

A. Glewen & Sons Excavating, Inc.



Safety & Health Program

SAFETY & HEALTH PROGRAM

Prepared for

A. Glewen & Sons Excavating, Inc.

By



Associated Builders & Contractors of Wisconsin

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A. Glewen & Sons Excavating, Inc.

SAFETY & HEALTH PROGRAM

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A. Glewen & Sons Excavating, Inc.

SAFETY POLICY

It is the policy of A. Glewen & Sons Excavating, Inc. to provide a safe and healthful place to work for its employees, customers and visitors. In order to maintain a successful safety program, it must embody cooperation and the proper attitudes toward accident prevention on the part of all employees at A. Glewen & Sons Excavating, Inc.

All work activities will comply with regulations, protect against personal injury and property damage and limit the company's risk of unnecessary financial burdens or reduced efficiency due to accidents. Only through a cooperative effort can a safety record in the best interest of all be established and maintained.

Policy Objectives

In keeping with A. Glewen & Sons Excavating, Inc. commitment to safety, we have implemented this policy to meet the following objectives:

1. To provide for development and implementation of safety and health policies, programs and implementing procedures designed to provide a safe and healthful working environment for all employees, our customers, visitors, vendors, suppliers, subcontractors and members of the general public.
2. To reduce the potential of accidental injuries to persons and to protect the property of A. Glewen & Sons Excavating, Inc. employees, customers, and general public, minimizing the occurrence of incidents, the consequences of which may drastically affect the safety and future of A. Glewen & Sons Excavating, Inc. projects and facility operations.
3. To cooperate with subcontractors and other clients in their efforts to contribute to safe and efficient operations, and to comply with applicable federal, state and local statutes, standards and regulations.
4. Exercise good judgment in the application of A. Glewen & Sons Excavating, Inc. Corporate Safety Policy.

Policy Applicability

This policy will apply to all regular full-time, part-time, commissioned, probationary, casual, or contract employees of A. Glewen & Sons Excavating, Inc. Compliance with the policy will be required as a condition of employment or continued employment with the A. Glewen & Sons Excavating, Inc. This policy also applies to all A. Glewen & Sons Excavating, Inc. operations including but not limited to: suppliers, owners' representatives, agents of the architect or engineer, regulative authorities, visitors, vendors, and invitees.

It is a condition of all subcontractors and purchase orders issued by A. Glewen & Sons Excavating, Inc. that applicable Local, State, and Federal Codes be followed. Failure to comply is a breach of contract terms.

Program Responsibilities

A. Glewen & Sons Excavating, Inc. written Safety and Health Program contains detailed procedures and guidelines, along with specific management, supervisor and employee responsibilities that have been designed to implement the Company Safety and Health Policy. Each employee of A. Glewen & Sons Excavating, Inc. shall be issued a copy of the safety and health program. Upon termination of employment with A. Glewen & Sons Excavating, Inc., employees are required to turn in their copy of this program.

Objectives, policy, guidelines, accountability, follow-up, training, education and a way to measure effectiveness are all elements of working safety and health programs that comply with applicable local, state and federal safety and health standards. It shall be our philosophy that our efforts towards production, quality, safety and health must be inseparable. Through the implementation of this program, every attempt will be made to reduce the possibility of an accident or illness occurring.

President
A. Glewen & Sons Excavating, Inc.

Date

REVISIONS

PURPOSE

To update the holders of this manual with changes and/or revisions of any material in this manual as a result of Governmental changes in Safety Standards/Procedures or any changes in A. Glewen & Sons Excavating, Inc. Safety Policies.

SCOPE

This Procedure applies to all A. Glewen & Sons Excavating, Inc. projects and to all manual holders.

RESPONSIBILITY

The Corporate Safety Manager will be responsible for reviewing the manual at least annually and issuing any revisions.

POLICY

Upon review of this manual the Safety Manager shall issue updates and/or changes to all holders of this manual by mail.

It will be the responsibility of each manual holder to insert revisions and discard old page(s).

SAFETY POLICY RESPONSIBILITY

PURPOSE

An effective safety program includes a complete and clear description of safety responsibilities for all employees. It is important for all employees to understand not only their responsibilities but also the responsibilities of fellow employees.

Policy

All levels of management and supervisors are charged with the responsibility of preventing conditions that could lead to occupational injuries or illness. While the ultimate success of our safety and health program depends upon the full cooperation of each employee, it is management's responsibility to see that effective training and education programs are employed to the best advantage.

RESPONSIBILITY

Corporate Safety Officer

- Set an example of safe working habits and follow all safety regulations.
- Assist in establishing annual company safety goals.
- Monitor all safety and workers compensation statistics.
- Manage special safety programs.
- Promote safety.
- Distribute safety-related publications and reports.

Safety Manager

- Set an example of safe working habits and follow all safety regulations.
- Work as a team with estimators, project managers, and superintendents in safety pre-planning sessions prior to letting of bids to subcontractors.
- Attend pre-job meetings with all subcontractors and discuss/review with each, the A. Glewen & Sons Excavating, Inc. and OSHA environmental, safety and health policies and procedures, which will require their compliance at the project site.
- Communicate safety information to the projects.
- Assist Project Supervision with safety activities and reporting issues.

SAFETY POLICY RESPONSIBILITY

Safety Managers *continued*

- Accompany and properly document any events arising out of OSHA inspections, corporate safety visits mid other formal type safety inspections conducted at the project site by outside agencies, logistics permitting.
- Monitor Safety Program activity at all projects.
- Conduct project safety visits for each location.
- Evaluate site superintendent's safety performance.
- Follow-up on all reported safety violations to ensure corrective action is taken.
- Assure timely and accurate accident reporting.
- Recommend improvements in the Safety Program.
- Review all accidents and investigation reports.
- Classify all occupational injuries and illnesses per OSHA Recordkeeping Practices (includes factual, alleged and/or exaggerated injuries or illnesses).
- Track all safety and workers compensation statistics.
- Evaluate the need for and requisition personal protective equipment, fire protection equipment, and other safety-related equipment required to fit the project sites needs during Construction Operations.
- Initiate, implement, and administer safety training in accordance with established project Site requirements.
- Monitor the administration of the project site first aid services and develop emergency rescue plan.
- Review and approve/disapprove any required job-made tool.
- Perform and carry out any other assignments delegated by the Corporate Safety

Officer.

SAFETY POLICY RESPONSIBILITY

Project Supervisor

- Set an example of safe working habits and follow all safety regulations.
- Responsible for the safety of their employees as well as the safety of others who may enter their work area.
- Attend safety pre-planning meetings.
- Communicate and enforce all safety policies and procedures within their operations.
- See that essential safety devices and personal protective equipment are provided and used.
- Inspect daily all work areas to ensure that work practices and equipment are meeting established safety standards, Complete Site Safety Checklist, Exhibit “A” (Page 61)
- Take immediate corrective action whenever unsafe conditions and/or unsafe acts are noted.
- Instruct employees as to the hazards of the job, how to avoid injury, and appropriate emergency procedures.
- Assist in training new and established employees.
- See that all injuries are promptly treated and reported,
- Investigate the cause of all accidents and injuries and complete reports as required.
- Conduct weekly Safety Talk meetings.

Foreman

- Set an example of safe working habits and follow all safety regulations.
- See that the Safety Program is carried out at the work level.
- Be familiar with the laws pertaining to safety and their basic requirements.

SAFETY POLICY RESPONSIBILITIES

Foreman *continued*

- Instruct all workers in safe procedures and job safety requirements. Follow-up, and insist on compliance.
- See that workers follow safe work practices at all times.
- Discuss safety in personal contact with workers on every operation.
- See that no unsafe conditions exist in their work area.
- Make sure that necessary protective equipment is on hand and used as required.
- Take immediate action on unsafe conditions reported by workers.
- See that all injuries are cared for properly and reported promptly.
- Investigate all accidents, file complete reports and correct the causes immediately.
- Conduct weekly *Safety Talk* meetings.

Employee

- Set an example of safe working habits and follow all safety regulations.
- Perform all duties in a safe manner.
- Read, understand and follow all company safety policies and procedures.
- Wear all personal protective equipment that is required and maintain the equipment in good condition.
- Report all unsafe acts and conditions.
- Report all accidents and injuries to Foreman or Site Superintendent immediately.
- Assist in Safety Talk meetings.

SAFETY POLICY RESPONSIBILITIES

SUBCONTRACTORS AND SUPPLIERS SHALL

- 1) Abide by all applicable safety rules of Local, State and Federal Regulations.
- 2) Subcontractors are required to submit their company safety program to A. Glewen & Sons Excavating, Inc. Safety Manager.
- 3) The subcontractor will ensure that their safety program is in compliance with all existing safety and health requirements of local, state and federal regulatory agencies. Where applicable, this may include, but not be limited to, hazard communication training, personal protective equipment training, and respiratory protection training.
- 4) The subcontractor/supplier is responsible for all employees working for subcontractor/supplier, and for all other persons calling on subcontractor/supplier or doing business with subcontractor/supplier while on a A. Glewen & Sons Excavating, Inc. job site.
- 5) Prior to the commencement of work, the subcontractor shall provide the name of their safety representative to A. Glewen & Sons Excavating, Inc. Safety Manager. This representative must be assigned to the project and be responsible for the administration and enforcement of the safety program. The safety representative may be required to meet with the A. Glewen & Sons Excavating, Inc. Safety Manager to review and discuss the safety regulations to be adhered to on the job site.
- 6) Notify all other contractors when actions or activities undertaken by them could affect health or safety of employees of other contractors.
- 7) Check in with job site supervisor before entering job site.
- 8) Inform A. Glewen & Sons Excavating, Inc. of all injuries to workers.
- 9) Report to A. Glewen & Sons Excavating, Inc. any unsafe conditions that come to their attention.

Architects, owners, and visitors to A. Glewen & Sons Excavating, Inc. sites shall:

- 1) Abide by all safety rules.
- 2) Check with A. Glewen & Sons Excavating, Inc. Superintendent, so appropriate personal protective equipment may be provided.
- 3) Refrain from entering site before notifying A. Glewen & Sons Excavating, Inc. Superintendent.

All Personnel Shall:

- 1) Strive to make all operations safe.
- 2) Maintain physical and mental health necessary to work safely.
- 3) Keep all work areas free from debris.
- 4) Assess results of their actions on site safety.
- 5) Repair or replace safety precautions removed or altered before leaving the area.
- 6) Promptly report all accidents and injuries whether involving A. Glewen & Sons Excavating, Inc. personnel or others.

DISCIPLINARY PROCEDURES

Disciplinary Procedures:

Supervisors are responsible for keeping employees informed on policies, rules and regulations, and for providing positive direction. Employees will be held accountable for acceptable on-the-job performance and for the policies, rules and regulations of A. Glewen & Sons Excavating, Inc.

The following are four standard disciplinary actions that may be taken in response to unsatisfactory work performance or conduct. They are: verbal warnings, written warnings Suspension without pay and discharge. The type of disciplinary action that is taken is determined by the degree of the seriousness of the infraction. In certain instances the company may believe that an employees conduct, performance or absenteeism/tardiness is so detrimental to the interest of the company or other employees of the company that immediate discharge is taken without notice or prior disciplinary action. No supervisor shall enact immediate discharge without consulting Human Resources. If a Supervisor feels that an employee must be immediately removed from, a jobsite, the supervisor shall send the employee home indicating "indefinite suspension".

The normal procedure for disciplinary action is as follows:

- ▶ One verbal warning
- ▶ One written warning
- ▶ Suspension
- ▶ Discharge

Verbal warnings must be put in writing and forwarded to Human Resources, who will monitor frequency of similar actions.

Written warnings state the nature of the infraction and should be signed by the employee, witness and supervisor. The employee should be provided with a copy of the warning. The employee's signature does not indicate that the employee believes that the disciplinary action is warranted, but simply acts as an acknowledgment that a copy of the warning was received. Furthermore, if an employee is unwilling to provide a signature, this should be noted on the form.

Suspension without pay can be used at any time during the disciplinary action process. The nature of the infraction will determine if suspension is used and the length of the suspension.

Alcohol and Controlled Substance Use

[NOTE: This is a sample policy to be used as a guide in developing your company's prevailing wage substance abuse policy. Any policy should only be used by your company with the advice of legal counsel. ABC of Wisconsin is not liable for any claims, acts or omissions relating to your company's drug testing policy or implementation of that policy.]

PREVAILING WAGE SUBSTANCE ABUSE POLICY

A. Glewen & Sons Excavating, Inc. has a concern for the safety, health and well-being of its employees. A. Glewen & Sons Excavating, Inc. also has an obligation to provide its customers with quality service and products. Alcohol or drug abuse can pose a serious safety and health hazard to the employee, co-workers and third parties and can interfere with our ability to meet our customer's needs.

In addition, Wisconsin law requires the Company to maintain a Substance Abuse Policy in order to perform work on prevailing wage projects.

Therefore, a condition of employment at A. Glewen & Sons Excavating, Inc. is that employees adhere to the following requirements:

PROHIBITED CONDUCT

A. Glewen & Sons Excavating, Inc. prohibits employees from using, possessing, attempting to possess, distributing, delivering or being under the influence of a drug or using or being under the influence of alcohol on Company premises, in Company vehicles or during work hours, including breaks, meals and overtime. Violation of these provisions will result in immediate removal from the work site and appropriate disciplinary action, which may include termination of employment.

Therefore, A. Glewen & Sons Excavating, Inc., in accordance with our policy, prohibits an employee working on a project from using, possessing, attempting to possess, distributing, delivering or being under the influence of: 1) marijuana, cocaine, or phencyclidine (PCP) or any derivative thereof; 2) an amphetamine or any formulation thereof; 3) a narcotic drug or any derivative thereof; or 4) any other substance to a degree which adversely affects the employee's safety and/or the safety of others. No employee shall report for duty or remain on duty while having a breath alcohol concentration of .04 or greater. No employee shall consume an intoxicating beverage, regardless of its alcoholic content, while on a project.

Effective (date), all employees/applicants (or employees/applicants performing work on prevailing wage projects) of A. Glewen & Sons Excavating, Inc. will be required to submit to a drug or alcohol test in the instances set forth as follows:

(1) Pre-Employment

Applicants will be informed that A. Glewen & Sons Excavating, Inc. requires all individuals it intends to hire to be drug-free and that passing a pre-employment drug test is a condition of employment at A. Glewen & Sons Excavating, Inc. All offers of employment are contingent upon satisfactory results of a drug test screen. If an applicant refuses to submit to the drug test, or tests positive on the drug test, the applicant will not be considered qualified for employment with A. Glewen & Sons Excavating, Inc. and will not be offered employment with the Company.

Alcohol and Controlled Substance Use

(2) Reasonable Suspicion

A. Glewen & Sons Excavating, Inc. may require employees to submit to a drug or alcohol test whenever reasonable suspicion exists that an employee may be unfit for duty due to alcohol or other drug use based upon an employee's behavior, performance or conduct. A. Glewen & Sons Excavating, Inc. shall ensure that the employee is transported immediately to a collection site for the collection of a urine or breath specimen. If the Company finds the employee not fit to return to work, the Company will arrange transportation for the employee to his/her home. The Company may also suspend the employee, without pay, pending receipt of the test results. If the test results are negative the employee will return to work and receive compensation for any wages lost while awaiting the test results.

(3) Post Accident

A. Glewen & Sons Excavating, Inc. requires any employee to report an accident to appropriate management personnel and provide a urine/breath specimen to be tested for the use of controlled substances and alcohol as soon as possible, but not later than 2 hours after an accident.

(4) Random

A. Glewen & Sons Excavating, Inc. shall use a scientifically valid random selection process to select and request an employee to be tested for the use of alcohol and controlled substances. Each employee shall have an equal chance of being tested each time selections are made. The random alcohol and controlled substances tests conducted under this part will be unannounced and spread reasonably throughout the calendar year.

The minimum annual percentage rate for random drug testing shall be 20 percent of employees [in the Consortium pool]. The minimum annual percentage rate for random alcohol testing shall be 5 percent of employees [in the Consortium pool].

(5) Removal and Return to Work

Any employee who violates the Company's Substance Abuse Policy, who is under the influence of drugs or alcohol while performing work, who tests positive for drugs or alcohol, who refuses to submit to drug or alcohol testing as required in this Policy, who engages in any conduct which operates to jeopardize the integrity of the specimen or the reliability of the test result, or if a contracting agency officer has reasonable suspicion to believe an employee is in violation of the Company's Substance Abuse Policy, that employee shall be immediately removed from work and subject to discipline up to and including discharge. Employees will only be eligible to return to work upon testing negative for drugs and alcohol and complying with any other substance abuse evaluation or treatment, if applicable.

Alcohol and Controlled Substance Use

DRUGS TESTED

A. A. Glewen & Sons Excavating, Inc. tests employees/applicants for the following drugs ("Drug Panel 5"):

Amphetamines/Methamphetamines
Cocaine Metabolites
Marijuana Metabolites
Opiates Metabolites
Phencyclidine

Alcohol (Breath)

A. Glewen & Sons Excavating, Inc. tests employees for the drugs indicated above plus alcohol for reasonable suspicion, random and post-accident situations. The employee is required to submit a breath specimen for the alcohol test under these circumstances.

COMPLIANCE WITH TESTING PROCEDURES

All employees/applicants requested to undergo a drug or alcohol test are required to promptly comply with the request. A. Glewen & Sons Excavating, Inc. expects all prospective and current employees to exercise good faith and cooperate in complying with any procedures required under the Policy. Refusal to submit to a drug test, or engaging in any conduct which operates to jeopardize the integrity of the specimen or the reliability of the test result will be subject to disciplinary action, up to and including termination, independent and regardless of any test results. This also includes failure to show up for a drug test specimen collection, postponing or rescheduling of drug specimen collections.

TESTING AND NOTIFICATION OF TEST RESULTS

Testing will be performed by a SAMHSA certified laboratory utilizing clinically sound and approved testing methodologies. The name of the individual providing the specimen will remain confidential and will not be provided to the laboratory performing the test (unless requested by the Company). The testing laboratory is only able to identify the specimen by the "specimen identification number" assigned at the time of collection.

