not assure the damaged good is useable then the item will be set aside until a registered professional engineer can approve it.

Drilled Shafts

A competent person must be designated for the drilling operations

All employees shall wear proper PPE when working within 40' of drilling operations

Identify shaft locations and establish a danger zone around the area.

Determine which direction the rig will swing and cast off cuttings and inform all workers

Shafts 30 inches or greater in diameter and 6 feet or greater in depth require some form of fall protection at the surface of the shaft.

A fall protection plan, including a rescue plan, must be in place prior to drilling any shaft.

Shaft entry for any reason is prohibited without consent from company's Vice President or Safety Manager.

Be aware of struck-by and pinch situations in and around drilled shaft operations.

Soil Classification

Soil borings shall be taken to determine the proper means of shoring system to use. These soil borings shall be reviewed by a registered professional engineer.

OSHA REFERENCE

Excavations – OSHA 1926.650

SECTION (S)

DEMOLITION

Demolition shares many of the hazards found in the construction process. However, demolition involves a variety of other factors.

Preparatory Operations

- Plan the overall demolition site.
- Plan the methods used to remove the structure/material
- Plan the equipment needed to complete the demolition
- Plan the safety measures required to complete the demolition
- Photograph the site prior to work beginning
- Have a competent person survey the site and make any recommendations.
 - OSHA Standard 1926.850 (a) requires that an engineering survey of the structure must be conducted by a competent person.
- Protect Utilities and Adjacent Structures that are to remain intact.
- Plan the equipment/vehicle flow of the jobsite.

All planning should be performed by a competent person experienced in demolition work.

Utility Location

Locate all utilities prior to any demolition work beginning

- Contact 8-1-1 (Indiana's / Nationwide Call-before-you-Dig Hotline)
- Contact local utility company's to confirm that they have been notified.
- Once locates are done, take pictures of all locates that could be affected during demolition.
- Maintain a list on site of all Utility Personnel Contact Information in case of emergency.

Utility Shutoff

- Some demolition may require certain utilities to shut down service while work is being performed.
This is to be coordinated between contractor and utility company.

Demolition of Pre-Stressed Concrete Structures

- All employees shall wear proper PPE at all times.
- Setup demolition zones that restrict access of employees.
- Have a qualified person determine if there are any pre-stressed concrete members located in the demolition.
- Categories of Pre-Stressed Construction
 1. Members are pre-stressed before the application of the superimposed loads and having all cables or tendons fully bonded to the concrete or grouted within ducts.
 - Usually do not have end anchors.
 - Members up to about 23 feet can be demolished in a manner similar to ordinary reinforced concrete.
 - Members shall be lowered to ground if possible
 - Lay member on its side
 - Get a professional engineer to advise on the demolition procedure
 - If the tendons are ungrouted proceed with caution.
 - Attempt to break the unit and release the pre-stress.
 - If need be place, place a sand bag screen, timbers, or a blast mat as a screen on each end of the member.
 - Mark and clear the area around each member.
 - Lifting member from the structure should be done from predetermined lifting points.
 2. Same as Category 1, but having the tendons left ungrouted. These tendons could be greased and surrounded by plastic sheathing, instead of the usual metal duct.
 3. Members that are pre-stressed progressively as the building construction proceeds and the dead load increases, using bonded tendons, as category 1.

4. As category 3, but using unbounded tendons, as Category 2.

Training Requirements

All employees will be properly trained prior to beginning work on a demolition site.

OSHA Reference

Subpart T - Demolition - 1926.850

SECTION (T)

BLASTING AND THE USE OF EXPLOSIVES

Our company does not perform blasting. The use of explosives is prohibited without the consent of the Vice President.

Definitions

A list of activity related definitions can be found at the company's main office or with the Safety Manager.

General Provisions

Only authorized and qualified persons can handle and use explosives

Smoking, firearms, matches, open flame lamps, and other fires, flame or heat producing devices and sparks shall be prohibited in or near explosive magazines or while explosives are being handled, transported, or used.

All explosives shall be accounted for at all times.

Explosives not being used shall be kept in a locked magazine, unavailable to persons not authorized to handle them.

The employer shall maintain an inventory and use record of all explosives

Appropriate authorities shall be notified of any loss, theft, or unauthorized entry into a magazine.

Training Requirements

All employees will be properly trained prior to any use of explosives.

Transportation

Transportation of explosives shall meet the provisions of DOT regulations.

A licensed driver shall be in charge of transporting the explosives

No person shall smoke, or carry matches or any other flame-producing device, nor shall firearms or loaded cartridges be carried while in or near a motor vehicle transporting explosives.

Blasting caps shall not be transported in the same vehicle with other explosives.

Vehicles must be prepped to prevent sparking. All vehicles will have to meet transportation specifications prior to hauling explosives.

Every motor vehicle transporting explosives shall be marked or placarded on both sides, the front, and the rear with the word "Explosives" in red letters, not less than 4 inches in height, on white background.

Each vehicle used for transportation of explosives shall be equipped with a fully charged fire extinguisher of not less than 10-ABC rating.

Do not leave vehicle unattended when transporting explosives.

Storage

Explosives shall be stored in approved facilities

Blasting caps, electric blasting caps, detonating primers, and primed cartridges shall not be stored in the same magazine with other explosives or blasting agents.

Smoking or open flames shall not be permitted within 50 feet of storage magazines.

Loading of Explosives and Blasting Agents

This work is not permitted to be done by any employee of Ragle, Inc. without written consent of Vice President.

Initiation of Explosive Charges

A safety meeting/training session will be held prior to initiating any explosions.

Firing the Blast

A code of blasting signals shall be posted in multiple locations around the blast zone.

All employees, other contractors, personnel, and public will be made aware of blasting.

Flagmen will be placed along highways to stop traffic traveling through the danger zone.