The laboratory will release the results of the drug test to a Certified Medical Review Officer (MRO) for chain of custody and test verification. The MRO will only release results to the contact person designated by the Company.

DISCIPLINARY ACTIONS

Employees who violate the above rules are subject to immediate termination. A. Glewen & Sons Excavating, Inc. in its sole discretion may take other disciplinary action, as it deems appropriate and/or may offer an employee the opportunity to undergo substance abuse evaluation and successfully complete treatment, if recommended, in lieu of termination.

Alcohol and Controlled Substance Use

REHABILITATION

A. Glewen & Sons Excavating, Inc. does provide group health insurance benefits to employees. The employee will pay for all costs of rehabilitation not covered under the Company's benefit plan. A leave of absence to participate in drug rehabilitation will not be paid by the Company. An employee may however choose to utilize vacation and sick leave he/she has available to pay of the lost time from work.

AMENDMENTS

This policy is subject to amendment from time to time as determined appropriate by A. Glewen & Sons Excavating, Inc. The Company reserves the right to add to, delete from or change this policy at any time with or without notice to employees.

This Policy is not intended, and should not be construed, as an employment contract. None of the statements or policies outlined in the Policy are meant to imply that the Company is guaranteeing employment for anyone. Employment with the Company is considered "at-will" and can be terminated by either the Company or the employee at any time and for any reason unless prohibited by statute or public policy. Final interpretation and implementation of any of the provisions of this Policy are vested solely with the Company.

Name of person(s) available to answer questions about this Policy:

____Andrew D. Glewen President_____

Alcohol and Controlled Substance Use

Dear Employee:

Effective _____, the Company will be implementing a drug and alcohol policy for all employees [who perform work on prevailing wage projects]. A copy of that policy will be distributed to all [affected] employees.

We are implementing this policy for a number of reasons. The Company has a concern for the safety, health and well-being of its employees. The Company also has an obligation to provide its customers with quality service and products. Drug and alcohol abuse can pose a serious safety and health hazard to the employee, coworkers, third parties, and can interfere with our ability to meet our customers' needs.

Finally, beginning May 1, 2007, Wisconsin law requires that the Company maintain a substance abuse policy in order to perform work on prevailing wage projects.

As a result of these and other concerns, the Company [has developed] [will be developing] a drug and alcohol policy which will be distributed to all employees.

The Company seeks your cooperation in maintaining a work environment that is free from the problems substance abuse can create.

If you have any questions about this policy, please contact _____.

[closing]

UNSAFE CONDITION ABATEMENT POLICY

It is the policy of *A. Glewen & Sons Excavating, Inc.* to comply with all applicable state, local, federal, and client regulations regarding safe work practices. It is the policy of *A. Glewen & Sons Excavating, Inc.* to abide by the most stringent relevant regulations.

PURPOSE

To provide minimum guidelines for the statement of unsafe conditions and minimum required actions to assure that individuals are not exposed to unsafe conditions during the abatement process.

RESPONSIBILITY

It is the responsibility of the project Superintendent, Forman and Project Manager to assure implementation and adherence to this policy on job sites.

It is the responsibility of all *A. Glewen & Sons Excavating, Inc.* employees to monitor, support and comply with this policy.

It is the responsibility of all subcontractors to comply with this policy.

GENERAL REQUIREMENTS

Under no circumstances will employees, subcontractors or the general public be exposed to an unsafe condition after the unsafe condition has been recognized. For example, if it is determined that work is taking place without proper fall protection; the work will be stopped until adequate protection is provided.

All unsafe conditions will be abated as soon as possible. If it will not be possible to abate an unsafe condition within 24 hours, the Safety Manager should be contacted immediately.

Once it is determined that an unsafe condition exists and it is not possible to abate the condition immediately, the area will be vacated, closed off, barricaded, or protected by other appropriate means to protect employees, subcontractors and the public from the unsafe condition.

Failure to adhere to this policy can result in disciplinary action up to and including termination.

ACCIDENT REPORTING, INVESTIGATION & RECORD KEEPING

PURPOSE

To establish an accident reporting system consistent with governmental requirements, proper claims processing procedures and loss control practices.

POLICY

It is the policy of *A. Glewen & Sons Excavating, Inc.* to voluntarily comply with all employee, worker and visitor accident, injury and illness reporting requirements established by OSHA, state workers compensation agencies and workers compensation insurance carriers.

When an accident occurs, first and foremost, prompt and appropriate assistance must be provided to the individual(s) involved. If the individual(s) involved require attention by a health care provider, the supervisor shall, if circumstances allow, complete the top section of an Attending Physician's Return to Work Recommendations Record form (Exhibit "A") to accompany the injured individual(s). In addition, a post accident drug screen of urine and/or blood and breath shall also be required. Refer to the Post Accident/Incident Guidelines as listed in the Substance Abuse Prevention/Detection Program for further guidance.

ALL ACCIDENTS AND/OR INJURIES MUST BE COMMUNICATED IMMEDIATELY OR AS SOON AS CIRCUMSTANCES ALLOW TO THE SAFETY COORDINATOR AT *(your company phone number)*

If the accident results in a fatality or sends three (3) or more individuals to the hospital or results in serious injury, the Safety Manager will then notify the following individuals:

- Corporate Safety Officer
- President of *A. Glewen & Sons Excavating, Inc.*
- General Superintendent
- Project Manager
- OSHA Regional Office*

Arrangements will then be made to conduct an extensive investigation by the Corporate Safety Manager in conjunction with the Project Manager.

*** For accidents resulting in a fatality or hospitalization of three (3) or more individuals, the Safety Manager is required to notify the local area OSHA office either by telephone or by fax within eight (8) hours after the occurrence of the accidents.**

ACCIDENT REPORTING, INVESTIGATION & RECORD

KEEPING

RECORDS

Accident Form

Once the appropriate assistance has been provided to the individual(s) involved, the supervisor shall immediately secure the accident area, determine the factors that led to the accident and take the necessary precautions to prevent its recurrence and allow for an extensive investigation by the Safety Manager, if appropriate.

The supervisor is responsible to then complete Supervisor's Incident/Near Miss Report (Exhibit "B"), with as much information and detail as possible and may use additional paper if necessary. The supervisor should sign and date the report as well as the employee. The completed form should be forwarded to the Safety Manager immediately.

The Safety Manager is then responsible for distributing copies of the reports to the following individuals:

- Corporate Safety Officer
- President of *A. Glewen & Sons Excavating, Inc.*
- General Superintendent
- Project Manager
- Employee's accident report file

Employer's First Report of Injury or Disease (WKC-12)

The Employer's First Report of Injury or Disease (Exhibit "C") shall be completed by the Safety Manager. Upon completion of the form, the Safety Manager will retain a copy with the OSHA 300 log and be responsible for distribution to the following:

- Worker's compensation Insurance Carrier (forwarded to Dept. of Workforce Development)
 - Within 24 hours after third day of employee disability
 - Within 24 hours of a fatality
- Employee's accident report File

ACCIDENT REPORTING, INVESTIGATION & RECORD KEEPING

OSHA 300 Log

Using the Guidelines for Determining OSHA Recordability (Exhibit “D”), the Safety Manager and/or Corporate Safety Officer, will review the accident to determine recordability. The Safety Manager is then responsible for entering an injury/illness on the OSHA 300 Log (Exhibit “E”).

What is Medical Treatment?

Medical treatment includes managing and caring for a patient for the purpose of combating disease or disorder (Exhibit “D”). The following are **not** considered medical treatments and are **NOT recordable**:

- Visits to a doctor or health care professional solely for observation or counseling.
- Diagnostic procedures, including administering prescription medications that are used solely for diagnostic purposes.
- Any procedure that can be labeled first aid.

Authorization for Medical Treatment Form

When an employee goes to a health care provider for a work-related injury or illness, an Attending Physician’s Return to Work Recommendations Record Form (Exhibit “A”) shall accompany the employee.

The employee will not be allowed to return to work without a “Return to Work Release” from the health care provider.

First Aid Treatment vs. Insurance Carrier Notification

Not all injuries result in a Worker’s Compensation claim. Each year thousands of injuries, such as scrapes, bruises and cuts receive nothing more than first aid treatment, result in no lost time and the employee recovers rapidly while continuing to work. However, some injuries do result in Worker’s compensation claims and must be reported to the insurance carrier as quickly as possible. The following criteria may be used in determining which injury requires first aid treatment and which injury requires immediate notification to the insurance carrier.

First Aid Treatment

Injuries which commonly fall into the first aid treatment category (Exhibit “D”) that do not require insurance carrier notification are generally classified as those injuries which:

- Are **not** required to be recorded on the OSHA 300 Log (See Exhibit “E”)
- Do **not** result in employee lost time

ACCIDENT REPORTING, INVESTIGATION & RECORD KEEPING

Any time an injured employee begins seeing their personal health care provider, returns to a health care provider to have the injury treated a second time, or gives any indication that a Worker's Compensation claim may be filed; the injury must be immediately reported to the insurance carrier using the Employer's First Report of Injury or Disease form (Exhibit "C").

Insurance Carrier Notification

Injuries which must be immediately reported to the insurance carrier, using the Employer's First Report of Injury or Disease form, are those injuries which:

- Are required to be recorded on the OSHA 300 Log (see Exhibit "E").
- Do result in lost time.

ACCIDENT REPORTING, INVESTIGATION & RECORD KEEPING

(EXHIBIT A)

NOTICE TO DOCTOR

(To be presented by injured when reporting for treatment)

_____ has reported that he/she was injured in our employ on _____, 20_____.

In order to expedite payment, please send your bill and report to:

ATTN: WC CONSTRUCTION CLAIM

◆ **Please note: _____ has an aggressive return-to-work program. *Alternate Duty work is available.* Please respond ASAP so we can coordinate the patient's return.**

◆ _____ has a post-accident drug test policy. We ask that a 5-panel (or comparable) drug screen be conducted. Please forward this information to our office as well. Thank You.

◆ Please fax or send a copy of this form to our office Attn: _____

Superintendent	
Date	Signature

NOTE: This is not an acceptance of liability

ACCIDENT REPORTING, INVESTIGATION & RECORD KEEPING

(EXHIBIT B)

SUPERVISOR'S REPORT OF ACCIDENT

Job Number: _____ Project Name: _____

Employee Name: _____

Social Security Number: _____

Date of injury: _____

Has the employee missed any time from work? _____

Name and address of healthcare provider: _____

Was employee given Notice to Doctor/Work Restrictions Form? _____

Injured part(s) of body: _____

Type of injury (example: cut, strain, contusion): _____

Description of how accident occurred (Please list as much detail as possible – showing exact location, type of tool being used, etc.): _____

I, the employee have read this report and state that it is true and correct.

Witnesses: _____

(Signature of Employee)

(Date)

(Signature of Supervisor filling out form)

(Job Title)

This Supervisor's Report of Accident form needs to be faxed immediately to (fax #) _____, attention _____

**ACCIDENT REPORTING, INVESTIGATION & RECORD KEEPING
(EXHIBIT C)**

EMPLOYER'S FIRST REPORT OF INJURY OR DISEASE

Fatal Injuries: Employers subject to ch.102, Wis. Stats., must report injuries resulting in death to the Department and to their insurance carrier, if insured, within one day after the death of the employee.

Non-Fatal Injuries: If the injury or occupational illness results in disability beyond the three-day waiting period, the employer, if insured, must notify its insurance carrier within 7 days after the injury or beginning of disability. Medical-only claims are to be reported to the insurance carrier only, not the Department.

Electronic Reporting Requirement: All work-related injuries and illnesses resulting in compensable lost time, with

The provision of your social security number is voluntary. Failure to provide it may result in an information processing delay.
 Personal information you provide may be used for secondary purposes [Privacy Law, s. 15.04(1)(m)]. **(Please read the instructions on page 2 for completing this form)**

EMPLOYEE	Employee Name (First, Middle, Last)			Social Security Number - -		Sex <input type="checkbox"/> M <input type="checkbox"/> F		Employee Home Telephone No. () -		
	Employee Street Address			City		State		Zip Code -		
	Birthdate		Date of Hire		County and State Where Accident or Exposure Occurred?					
	Employer Name			WI Unemployment Ins. Acct No.		Self-Insured? <input type="checkbox"/> Yes <input type="checkbox"/> No		Nature of Business (Specific Product)		
	Employer Mailing Address			City		State		Zip Code -		Employer FEIN -
	Name of Worker's Compensation Insurance Co. or Self-Insured Employer								Insurer FEIN -	
	Name and Address of Third Party Administrator (TPA) Used by the Insurance Company or Self-Insured Employer								TPA FEIN -	
	Wage at Time of Injury \$		Specify per hr., wk., mo., yr., etc. Per:		In Addition to Wages, Check Box(es) if Employee Received:		<input type="checkbox"/> Meals <input type="checkbox"/> Room <input type="checkbox"/> Tips		No. of Meals/wk. No. of Days/wk Avg. Weekly Amt. \$	
	Is Worker Paid for Overtime? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, After How Many Hours of Work Per Week?									
	For the 52 Week Period Prior to the Week the Injury Occurred, Report Below the Number of Weeks Worked in the Same Kind of Work, and the Total Wages, Salary, Commission and Bonus or Premium Earned for Such Weeks.									
No. of Weeks:		Gross Amount Excluding Tips: \$			If Piece-Work, No. of Hrs. Excluding Overtime:					
Employee's Usual Work Schedule When Injured:				Start Time : <input type="checkbox"/> AM <input type="checkbox"/> PM		Hours Per Day		Hours Per Week		Days
Employer's Usual Full-Time Schedule for This Type of Work at Time of Employee's Injury:										
Part-Time Employment Information:		Are there Other Part-Time Workers Doing the Same Work With the Same Schedule? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, how many?				Number of Full-Time Employees Doing The Same Type Of Work:				
Injury Date		Time of Injury : AM : PM		Last Day Worked		Date Employer Notified		<input type="checkbox"/> Date Returned to Work <input type="checkbox"/> Estimated Date of Return		
Did Injury Cause Death? <input type="checkbox"/> Yes <input type="checkbox"/> No		Date of Death		Was This a Lost Time or Other Compensable Injury? <input type="checkbox"/> Yes <input type="checkbox"/> No		Did Injury Occur Because of: <input type="checkbox"/> Substance Failure to Abuse <input type="checkbox"/> Failure to Use Safety Devices <input type="checkbox"/> Obey Rules				
Was Employee Treated in an Emergency Room? <input type="checkbox"/> Yes <input type="checkbox"/> No Was Employee Hospitalized Overnight as an In-Patient? <input type="checkbox"/> Yes <input type="checkbox"/> No										
Name and Address of Treating Practitioner and Hospital: Case Number from the OSHA Log:										
Injury Description - Describe Activities of Employee When Injury or Illness Occurred and What Tools, Machinery, Objects, Chemicals, Etc. Were Involved. <i>What Happened to Cause This Injury or Illness? (Describe How The Injury Occurred)</i> <i>What Was the Injury or Illness? (State the Part of Body Affected and How It Was Affected)</i>										
Report Prepared By			Work Phone Number () -			Position			Date Signed	

WKC-12-E (R. 11/2005)

SEND REPORT IMMEDIATELY - DO NOT WAIT FOR MEDICAL REPORT

ACCIDENT REPORTING, INVESTIGATION & RECORD KEEPING

(EXHIBIT C continued)

EMPLOYER AND INSURANCE CARRIER INSTRUCTIONS

The employer must complete all relevant sections on this form and submit it to the employer's worker's compensation insurance carrier or third party claim administrator within seven (7) days after the date of a work-related injury which causes permanent or temporary disability resulting in compensation for lost time. The employer's insurance carrier or the third-party claim's administrator may request that this form also be used to immediately report any injury requiring medical treatment, even though it does not involve lost work time.

For any work injury resulting in a **fatality**, the employer must also submit this form directly to the Department of Workforce Development **within 24 hours of the fatality**.

An employer exempt from the duty to insure under s. 102.28, Wis. Stats., and an insurance carrier administering claims for an insured employer are required to submit this form to the Department of Workforce Development within 14 days of the date of work injury.

MANDATORY INFORMATION

In order to accurately administer claims, each of the following sections of this form must be completed. The First Report of Injury will be returned to the sender if the mandatory information is not provided.

Employee Section: Provide all requested information to identify the injured employee. If an employee has multiple dates of employment, the "Date of Hire" is the date the employee was hired for the job on which he or she was injured.

Employer Section: Provide all requested information to identify the injured worker's employer at the time of injury. Provide the name and Federal Employer Identification Number (FEIN) for the insurance carrier or self-insured employer responsible for the worker's compensation expenses for this injury. Also identify the third party claim administrator, if one is used for this claim.

Wage Information Section: Provide the information requested regarding the injured employee's wage and hours worked for the job being performed at the time of injury.

Injury Information Section: Provide information regarding the date and time of injury. Provide a detailed description of the injury, including part of the body injured, the specific nature of the injury (i.e., fracture, strain, concussion, burn, etc.) and the use of any objects or tools (i.e., saw, ladder, vehicle, etc.) that may have caused the injury. Provide the name of the person preparing this report and the telephone number at which they may be reached, if additional information is needed. This form was designed to include information required by OSHA on form 301. If this section is completed and retained, the employer will not have to complete the OSHA 301 form.

ACCIDENT REPORTING, INVESTIGATION & RECORD KEEPING

(EXHIBIT “D”)

GUIDELINES FOR DETERMINING OSHA RECORDABILITY

Page 1 of 5

When is an Injury or Illness Considered Work-Related?

In order for an injury or illness to be recorded, it must be work-related. An injury or illness is considered work-related if an event or exposure in the work environment caused or contributed to the condition or significantly aggravated a pre-existing condition.

Work-relatedness is presumed for injuries and illnesses resulting from events or exposures occurring in the workplace, unless an exception specifically applies. See 29 CFR part 1904.5(b)(2) for the exceptions.