OSHA Reference

Subpart U – Blasting and the Use of Explosives – 1926.900

SECTION (U)

ROLLOVER PROTECTIVE STRUCTURES & OVERHEAD PROTECTION

All equipment which is brought on to a company jobsite, subcontractor included, will be equipped with ROPS.

Material Handling Equipment Covered

- All Rubber-tired
- Self-propelled scrapers
- Rubber-tired front-end loaders
- Rubber-tired Dozers
- Wheel-type agricultural and industrial tractors
- Crawler tractors
- Crawler-type loaders
- Motor Graders

The promulgation of specific standards for ROPS for compactors and rubber-tired skid-steer equipment is reserved pending consideration of standards currently being developed.

Equipment Manufactured On or After September 1, 1972

Material handling machinery that falls in this category shall be equipped with Rollover Protective Structures (ROPS) which meet the minimum performance standards.

Equipment Manufactured Before September 1, 1972

Material handling machinery will be fitted with ROPS which meets the following minimum performance and design criteria:

- Fabricated and installed in a manner based on the ultimate strength of the metal, which will support at least two times the weight of the prime mover applied at the point of contact.
- Objective shall be to minimize the likelihood of a complete overturn.
- Provide a vertical clearance of at least 52 inches from the work deck to the ROPS at the point of ingress and egress.

OSHA Reference

Subpart W – Rollover Protective Structures; Overhead Protection – 1926.1000

SECTION (V)

STAIRWAYS & LADDERS

The OSHA Rules apply to all stairways and ladders used in construction, alteration, repair, and demolition of work sites covered by OSHA's construction safety and health standards.

They do not apply to ladders that are specifically manufactured for scaffold access and egress, but do apply to job-made and manufactured portable ladders intended for general purpose use and which are then used for scaffold access and egress.

General Requirements

- A stairway or ladder must be provided at all worker points of access involving an elevation break of 19 inches or more **and** no ramp, runway, embankment, or personnel hoist provided.
- When there is one point of access between levels.
 - Must be kept clear
 - When there are two points of access, one must be kept clear at all times.
- All stairway and ladder fall protection systems required by these rules must be installed prior to employee use.

Stairways

- Stairways that will not be part of the permanent structure must have landings at least 30" deep and 22" wide at every 12 feet or less of vertical rise.
- Stairways must be installed at least 30 degrees, and no more than 40 degrees horizontal.
- Variations in riser height or stair tread depth must not exceed ¼ inch in any stairway system. Including any foundation structure used as one or more treads of the stairs.
- Where doors or gates open directly onto a stairway, a platform must be provided that is at least 20 inches in width beyond the swing of the door.

- Metal pan landings and metal pan treads must be secured in place before filling.
- All stairway parts must be free of dangerous projections such as nails.
- Slippery conditions on stairs must be corrected.
- Spiral stairways that will not be a permanent part of the structure may not be used by workers.

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

- Except during construction of the actual stairway, stairways with metal pan landings and treads must not be used unless filled with concrete or other material, unless the pans and treads are temporarily filled with wood or other material.
- All treads and landings must be replaced when worn below the top edge of the pan.
- Except during construction of the actual stairway, skeleton metal frame structures and steps must not be used unless the stairs are fitted with secured temporary treads and landings.
- Temporary treads must be made of wood or other solid material and installed the full width of the stair.

Stair Rails and Handrails

- Stairways having four or more risers or rising more than 30"
 - Have at least one handrail
 - Stair rail installed along each unprotected side
 - When the top rail of the stair rail system also serves as a handrail
 - The top edge must not be more than 37" nor less than 36" from the upper surface of the stair rail to the surface of the tread.
- Stair rails installed after March 15, 1991 must not be less than 36" in height.
- Midrails, screens, mesh, intermediate vertical members must be provided
- Intermediate vertical members must be installed no more than 19" apart.
- Handrails/Top Rails must be able to withstand 200 lbs of force along its length at any point 2" from the top of the top rail.
- Handrails must provide an adequate hand hold.

- Systems must be constructed to prevent dangerous projections protruding beyond the system.
- Handrails must have a minimum clearance of 3" between the handrail and object.
- Unprotected sides and edges of stairway landing must be provided with standard 42" guardrail systems.

Ladders

Use of all Ladders (Including Job-Made Ladders)

- When portable ladders are used for access to an upper landing surface, the side rails must extend at least 3 feet (.9 m) above the upper landing surface. When such an extension is not possible, the ladder must be secured, and a grasping device such as a grab rail must be provided to assist workers in mounting and dismounting the ladder. A ladder extension must not deflect under a load that would cause the ladder to slip off its support.
- Ladders must be maintained free of oil, grease, and other slipping hazards.
- Ladders must not be loaded beyond the maximum intended load for which they were built or beyond their manufacturer's rated capacity.
- Ladders must be used only for the purpose for which they were designed.
- Non-self-supporting ladders must be used at an angle where the horizontal distance from the top support to the foot of the ladder is approximately one-quarter of the working length of the ladder. Wood job-made ladders with spliced side rails must be used at an angle where the horizontal distance is one-eighth the working length of the ladder.
- Fixed ladders must be used at a pitch no greater than 90 degrees from the horizontal, measured from the back side of the ladder.
- Ladders must be used only on stable and level surfaces unless secured to prevent accidental movement.
- Ladders must not be used on slippery surfaces unless secured or provided with slip-resistant feet to prevent accidental movement. Slip-resistant feet must not be used as a substitute for the care in placing, lashing, or holding a ladder upon slippery surfaces.