The work environment includes the establishment and other locations where one or more employees are working or are present as a condition of their employment. See 29 CFR Part 1904.5 (b)(1). This is defined as anywhere on the employer’s premises, such as the worksite, the company cafeteria, customer’s worksite where the employer has a contracted job, etc. The work environment surrounds the worker wherever he or she goes on company business . . . on official travel, on dispersed operations, or along regular routes (e.g. sales representatives, truck drivers, construction workers, field personnel, etc.).

Which Work-Related Injuries and Illnesses Should You Record?

Record those work-related injuries and illnesses that result in:

- Fatality
- Loss of consciousness
- Days away from work
- Restricted work activity, job transfer or termination of employment
- Medical treatment beyond first aid

You must also record work-related injuries and illnesses that are significant (as defined below) or meet any of the additional criteria listed below.

You must record any significant work-related injury or illness that is diagnosed by a physician or other licensed health care professional. You must record any work-related case involving cancer, a fractured or cracked bone, or a punctured eardrum. See 29 CFR 1904.7.

(EXHIBIT “D” continued)

GUIDELINES FOR DETERMINING OSHA RECORDABILITY

Page 2 of 5

What are the Additional Criteria?

You must record the following conditions when they are work-related:

- Any needlestick injury or cut from a sharp object that is contaminated with another person’s blood or other potentially infectious material.
- Any case requiring an employee to be medically removed under the requirements of an OSHA health standard.
- Tuberculosis infection as evidenced by a positive skin test or diagnosis by a physician or other licensed health care professional after exposure to a known case of active tuberculosis.

While most of the above are clear cut and easily understood, “all work-related injuries requiring medical treatment beyond first aid” forces you to make the decision concerning recordability. In this category, recordable and non-recordable injuries are only distinguishable by the actual treatment provided. That is, if the injury actually required medical treatment as opposed to first aid treatment, it is recordable. If, on the other hand, the injury is such that only first aid treatment is required, regardless of who applies the first aid, it is not a recordable incident.

The following guidelines should assist you in determining Recordability- first aid vs. medical treatment and significant diagnosed injury or illnesses.

FIRST AID (All Inclusive)

- Using **non-prescription** medications at non-prescription strength (for medications available as both prescription and non-prescription drugs). A recommendation by a physician or other licensed health care professional to use a non-prescription drug at prescription strength is considered medical treatment for recordkeeping purposes.
- Administering tetanus or diphtheria **immunizations** (other immunizations such as Hepatitis B vaccine or rabies vaccine are considered medical treatment).
- Cleaning, flushing or soaking **wounds on the surface** of the skin.
- Using **wound coverings** such as bandages, Band-Aids, gauze pads, butterfly bandages, Steri-Strips, etc. (other wound closing devices such as sutures; staples, etc. are considered medical treatment).
- Using hot or cold **therapy**.

(EXHIBIT “D” continued)

GUIDELINES FOR DETERMINING OSHA RECORDABILITY

Page 3 of 5

FIRST AID *continued* . . .

- Using any **non-rigid means of support** such as elastic bandages, wraps, non-rigid back belts, etc. (devices with rigid stays or other systems designed to immobilize parts of the body are considered medical treatment for recordkeeping purposes).
- Using temporary **immobilization devices while transporting** an accident victim (e.g. splints, slings, neck collars, back boards, etc.).
- Drilling of a fingernail or toenail to **relieve pressure**, or **draining fluid** from a blister.
- Using eye patches.
- Removing foreign bodies from the eye **using only irrigation or a cotton swab**.
- **Removing splinters or foreign material from areas other than the eyes** by irrigation, tweezers, cotton swabs, or other simple means.
- Using finger **guards**.
- Using **non-therapeutic massages** (physical therapy or chiropractic treatment are considered medical treatment for recordkeeping purposes).
- Drinking **fluids for relief** of heat disorders.

MEDICAL TREATMENT

- All treatment that does not fall into first aid as listed above.
- Using prescription medications or use of a non-prescription drug at prescription strength.
- Using wound closing devices such as surgical glue, sutures, staples, etc.
- Using any devices with rigid stays or other systems designed to immobilize parts of the body.

(EXHIBIT “D” continued)

GUIDELINES FOR DETERMINING OSHA RECORDABILITY

Page 4 of 5

SIGNIFICANT DIAGNOSED INJURY OR ILLNESS

- Any serious or significant work-related disorder that is diagnosed by a physician or other licensed health care provider or identified by a positive medical test. These include work-related cases involving cancer, chronic irreversible disease, a fractured or a cracked bone or a punctured eardrum.

CLASSIFYING INJURIES

An injury is any wound or damage to the body resulting from an event in the work environment.

Examples: Cut, puncture, laceration, abrasion, fracture, bruise, contusion, chipped tooth, amputation, insect bite, electrocution, or a thermal, chemical, electrical or radiation burn. Sprain and strain injuries to muscles, joints and connective tissues are classified as injuries when they result from a slip, trip, fall or other similar accidents.

CLASSIFYING ILLNESSES

- **Skin Diseases or Disorders** are illnesses involving the worker’s skin that are caused by work exposure to chemicals, plants or other substances. Examples: Contact dermatitis, eczema, or rash caused by primary irritants and sensitizers or poisonous plants, oil acne, friction blisters, chrome ulcers, inflammation of the skin.
- **Respiratory Conditions** are illnesses associated with breathing hazardous biological agents, chemicals, dust, gases, vapors, or fumes at work. Examples: silicosis, asbestosis, pneumonitis, pharyngitis, rhinitis or acute congestion; farmer’s lung, beryllium disease, tuberculosis, occupational asthma, reactive airways dysfunction syndrome (RADS), chronic obstructive pulmonary disease (COPD), hypersensitivity pneumonitis, toxic inhalation injury, such as metal fume fever, chronic obstructive bronchitis and other pneumoconiosis’.
- **Poisoning** includes disorders evidenced by abnormal concentrations of toxic substances in blood, other tissues, other bodily fluids, or the breath that are caused by the ingestion or absorption of toxic substances into the body. Examples: Poisoning by lead, mercury, cadmium, arsenic or other metals; poisoning by carbon monoxide, hydrogen sulfide or other gases; poisoning by benzene, benzol, carbon tetrachloride or other organic solvents; poisoning by insecticide sprays, such as parathion or lead arsenate; poisoning by other chemicals such as formaldehyde.

(EXHIBIT “D” continued)

GUIDELINES FOR DETERMINING OSHA RECORDABILITY

Page 5 of 5

- **All Other Occupational Illnesses** Examples: heatstroke, sunstroke, heat exhaustion, heat stress and other effects of environmental heat; freezing, frostbite, and other effects of exposure to low temperatures; decompression sickness; effects of ionizing radiation (isotopes, x-rays, radium); effects of non-ionizing radiation (welding flash, ultra-violet rays, lasers); anthrax; bloodborne pathogenic diseases, such as AIDS, HIV, hepatitis B or hepatitis C; brucellosis; malignant or benign tumors; histoplasmosis; coccidiomycosis.

ACCIDENT REPORTING, INVESTIGATION & RECORD KEEPING

(EXHIBIT E)

ACCIDENT REPORTING, INVESTIGATION & RECORD KEEPING

(EXHIBIT F)

NEW EMPLOYEE ORIENTATION

A. Glewen & Sons Excavating, Inc. Safety and Health Program

PURPOSE

A. Glewen & Sons Excavating, Inc. regards their employees as vital parts of the Company. As such, A. Glewen & Sons Excavating, Inc. accepts the responsibility of providing a work place where the worker can do his/her job without injury to him/her or to others.

The orientation is designed to increase the safety awareness of the individual worker and all of the supervisors on the project by getting the supervisor directly involved with the training of his/her workers. It strives to impress on the employee the seriousness of the safety commitment of their supervisors and A. Glewen & Sons Excavating, Inc.. The Orientation trains the employees in specific hazard recognition and promotes communication between individual crafts, departments' management and employees.

POLICY

A representative of the Corporate Safety Department meets with each new employee and distributes a copy of A. Glewen & Sons Excavating, Inc.'s Safety Policy Manual.

During the orientation, all new field personnel review the following videotapes/DVD:

- **ABC's Safety Orientation**
- **Hazard Communication**
- **Other tapes/DVDs may be used in addition (to be determined by the Safety Manager)**

Each new field employee completes an orientation question and answer form after viewing the video/DVD

All new field personnel are required to complete acknowledgements for Safety Orientation and Hazard Communication. The acknowledgements are kept on file by Human Resources.

The new employee will receive hands-on training during the orientation process.

Hands-on training will include:

- Full Body Harness and other Fall Protection Equipment and Use
- Personal Protective Equipment
- Hand and Power Tools
- Other topics may be added as determined by the Safety Manager

Upon completing their first 60 days continuous employment, all held personnel are required to participate in a Safety Reorientation and complete a Safety Reorientation Acknowledgment Form.

PURPOSE

To inform all employees, by means of labels, Material Safety Data Sheets (MSDS) and Training, of the physical and health hazards to which they may be exposed.

REFERENCES

OSHA 29 CFR 1910.1200; 1926.59

OSHA has established a minimum number of chemicals, which are considered hazardous and are covered by the Standard. These are:

- Chemicals listed by OSHA in 29 CFR 1910, Subpart Z, Toxic and Hazardous Substances; and
- Chemicals listed by ACGIH in Threshold Limit Values for Chemical Substances and Physical Agents.

The National Toxicology Program's Annual Report on Carcinogens;

The International Agency on Research on Cancer's monographs.

POLICY

A. Glewen & Sons Excavating, Inc. as an employer engaged in a business where hazardous materials are either used or produced for use or distributed, or where its workers have the potential for contact with hazardous materials in their workplace, will ensure that the hazards of all materials found in the workplace will be evaluated, and that information concerning their hazard will be transmitted to all affected employees. Accordingly, this policy describes how these criteria will be met.

The Safety Manager will be responsible for:

- Providing the hazard assessment, based upon the material's Material Safety Data Sheet (MSDS);
- Obtaining and providing additional information on the hazardous materials;
- Overseeing the company's labeling program
- Identifying and providing appropriate emergency procedures if necessary; and
- Supervising the training program.

DEFINITIONS

ACGIH – American Conference of Governmental industrial Hygienists is an organization of professional personnel in governmental agencies or educational institutions engaged in occupational safety and health programs. ACGH establishes recommended occupational exposure limits for chemical substances and physical agents. See TLV.

Acid – Any chemical that undergoes dissociation in water with the formation of hydrogen ions. Acids have a sour taste and may cause severe skin burns. Acid turns litmus paper red and has pH values of 0 to 6.

Acute Effect – Adverse effect on a human or animal that has severe symptoms developing rapidly and coming quickly to a crisis.

Acute Toxicity – Acute effects resulting from a single dose of, or exposure to, a substance. Ordinarily used to denote effects in experimental animals.

Aerosol – A fine aerial suspension of particles sufficiently small in size to confer some degree of stability from sedimentation (e.g., smoke or fog).

Alkali – Any chemical substance that forms soluble soaps with fatty acids. Alkalis are also referred to as bases. They may cause sever burns to the skin. Alkalis turn litmus paper blue and have pH values from 8 to 14.

Appearance – A description of a substance at normal room temperature and normal atmospheric conditions. Appearance includes the color, size, and consistency of a material.

Asphyxiant – A vapor or gas that can cause unconsciousness or death by suffocation (lack of oxygen). Most simple asphyxiants are harmful to the body only when they become so concentrated that they reduce oxygen in the air (normally about 21 percent) to dangerous levels (18 percent or lower). Asphyxiation is one of the principle potential hazards of working in confined and enclosed spaces.

Base – A substance that (1) liberate hydroxide (OH) ions when dissolved in water, (2) receives hydrogen ions from a strong acid to form a weaker acid, and (3) neutralizes an acid. Bases react with acids to form salts and water. Bases have a pH greater than 7 and turn litmus paper blue. See Alkali.

Boiling Points (BP) – The temperature at which a liquid changes to a vapor state at a given pressure. The boiling point usually expressed in degrees Fahrenheit at sea level pressure (760 mmHg, or one atmosphere). For mixtures, the initial boiling point or the boiling range may be given.

DEFINITIONS *continued...*

Ceiling Limit (PEL or TLV) – The maximum allowable human exposure limit for an airborne substance, which is not to be exceeded even momentarily. Also see PEL and TLV.

Carcinogen – A substance or agent capable of causing or producing cancer in mammals, including humans. A chemical is considered to be carcinogen if:

- It has been evaluated by the International Agency for Research on Cancer (IARC) and found to be a carcinogen or potential carcinogen; or
- It is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or
- It is regulated by OSHA as a carcinogen.

CAS – Chemical Abstracts Service is an organization under the American Chemical Society. CAS abstracts and indexes chemical literature from all over the world in “Chemical Abstracts.” CAS Numbers are used to identify specific chemicals or mixtures.

Central Nervous System – The brain and spinal cord. These organs supervise and coordinate the activity of the entire nervous system. Sensory impulses are transmitted into the central nervous system, and motor impulses are transmitted out.

CFR-Code of Federal Regulations – A collection of the regulations that have been promulgated, under the United States Law.

Chemical – An element (e.g., chlorine) or a compound (e.g., sodium bicarbonate) produced by chemical reaction.

Chemical Family – A group of single elements or compounds with a common general name. Example: acetone, methyl ethyl ketone (MEK) are of the “Ketone” family; acrolein, furfural, and acetaldehyde are of the “aldehyde” family.

Chemical Name – The name given to a chemical in the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS). The scientific designation of a chemical or a name that will clearly identify the chemical for hazard evaluation purposes.

Chronic Effect – An adverse effect on a human or animal body with symptoms that develop slowly over a long period of time or that recur frequently. Also see Acute.

Chronic Exposure – Long term contact with a substance.

HAZARD COMMUNICATION

DEFINITIONS *continued...*

Chronic Toxicity – Adverse (chronic) effects resulting from repeated doses of or exposure to a substance over a relatively prolonged period of time. Ordinarily used to denote effects in experimental animals.

Combustible – A term used by the National Fire Protection Association (NFPA), the U.S. Department of Transportation (DOT), and others to classify certain liquids that will burn, on the basis of flash points. Both NFPA and DOT generally define “Combustible liquids” as having a flash point of 100°F (37.8°C) or higher but below 200°F (93.9°C). Also see “flammable.” Non-liquid substances such as wood and paper are classified as “ordinary combustibles” by NFPA.

Combustible Liquid – Any liquid having a flash point at or above 100°F (37.8°C), but below 200°F (93.3°C), except any mixture having components with flash points of 200°F (93.3°C) or higher, the total volume of which makes up ninety-nine (99) percent or more of the total volume of the mixture.

Common Name – Any means used to identify a chemical other than its chemical name (e.g., code name, code number, trade name, brand name, or generic name). See Generic.

Concentration – The relative amount of a substance when combined or mixed with other substances. Examples: 2ppm hydrogen sulfide in air, or a 50 percent caustic solution.

Container – Any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of MSDS or HCS, pipes or piping systems are not considered to be containers.

Corrosive – A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. For example, a chemical is considered to be corrosive if, when tested on the intact skin of albino rabbits by the method described by the DOT in Appendix A to 49 CFR Part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of 4 hours. This term shall not refer to action on inanimate surfaces.

Epidemiology – Science concerned with the study of disease in a general population. Determination of the incidence (rate of occurrence) and distribution of a particular disease (as by age, sex, or occupation) which may provide information about the cause of the disease.

HAZARD COMMUNICATION

DEFINITIONS *continued...*

Evaporation Rate – The rate at which a material will vaporize (evaporate) when compared to the known rate of vaporization of a standard material. This evaporation rate can be useful in evaluating the health and fire hazards of a material. The designated standard material is usually normal butyl acetate (NBUAC or n-BuAc), with a vaporization rate designated as 1.0. Vaporization rates of other solvents or materials are then classified as:

- **FAST** evaporating if greater than 3.0. Examples: Methyl Ethyl Ketone = 3.8, Acetone – 5.6, Hexane = 8.3.
- **MEDIUM** evaporating if 0.8 to 3.0. 190 proof (95%) Ethyl Alcohol – 1.4 VM&P Naphtha = 1.4, MIBK = 1.6.
- **SLOW** evaporating if less than 0.8. Examples: Xylene = 0.6, Isobutyl Alcohol = 0.6, Normal Butyl Alcohol = 0.4, Water = 0.3, Mineral Spirits = 0.1.

Explosive – A chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

Exposure or Exposed – State of being open and vulnerable to a hazardous chemical by inhalation, ingestion, skin contact, absorption, or any other course; includes potential (accidental or possible) exposure.

Flammable – A chemical that includes one of the following categories:

- **“Aerosol, flammable”** – An aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame protection exceeding 18 inches at full valve opening, or a flash back (a flame extending back to the valve) at any degree of valve opening;
- **“Gas, flammable”** – (1) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of 13 percent by volume or less; or (2) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than 12 percent by volume, regardless of the lower limit;
- **“Liquid, flammable”** – Any liquid having a flash point below 100°F (37.8°C), except any mixture having components with flash points of 100°F (37.8°C) or higher, the total of which make up 99 percent or more of the total volume of mixture.

HAZARD COMMUNICATION

DEFINITIONS *continued...*

- **“Solid, flammable”** – A solid, other than a blasting agent or explosive as defined in 1910.109(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A solid is a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

Flash Point – The minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested by the following methods:

- Tableau Closed Tester (see American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24 1979 [ASTM D56-79]).
- Pensky-Martens Closed Tester (see American National Standard Method of Test for Flash Point by Pensky-Martens Closed Tester, Z11.7-1979 [ASTM D93-79]).
- Setaflash Closed Tester (see American National Standard Method of Test for Flash Point by Setaflash Closed Tester [ASTM D3278-78]).

Generic Name – A designation or identification used to identify a chemical by other than its chemical name (e.g., code name, code number, trade name, and brand name).

Hazardous Chemical – Any chemical whose presence or use is a physical hazard or a health hazard.