- Ladders placed in areas such as passage-ways, doorways, or driveways, or where they can be displaced by workplace activities or traffic must be secured to prevent accidental movement, or a barricade must be used to keep traffic or activities away from the ladder.
- The area around the top and bottom of the ladders must be kept clear.
- The top of a non-self-supporting ladder must be placed with two rails supported equally unless it is equipped with a single support attachment.
- Ladders must not be moved, shifted, or extended while in use.
- Ladders must have nonconductive side rails if they are used where the worker or the ladder could contact exposed energized electrical equipment.
- The top or top step of a stepladder must not be used as a step.
- Cross-bracing on the rear section of stepladders must not be used for climbing unless the ladders are designed and provided with steps for climbing on both front and rear sections.
- Ladders must be inspected by a competent person for visible defects on a periodic basis and after any incident that could affect their safe use.
- Single-rail ladders must not be used.
- When ascending or descending a ladder, the worker must face the ladder.
- Each worker must use at least one hand to grasp the ladder when moving up or down the ladder.
- A worker on a ladder must not carry any object or load that could cause the worker to lose balance and fall.

Structural Defects

- Portable ladders with structural defects—such as broken or missing rungs, cleats, or steps, broken or split rails, corroded components, or other faulty or defective components—must immediately be marked defective, or tagged with "Do Not Use" or similar language and withdrawn from service until repaired.
- Fixed ladders with structural defects—such as broken or missing rungs, cleats, or steps, broken or split rails, or corroded components—must be withdrawn from service until repaired.
- Defective fixed ladders are considered withdrawn from use when they are (a) immediately tagged with "Do Not Use" or similar language; (b) marked in a manner that identifies them as defective; or (c) blocked (such as with a plywood attachment that spans several rungs).

- Ladder repairs must restore the ladder to a condition meeting its original design criteria, before the ladder is returned to use.

General Requirements

- A double-cleated ladder or two or more ladders must be provided when ladders are the only way to enter or exit a work area having 25 or more employees, or when a ladder serves simultaneous two-way traffic.
- Ladder rungs, cleats, and steps must be parallel, level, and uniformly spaced when the ladder is in position for use.
- Rungs, cleats, and steps of portable and fixed ladders (except as provided below) must not be spaced less than 10 inches (25 cm) apart, nor more than 14 inches (36 cm) apart, along the ladder's side rails.
- Rungs, cleats, and steps of step stools must not be less than 8 inches (20 cm) apart, nor more than 12 inches (31 cm) apart, between center lines of the rungs, cleats, and steps.
- Rungs, cleats, and steps at the base section of extension trestle ladders must not be less than 8 inches (20 cm) nor more than 18 inches (46 cm) apart, between center lines of the rungs, cleats, and steps. The rung spacing on the extension section must not be less than 6 inches (15 cm) nor more than 12 inches (31 cm).
- Ladders must not be tied or fastened together to create longer sections unless they are specifically designed for such use.
- A metal spreader or locking device must be provided on each stepladder to hold the front and back sections in an open position when the ladder is being used.
- When splicing side rails, the resulting side rail must be equivalent in strength to a one-piece side rail made of the same material.
- Two or more separate ladders used to reach an elevated work area must be offset with a platform or landing between the ladders, except when portable ladders are used to gain access to fixed ladders.
- Ladder components must be surfaced to prevent injury from punctures or lacerations, and prevent snagging of clothing.

- Wood ladders must not be coated with any opaque covering, except for identification or warning labels which may be placed only on one face of a side rail.

Portable Ladders

- Non-self-supporting and self-supporting portable ladders must support at least four times the maximum intended load; extra heavy-duty type 1A metal or plastic ladders must sustain 3.3 times the maximum intended load. The ability of a self-supporting ladder to sustain loads must be determined by applying the load to the ladder in a downward vertical direction. The ability of a non-self-supporting ladder to sustain loads must be determined by applying the load in a downward vertical direction when the ladder is placed at a horizontal angle of 75.5 degrees.
- The minimum clear distance between side rails for all portable ladders must be 11.5 inches (29 cm).
- The rungs and steps of portable metal ladders must be corrugated, knurled, dimpled, coated with skid-resistant material, or treated to minimize slipping.

Fixed Ladders

- A fixed ladder must be capable of supporting at least two loads of 250 pounds (114 kg) each, concentrated between any two consecutive attachments. Fixed ladders also must support added anticipated loads caused by ice buildup, winds, rigging, and impact loads resulting from the use of ladder safety devices.
- Individual rung/step ladders must extend at least 42 inches (1.1 m) above an access level or landing platform either by the continuation of the rung spacings as horizontal grab bars or by providing vertical grab bars that must have the same lateral spacing as the vertical legs of the ladder rails.
- Each step or rung of a fixed ladder must be capable of supporting a load of at least 250 pounds (114 kg) applied in the middle of the step or rung.
- The minimum clear distance between the sides of individual rung/step ladders and between the side-rails of other fixed ladders must be 16 inches (41 cm).
- The rungs of individual rung/step ladders must be shaped to prevent slipping off the end of the rungs.

- The rungs and steps of fixed metal ladders manufactured after January 14, 1991, must be corrugated, knurled, dimpled, coated with skid-resistant material, or treated to minimize slipping.
- The minimum perpendicular clearance between fixed ladder rungs, cleats, and steps, and any obstruction behind the ladder must be 7 inches (18 cm), except that the clearance for an elevator pit ladder must be 4.5 inches (11 cm).
- The minimum perpendicular clearance between the centerline of fixed ladder rungs, cleats, and steps, and any obstruction on the climbing side of the ladder must be 30 inches (76 cm). If obstructions are unavoidable, clearance may be reduced to 24 inches (61 cm), provided a deflection device is installed to guide workers around the obstruction.
- The step-across distance between the center of the steps or rungs of fixed ladders and the nearest edge of a landing area must be no less than 7 inches (18 cm) and no more than 12 inches (30 cm). A landing platform must be provided if the step-across distance exceeds 12 inches (30 cm).
- Fixed ladders without cages or wells must have at least a 15-inch (38 cm) clear width to the nearest permanent object on each side of the centerline of the ladder.
- Fixed ladders must be provided with cages, wells, ladder safety devices, or self-retracting lifelines where the length of climb is less than 24 feet (7.3 m) but the top of the ladder is at a distance greater than 24 feet (7.3 m) above lower levels.
- If the total length of a climb on a fixed ladder equals or exceeds 24 feet (7.3 m), the following requirements must be met: fixed ladders must be equipped with either (a) ladder safety devices; (b) self-retracting lifelines, and rest platforms at intervals not to exceed 150 feet (45.7 m); or (c) a cage or well, and multiple ladder sections, each ladder section not to exceed 50 feet (15.2 m) in length. These ladder sections must be offset from adjacent sections, and landing platforms must be provided at maximum intervals of 50 feet (15.2 m).
- The side rails of through or side-step fixed ladders must extend 42 inches (1.1 m) above the top level or landing platform served by the ladder. For a parapet ladder, the access level must be at the roof if the parapet is cut to permit passage through it; if the parapet is continuous, the access level is the top of the parapet.
- Steps or rungs for through-fixed-ladder extensions must be omitted from the extension; and the extension of side rails must be flared to provide between 24 inches (61 cm) and 30 inches (76 cm) clearance between side rails.