Hazardous Warning – Words, pictures, symbols, or combination thereof presented on a label or other appropriate form to inform of the presence of various materials.

Health Hazard – A chemical for which there is significant evidence, based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term “health hazard” includes chemicals that are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents that act on the hematopoietic systems, and agents that damage the lungs, skin, eyes or mucous membranes.

HAZARD COMMUNICATION

DEFINITIONS *continued...*

Highly Toxic – A chemical in any of the following categories:

- A chemical with a median lethal dose (LD50) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
- A chemical with a median lethal dose (LD50) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
- A chemical that has a median lethal concentration (LC50) in air of 200 parts per million by volume or less of gas or vapor or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

IDLH – Immediately Dangerous to Life or Health.

Inhibitor – A chemical added to another substance to prevent an unwanted chemical change.

Irritant – A chemical, which is not corrosive, that causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 CFR 1500.41 for 4 hours exposure or by other appropriate techniques, it results in an empirical score of 5 or more. A chemical is an eye irritant if so determined under the procedure listed in 16 CFR 1500.42 or other appropriate techniques.

Label – Notice attached to a container, bearing information concerning its contents.

LC – Lethal concentration is the concentration of a substance being tested that will kill.

LCL – Lethal concentration, low, lowest concentration of gas or vapor capable of killing a specified species over a specified time.

LC50 – The concentration of a material in air that will kill 50 percent of a group of test animals with a single exposure (usually 1 to 4 hours). The LC50 is expressed as parts of material per million parts of air, by volume (ppm) for gases and vapors, or as micrograms or material per liter of air (g/l) or milligrams of material per cubic meter of air (m/m³) for dusts and mists, as well as for gases and vapors.

LD – Lethal dose is the quantity of a substance being tested that will kill.

HAZARD COMMUNICATION

DEFINITIONS *continued...*

LDL – Lethal dose low, lowest administered dose of a material capable of killing a specified test species.

LD50 – A single dose of a material expected to kill 50 percent of a group of test animals. The LD50 dose is usually expressed as milligrams or grams of material per kilogram of animal body weight (mg/kg or g/kg). The material may be administered by mouth or applied to the skin.

LEL, or LFL – Lower explosive limit, or lower flammable unit, of a vapor or gas; the lowest concentration (lowest percentage of the substance in air) that will produce a flash of fire when an ignition source (heat, arc, or flame) is present. At concentrations lower than the LEL, the mixture is too “lean” to burn. Also see “UEL”.

Mist – Suspended liquid droplets generated by condensation from the gaseous to the liquid state, or by breaking up a liquid into a dispersed state such as splashing, foaming or atomizing. Mist is formed when a finely divided liquid is suspended in air.

Mixture – Any combination of two or more chemicals if the combination is not, in whole or part, the result of a chemical reaction.

MSDS – Material Safety Data Sheet (s).

Neutralize – To eliminate potential hazards by inactivating strong acids, caustics, and oxidizers. For example, adding an appropriate amount of caustic substance to the spill can neutralize acids.

Nonflammable – Not easily ignited, or if ignited, not burning rapidly.

Overexposure – Exposure to a hazardous material beyond the allowable exposure limits.

Pathology – Scientific study of alterations produced by disease.

PEL – Permissible Exposure Limit is an occupational exposure limit established by OSHA’s regulatory authority. It may be time-weighted average (TA) limit or a maximum concentration exposure limit.

Physical Hazard – Means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

HAZARD COMMUNICATION

DEFINITIONS *continued...*

Polymerization – A chemical reaction in which one or more small molecules combine to form larger molecules. A hazardous polymerization is such a reaction that takes place at a rate that releases large amounts of energy. If hazardous polymerization can occur with given material, the MSDS usually will list conditions that could start the reaction and – since the material usually contains a polymerization inhibitor – the length of time during which the inhibitor will be effective.

Reactivity – Chemical reaction with the release of energy. Undesirable effects – such as pressure build up, temperature increase, formation of noxious, toxic or corrosive byproducts – may occur because of the reactivity of a substance to heating, burning, direct contact with other materials, or other conditions in use or in storage.

Solubility in Water – A term expressing the percentage of a material (by weight) that will dissolve in water at ambient temperature. Solubility information can be useful in determining spill cleanup methods and re-extinguishing agents and methods for a material.

Solvent – A substance, usually a liquid, in which other substances are dissolved. The most common solvent is water.

Specific Gravity – The weight of a material compared to the weight of an equal volume of water is an expression of the density (or heaviness) of a material. Insoluble materials with specific gravity or less than 1.0 will float in (or on) water. Insoluble materials with specific gravity greater than 1.0 will sink in water. Most (but not all) flammable liquids have specific gravity less than 1.0 and, if not soluble, will float on water – an important consideration for fire suppression.

Stability – The ability of a material to remain throughout the body, affecting all body systems and organs. Its adverse effect is not localized in one spot or area.

Systemic Poison – A poison that spreads throughout the body, affecting all body systems and organs. Its adverse effect is not localized in one spot or area.

Systemic Toxicity – Adverse effects caused by a substance that affects the body in a general rather than local manner.

Target Organ Toxin – A toxic substance that attacks a specific organ of the body. For example, overexposure to carbon tetrachloride can cause liver damage.

TLC – Toxic concentration low, the lowest concentration of a gas or vapor capable of producing a defined toxic effect in a specified test species over a specified time.

HAZARD COMMUNICATION

DEFINITIONS *continued...*

TDL – Toxic dose low, lowest administered dose of a material capable of producing a defined toxic effect in a specified test species.

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TLV – Threshold Limit Value is a term used by ACGIH to express the airborne concentration of material to which nearly all persons can be exposed day after day without adverse effects. ACGIH expressed TLVs in three ways:

- **TLV-TWA:** The allowable Time-Weight Average concentration for a normal 8-hour workday or 40 hour workweek.
- **TLV-STEL:** The Short Term Exposure Limit, or maximum concentration for a continuous 15-minute exposure period (maximum of four such periods per day, with at least 60 minutes between exposure periods, and provided the daily TLV-TWA is not exceeded).
- **TLV-C:** The ceiling exposure limit – the concentration that should not be exceeded even instantaneously.

Toxic – A chemical falling within any of the following categories:

- A chemical that has a median lethal dose (LD50) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
- A chemical that has a median lethal dose (LD50) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.
- A chemical that has a median lethal concentration (LC50) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams.

Toxic Substance – Any substance that can cause acute or chronic injury to the humane body, or which is suspected of being able to cause diseases or injury under some conditions.

Trade Name – The trademark name or commercial trade name for a material or product.

TWA – Time Weighted Average exposure is the airborne concentration of a material to which a person is exposed, averaged over the total exposure time – generally the total workday (8 to 12 hours). Also see TLV.

HAZARD COMMUNICATION

DEFINITIONS *continued...*

UEL, or UFL – Upper explosive limit or upper flammable limit of a vapor or gas; the highest concentration (highest percentage of the substance in air) that will produce a

flash of fire when an ignition source (heat, arc, or flame) is present. At higher concentrations, the mixture is too “rich” to burn. Also see LEL.

Unstable – Tending toward decomposition or other unwanted chemical change during normal handling or storage.

Unstable Reaction – A chemical that, in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or become self-reactive under conditions of shocks, pressure, or temperature.

Vapor Density – The weight of a vapor or gas compared to the weight of an equal volume of air is an expression of the density of the vapor or gas. Materials lighter than air have vapor densities less than 1.0 (examples: acetylene, methane, hydrogen). Materials heavier than air (examples: propane, hydrogen sulfate, ethane, butane, chlorine, sulfur dioxide) have vapor densities greater than 1.0. All vapors and gasses will mix with air, but the lighter materials will tend to rise and dissipate (unless confined). Heavier vapors and gasses are likely to concentrate in low places – along or under floors, in sumps, sewers, and manholes, in trenches and ditches – where they may create fire or health hazards.

Vapor Pressure – The pressure exerted by a saturated vapor above its own liquid in a closed container. When quality control tests are performed on products, the test temperature is usually 100°F, and the vapor pressure is expressed as pounds per square inch (psig or psia), but vapor pressures reported as MSDS are in millimeters of mercury (mmHg) at 68°F (20°C), unless stated otherwise. Three factors are important to remember:

- Vapor pressure of a substance at 100F will always be higher than the vapor pressure of the substance at 68°F (20°C).
- Vapor pressure reported on MSDA in mmHg is usually very low pressure; 760 mmHg is equivalent to 14.7 pounds per square inch.
- The lower the boiling point of a substance, the higher its vapor pressure.

Viscosity – The tendency of fluid to resist internal flow without regard to its density.

Volatility – A measure of how quickly a substance forms a vapor at ordinary temperatures.

Water-Reactive – A chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

HAZARD COMMUNICATION

STATE RIGHT-TO-KNOW

Many states and local communities have adopted employee “Right-To-Know” laws.

Most of these local laws contain not only the provisions of Federal Standard, but often go far beyond in their compliance requirements. However, the courts have ruled that the Federal OSHA Standard pre-empts all state and community Right-To-Know laws for all employers with respect to those requirements that are covered by the federal standard.

This does not mean *A. Glewen & Sons Excavating, Inc.* is exempt from all of the requirements of state Right-To-Know laws. According to OSHA, employers need to comply with the labeling, MSDS and training requirements. Others must still be met, such as annual reports, community notification of hazardous materials, employee right of refusal to work, additional hazardous material sources, etc. Each state and local community must be checked to determine their local requirements regarding hazardous materials.

EXEMPTIONS

There are two types of exemptions from this program, and they are as follows:

The following materials or operations are exempt from the provisions of this Standard:

- Any hazardous waste which is subject to the regulations of the Environmental Protection Agency (EPA);
- Toxic substances used in the workplace which are in the same form, volume, concentration, and for the same use as commonly sold by retail outlets as consumer goods;
- Any consumer product used in the workplace in the same manner as normal customer use, which will not result in a duration and frequency of exposure greater than consumer exposure;
- Tobacco or tobacco products;
- Foods, drugs, or cosmetics for personal consumption by employees in the workplace.

HAZARD COMMUNICATION

EXEMPTIONS *continued...*

When labeled in accordance with federal requirements, the following substances shall be exempt only from the labeling provisions of the Standard.

- Pesticides subject to EPA's Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) labeling requirements;
- Food, drug or cosmetic material subject to labeling requirements of the Food and Drug Administration (FDA);
- Distilled spirits, wine or malt beverages subject to labeling requirements of the Treasury's Bureau of Alcohol, Tobacco and Firearms (BATF); and
- Consumer products subject to labeling requirements of the Consumer Products Safety Commission.

HAZARD ASSESSMENT

A. Glewen & Sons Excavating, Inc. has chosen to rely on the evaluation and determination of the material by the material manufacturer and importer and the use of the Material Safety Data Sheets (MSDS) they have provided, to satisfy the requirements of 29 CFR 1910.1200 (d) Hazard Determination.

A. Glewen & Sons Excavating, Inc. relies, in good faith, on the MSDS received with all hazardous material shipments, or soon thereafter in the case of missing or updated MSDS, from the material manufacturer, importer or distributor. If new and significant information concerning the potential health hazard of a material in the workplace is uncovered, then the Safety Manager will ensure that either an updated MSDS is obtained from the supplying source, or in the event such MSDS is not available, that the new information is added to the appropriate section of the existing MSDS within two (2) months of his being advised of the new information.

A. Glewen & Sons Excavating, Inc. will rely solely on the MSDS and will not utilize any in-house alternatives to the MSDS for hazard assessment.

Since *A. Glewen & Sons Excavating, Inc.* does not have access to the written procedures maintained by the material manufacturer or importer, should a problem arise with the information received which cannot be resolved with the supplier, the matter will be referred to the nearest OSHA office for investigation.

HAZARD COMMUNICATION

HAZARD ASSESSMENT *continued...*

In the event A. Glewen & Sons Excavating, Inc. should become a “hazardous material manufacturer” due to a material being produced during a process of any type, and should A. Glewen & Sons Excavating, Inc. employees become either exposed or potentially exposed, the material will be evaluated in accordance with the provisions of the Standard by an appropriate outside chemical laboratory who will also be requested to provide a completed MSDS on the basis of their analysis of the material.

Should A. Glewen & Sons Excavating, Inc. find it necessary to mix two or more materials, and the mixture has already been tested as a whole by any of the suppliers to determine its hazards, the results of this testing will be requested on an MSDS for the mixture as a whole. If this mixture has not been tested as a whole, then paragraphs (5) (ii), (5) (iii), and (5) (iv) of the Standard will be used as the procedure for determination of the hazard. Should this become necessary, the procedures used to evaluate this mixture will be described in writing and attached to the completed MSDS.

NOTE: Ingredients of less than 1% of the mixture must be identified if there is evidence that the ingredients could be released from the mixture in concentrations that would exceed a maximum threshold limit or present a health hazard.

HAZARDOUS MATERIAL INVENTORY

The Safety Manager will conduct an inventory of all hazardous materials within the workplace. From the appropriate MSDS on each of these materials, he/she will make a hazard assessment and take the necessary steps to ensure that the hazard information is included on all Hazardous Materials Identification System (HMIS) labels. The Safety Manager will also determine whether or not there are any missing MSDS and if any have been requested from the appropriate supplier. The complete inventory of all hazardous materials in the workplace will be kept in the Safety office.

MATERIAL SAFETY DATA

Material Safety Data Sheets (MSDS)

The MSDS is the primary document in the hazard communication procedure. The Standard requires manufacturers and importers to provide an MSDS with the materials they ship and requires employers to have an MSDS on each hazardous material they use. We cannot overstate the importance of the MSDS. This form contains known hazard and protection information on a hazardous material. It is the one place everyone should look before starting any job involving hazardous materials and any time there is a question about a particular material’s risks or means of protection.

HAZARD COMMUNICATION

MATERIAL SAFETY DATA *continued...*

Acquiring MSDS

The Safety Manager and the supervisor of the Purchasing Department are responsible for obtaining an MSDS on each material substance or compound entering the workplace. The normal procedure for acquiring an MSDS will be to place a notice on all purchase orders requiring the supplier to comply with the MSDS requirements of the standard by providing the MSDS with the ordered product at the time of delivery.

Commodities ordered/received by the project shall not be distributed into the workplace until the Purchasing Department has confirmed receipt on the accompanying MSDS. The supplier has 30 days in which to respond. A follow-up letter should be sent if the MSDS is not received within the 30-day period. This second request should be accompanied by a telephone call.

If the MSDS is not received within 10 working days following the second request, a certified letter requesting the MSDS should be sent to the supplier. Continued absence of the MSDS within the then (10) working days following the certified letter should result in the filing of a written complaint with the nearest OSHA regional office or appropriate state agency. One other possibility is to seek an alternate supplier who can guarantee an immediate MSDS.

NOTE: One of the most important aspects of state Right-To-Know laws is documentation. Therefore, it is imperative that you carefully document all communications with both supplier and customers when dealing with hazardous materials and MSDS.

TRADE SECRETS

Most state Right-To-Know laws, as well as the Federal Standard, provide protection for trade secrets in varying degrees. If trade secret information is withheld on the MSDS, all other information must be provided on the substance's properties and effects. The MSDS must also indicate the category of information being withheld and the claim of a trade secret must be able to be supported. The specific chemical identity that may be withheld includes the chemical name, CAS number, or any other information, which could reveal the precise chemical designation of the substance.

Should a treating physician or health care professional determine that a medical emergency exists; the manufacturer must immediately disclose any necessary trade secret information that will assist the medical professionals in handling the emergency.

HAZARD COMMUNICATION

HAZARDOUS MATERIALS IDENTIFICATION

Container Labeling (Hazardous Chemicals Only)

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Each container of a hazardous chemical must have a warning label. The labeling system adopted by *A. Glewen & Sons Excavating, Inc.* is not intended to be the sole or the most complete source of information regarding the nature or identity of the hazardous chemicals within the workplace. The identity of the chemical, as it is shown on the label, could be any term the company wishes to use, as long as it also appears on the MSDS for that chemical along with its precise chemical name.

In doing this, it allows the company to use a common term familiar to the employees of this particular company, while still providing them with more extensive information including specific chemical identities on the MSDS. This is not true of shipping containers of hazardous chemicals.

The Safety Manager is responsible for ensuring that containers of hazardous chemicals which are shipped to the workplace are marked with the identity of the chemical, the appropriate health warning, the target organ effects of the chemical, and the name and address of the chemical manufacturer, importer or other responsible party.

A. Glewen & Sons Excavating, Inc. is not required to label small portable containers into which hazardous chemicals are transferred from labeled containers, as long as these portable containers are intended only for the immediate use of the employees who performs the transfer.

Hazardous Materials Identification System (HMIS)

The HMIS is a comprehensive color-coded labeling system covering both hazard assessment and hazard communication. Hazard assessment involves the collection and evaluation of MSDS' and the development of numerical ratings for the acute health, flammability and reactivity hazards of the chemical, the designation of chronic health hazards, and the assignment of a personal protective equipment index. The hazard communication portion of the HMIS procedure communicates information on the chemical's identity, its degree of acute health, flammability, and reactivity hazards, its chronic health hazards, and the proper personal protective equipment that must be used when exposed to the hazardous chemical.

HAZARD COMMUNICATION

Hazardous Materials Identification System (HMIS) *continued...*

The chemical's identity is conveyed by a chemical, trade or brand name, by a chemical code number, or by some other descriptive term which clearly identifies the chemical to the work force and for hazard evaluation purposes. ~~The acute health, flammability and~~

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reactivity hazards are communicated by numerical ratings, and an asterisk on the label, which is tied to descriptive information on the MSDS, communicates the chronic health hazard. An alphabetical designation is used to denote a single item, or a combination of terms, of personnel protective equipment appropriate for use when exposed to the hazardous chemical.

The HMIS label utilizes a four-color rectangle or square, which is affixed to the chemical container, conveyance, or piping system, etc.

Work Place Labels

LABELS USED ON CONTAINERS OF HAZARDOUS CHEMICALS WHICH DO NOT LEAVE THE WORK PLACE

The use of the standard HMIS labels, as identified below, may be used on all containers, which remain within the work place. The standard label is described as follows:

White space	--Chemical name	0 = Little or no hazard
Blue space	--Health Hazard	1 = Slight hazard
Red space	--Flammability hazard	2 = Moderate hazard
Yellow space	--Reactivity hazard	3 = High hazard
White space	--Personal Protective Equipment	4 = Extreme hazard

The numbers 0 to 4 may appear in the blue, red, and yellow spaces.

Shipping Labels

LABELS USED ON CONTAINERS OF HAZARDOUS CHEMICALS WHICH ARE SHIPPED OUT OF THE WORK PLACE

In the case of shipped containers of hazardous chemicals, the label must also include the target organ effects of the hazardous chemical. In addition to the information contained in the standard HMIS label, the shipping HMIS label must also contain the following information:

- Health hazards
- Immediate and delayed target organ effects
- Routs of entry

HAZARD COMMUNICATION

Shipping Labels *continued...*

- Physical hazards

- Name and address of chemical manufacturer, importer, or other responsible party.

Completing the HMIS Label

The Safety Manager is responsible for ensuring that the proper hazard assessment and protective equipment ratings appear on all HMIS labels used for identifying hazardous chemicals in the work place. Work area supervisors should assist the Safety Manger in ensuring that all such containers in the work place are properly labeled, stenciled, or tagged. The appropriate information concerning the chemical should be written directly onto the HMIS label with an indelible felt-tip marking or writing pen.

Stockroom or warehouse receiving supervisors are responsible for ensuring that all containers of hazardous chemicals received at the dock or coming onto the site are free from damage and/or leaks prior to their acceptance. They are also responsible for ensuring that all such chemicals received are properly identified, that an accompanying MSDS is available, and that the appropriate HMIS label is displayed on or affixed to the container before it is removed from the receiving area for either storage or delivery to the work area.

CONTRACTOR NOTIFICATION

All contractual agreements with on-site contractors will contain a notification advising the contractor of *A. Glewen & Sons Excavating, Inc.* Communication Procedure and requiring the contractor to make himself, and those of his employees that will be working at the site, to become familiar with the provisions of this program.

In the event the contractor will be performing his work in an area where hazardous materials are present, the contractor must be given: a verbal orientation on the program by the Safety Manger, a copy of the *A. Glewen & Sons Excavating, Inc.* Hazard Communication Program, and the hazardous material inventory for that area.

ORIENTATION AND TRAINING (ROUTINE TASKS)

A. Glewen & Sons Excavating, Inc. has established an initial orientation and on-the-job training program for each employee who may come into contact with, or be exposed to, a hazardous material in the work place.

We believe that color coded warning labels, MSDS, Hazardous Chemical Inventories, and a specific orientation and training program, all play an equally important part in the Hazard Communication Program.

HAZARD COMMUNICATION

ORIENTATION AND TRAINING (ROUTINE TASKS) *continued...*

Each employee, who is affected by the OSHA Hazard Communication Standard, must be informed of the provisions of the Standard. This will include an explanation of the requirements of the Standard, the *A. Glewen & Sons Excavating, Inc.* written Hazard
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Communication Program, how to use the Material Safety Data Sheet, the Hazardous Material Inventory, and the color coded label system. Training will be provided at the time of initial assignment and whenever a new hazardous material is introduced into the work area. Employees will be informed of operations in the work area where hazardous materials are present, and where they can find the company's written Hazard Communication Program, the Hazardous Material Inventory, the hazard determination procedure, and the MSDS.

Initial Orientation and Training

New or transferred employees must be assumed to have little or no prior knowledge of the extent of hazards associated with hazardous materials. Prior to initiation of work, the supervisor must give the new employee a thorough description of the work area, use and maintenance of personnel protective devices, and a complete description of the initial work assignment.

The format of the hazard communication portion of the initial orientation and training includes: supervisor's classroom instruction on the employees' right-to-know, how to use a MSDS, the company's Hazard Communication Program, the OSHA Standard, and the Hazardous Material Inventory.

On-The-Job Training

For those employees who will be working directly with a hazardous material, the functional supervisor in the area in which the work will take place will be responsible for specific on-the-job training regard to these materials. The supervisor will instruct these employees on the methods and observations that may be used to detect the presence or release of the hazardous chemical, including air sampling, personal monitoring, visual appearance, odor, etc., the physical and health hazard of the chemical, and the specific measures the employee can take to protect himself from these hazards.

During this on-the-job training and working directly with the hazardous material, it should be planned to have the new employee work closely with a more experienced co-worker until such time as it is determined the new employee can work independently.

HAZARD COMMUNICATION

ORIENTATION AND TRAINING (ROUTINE TASKS) *continued...*

Non-Routine Tasks

All management personnel are responsible for contacting the Safety Manager before ~~any non-routine task is undertaken in their respective department or anywhere else in~~

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the work place where personnel may have the potential for exposure to a hazardous material. This also applies to non-routine maintenance tasks. This is necessary to allow for a hazard assessment to be made and to communicate these hazards to the affected employees before the non-routine tasks are performed and personnel are subject to exposure.

RECORDS

OSHA does not require that MSDS or the chemical inventory be kept for a specific period of time. They need only be maintained on a current status and to the extent required by OSHA's Employee Access to Exposure and Medical Records, as specified in 29 CFR 1910.20. However, while neither MSDS nor chemical inventories have to be kept for a specified period of time, this is only true provided some other record of identity and where and when the hazardous chemical was used is kept for a period of 30 years.

Therefore, *A. Glewen & Sons Excavating, Inc.* has the option of keeping either the MSDS or the inventories, or some other record of chemical identity for the 30-year period specified in the Records Access Rule. It is the responsibility of the Safety Manger to ensure that the MSDS are maintained up-to-date for immediate employee access.

The passage of the OSHA Hazard Communication Standard has mandated that the employer provide worker training in the area of hazardous materials. It has been found that it is not adequate to just provide this training, but that it is necessary to have sufficient written documentation that the employee has received and understood the training.

It will therefore be necessary to obtain a written statement from the employee attesting to the fact that they have received hazard communication training, that they have been furnished hazard communication material, that they have studied the material, and that they comprehend the information contained in the material. These records will be maintained in the Human Resource office for record retention.

COMPANY SAFETY RULES

The purpose of safety rules is to acquaint each employee with a set of safe working rules and procedures that will help you to provide a safe workplace. It is well understood that employees and their families are the beneficiaries of a good safety and health program.

No safety and health program can cover all conditions that might arise; therefore, it is necessary for employees to use their best judgment along with the observance of established job safety practices. It is necessary to have the cooperation of employees in order to promote workplace safety and health. If employees do not completely

understand all of the job procedures and safety rules, they should ask their supervisor for an explanation prior to starting work. It is management's responsibility to provide employees with equipment and methods that result in safe work performance. However, it is the employee's responsibility to work according to established procedures.

General Construction Rules

Compliance with the following safety rules and guidelines are required of all employees as a condition of continued employment with A. Glewen & Sons Excavating, Inc. These rules are minimum requirements and are only intended to cover average conditions. Employees shall use good judgment in dealing with conditions not covered in these rules and when in doubt should consult their supervisor.

- 1) Employees working in areas where there is a possible danger of head injury from impact, or from falling or flying objects or from electrical shock and burns, shall be protected by protective helmets.
- 2) Employees shall use care in the performance of their duties and act in a manner that will assure maximum safety to themselves, fellow employees, other contractors and the general public.
- 3) Report all injuries and illnesses, no matter how minor, to their supervisor. This will prevent today's minor injury from becoming tomorrow's major injury.
- 4) On-the-job illness, excessive fatigue and any other impairment shall be reported to the supervisor, so possible accident situations can be avoided.
- 5) Work areas, vehicles and the inside and outside access ways of buildings shall be kept clean. Waste materials shall be disposed of properly and not be allowed to accumulate in work areas.
- 6) If employees see something unsafe, they should immediately report this to their supervisor and if they can safely do so, correct it. Do not wait for an accident to happen and then be told to correct the problem.
- 7) Use the right tool for the right job. Keep tools in good, clean condition. If replacement parts are needed, employees shall ask their supervisor for the necessary parts
- 8) Use, adjust and repair only tools and equipment for which they have been trained and authorized to use.
- 9) Employees shall follow any and all company written and oral instructions to safely perform their jobs.

COMPANY SAFETY RULES

General Construction Rules: (cont.)

- 10) Authorized employees shall give special instructions and assistance to new employees who are not familiar with the work.
- 11) No jewelry should be worn during work to avoid snags on objects. Loose or ragged clothing shall not be worn while working around machinery, moving parts or belts.
- 12) ~~Observe and obey all posted "No Smoking" areas, offices, and buildings.~~

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- 13) Learn the location of emergency phone numbers, first aid kits, fire extinguishers, emergency equipment, fire alarms, and emergency evacuation routes.
- 14) Use good manners and common sense. Avoid distracting others.
- 15) Use the sanitation facilities, keep them clean and do not abuse them.
- 16) Lift correctly - with the legs, not the back. If the load is heavy, GET HELP.
- 17) Running on the job is prohibited, except in obvious emergencies.
- 18) Employees shall observe and obey all caution and danger signs, barricades, and safety permit tags that are placed on the jobsite or in the shop.
- 19) Employees shall not use compressed air or other compressed gasses, especially oxygen, for dusting or cleaning off their body or clothes.
- 20) Gasoline, kerosene or diesel shall not be used for cleaning purposes. Contact your supervisor for an approved safety solvent.
- 21) Unauthorized tampering with any machinery or equipment is not allowed.
- 22) Carrying firearms, explosives or unlawful weapons on company property or in company vehicles is prohibited and grounds for dismissal.
- 23) Sabotage, theft or willful destruction of company property is grounds for immediate dismissal and prosecution.
- 24) Horseplay or practical jokes shall not be permitted in company vehicles or on company property before, during or after work hours. Fighting on the job is grounds for dismissal.
- 25) The use, abuse, transportation, concealment, sale or dispensation of illegal, unauthorized drugs (including detectable amounts in employees' system while working) on company property, jobsites or work areas shall be grounds for dismissal. The use of alcoholic beverages during work on company property, jobsites or work areas is prohibited and can be grounds for dismissal.
- 26) All workers are required to follow specific safety rules and regulations which are prescribed for employee safety in the Occupational Safety and Health Act of 1970 and other applicable federal, state and local statutes, standards and regulations.
- 27) Employees shall also be responsible for any specific subsidiary, construction owner, project, office or department safety rules that have been distributed to them in writing by their supervisor as a condition of employment.

COMPANY SAFETY RULES

Specific Job Site Rules

- 1) Wear the proper personal protective equipment for the job and conditions. This includes approved hard hats, eye and face protection, hearing protection, gloves, hard-soled work boots or safety shoes and comfortable clothes in good repair.
- 2) Use a safety harness and fall arrest system when there is exposure to a fall of six (6) feet or more.
- 3) No employee shall be permitted to ride manually propelled scaffolding.
- 4) All scaffolding must be provided with appropriate decking. Toe boards, midrails and handrails are required on all scaffolds over 10 feet in height.

- 5) Gasoline shall be stored and transported in labeled, self-closing; safety cans fitted with Spark arrestor screens in the spout. Engines must be shut off when refueling. No smoking, Near flammable liquids.
- 6) Tools shall only be used for the purposes for which they are designed. The employee is responsible for checking the tool's general condition prior to use. All employee owned tools and extension cords must be inspected and approved by the supervisor prior to use.
- 7) The employee prior to use shall inspect all ladders. No defective ladders shall be used. Straight ladders shall be placed on secure footing at a 4 to 1 pitch (75-degree angle) with at least 3 feet extending above the work surface. The ladder shall also be tied off at the top. Folding ladders shall be used only in the open and locked position and the last step prior to the top shall never be used. Only non-conductive ladders should be used when working on or near electrical equipment.
- 8) Unless double insulated, all electric power tools and equipment shall be grounded and connected to ground power cords and receptacles. Power extension cords shall be protected from crushing, cuts and other damage. Ground fault circuit interrupters should be used.
- 9) Employees shall not operate any machine unless they are trained and authorized to use the equipment. All guards and safety devices must be in place and in operating condition.
- 10) All compressed gas cylinders shall be chained in an upright position to the wall or other stationary object.
- 11) Riding on loads, fenders, running boards, sideboards and gates with legs dangling over the sides of trucks will not be tolerated.
- 12) Do not use power tools and equipment until employees have been properly instructed in Safe work methods and become authorized to use them.
- 13) Be sure that all guards are in place. Do not remove, displace damage or destroy any safety device or safeguard furnished or provided for use on the job, nor interfere with the use thereof.
- 14) Do not enter an area, which has been roped off or barricaded.

A. Glewen & Sons Excavating, Inc. safety rules, regulations and procedures are illustrative and should not be viewed as an exclusive listing to encompass situations not specifically mentioned. Management reserves the right at all times, when circumstances warrant it, to promulgate new rules or modify existing ones in order to insure a safe, healthy and productive work environment for all employees, contractors or visitors. In addition, any similar guidelines provided and required by the general contractors, owner or by specifications are to be observed. Any conflict between these guidelines and those of any applicable state regulations will mean that the applicable state regulation will supersede.

SAFETY INSPECTIONS

PURPOSE

To provide a guide for conducting regular site safety inspections to ensure that corporate and regulatory standards are being adhered to, and to ensure the safety of all workers and visitors on the jobsite.

Types of Inspections

There are several types of jobsite safety inspections A. Glewen & Sons Excavating, Inc. will use. A description of each along with the areas of responsibility for personnel, are as follows:

- 1) **Periodic Inspections** - These types of inspections shall be made on a weekly basis by job site supervisors and quarterly by the project manager.
- 2) **Intermittent Inspections** - These inspections shall be unannounced and will be made by the Safety Consultant.
- 3) **Continuous Inspections** - Each jobsite supervisor shall make daily inspections of their work areas as part of their everyday duties. These inspections should be designed to include communication with specific employees in the workplace rather than just a site check. This type of inspection will assist the supervisor in looking for unsafe acts or conditions on a routine basis.

POLICY

The Safety Manager shall conduct a periodic Site Safety Inspection using the Site Safety Evaluation (Exhibit "A") as a guide. The Safety Manager will be accompanied by one member of the supervision staff and/or one member from the crafts (foreman).

After the safety visit is completed, the Safety Manager will document the visit findings in writing on a report called Site Safety Visit (Exhibit "C"). A copy will be left with the jobsite superintendent and/or the foreman. The Site Safety Evaluation may also be filled out at the time of the visit or the Safety Manager may wait until he/the is back at the office to fill it out, The Site Safety Evaluation will be entered in the computer and copied to the General Superintendent and Project Managers for their review.

Those members of Project supervision who are responsible for follow-up corrective action relative to the findings on the Site Safety visit shall ensure that all corrective action has been performed in a timely manner.

SAFETY INSPECTIONS

The Project Superintendent or assignee will conduct daily Site inspections for the purpose of hazard identification and correction. The daily inspections are to be documented on the Daily Field Safety Activities Report and the Site Safety Checklist (Exhibit "A"), using the Site Safety Checklist Completion Guide (Exhibit "C"), listing the unsafe acts and unsafe conditions observed and corrective action taken. General observations are to be discussed at the weekly safety meeting.

Foremen and supervisors are to conduct inspections to their work areas on a regular basis throughout the shift. Unsafe conditions and unsafe acts observed are to be corrected immediately.

RECORDS

The Site Safety Visit report is to be distributed as follows:

Original - Safety Manager

Copy - Corporate Safety Officer, Project Manager, General Superintendent
Project Superintendent

Exhibit "A"

SITE SAFETY CHECKLIST COMPLETION GUIDE

Page 1 of 5

Excavation

- Trench Collapse - >5' deep. Soil classification; proper shoring, sloping, benching, trench box; spoil pile >2' from excavation edge. Wet conditions, vibration from vehicles/equipment.
- Overhead Power Lines - Excavation equipment kept minimum clearance of 10' from power lines; De-energized or insulate electric lines.
- Fall Protection/Open Trench - Backfill when possible; cover or barricade, visual identification with caution tape.
- Trench Means of Egress - > 4' deep. Ladders or ramps located so that maximum lateral travel distance is <25' to reach them. Ladders extend 3' above surface.

Mechanized Equipment

- Mechanized Equipment - Earth moving equipment, **backhoes**, skid loaders, fork lifts, trucks, etc. Good operating condition; condition of operator access (steps & hand grabs); seat belts, roll over protection; blades, buckets, forks fully lowered when not in use.
- Back Up Alarms - All vehicles or equipment with obstructed view shall have a back up alarm. All bi-directional equipment shall be equipped with a horn.
- Certified Equipment Operators - Only certified/qualified individuals shall operate any motorized vehicles or mechanized equipment.
- Cranes & Hoist Equipment - Inspection before each use; operators and signalmen properly trained; lifting chart in cab; high wind restrictions; outriggers fully extended; swing radius barricaded; power lines clearance or de-energized.
- Rigging -Condition of chokers, chains, slings and shackles; tag lines used. Check load weight and load capacity of rigging equipment.

Scaffolds

- Guardrails, Toeboards - Policy is 6' rule, OSHA is 10' rule. Top rail 42", mid-rail 21" and toeboards minimum of 3 i/2" in vertical height from working/walking surface.
- Platform / Working Surface - Working platform must be planked 100%. Condition of platforms and planks. Scaffold grade planks only.