- When safety devices are provided, the maximum clearance between side rail extensions must not exceed 36 inches (91 cm).

Ladder Safety Devices and Related Support Systems for Fixed Ladders

- All safety devices must be capable of withstanding, without failure, a drop test consisting of a 500-pound weight (226 kg) dropping 18 inches (41 cm).
- All safety devices must permit the worker to ascend or descend without continually having to hold, push, or pull any part of the device, leaving both hands free for climbing.
- All safety devices must be activated within 2 feet (.61 m) after a fall occurs, and limit the descending velocity of an employee to 7 feet/second (2.1 m/sec) or less.
- The connection between the carrier or lifeline and the point of attachment to the body belt or harness must not exceed 9 inches (23 cm) in length.

Mounting Ladder Safety Devices for Fixed Ladders

- Mountings for rigid carriers must be attached at each end of the carrier, with intermediate mountings, spaced along the entire length of the carrier, to provide the necessary strength to stop workers' falls.
- Mountings for flexible carriers must be attached at each end of the carrier. Cable guides for flexible carriers must be installed with a spacing between 25 feet (7.6 m) and 40 feet (12.2 m) along the entire length of the carrier, to prevent wind damage to the system.
- The design and installation of mountings and cable guides must not reduce the strength of the ladder.
- Side rails, and steps or rungs for side-step fixed ladders must be continuous in extension.

Training Requirements

OSHA requires that training be provided to all employees who will use ladders and stairways.

The Program:

- Must enable employees to recognize hazards related to ladders and stairways

- Use proper procedures to minimize these hazards
- Each employee must be trained by a competent person in the following areas, as applicable:
 - The nature of fall hazards in the work area
 - The correct procedures for erecting, maintaining, and disassembling the fall protection systems to be used.
 - The proper construction, use, placement, and care in handling of all stairways and ladders
 - The maximum intended load-carrying capacities of ladders used.
- Retraining must be provided for each employee, as necessary.

Definitions

CLEAT - A ladder crosspiece of rectangular cross section placed on edge upon which a person may step while ascending or descending a ladder.

DOUBLE-CLEAT LADDER - A ladder with a center rail to allow simultaneous two-way traffic for employees ascending or descending.

FAILURE - Load refusal, breakage, or separation of components.

FIXED LADDER - A ladder that cannot be readily moved or carried because it is an integral part of a building or structure.

HANDRAIL - A rail used to provide employees with a handhold for support.

JOB-MADE LADDER - A ladder that is fabricated by employees, typically at the construction site; not commercially manufactured.

LOAD REFUSAL - The point where the structural members lose their ability to carry the load.

POINT OF ACCESS - All areas used by employees for work-related passage from one area or level to another.

PORTABLE LADDER - A ladder that can be readily moved or carried.

RISER HEIGHT - The vertical distance from the top of a tread or platform/landing to the top of the next higher tread or platform/landing.

SIDE-STEP FIXED LADDER - A fixed ladder that requires a person to get off at the top to step to the side of the ladder side rails to reach the landing.

SINGLE-CLEAT LADDER - A ladder consisting of a pair of side rails connected together by cleats, rungs, or steps.

STAIRRAIL SYSTEM - A vertical barrier erected along the unprotected sides and edges of a stairway to prevent employees from falling to lower levels.

TEMPORARY SERVICE STAIRWAY - A stairway where permanent treads and/or landings are to be filled in at a later date.

THROUGH FIXED LADDER - A fixed ladder that requires a person getting off at the top to step between the side rails of the ladder to reach the landing.

TREAD DEPTH - The horizontal distance from front to back of a tread, excluding nosing, if any.

OSHA Reference

Subpart X - Stairways and Ladders - 1926.1050, 1926.1051, 1926.1052, 1926.1053, 1926.1060

OSHA Reference

Subpart Z 1926

SECTION (W)

CONFINED SPACES

A confined space has limited openings for entry or exit, is large enough for entering and working, and is not designed for continuous worker occupancy.

Confined Spaces Include, but are not limited to:

- Storage tanks
- Process Vessels
- Bins
- Boilers
- Sewers
- Underground Utility Vaults
- Tunnels/Pipelines
- Excavations/Cofferdams

Description of Confined Spaces

May contain a hazardous or potentially hazardous atmosphere

May contain a material which can engulf an entrant

May contain walls that converge inward or floors that slope downward and taper into a smaller area which could trap or asphyxiate an entrant

May contain other serious physical hazards such as unguarded machines or exposed live wires

Must be identified by the employer who must inform exposed employees of the existence and location of such spaces and their hazards.

Potential Hazards

Oxygen-deficient Atmospheres

Explosive or toxic gases, vapors, or fumes

Electrical shock

Purging - In some instances, purging agents such as nitrogen and argon may enter the space and displace the oxygen in the confined space.