EXHIBIT "B"

A. Glewen & Sons Excavating, Inc. Safety and Health Program

SITE SAFETY CHECKLIST COMPLETION GUIDE

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- Base Plates / Mudsills / Casters - Base plates are required for all surfaces. Mudsills are required for any surfaces which subsidence could occur (stone, dirt). On mobile scaffold, caster and wheels shall be locked while scaffold is in use. No riders on manual mobile scaffolds.
- Bracing, Locking Pins - Tubular welded frame scaffold shall be braced 100% on front and rear sides of scaffold. Scaffold frames shall be pinned 100% of upper and lower sections of coupler posts. Mobile scaffold shall have horizontal - diagonal bracing at base and every 20' in height.
- Tied-off/ Secured - Supported scaffolds need to be secured by guys, ties or braces at a height (4) times the minimum dimension of the base.
- Access Ladder - Access ladder is required unless ladder rungs are built into the scaffold frame. Don't climb bracing. Ladder can be a fixed ladder or extension ladder that is tied off and extends 3' above the landing.
- Aerial Lift Operation - Qualified operators; adequate guard railing; no standing on guardrails; fall arrest equipment for boom lifts; moving of lifts in lowered position without a spotter.

Ladders

- Condition - Routine inspections; damaged rungs, side-rails, safety feet - ladder must be removed from service. Straight ladders require safety feet if not secured.
- Extend 3' Above Landing -Straight ladder side-rails must extend 3' above working surface or landing.
- Tied-off/ Secured -Straight ladders need to be tied-off/ secured at the top or bottom to prevent displacement.
- Step Ladder Misuse - Stepladders shall not be used as straight ladders. Stepladders need to be fully open. No one permitted to work from top two steps.
- Ladder - Other -Metal ladders not permitted around electrical components. Set up slope for straight ladder is 4:1. Minimum clearance between side rails for portable ladders 11.5".
- Stairs / Steps -A break in elevation of 19" or more - stairs / steps are required. Any stairs / steps with (4) or more risers or rising >30" must have a handrail. Metal stair pans can not be used unless they are filled with wood or other material.

EXHIBIT "B" SITE SAFETY CHECKLIST COMPLETION

GUIDE

Page 3 of 5

Electrical

- GFCI / Assured Grounding - All 120 volt, single phase, 15 & 20 AMP outlets on site which are not part of the permanent wiring of an existing building shall have approved ground fault circuit interceptor protection or have an assured equipment grounding conductor program in place. Use of extension cords in an existing building is considered temporary wiring and requires GFCI or assured grounding protection.
- Extension Cords -Condition of cords (cuts in outer sheath and insulation, outer sheath pulled away from plug, plug prongs damaged or missing, no splices). Protect cords passing through holes in walls, floors, ceiling and doorways. Cords should be 3-wire type.
- Temporary Lighting (Hanging and Protection) - Lights shall not be suspended by their cords unless cords and lights are designed for this means of suspension. Bulbs need to be protected to prevent accidental contact or breakage. Sockets with out bulbs are not permitted.
- Adequate Amount of Temporary Lighting - General construction area lighting is 5 foot -candles.
- Exposed Energized Components - Energized panels / live parts need to be guarded to prevent accidental contact. Rooms/ vaults should be accessible to only qualified persons. Partitions and screens can be used with warning signs displayed.
- Electrical / Lockout / Tagout - Equipment or circuits that are de-energized shall be rendered inoperative and have tags attached.

Fall Protection

- Walking / Working Surfaces >6' -Guardrail systems that include top-rail, mid-rail, toeboard; safety nets; fall arrest equipment or OSHA accepted alternatives such as warning lines, safety monitor, controlled access zone.
- Fall Arrest Equipment - Improper use of equipment; use of damaged equipment or obsolete equipment that does not meet OSHA standards (locking snap hooks and shock absorbing lanyards, body belts).
- Exposed Rebar / Impalement -All protruding reinforcing steel, conduit, pipes, pins which workers could fall onto need to be guarded to eliminate the impalement hazard. No mushroom caps.

EXHIBIT "B"

SITE SAFETY CHECKLIST COMPLETION GUIDE

A. Glewen & Sons Excavating, Inc. Safety and Health Program

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- Floor Hole / Edge Falling Object Protection - Holes >2" in dimension must be covered. Protection from falling objects includes covers, **toeboards**, screens, guardrails, canopy, or barricade the area below prohibiting workers from entering the area.
- Walking / Working Surfaces <6' - Workers shall be protected from tripping in or stepping into or through holes by covers or guardrails regardless of the depth of the hole.
- Exposed Rebar / Scratch -Any horizontal protruding **rebar** or vertical **rebar** 3' to 5' in height needs to be guarded to eliminate scratch hazard of employees working adjacent to the rebar (mushroom caps are acceptable).

General

- General Public Protection - Keeping the general public from entering the job site or construction area. Use of fencing, barricades, warning signs.
- Signs, Signals, Barricades - Used to control individual access to hazardous work areas or areas where hazardous operations or situations are taking place. Example: surface openings, overhead work, hazardous atmosphere; mechanized equipment.
- Housekeeping - Building materials neatly stockpile. Regular disposal of waste and trash. Aisles and passageways clear of debris and materials.
- Flammable Material Storage (liquid, gases) -Use of approved safety cans. >25 gallons of flammable liquids shall be stored in approved storage cabinets. Gas cylinders need to be stored in upright position and secured to prevent being knocked over. Oxygen cylinders and fuel gas cylinders need to be separated when stored. Valves need protective caps.
- Fire Extinguishers -Fire extinguishers are needed for "hot work" operations. Fire extinguishers with minimum rating of 2A10BC are required in buildings on each level and positioned so that the travel distance does not exceed 100 feet. Fire extinguishers need to be inspected periodically and serviced annually.
- Welding and Cutting -Use of hot work permit. Use of protective clothing, head and eye protection.

Use of flameproof screens and **tarps**. Fire extinguisher present; condition of welding cords; gas cylinders secured upright and valve protection caps in place; regulators removed when not in use; condition of hoses; torch to have gas flow check valves; fire watch.
- Tool Condition / Use - Proper use of tool; condition of tools and power cords; guards in place for power tools; qualified operators for powder - actuated tools; damaged or defective tools tagged and removed from service.

EXHIBIT "B"

SITE SAFETY CHECKLIST COMPLETION GUIDE

A. Glewen & Sons Excavating, Inc. Safety and Health Program

- Lockout / Tagout (general) - Stored energy such as that in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc. must be dissipated or restrained by methods such as repositioning, blocking, bleeding down, etc.
- Air Quality - Lack of oxygen; presence of or creation of gases, vapors, fumes, dusts, and mists. Use of administrative controls, engineering controls such as ventilation or PPE.
- Confined Space - Large enough and so configured that an employee can bodily enter and perform work. Has limited means of entry and exit. Is not designed for continuous occupancy. Determine if space is Permit-Required confined space or Low Hazard/Non Permit Confined Space. Refer to Corporate Safety Policy for confined space entry policy.
- Site Hazards - Any health, safety, or environmental hazards on the job site that were created by contractor performing work on the site.
- Manual / Material Handling - Use mechanical devices at every opportunity in place of manual handling. Get help for large or heavy loads. Lift with legs; keep back straight; avoid over-extending or twisting of back.
- Hard Hats / Safety Glasses - Hard hats and safety glasses must be worn at all times when on the construction site.
- Shoes / Clothing / Gloves - Leather work shoes/boots are required. Rubber boots must be worn when working with wet concrete. No sneakers. No tank tops. No shorts. Wear gloves suited to the type of work involved (leather, neoprene or rubber to handle chemicals).
- Respirators - Use of respirator appropriate for the hazard. Airborne contaminants such as fibers, dust, smoke, vapors, fumes, mists.
- Hearing Protection - Use of hearing protection when subject to sound levels exceeding 90 dba. Informal indicator - when you must shout to speak to the person beside you, the noise level is probably exceeding 90 dba.

EXHIBIT "C"

Site Safety Visit

CALL

Call 911 or appropriate number listed on the emergency number sheet that should be posted in the job trailer. Clearly and concisely report your name, location, address and a description of the situation.

ACCOUNT

Account for all people known on the jobsite. Have a designated assembly area. Superintendents, foremen, and subcontractors should determine if anybody is missing.

ACTION

- **Building Collapse**
 1. Rope off area.
 2. Block off street and sidewalk and re-route pedestrians and vehicle traffic.
 3. Check for fires, gas leaks, water leaks, and electrical power conditions.
 4. Assist injured personnel.

- **Explosion**
 1. Secure area and keep people away from area.
 2. Assist injured personnel.

- **Fire**
 1. Attempt to extinguish fire with maximum of two fire extinguishers. If the fire is not extinguished, evacuate the building or area and wait for the fire department.
 2. Alert people to evacuate the building or area.
 3. Keep people out of burning building.
 4. Keep people and equipment away from building or area so that there is adequate access for emergency personnel and equipment.
 5. Assist injured personnel.

- **Gas Line Hit**
 1. Clear and secure the area.
 2. Evacuate the building.
 3. Discontinue any operation that produces sparks or heat.

EMERGENCY ACTION PLAN FOR JOBSITES

EMERGENCY PROCEDURES *continued . . .*

- **Hazardous Material Spills or Leaks**
 1. Secure the area.
 2. Contain the spill using appropriate materials to stop it from spreading.
-

3. Determine what the material is.
4. Obtain MSDS from *A. Glewen & Sons Excavating, Inc.* subcontractor to review information regarding emergency procedures, medical treatment, and clean up procedures.

- **Power Line Down**

1. Block off and stay away from area until Power Company or electrical contractor shuts off power.
2. Secure the area.
3. Keep unauthorized personnel away from the area.

- **Scaffold Collapse**

1. Secure area, scaffold, and material.
2. Assist injured personnel.

- **Sewer Line**

1. Take steps to prevent flow from entering streams and waterways.
2. Secure area with barricades.

- **Trench Entrapment**

1. Re-shore trench before entering.
2. Begin hand digging only, no mechanical equipment.
3. Assist injured personnel.

- **Water Line**

1. Shut off water flow.
2. Secure area with barricades.

- **TORNADO:**

If you hear the outdoor warning sirens sound and the weather is threatening, go to the closest building and follow the owners instructions or go to the nearest inside restroom. If there is no building or you are not close enough to make it, lie down in a depression or low area and cover your head. **Never try to outrun a tornado!**

EMERGENCY ACTION PLAN FOR JOBSITES

- **LIGHTNING:**

Lightning presents an extreme hazard to all who may be exposed to it but

workers on a rooftop are especially at risk. The method for calculating how far lightning strikes is to listen for the thunder and count or observe a watch or clock. The distance to the lightning is equal to approximately one mile for every five seconds of time between the flash and the thunder. The following information is provided by the United States Weather Service.

If lightning threatens:

Move indoors but stay away from windows.
Avoid using electrical appliances and use the telephone only in an emergency.

If caught outdoors during a thunderstorm:

Stay away from isolated objects such as single trees or towers. If your hair stands on end or your skin tingles, lightning may be about to strike.
Crouch down quickly and make yourself as small a target as possible.
Minimize contact with the ground.

If driving in a motor vehicle:

Stay in your vehicle. An enclosed vehicle offers reasonably good protection from lightning as long as you don't touch metal.

Protection from Electric Shock and Arc Flash

Journeyman Technical Information Paper 2

About 50 electrical workers are killed in construction every year in the U.S. by electric current and many more are injured. Over half of the deaths are from working on energized ("live") electric circuits without proper protection – often when it was not necessary to work "live." At least one-third of the electrocutions occur at low voltage, under 600 volts.

Electric hazards

Electricity-related hazards include electric shock and burns, arc-flash burns, arc-blast impacts, and falls.

- **Electric shock and burns.** An electric shock occurs when electric current passes through your body. This can happen when you touch an energized part. If the electric current passes across the chest or head, you can be killed. At high voltages, severe burns can result.
- **Arc-flash burns.** An electric arc flash can occur if a conductive object gets too close to a high-amp current source or by equipment failure (for instance, while opening or closing disconnects). The arc can heat the air to temperatures as high as 35,000° F, and vaporize metal in the equipment. The arc flash can cause severe skin burns by direct heat exposure and by igniting clothing.
- **Arc-blast impacts.** The heating of the air and vaporization of metal creates a pressure wave that can damage hearing and cause memory loss (from concussion) and other injuries. Flying metal parts are also a hazard.
- **Falls.** Electric shocks and arc blasts can cause falls, especially from ladders or unguarded scaffolding.

Electric Safety Principles

Plan every job. Decide on your approach and step-by-step procedures. Write down first-time procedures. Discuss hazards and procedures in a job briefing with your supervisor and other workers before starting a job. Your employer should already have or develop a permit system for working on live circuits, if a circuit must be worked live.

- **Identify the hazards.** Do a job hazard analysis (*see* fig. 1). Identify steps that could create electric shock or arc-flash hazards.
- **Minimize the hazards.** De-energize the equipment or insulate or isolate exposed live parts so you cannot contact them. If this is impossible, get proper personal protective equipment (PPE) and tools.
- **Anticipate problems.** If it can go wrong, it might. Make sure you have the right PPE and tools for the worst case scenario.
- **Get training.** Make sure you and everyone working with you is a qualified person with appropriate training for the job.*

To De-Energize or Not to De-Energize

One of the most important decisions in planning an electric task is whether to de-energize. Whenever possible, live parts to which you might be exposed should be put into an **electrically safe work condition**, unless your employer can demonstrate that de-energizing creates more or worse hazards, or is not practical because of equipment design or operational limitations.

You might need to work live to avoid interrupting life-support systems, de-activating emergency alarm systems, or shutting down ventilation equipment for hazardous locations, for instance. And de-energizing would not be practical during testing of live electric circuits or work on circuits that are part of a continuous process that cannot be completely shut down.

* OSHA defines an electrical-qualified person as “one familiar with the construction and operation of the equipment and the hazards involved.”

De-Energizing

An Electrically Safe Work Condition

The most important principle of electric safety is, **assume electric circuits are energized unless you make sure they are not**. Test every circuit and conductor every time you work on them. The National Fire Protection Association lists six steps to ensure conditions for electrically safe work.

- Identify all sources of power to the equipment.
- Interrupt the load current, and then open the disconnecting devices for each power source.
- Where possible, visually verify that blades of disconnecting devices are fully open or that draw out-type circuit breakers are fully withdrawn.
- Apply lockout/tagout devices in accordance with a formal, written policy.
- Test each phase conductor or circuit part with an adequately rated voltage detector to verify that the

equipment is de-energized. Check the voltage detector before and after each test to be sure it is working.

- Properly ground all possible sources of induced voltage and stored electric energy (such as, capacitors) before touching. If conductors or circuit parts that are being de-energized could contact other exposed conductors or circuit parts, apply ground-connecting devices rated for the available fault current.

The process of de-energizing is “live” work and can result in an arc flash due to equipment failure. When de-energizing, follow the procedures described below in “Working On or Near Live Circuits.”

Lockout/tagout program

Lockout/tagout application.

Each person who could be exposed to electric energy must be involved in the lockout/tagout process.

- After de-energizing, each employee at risk should apply an individual lockout/tagout device to each source of electric energy. Pushbuttons or selector switches cannot be used as the only way to de-energize.
- A lockout device is a key or combination lock with a tag that can be attached to a disconnecting device to prevent the re-energizing of the equipment being worked on without removal of the lock. The lockout device should have a way of identifying whose lock it is. Individual lockout devices with your name and picture on them are preferred. You must be the only person who has the key or combination for a lockout device you install, and you should be the only person to remove the lock after all work has been completed.
- A tagout device is a tag and a way to attach it that can withstand at least 50 pounds of force. Tagout devices should be used alone only when it is not possible to install a lockout device.
- The tag used in conjunction with a lockout or tagout device must have a label prohibiting unauthorized operation of the disconnecting means or unauthorized removal of the device.
- Before beginning work, you must verify through testing that all energy sources have been de-energized.
- Electric lockout/tagout procedures should be coordinated with all other site procedures for controlling exposure to electric energy and other types of energy sources.

Individual qualified-employee control procedure.

For minor servicing, maintenance, inspection, and so on, on plug connected equipment, work may be done without attaching lockout/tagout devices if the plug is next to where you are working and is always easy to see, and you do not ever leave the equipment alone.

Working On or Near Live Circuits

Working on live circuits means actually touching energized parts. Working near live circuits means working close enough to energized parts to pose a risk even though you make be working on de-energized parts.

Common tasks where you need to work on or near live circuits include:

- Taking voltage measurements
- Opening and closing disconnects and breakers
- Racking breakers on and off the bus
- Removing panels and dead fronts
- Opening electric equipment doors for inspection.

There should be standard written procedures and training for these common tasks. For instance, when opening and closing disconnects, use the **left-hand rule** when possible (stand to the right side of the equipment and operate the disconnect with your left hand). For other situations where you might need to work on or near live circuits, your employer should institute a written live work permit system which must be authorized by a

qualified supervisor.

Live-work permit system

A live work permit should, at a minimum, contain this information:

- A description of the circuit and equipment to be worked on and location
- The date and time covered by the permit
- Why live work will be done
- Results of shock hazard analysis and determination of shock protection boundaries
- Results of flash hazard analysis and determination of flash protection boundary
- PPE to be worn and description of safe work practices to be used
- Who will do the work and how unqualified persons will be kept away
- Evidence of completion of job briefing, including description of job-specific hazards.

Approach distances to exposed live parts

The National Fire Protection Association defines three approach distances for shock hazards and one for arc flash.

Electric shock (*see* table 1).

- The **limited approach boundary** is the closest distance an unqualified person can approach, unless accompanied by a qualified person.
- The **restricted approach boundary** is the closest distance to exposed live parts a qualified person can approach without proper PPE and tools. Inside this boundary, accidental movement can put a part of your body or conductive tools in contact with live parts or inside the prohibited approach boundary. To cross the restricted approach boundary, the qualified person must:
 - (a) Have a documented plan that is approved by the manager responsible for the safety plan.
 - (b) Use PPE suitable for working near exposed live parts and rated for the voltage and energy level involved.
 - (c) Be certain that no part of the body enters the prohibited space.
 - (d) Minimize the risk from unintended movement, by keeping as much of the body as possible out of the restricted space; body parts in the restricted space should be protected.
- The **prohibited approach boundary** is the minimum approach distance to exposed live parts to prevent flashover or arcing. Approaching any closer is comparable to making direct contact with a live part. To cross the prohibited approach boundary, the qualified person must:
 - (a) Have specified training to work on exposed live parts.
 - (b) Have a documented plan with proper written work procedures and justifying the need to work that close.
 - (c) Do a written risk analysis.
 - (d) Have (b) and (c) approved by the manager responsible for the safety plan.
 - (e) Use PPE appropriate for working near exposed live parts and rated for the voltage and energy level involved.