Materials falling in and on

Manholes and Pipes

What to Do

- If a space is questionable have a qualified individual inspect and determine the needs to work in the space
- Do not enter permit-required confined spaces without being trained and without having a permit to enter
- Review, understand, and follow employer's procedures before entering permit-required confined spaces and know how and when to exit.
- Before entry, identify any physical hazards
- Before and during entry, test and monitor for oxygen content, flammability, toxicity or explosive hazards as necessary
- Use employer's fall protection, rescue, air monitoring, ventilation, lighting and communication equipment according to entry procedures.

- Maintain contact at all times with a trained attendant either visually, via phone, or by two way radio. This monitoring system enables the attendant and entry supervisor to order you to evacuate and to alert appropriately trained rescue personnel to rescue entrants when needed.

Testing

The employer shall evaluate the workplace to determine if any spaces are permit-required confined spaces.

Equipment

Confined Space testing equipment can be found at the main office or by contacting the safety manager.

OSHA Reference

Permit Required Confined Spaces - 1910.146

TAILGATE TALKS

TOPIC: FIRST AID

What would you do if the person standing beside you was injured?
Have you taken the time to know how to react in this situation?

Injuries are an unfortunate part of the construction industry. Whether the injury is serious or not, the proper response is critical.

First and foremost, always call the proper emergency contacts. *“Supervisor-please show and review with employees the emergency contact information at this time.”* The emergency contact list is to be posted in an easily accessible location and all employees should know its location. This contact list is vital whether the injury is serious or not.

Before an injury occurs and first aid is required; here are some things to know:

1. Who is trained in first aid/CPR? _____
2. Who is the employee in charge? _____
3. Where is the first aid kit located? _____

Helpful hints when first aid is needed

1. Know the situation > Knowing what happened will make a difference in how you administer first aid
2. Act promptly but not hastily > Check for breathing, bleeding, or broken bones
3. Protect yourself > Be sure to wear proper protective equipment when providing first aid
4. Caution, handle with care! > A suspected neck or back injury should not be moved. Call 9-1-1 and let the professionals handle the injured
5. Check for breathing > Have a trained employee start CPR, and don't forget to use a one-way mask
6. Stop the bleeding > A snug bandage or direct pressure will usually work. Do not use a tourniquet. Direct pressure is the best until professional rescue personnel arrive. Avoid contact with blood Splint broken bones > This can be accomplished with any object that is rigid and longer than the broken bone. Immobilize the joints above and below the broken bone
7. Look for shock > Moist and cold skin, weak pulse, face drained of color and fainting. Keep the victim warm and have them lay down if it is safe for them to move. Keep them calm
8. Bandage wounds > This will help protect them against infection. Be sure to disinfect the wound and place a sterile dressing prior to the bandage
9. Never give liquids to an unconscious victim

Your supervisor will have a handbook on how to properly use the items found in each first aid kit. All of Ragle, Inc and Rivertown's jobs have identical first aid kits. Every vehicle owned by either company will have a small first aid kit and every jobsite trailer will have a large first aid kit.

Knowing how to administer first aid is the responsibility of everyone on a jobsite.

If there are any questions pertaining to PPE please contact Jason Ragle 305-5580

TAILGATE TALKS

TOPIC: PROPER PERSONAL PROTECTIVE EQUIPMENT (PPE)

What are any employee's five most valuable tools? Without these tools, all the other tools would simply be unusable. These tools are face/eyes, feet, hands, head, and

hearing. These are critical in your job and should be protected properly. Ragle, Inc will provide the PPE, but it is up to each of you to utilize them.

HEAD PROTECTION > This is the location of your ability to perform this type of work. Protecting it is as simple as wearing a hardhat when at work. At Ragle, Inc as of 2008, it is a requirement to wear your hard hat at all times no matter what the activity.

1. Hard hats are made of an impact resistant material that will deflect a blow to the head
2. A hard hat is not to be worn backwards, cut on, sat on, thrown, or anything else that could damage the hard hats structural integrity
3. A hard hat should be checked for dents, cracks, cuts, or fading daily
4. A hard hat is rated to withstand an 8lb object falling from a height of 5ft overhead
5. Most hard hats weigh roughly 14 oz. compared with 14 lbs. for a normal human head.
6. The hard hat myth of being too hot is just that. A hard hat provides shade and a place for air to circulate.
7. Don't replace a bump cap for another hard hat

Protect your head. It's the only one you get

EYE/FACE PROTECTION > Your eyes give you the ability to take in the world and what goes on within it. We are constantly putting our eyesight in danger when wearing a simple pair of safety glasses or the proper face protection would work.

1. Face/eye protection comes in a few common types: Regular clear safety glasses, tinted safety glasses, prescription eye glasses with side shield protection (only prescription lenses approved for safety are adequate), goggles, face shields, and full helmets
2. There are 4 common hazards that injure eyes: Unidentified Flying Objects; Particles from brushing, grinding, cutting, sawing, hammering; Invisible Hazards (welding or lasers), and Liquids
3. Ragle, Inc. provides eye protection for everyone including eye protection to go over your prescription lenses

Don't be blind to eye protection

HAND PROTECTION > Our hands are something we take for granted. They do so many things and take so much punishment that we assume they will always be there working for us. Hands are injured more often than any other part of the body. Consider everything that went in to you putting your boots on today. Now think about doing that with a hand that is burned or cut or even the loss of just one thumb. Your hands are not invisible out here, be sure to protect them.

1. Wear gloves, your supervisor can provide you a pair of gloves if the activity requires it
2. Take care of your hands, cuts, scrapes, bumps all need to be attended to
3. Be sure to wear proper gloves for the activity, your supervisor will be able to help you with this

Your hands are the best tools you have, do what it takes to keep them working

If there are any questions pertaining to PPE please contact Jason Ragle 305-5580

HEARING PROTECTION > Listen up, your hearing allows you to work in an environment of constant threats your own well being. You have to hear the equipment backing up or hear someone warn you. Your ears give you the ability to react to something without looking for it.