Approach distances (*continued*)

Arc flash

The **flash protection boundary** is the distance at which PPE is needed to prevent incurable burns (2nd degree or worse) if an arc flash occurs. (You still can get 1st or 2nd degree burns.) For systems of 600 volts and less, the flash protection boundary is 4 feet, based on an available bolted fault current of 50 kA (kiloamps) and a clearing time of 6 cycles (0.1 seconds) for the circuit breaker to act, or any combination of fault currents and clearing times not exceeding 300 kA cycles. For other fault currents and clearing times, *see* NFPA 70E.

Remember; when you have de-energized the parts you are going to work on, but are still inside the flash protection boundary for nearby live exposed parts: If the parts cannot be de-energized, you must use barriers such as insulated blankets to protect against accidental contact or you must wear proper PPE.

Proper Personal Protective Equipment

When working on or around live circuits, be sure to wear the right PPE to protect against electric shock and **arc flash**.

Never wear clothing made from synthetic materials, such as acetate, nylon, polyester, or rayon – alone or combined with cotton. Such clothing is dangerous because it can burn and melt into your skin. The type of PPE worn depends on the type of electric work being done (*see table 2*).

Once the hazard/risk category has been identified, check requirements for clothing and other PPE when working on or near energized equipment within the flash protection boundary (*see tables 3 and 4*). These PPE requirements protect against electric shock and incurable arc-flash burns. They do not protect against physical injuries from arc blasts.

The **minimum** PPE required would be an untreated natural fiber long-sleeve shirt and long pants with safety glasses with side shields (hazard/risk category 0).

Table 1- Approach Distances

Approach Distances for Qualified Employees - Alternating Current	
Voltage range (phase to phase)	Minimum approach distance
300V and less	Avoid contact
Over 300V, not over 750V	1 ft. 0 in.
Over 750V, not over 2kV	1 ft. 6 in.
Over 2kV, not over 15kV	2 ft. 0 in.
Over 15kV, not over 37kV	3 ft. 0 in.
Over 37kV, not over 87.5kV	3 ft. 6 in.
Over 87.5kV, not over 121kV	4 ft. 0 in.
Over 121kV, not over 140kV	4 ft. 6 in.

Table 2. Hazard Risk Category Classification

Electrical Safety Matrix Task (Assumes Equipment Is Energized, and Work, Is Done Within the Flash Protection Boundary)	Hazard Risk Category	V-rated Gloves	V-rated Tools	Natural Fiber Clothing	Long sleeve Shirt	11 cal/cm ² Hooded Jacket	Denim Jeans	Hardhat	Safety Glasses	Hearing Protection	8 cal/cm ² Face shield	45 cal/cm ² Flahsuit	Hot Work Form 12.1	Qualified Standby Person
Panel boards 240 V (nominal) and below														
Circuit breaker (CB) or fused switch (FS) operation with covers on	0			•			•	•	•					
Opening hinged covers (to expose bare, energized parts)	0			•			•	•	•					
CB or FS operation with covers off	0			•			•	•	•					
Work on energized parts, including all testing	1	•	•	•	•	•	•	•	•				•	
Remove/install CBs or fused switches	1	•	•	•	•	•	•	•	•				•	
Removal of bolted covers (to expose bare, energized parts)	1			•	•	•	•	•	•				•	
Panel boards or Switchboards rated 250– 600 V (nominal) (with molded case or insulated case circuit breaker)														
CB or FS operation with covers on	0			•			•	•	•					
Opening hinged covers (to expose bare, energized parts)	1			•	•	•	•	•	•				•	
Removal of bolted covers (to expose bare, energized parts)	2	•	•	•	•	•	•	•	•	•	•		•	
CB or FS operation with covers off	1			•	•	•	•	•	•				•	
Work on energized parts, including all testing	2	•	•	•	•	•	•	•	•	•	•		•	
Remove/install CBs or fused switches	2	•	•	•	•	•	•	•	•	•	•		•	
Opening hinged covers (to expose bare, energized parts)	1			•	•	•	•	•	•				•	
600 V (nominal) Class Motor Control Centers (MCCs)														
CB or FS or starter operation with enclosure doors closed	0			•			•	•	•					
Reading a panel meter while operating a meter switch	0			•			•	•	•					
Opening hinged covers (to expose bare, energized parts)	1			•	•	•	•	•	•				•	
Application of safety grounds, after voltage test	2	•		•	•	•	•	•	•	•	•		•	
CB or fused switch or starter operation with enclosure doors open	1			•	•	•	•	•	•				•	
Work on energized parts, including all testing, conductor insertion/removal	2	•	•	•	•	•	•	•	•	•	•		•	
Work on control circuits with energized parts 120V or below, exposed	0	•	•	•			•	•	•					
Work on control circuits with energized parts >120V, exposed	2	•	•	•	•	•	•	•	•	•	•		•	
Insertion or removal of individual starter “buckets” from MCC	3	•		•	•		•	•	•	•		•	•	•
600 V (nominal) Class Switchgear (with power circuit breakers or fused switches)														
CB or fused switch operation with enclosure doors closed	0			•			•	•	•					
Reading a panel meter while operating a meter switch	0			•			•	•	•					
Removal of bolted cover (to expose bare, energized parts)	3			•	•		•	•	•	•		•	•	•
Application of safety grounds, after voltage test	2	•		•	•	•	•	•	•	•	•		•	
CB or fused switch operation with enclosure doors open	1			•	•		•	•	•				•	
Work on energized parts, including all testing	2	•	•	•	•	•	•	•	•	•	•		•	

Electrical Safety Matrix Task (Assumes Equipment Is Energized, and Work, Is Done Within the Flash Protection Boundary)	Hazard Risk Category	V-rated Gloves	V-rated Tools	Natural Fiber Clothing	Long sleeve Shirt	11 cal/cm ² Hooded Jacket	Denim Jeans	Hardhat	Safety Glasses	Hearing Protection	8 cal/cm ² Face shield	45 cal/cm ² Flashesuit	Hot Work Form 12.1	Competent Standby Person
600 V (nominal) Class Switchgear (with power circuit breakers or fused switches) (continued)														
Work on control circuits with energized parts I20V or below, exposed	0	•	•	•			•	•	•					
Work on control circuits with energized parts >120V, exposed	2	•	•	•	•	•	•	•	•	•	•		•	
Insertion or removal (racking) of CBs from cubicles, doors open	3			•	•		•	•	•	•		•	•	•
Insertion or removal (racking) of CBs from cubicles, doors closed	2			•	•	•	•	•	•	•	•		•	
Application of safety grounds, after voltage test	2	•		•	•	•	•	•	•	•	•		•	
Conductor insertion/removal	3	•	•	•	•		•	•	•	•		•	•	•
Other 600 V Class (250 V through 600 V, nominal) Equipment														
Lighting or small power transformers (600 V maximum)														
Removal of bolted covers (to expose bare, energized parts)	2			•	•	•	•	•	•	•	•		•	
Opening hinged covers (to expose bare, energized parts)	1			•	•	•	•	•	•				•	
Work on energized parts, including all testing	2	•	•	•	•	•	•	•	•	•	•		•	
Application of safety grounds, after voltage test	2	•		•	•	•	•	•	•	•	•		•	
Revenue meters (kW-hour, at primary voltage and current)														
Insertion or removal	2	•		•	•	•	•	•	•	•	•		•	
Cable trough or tray cover removal or installation	1			•	•	•	•	•	•				•	
Miscellaneous equipment cover removal or installation	1			•	•	•	•	•	•				•	
Work on energized parts, including all testing	2	•	•	•	•	•	•	•	•	•	•		•	
Application of safety grounds, after voltage test	2	•		•	•	•	•	•	•	•	•		•	
NEMA E2 (fused contactor) Motor Starters, 2.3kV through 7.2 kV (nominal)														
Contactor operation with enclosure doors closed	0			•			•	•	•					
Reading a panel meter while operating a meter switch	0			•			•	•	•					
Removal of bolted covers (to expose bare, energized parts)	4			•	•		•	•	•	•		•	•	•
Contactor operation with enclosure doors open	2			•	•	•	•	•	•	•	•		•	
Work on energized parts, including voltage testing	3	•	•	•	•		•	•	•	•		•	•	•
Work on control circuits with energized parts 120V or below, exposed	0	•	•	•			•	•	•					
Work on control circuits with energized parts >120V, exposed	3	•	•	•	•		•	•	•	•		•	•	•
Insertion or removal (racking) of starters from cubicles, doors open	3			•	•		•	•	•	•		•	•	•
Insertion or removal (racking) of starters from cubicles, doors closed	2			•	•	•	•	•	•	•			•	
Application of safety grounds, after voltage test	3	•		•	•		•	•	•	•	•	•	•	•
Opening hinged covers (to expose bare, energized parts)	3			•	•		•	•	•	•		•	•	•

Electrical Safety Matrix

Task (Assumes Equipment Is Energized, and Work, Is Done Within the Flash Protection Boundary)

	Hazard Risk Category	V-rated Gloves	V-rated Tools	Natural Fiber Clothing	Long sleeve Shirt 11 cal/cm ² Hooded Jacket	Denim Jeans	Hardhat	Safety Glasses	Hearing Protection	8 cal/cm ² Face shield	45 cal/cm ² Flashesuit	Hot Work Form 12.1 Competent Standby Person
Metal Clad Switchgear, 1 kV (nominal) and above												
CB or fused switch operation with enclosure doors	2			•	•	•	•	•	•	•		•
Reading a panel meter while operating a meter switch	0			•		•	•	•				
CB or fused switch operation with enclosure doors open	4			•	•	•	•	•	•		•	•
Work on energized parts, including all testing	4	•	•	•	•	•	•	•	•		•	•
Work on control circuits with energized parts 120V or below, exposed	2	•	•	•	•	•	•	•	•	•		•
Work on control circuits with energized parts >120V, exposed	4	•	•	•	•	•	•	•	•		•	•
Insertion or removal (racking) of CBs from cubicles, doors open	4			•	•	•	•	•	•		•	•
Insertion or removal (racking) of CBs from cubicles, doors closed	2			•	•	•	•	•	•	•		•
Application of safety grounds, after voltage test	4	•		•	•	•	•	•	•		•	•
Removal of bolted covers (to expose bare, energized parts)	4			•	•	•	•	•	•		•	•
Opening hinged covers (to expose bare, energized parts)	3			•	•	•	•	•	•		•	•
Opening voltage transformer or control power transformer compartments	4			•	•	•	•	•	•		•	•
Other Equipment 1 kV (nominal) and above												
Metal clad load interrupter switches, fused or un-fused												
Switch operation, doors closed	2			•	•	•	•	•	•	•		•
Work on energized parts, including all testing	4	•	•	•	•	•	•	•	•		•	•
Removal of bolted covers (to expose bare, energized parts)	4			•	•	•	•	•	•		•	•
Opening hinged covers (to expose bare, energized parts)	3			•	•	•	•	•	•		•	•
Outdoor disconnect switch operation (hook-stick operated)	3	•	•	•	•	•	•	•	•		•	•
Outdoor disconnect switch operation (gang-operated, from grade)	2			•	•	•	•	•	•	•		•
Insulated cable examination, in manhole or other confined space	4	•		•	•	•	•	•	•		•	•
Insulated cable examination, in open area	2	•		•	•	•	•	•	•		•	
Direct Current Equipment 36V - 72V (nominal)												
Work on energized parts, including all testing	1	•	•	•	•	•	•	•				•

Table 3. Simplified, two-category, flame-resistant clothing system

Applicable tasks	Clothing requirement
<p>All hazard/risk category 1 and 2 tasks listed in table 2 On systems operating at less than 1000 volts, these tasks include work on all equipment <i>except</i></p> <ul style="list-style-type: none"> • Insertion/removal of low-voltage motor starter “buckets” • Insertion/removal of power circuit breakers with the switchgear doors open • Removal of bolted covers from switchgear. <p>On systems operating at 1000 volts or more, tasks also include the operation, insertion, or removal of switching devices <i>with equipment enclosure doors closed</i>.</p>	<p>Everyday work clothing Flame-resistant long-sleeve shirt (minimum ATPV of 5) <u>worn over</u> an untreated cotton T-shirt with FR pants (minimum ATPV of 8) <i>Or</i> FR coveralls (minimum ATPV of 5) <u>worn over</u> an untreated cotton T-shirt (or an untreated natural-fiber long-sleeve shirt) with untreated natural-fiber pants.</p>
<p>All hazard/risk category 3 and 4 tasks listed in table 2 On systems operating at 1000 volts or more, these tasks include work on energized parts of all equipment. On systems of less than 1000 volts, tasks include insertion or removal of low-voltage motor-start motor control center “buckets,” insertion or removal of power circuit breakers with the switchgear enclosure doors open, and removal of bolted covers from switchgear.</p>	<p>Electric “switching” clothing Double-layer FR flash jacket and FR bib overalls <u>worn over</u> either FR coveralls (minimum ATPV of 5) or FR long-sleeve shirt and FR pants (minimum ATPV of 5) <u>worn over</u> untreated natural-fiber long-sleeve shirt and pants <u>worn over</u> an untreated cotton T-shirt <i>Or</i> Insulated FR coveralls (minimum ATPV of 25, independent of other layers) <u>worn over</u> untreated natural-fiber long-sleeve shirt with untreated cotton blue jeans (“regular weight,” minimum 12 oz./sq. yd. fabric weight), <u>worn over</u> an untreated cotton T-shirt.</p>

FR - flame resistant.

ATPV - arc thermal performance exposure value of the clothing in calories/cm².

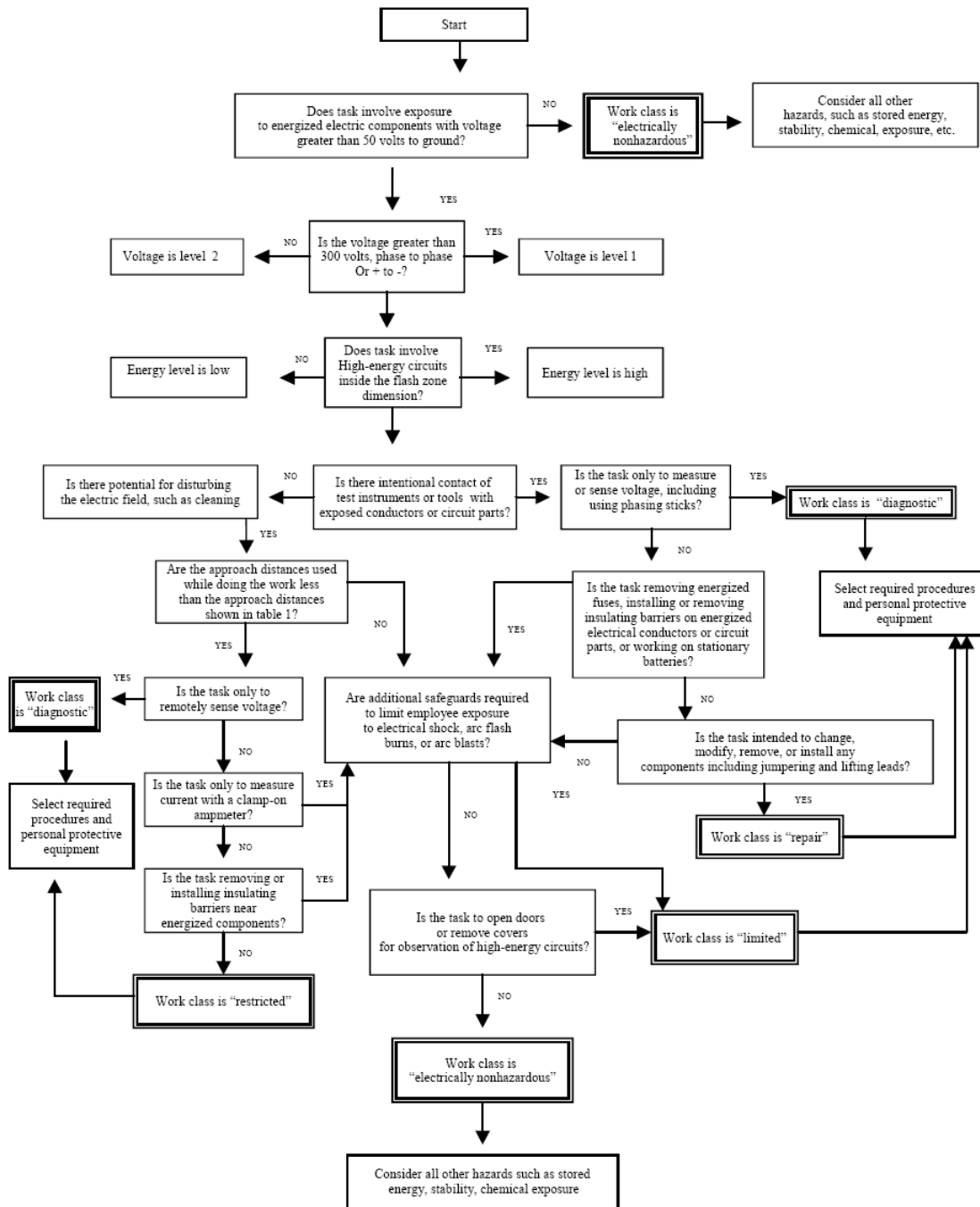
Source: Based on Table F-1 in appendix F of NFPA 70E, *Electrical Safety Requirements for Employee Workplaces*, 2000.