1. According to OSHA we can work eight hours with a noise level of 90 decibels. Our normal voices are around 60 decibels.
2. Both loud and impulse or quick noises can damage your hearing
3. Talk to your supervisor about the proper hearing protection and use it correctly.

Hearing loss is irreversible

FOOT PROTECTION > This is a topic that is always forgotten. Your feet are what gets you from place to place and allows us to work in this ever changing environment. Let's make sure we do what it takes to keep them moving.

1. Wear a suitable boot: puncture resistant soles, steel toes, boot extends above the ankle, sole is in good shape
2. When the proper footwear is not used, injuries occur: punctures, bruises, blisters, body fatigue, and smashed feet
3. Other type of foot protection that is acceptable for certain activities: Buckle overshoes for mud, concrete, and water & Knee and Hip Boots for work in deep mud and water.
4. Always wear rubber overshoes when working around concrete

All of you rely on your feet to do your job, so let's make sure you keep them working This week Ragle, Inc. will be providing a topic of PPE each day for you and your crew to review. We are company whose success depends on each on of its employees. Therefore we are going to cover these personal protective issues more in depth than normal. If you have any questions please feel free to speak with your supervisor about them.

If there are any questions pertaining to first aid, cpr or training please contact Jason Ragle 305-5580 "Supervisor-please show the employees where the first aid kits are located and briefly go over what can be found in your personal truck first aid kit and in the job site trailer first aid kit."

TAILGATE TALKS

TOPIC: PPE – HEAD PROTECTION

Some scientists say that as little as 16 lbs of force can fracture an adult human skull and roughly 200 lbs to crush it. Some may say you are hard headed, but I'd be willing to

bet they are wrong. Head traumas from falling objects are coming in an industry where activities are going on all around a person. In 1919 the first hard hat was invented by E.D. Bullard, whose company still makes hard hats today. Hard hats have improved in design, ability, weight, and appearance over the years.

What is a hard hat and how does it protect

1. A hard hat is shaped like an upside down bowl coming with two main styles – full brim and front brim.
2. Hard hats are made of rigid materials that help resist and deflect impacts
3. An average hard hat weighs approximately 14 oz.
4. Hard hats come with a suspension system that is there to act as a shock absorber – do not put items between the suspension system and the hard hat
5. Some hard hats are designed against electric shock
6. Hard hats can be modified with face shields, ear muffs, neck/skin protection, and numerous other items.

What does a hard hat do

1. A hard hat is designed to protect the head from an 8lb object falling 5 ft (roughly the same as a 2lb hammer falling 20 ft)
2. A hard hat protects the wearer from blunt force impacts caused by falling objects
3. Can offer some protection from an injury occurring due to trauma from the side
4. Keeps the rain off of your head

Types of Hard hats

1. Class 'A' – Made from insulating material to protect from falling objects and electric shock up to 2,200 volts.
2. Class 'B' – Same requirements as 'A', but are rated for shock protection up to 20,000 volts.
3. Class 'C' – Designed to protect you from falling objects, but not electrical shock
4. Bump Caps – Are not made to resist falling objects. They are the same as a normal ball cap.

Dos and Don'ts of Hardhats

1. DO Check your hardhat daily for dents, cuts, deep scratches, or fading
2. DON'T Sit on your hardhat, use it to hit something with or throw it
3. DON'T Wear your hardhat backwards unless you are welding and have a welder's mask on it
4. DO Wear your hardhat so that it is well adjusted on your head
5. DON'T Put anything in your hard hat except your head
6. DON'T Cut, bend, or heat the hard hat
7. DON'T Paint your hardhat
8. DON'T Cut holes for ventilation

Common Complaints and Truths about hardhats

1. It's too heavy. Hard hats weigh only a few more ounces than a normal cloth cap

If there are any questions pertaining to first aid, cpr or training please contact Jason Ragle 305-5580

“Supervisor-please show the employees where the first aid kits are located and briefly go over what can be found in your personal truck first aid kit and in the job site trailer first aid kit.”

2. It's too hot. Measurements taken under a hard hat in hot weather show that it is often cooler under a hard hat.
3. It gives me a headache. A blow to the head will be worse.
4. It won't stay on. Unless it is due to a high wind, it will. Unless it is not fit properly

It is Ragle, Inc.'s new job site safety policy that all employees will wear a hard hat at all times. Those caught not abiding by this policy will be warned and then removed from the project. This policy is here to protect you.

Helpful hints when first aid is needed

1. Know the situation > Knowing what happened will make a difference in how you administer first aid
2. Act promptly but not hastily > Check for breathing, bleeding, or broken bones
3. Protect yourself > Be sure to wear proper protective equipment when providing first aid
4. Caution, handle with care! > A suspected neck or back injury should not be moved. Call 9-1-1 and let the professionals handle the injured
5. Check for breathing > Have a trained employee start CPR, and don't forget to use a one-way mask
6. Stop the bleeding > A snug bandage or direct pressure will usually work. Do not use a tourniquet. Direct pressure is the best until professional rescue personnel arrive. Avoid contact with blood Splint broken bones > This can be accomplished with any object that is rigid and longer than the broken bone. Immobilize the joints above and below the broken bone
7. Look for shock > Moist and cold skin, weak pulse, face drained of color and fainting. Keep the victim warm and have them lay down if it is safe for them to move. Keep them calm
8. Bandage wounds > This will help protect them against infection. Be sure to disinfect the wound and place a sterile dressing prior to the bandage
9. Never give liquids to an unconscious victim

Your supervisor will have a handbook on how to properly use the items found in each first aid kit. All of Ragle, Inc. and Ragle Inc. jobs have identical first aid kits. Every vehicle owned by either company will have a small first aid kit and every jobsite trailer will have a large first aid kit.

Knowing how to administer first aid is the responsibility of everyone on a jobsite.

If there are any questions pertaining to trench safety, please contact Jason Ragle 305-5580 **THE COMPETENT PERSON MUST BE KNOWLEDGEABLE AND HAVE THE AUTHORITY TO TAKE CORRECTIVE ACTION.**

TAILGATE TALKS

TOPIC: TRENCH SAFETY

Trench excavations are a common activity in construction. Trenches and deep excavations are situations that put employees at risk. OSHA and Ragle, Inc. want to inform you on how to work safely within these areas. The following information can be utilized with any depth of trench, but OSHA concentrates on depths greater than 5'. A normal person's torso is 3-4', a trench collapsing against you could cause you to suffocate or collapse lungs, ribs and cause heart damage. Please pay attention to the following information so you don't get into a trench that is actually a grave.

A trench as defined by OSHA is:

1. A narrow excavation (in relation to its length made below the surface of the ground)
2. In general, the depth is greater than the width
3. But the width of a trench (measured at the bottom) is not greater than 15 feet.

There are multiple hazards that everyone needs to be aware of when trenching activities are happening. These must be understood and everyone should be able to recognize a hazard.

1. Surface Hazards
2. Underground Utilities
3. Getting in and out of the excavation
4. Traffic Hazards
5. Hazardous Atmospheres
6. Emergency Rescue

All excavated trenches must be checked by a competent person prior to employees entering on a daily bases and also as needed throughout construction. There are many factors to consider when deciding if a trench is safe to enter.

1. Can any activities going on around the trench cause a collapse.
2. Ground condition: rain, ground water, nearby utilities
3. The atmosphere of the trench, might be treated as a confined space and air tested
4. Are there are any signs of failure in the surrounding soils
 - a. Tension cracks, ground settlement, spalling or sloughing soils, bulges, seepage, sounds from soil
 - b. Visual signs of deformation in bracing system
5. The depth of the trench to be working in (any trench deeper than 5' must have proper safety measures in place). Less than 5 ' must be approved by the competent person.
6. Is the trench protected structurally from a cave-in or collapse
 - a. Any trench deeper than 4' must be protected by slopping, benching, or using an approved trench box.

- b. Are loose materials placed further than 2' from the edge of the trench
- 7. Is there proper entry and exit from excavation
 - a. A safe means of entry and exit from no more than 25' in any direction of the trench.
 - b. Usually a working ladder that sticks out over 3' from the top of trench

When it comes to trench safety, it is simple. Don't get in it if you have the slightest bit of concern. A cubic foot of dirt weighs roughly 75-100 lbs, a cubic yard up to 900 lbs, and a three yard bucket up to 2700 lbs. It does not take much soil to crush a person.

Working inside a trench that is not safe or venturing outside of trench safety protection will put you or your coworker in grave danger. It is the responsibility of everyone to maintain a safe working environment.

Your supervisor will need to approve the trench protection systems prior to anyone working. Ragle, Inc. has provided all the necessary trench shoring systems needed to complete the activities. Trench safety also goes for the installation of any structures.

This is a deep excavation that has the potential to be a deadly activity.

If there are any questions pertaining to trench safety, please contact Jason Ragle 305-5580 THE COMPETENT PERSON MUST BE KNOWLEDGEABLE AND HAVE THE AUTHORITY TO TAKE CORRECTIVE ACTION.

Don't go deeper than 4' without protection. Remember that a grave doesn't have to be 6' deep.

If there are any questions pertaining to traffic safety, please contact Jason Ragle 305-5580 ALL EMPLOYEES HAVE THE RESPONSIBILITY TO ENSURE THE PUBLIC AND THE EMPLOYEES INTERACT SAFELY

TAILGATE TALKS

TOPIC: TRAFFIC SAFETY

We work in the heavy highway construction industry. Which means our office is also everyone else's way to get from A to B. Due to our work taking place at the same time traffic is moving, a hazardous situation is created. We work in a business poses many threats to our own well being, but our industry is one of a few that also has the added element of the driving public to deal with. That is why we have such detailed Traffic Control Operations.

The issues that all employees on site need to be aware of are:

1. Proper PPE
 - a. This means a Class 2 Vest of either orange or lime-green color.
 - b. Does not mean a vest purchased at a home supply store.
 - c. If working at night, along side a road then Class 3 Apparel must be worn.
2. Proper Traffic Control Signs in place for work

3. Proper Traffic Delineation (Control of the flow of traffic, creating a safe working environment)
 - a. Barrels that are in good condition with sound bases
 - b. Cones a minimum of 24" tall
 - c. Another of the approved devices as stated by INDOT or MUTCD
4. Use of Flaggers

Information that all employees should consider when deciding on traffic control setups:

1. Is the working condition safe or not for employees
2. Is the driving public safe
3. Does traffic need to be controlled by flaggers to create a safe situation
4. Are the traffic control devices installed properly

Is the working condition safe or not for employees

Traffic control is a day to day activity that can change often. To decide whether or not it is needed, you need to evaluate the working environment and how it relates to the day's activities:

1. Will Employees be near live traffic
2. Can employees see traffic or will their backs be turned to it
3. Will Deliveries be coming in to project
4. Will trucks be entering and exiting the project in to live traffic
5. Will my employees be seen or blocked by a hill or other object

These are some main thoughts to consider when deciding your need for traffic control. They are not the only considerations!

Is the driving public safe

Our traffic control is not only for our protection, but the public's too. We post speed limits lower than actual speed limit because we are creating an environment that drivers are not used to. By lowering the posted speed limit and placing orange delineation objects, we can decrease the hazards for both the workers and the public. We wear reflective vests to alert the drivers of our presence (Do not rely on your vests to make you visible; always use your eyes to confirm traffic has seen you). We place signs to alert drivers of our projects and possible changes to the normal driving pattern. All of the Traffic Control and PPE is designed for both our safety and theirs, but being aware of traffic is your best weapon. Does traffic need to be controlled by flaggers to create a safe situation?

If there are any questions pertaining to traffic safety, please contact Jason Ragle 305-5580 **ALL EMPLOYEES HAVE THE RESPONSIBILITY TO ENSURE THE PUBLIC AND THE EMPLOYEES INTERACT SAFELY**

When work operations cause a major change in traffic patterns for a limited time. Flaggers need to be utilized. Flaggers should be used when deliveries come in and off of job, traffic is moving into oncoming traffic, work needs to be done in traveling lane, and many more. Flagging is a serious job with serious consequences when taken lightly. Many Heavy Highway accidents happen when flagging is not done properly.

Your superintendent can direct you on the proper techniques of flagging or call Jason Ragle (812-305-5580) for more information.

Are the traffic control devices installed properly INDOT has set standards for size and requirements of traffic control devices. This includes the reflective vests you are required to wear on some projects. The devices must be in good condition and able to be seen by the driving public. It is everyone's responsibilities to ensure their condition is satisfactory. It is just as important that the devices are placed properly and used in the manner with which they were designed. For more information on spacing and placement of devices please contact Jason Ragle (812-305-5580) for more information.

Traffic Safety is what allows us to work in these dangerous situations. It is important that employees understand the danger that vehicles can produce. Traffic Safety is as much about controlling traffic as it is about being seen.

Make sure you are seen before it is too late.

If there are any questions pertaining to impalements or impalement protection needs: please contact Jason Ragle 305-5580 "Supervisor- please review your current job site status for impalement hazards."

TAILGATE TALKS

TOPIC: IMPALEMENTS

Exposed rebar, nail pins, protruding metal bars, these are just a few examples of items that are found on the jobsite that could impale or harm a worker. These items can only be a hazard for minutes, but that is enough time to have (and required) impalement protection. We work with vertical and horizontal rebar daily, use nail pins with many of our forms, and use various types of objects both vertically and horizontally that can pose threats to our personal safety.

IMPORTANT NOTE: Mushroom style caps are only approved for scratch guards. They are approved for use on horizontal objects that could scratch or poke, but not impale. They cannot prevent impalement.

2x4's with rebar saddles or rebar caps, with steel imbeds, designed to withstand 250 pounds are acceptable for exposed impalement objects (rebar, nail pins...).

Objects and Activities to look for impalement hazards:

1. Vertically exposed rebar beyond the depth of cap (3").
2. Nail Pins used in form work that have 3" or exposed
3. Posts or other metal objects
4. Nails or Bolts

These items do not requires impalement caps at all times, but should be protected

How to avoid impalement hazards:

1. Use approved rebar caps (remember: Mushroom style caps are not acceptable for vertical objects)
2. Use wooden troughs with rebar saddles for long runs
3. Drive nail pins down flush with forms
4. If no overhead work is being done, then barricading the area off with safety fence is acceptable.
5. Bend rebar over to 90

Please review your current job site and building practices to make sure that you are providing protection against impalement hazards. Caps are available if you do not have enough for you project. A one second action can save someone a lot of time in pain.

If there are any questions pertaining to concrete safety or MSDS information: please contact Jason Ragle 305-5580 “Supervisor – check to see if all of your construction products have MSDS sheets at the office, if not please make a list and fax it to Jason.”

TAILGATE TALKS

TOPIC: CONCRETE (PART 1)

CONSTRUCTION ACTIVITIES

Concrete is a major part of our industry. It is a material that allows us to build a wide range of structures and objects. We use it in our bridges, our walls, the sidewalks, and drives. While you may not realize it, the actions of producing and placing it can be dangerous to your health.

Concrete is a mixture of cement, water, and aggregates, along with any variety of admixtures. Concrete can produce immediate hazards because a main ingredient is cement. Cement is a highly alkaline (caustic) chemical which if allowed to sit on your skin can cause irritation and burns. If you have never had concrete burn just ask someone who has, it isn't mild. Other additives could be in the concrete mix. These could pose other potential risk. Any of these additives or cement will have a Material Safety Data Sheet which will inform you about the product and what risks are associated with its use. The MSDS papers will also tell you how to treat any health problems.

When working with concrete, some simple precautions will help prevent personal injury.

1. Keep cement products off the skin – Wear rubber boots, gloves, and appropriate clothing. If you get any in your boot – change your socks.
2. Wash your skin promptly – Concrete Trucks will have available water
3. Keep cement products out of your eyes – Use proper safety eye wear when working with concrete. If concrete gets in your eyes do not run them. Immediately flush them out with water and eye solution.

4. Be aware of the concrete truck – The driver will be concentrating on the end of his chute not what is around him. Don't get run over!
5. Pinch points when placing – Concrete chutes can take a finger if off if caught between sections or can create a head hazard by being over head. Concrete Buckets have a few moving parts, but they are spring loaded and can easily take a finger or knock you out.
6. Check Tools – Be sure to use good tools
7. Be aware of your surroundings - This includes traffic, equipment, other construction activities, falls, overhead hazards (power lines).
8. Wear proper PPE when working with fresh concrete, sawing concrete, or using curing material.
9. Protect all protruding rebar and nail pins with caps or other impalement/scratch protection.
10. Formwork must be designed and constructed to handle to load produced by the concrete.

Concrete is a material that makes our type of work possible. It is a limitless material in its capabilities, but do not take it lightly as it poses many risks during its construction. The activities that go in to a finish concrete product are full of hazards and risks to both employee and project.

Keep it off your skin and in the forms.

Weekly Safety Discussion

Contract #: _____

Date: _____

Ragle, Inc. #: _____

Supervisor: _____

Safety Topic: _____

Jobsite Hazards: _____

Jobsite Activities that could lead to Hazards: _____

Jobsite Solutions: _____

Employee's Name (print)

Employee's Signature