Table 4. Flame-resistant protective clothing and equipment

Flame-resistant protective clothing and equipment	Protective systems for hazard/risk category (4 = most hazardous)			
	1	2	3	4
Hazard/risk category number				
Flash suit jacket (2-layer)				X
Flash suit pants (2-layer)				X
Head protection				
Hardhat	X	X	X	X
Flame-resistant hardhat liner			X	X
Eye protection (safety glasses + side shields or safety goggles)	X	X	X	X
Face protection (double-layer switching hood)		2* tasks	X	X
Hearing protection (ear canal inserts)		2* tasks	X	X
Leather gloves or voltage-rated gloves with leather protectors	As needed	X	X	X
Leather work shoes	As needed	X	X	X

Source: Based on personal protective equipment requirements of table 3-3.9.2 of NFPA 70E, *Electrical Safety Requirements for Employee Workplaces*. Tables are reprinted with permission. Copyright ©2000 National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association on the referenced subject, which is represented only by the standard in its entirety.

Figure 1. Hazard / risk analysis flow



Source: Adapted from figure D-1 of NFPA 70E, *Electrical Safety Requirements for Employee Workplaces*. Tables are reprinted with permission. Copyright ©2000 National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association on the referenced subject, which is represented only by the standard in its entirety.

ENERGIZED WORK SPECIFICATIONS FORM

Requesting Person _____ Division _____

Job Number _____ Job Name _____

Equipment/Machine to be Locked Out and Tagged Out _____

Equipment and/or Circuits to be worked on energized _____

Date(s) of work to be performed _____

Work to be performed _____

Energy Source and Location _____

Statement of why equipment cannot be de-energized _____

Is it possible to reschedule work at a later date when equipment may be de-energized? YES NO

Hazards (risk to personnel, property, production) _____

Results of Shock/Flash Hazard Analysis: Hazard Risk Category _____

Flash Protection Boundary _____ Limited Approach Boundary _____

Restricted Approach Boundary _____ Prohibited Approach Boundary _____

Employees who will be performing the energized work _____

Have employees been properly trained? Yes No

Have affected employees been notified of procedures and hazards? Yes No

Date of Notification _____ Competent person assigned _____

Energized Work Category: ≤ 50v 50 – 250v 250–600v ≥ 600v

List personal protective equipment needed _____

Date equipment last tested _____ Tested by: _____

Has written plan/Task Safety Analysis (TSA) been completed for energized work? _____, attach copy.

Authorized Customer representative approval _____ Date _____

Customer representative understands all risks: injury, damage and loss of production (Required for all energized work)

Job Supervisor _____ Date _____

(Required PM / PCM _____ Date _____
(Required for energized work, ≥ 600v)

Branch Manager _____ Date _____
(Required for energized work, ≥ 600v)
for all Energized work

BLOODBORNE PATHOGENS PROGRAM

PURPOSE

To reduce occupational exposure to Hepatitis B Virus (HBV), Human Immunodeficiency Virus (HIV), and other bloodborne pathogens that employees may encounter in their workplace.

REGULATORY REFERENCES

OSHA 29 CFR 1910.1030

POLICY

A. Glewen & Sons Excavating, Inc. believes that there are a number of good general principals that should be followed when working with bloodborne pathogens. These include:

- It is prudent to minimize all exposure to bloodborne pathogens.
- Risk of exposure to bloodborne pathogens should never be underestimated.
- Our facilities should institute as many work practice and engineering controls as possible to eliminate or minimize employee exposure to bloodborne pathogens.

We have implemented an Exposure Control Plan to meet the letter and intent of the OSHA Bloodborne Pathogens Standard. The objective of this plan is twofold:

- To protect our employees from the health hazards associated with bloodborne pathogens.
- To provide appropriate treatment and counseling should an employee be exposed to bloodborne pathogens.

INFORMATION CHECKLIST

The following information is being given so that you can quickly identify department personnel if you have a question about the program. For the locations where copies of the Exposure Control Plan are kept, see Item #5.

1. Name of the person responsible for maintaining the list of employees who have specific responsibilities in your Exposure Control Plan. **Safety Manager**
2. Name of the person who has been appointed to the position of Exposure Control Officer. **Safety Manager**
3. Names and departments of the people making up the Exposure Control Committee. **Human Resources Director, General Superintendent, and Safety Manager**

BLOODBORNE PATHOGENS PROGRAM

INFORMATION CHECKLIST *continued...*

4. Name of the person who has been selected to be your facility's Education/Training Coordinator. **Human Resources Director and Safety Manager**
5. Locations within your facility where copies of your Exposure Control Plan are kept and are accessible to employees. **Safety Manager, General Superintendent, and in all Foremen and Superintendents' Safety Boxes**
6. The name of the person responsible for maintaining and updating the lists of job classifications and tasks/procedures in which occupational exposure to bloodborne pathogens occurs. **Human Resources Director**
7. The date on which your facility began practicing Universal Precautions. _____
8. The name of the person or department who is responsible for overseeing your facility's Universal Precautions Program. **Safety Manager**
9. The name of the person responsible for overseeing Engineering Controls in your facility. **Safety Manger**
10. The date on which your "Engineering Controls Survey" was completed. _____
11. The interval (in months) between reviews of your facility's Engineering Controls. _____
12. The name of the person responsible for making sure personal protective equipment is available in all appropriate locations. **General Superintendent**
13. The name of the person responsible for making sure personal protective equipment is available in all appropriate locations. **General Superintendent**
14. The name of the person or department responsible for the disposal of contaminated personal protective equipment. **General Superintendent**
15. The name of the person responsible for setting up and carrying out your facility's Cleaning and Decontamination Schedule. **General Superintendent**
16. The name of the person or department responsible for the collection and handling of your facility's contaminated waste. **General Superintendent**
17. The name of the person or department responsible for setting up and operating your facility's Hepatitis B Vaccination Program. **Benefits Coordinator**

BLOODBORNE PATHOGENS PROGRAM

INFORMATION CHECKLIST *continued...*

18. The date that your Hepatitis B Vaccination program started. _____
19. The name of the person or department who investigated all “exposure incidents”.
Corporate Safety Manager and Corporate General Superintendent
20. The names of the people in your facility who oversee your Post-exposure Evaluation and Follow-up Process. **Corporate Human Resources Director and Benefits Coordinator**
21. The name of the person or department responsible for setting up and maintaining employee medical records. **Benefits Coordinator**
22. The name of the person or department responsible for setting up and maintaining your facility’s biohazard labeling program. **Corporate Safety Manager**
23. The name of the person responsible for overseeing your facility’s employee training program. **Corporate Safety Manager**
24. The names of the persons responsible for assisting with your employee training program.
Corporate General Superintendent

TRAINING METHODS

Our facility’s training presentations make use of several training techniques including, but not limited to:

- Classroom type atmosphere with personal instruction
- Videotape programs
- Training manuals/employee handouts
- Employee review sessions

Because we feel that employees need an opportunity to ask questions and interact with their instructors, time is specifically allotted for these activities in each training session.

CONFINED SPACE ENTRY

PURPOSE

To ensure that all *A. Glewen & Sons Excavating, Inc.* personnel are protected from those hazards and risks associated with entry into and work within confined spaces.

Work in a confined space may require a Hot Work Program, a Lockout-Tagout Program or a Respirator Program.

OBJECTIVES

The primary objectives of this policy are as follows:

1. Establish minimum procedures to use in determining the safe condition of the atmosphere within any confined space prior to and during any entry.
2. Establish minimum procedures to use in the event of an emergency situation and for personnel rescue.
3. Define minimum standards for personnel training and medical surveillance.
4. Establish criteria for the selection, use and maintenance of equipment required for this work.
5. Provide procedures for the issuance and use of Confined Space Entry Permit.

SCOPE

This policy covers all employees of *A. Glewen & Sons Excavating, Inc.* in accordance with the requirements of OSHA in 29 CFR 1910.146 and 1926.21. It applies to any and all operations and/or activities where entry into a confined space occurs. The most frequent type of confined space entries are done under contractual agreements with other companies. The most commonly entered confined spaces are aboveground storage tanks, crawl spaces, sewers, pipelines, trenches, and manholes.

All confined spaces into which *A. Glewen & Sons Excavating, Inc.* employees will enter will be classified as permit required confined spaces, unless they can be characterized as Low-Hazard (non-permit) Confined Spaces.

RESPONSIBILITIES

This program outlines your rights and responsibilities as an employee as well as the rights and responsibilities of *A. Glewen & Sons Excavating, Inc.*

1. The Safety Manager is responsible for enforcing and periodically reviewing this program and the use of the confined space entry equipment. Periodic site visits will be conducted at various job sites to ensure compliance with established guidelines, procedures and applicable regulations.

CONFINED SPACE ENTRY

RESPONSIBILITIES continued

2. **Managers, Supervisors, and/or Foremen** shall be responsible for ensuring compliance with the provisions of this plan by ensuring that:
 - a. Those employees under their direct control are properly trained.
 - b. All necessary equipment is present at the job site and is in safe working order.
 - c. All employees follow all procedures outlined in this plan.
 - d. A complete site hazard assessment is completed prior to commencement of work to ensure that adequate safety precautions and equipment are taken.
 - e. Will report unknown/new exposure situations to the Safety Manager.
3. **Employees** have the responsibility to have awareness of the protection requirements for their work areas. Employees are responsible for wearing the appropriate protective equipment according to proper instructions and maintaining the equipment in a clean, sanitary and operable condition. It is also the responsibility of the employee to follow all established and communicated safety guidelines.
4. **The On-Site Supervisor** will be responsible for obtaining the sub-contractor's Confined Space Entry Program where applicable.
5. **Any employee** that willfully disregards company and/or governmental regulations may be subject to disciplinary actions, up to and including termination.

CONFINED SPACE DEFINITION

Entry into a confined space is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the confined space. For the purpose of this program, Confined Space Entry (CSE) shall mean entry for the purpose of performing any type of work activities into any space or area. A confined space meets the following criteria:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work.
2. Has limited means of entry and exit.
3. Is not designed for continuous employee occupancy.

Examples:

Boilers, Degreasers, Furnaces, Pipelines, Pits, Pumping Stations, Reaction or Process Vessels, Mills, Septic Tanks, Sewage Digesters, Silos, Storage Tanks, Barges, Sewers, Utility Vaults, Manholes, Trenches, Shafts, Caissons, Attics, Crawl Spaces.

CONFINED SPACE ENTRY

CONFINED SPACE DEFINITION *continued . . .*

A **permit-required confined space** will also have one or more of the following characteristics:

4. Does not have adequate natural or mechanical ventilation and contains or has the potential to contain a hazardous atmosphere by the presence of flammable vapors/gases in excess of the OSHA PEL (or less than 19.5% or over 23.5% oxygen).
5. Contains material with the potential for engulfment of an entrant.
6. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or a floor, which slopes downward and tapers to a smaller cross-section.
7. Contains any other recognized safety or health hazards to the entrant.

Note: This may be the physical or chemical hazard that the entrant brings into the confined space. Examples would be cutting, welding or brazing operations, power tools, methyl ethyl ketone solvent (MEK) used for PVC cleaning, degreasers, etc.

CONFINED SPACE ENTRY PERMIT PROCEDURES

The Confined Space Entry Permit (Exhibit “A”) is used to authorize entry and to ensure that proper precautions are taken before entry. **The Entry Supervisor is responsible for filling out the permit.** A written confined space entry permit must be completed and all specified conditions satisfied before anyone can enter a confined space. A copy of the permit is shown in Appendix A. The permit must be filled out completely and posted near the confined space until the job is complete and shall be made available for review by authorized entrants. Turn in the permit with the project’s paperwork.

The Safety Manager shall retain each cancelled entry permit for at least one year to facilitate review of any problems encountered during an entry operation. Problems encountered shall be noted so that revisions to the confined space entry permit program can be made if appropriate.

The duration of the permit may not exceed the time required to complete the assigned task identified on the permit and will at no time exceed a 24-hour period.

The permit expires when any of the following conditions are met:

1. A change in work conditions introduces a new hazard.
2. The time period of the permit has elapsed.
3. Any other change in the existing condition occurs that may cause a new hazard or casts doubt upon the ability to continue safely in the same fashion.

After the permit is expired and work must continue, a new permit must be completed following the same procedures.

CONFINED SPACE ENTRY

REQUIREMENTS FOR THE ENTRANT

A confined space is entered when any part of the body crosses the plane of the space opening.

1. Recognize the hazards that may be faced during entry, including information on the route of entry, signs or symptoms and consequences of exposure.
2. Properly use all safety and personal protection equipment.
3. Maintain communication with the attendant as necessary to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space. Communication procedures must be established before entering the space.
4. Keep lifelines orderly and untangled within the confined space.
5. May wear on his/her person an air monitor, and perform continuous atmospheric monitoring in the confined space for oxygen content, presence of a flammable atmosphere and the presence of toxic when applicable.
6. Alert the attendant whenever:
 - a) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
 - b) The entrant detects a prohibited condition.
7. Exit from the permit space as quickly as possible whenever:
 - a) An order to evacuate is given by the attendant or the entry supervisor.
 - b) The entrant recognizes any warning sign or symptom to a dangerous situation.
 - c) The entrant detects a prohibited condition.
 - d) An evacuation alarm is sounded.

REQUIREMENTS FOR THE ATTENDANT

1. Must be aware of the hazards that may be faced during entry, including information on the route of entry, signs or symptoms and consequences of the exposure such as behavioral effects to the entrants.
2. Post warning signs at the confined space to warn of the dangers involved, e.g. **“DANGER - PERMIT REQUIRED CONFINED SPACE, DO NOT ENTER”**.
3. Continuously maintain an accurate count and identification of authorized entrants in the permit space.
4. **Does not leave the confined space entrance while the entrants are in the space.** If the attendant must leave the opening of the confined space, another properly trained attendant must replace the attendant or the entrant must leave the confined space.
5. **Must maintain visual and/or verbal communication with authorized entrants** as necessary to monitor entrant’s status and to alert entrants of the need to evacuate the space.

CONFINED SPACE ENTRY

REQUIREMENTS FOR THE ATTENDANT continued . . .

6. May continuously monitor the atmosphere of the confined space for oxygen content, presence of a flammable atmosphere, and the presence of a toxic when applicable.

7. Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions if the attendant:
 - a. Detects a prohibited condition.
 - b. Detects the behavioral effects of hazard exposure in authorized entrants.
 - c. Detects a situation outside the space that could endanger the authorized entrants.
 - d. Cannot effectively and safely perform all the duties required.
8. Keep lifeline orderly, untangled and the end secured outside of the confined space.
9. **Performs non-entry rescues.**
10. Summon rescue and other emergency services as soon as the attendant determines that entrants may need assistance to escape from permit space hazards.
11. Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway.
 - a. Warn the unauthorized persons that they must stay away from the permit space.
 - b. Advise the unauthorized persons that they must exit immediately if they have entered the permit space.
 - c. Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.
12. Performs no duties that might interfere with the attendant's primary duty to monitor and protect authorized entrants.

REQUIREMENTS OF THE ENTRY SUPERVISOR

Note: The entry supervisor may also be the attendant if all duties can be satisfied.

1. Must be aware of the hazards that may present during entry, including the route of entry, signs or symptoms and consequences of exposure.
2. **Verify** by Checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified in the permit are in place before endorsing the permit and allowing entry to begin. The supervisor must sign the entry permit.
3. Shall terminate the entry and cancel the permit upon job completion or if conditions change within the confined space.
4. **Verifies** that rescue services are available and that the communication method for summoning them is operable.
5. Keeps all unauthorized individuals away from the confined spaces during entry operations.
6. Determines, whenever responsibility for a permit space entry operations is transferred and at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

CONFINED SPACE ENTRY

RESCUE AND EMERGENCY SERVICES

Only *A. Glewen & Sons Excavating, Inc.* personnel that have been trained in **Confined Space Rescue may enter permit spaces to perform rescue operations.** *A. Glewen & Sons Excavating, Inc.* will use the retrieval systems to remove personnel in confined spaces. Emergency services will be contacted immediately to assist *A. Glewen & Sons Excavating, Inc.*

personnel.

To facilitate non-entry rescue, retrieval systems (body harness, or wristlets and lifeline) shall be used whenever an entrant is within a confined space. Retrieval systems shall meet the following requirements:

1. Each entrant shall use a chest or full body harness with a retrieval line attached at the center of the entrants back near shoulder level, or above the entrants head. Wristlets may be used when the use of a body harness would create an additional hazard or interfere with the retrieval through a small man-way entrance.
2. The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the attendant becomes aware that rescue is necessary. A mechanical device shall be made available to retrieve personnel from a vertical entry permit space more than five feet in depth.

MINIMUM ENTRY REQUIREMENTS

The minimum entry requirements for any CSE are listed as follows. Additional requirements may be necessary due to site specific requirements and are also to be used when making any entry.

1. **Physical entry shall not be made into an unknown atmosphere.** All such areas must be checked prior to entry using an appropriate monitoring instrument(s). Air monitoring is to continue during all entries. All areas of the confined space must be monitored for oxygen, combustibility (% LEL), and toxins. *Record the findings on the Entry Permit.*

Safe atmospheric parameters for entry into a confined space without requiring the use of respiratory protection:

Oxygen:	19.5% to 23.5%
Combustibility:	< 10% LEL
CO:	< 35 PPM
H2S:	< 10 PPM
Other Toxics:	<= PEL/TLV

2. All areas of a confined space shall be monitored and the hazards characterized prior to commencement of work activities.
3. Employees authorized to work in confined spaces shall receive appropriate training in confined space entry. Persons to be trained include attendants, authorized entrants, rescuers, and personnel authorizing or in charge of entry.

CONFINED SPACE ENTRY

MINIMUM ENTRY REQUIREMENTS *continued . . .*

4. **No entry is to be made into a confined space where a flammable atmosphere (=> 10% of the LEL exists or oxygen levels in excess of 23.5% in the presence of flammable vapors/gases)** until ventilation or other means have been used to make the

atmosphere safe. In a dust environment, a potentially explosive condition exists when visibility is obscured at a distance of 5 feet.

5. **No entry is to be made unless an attendant person is stationed on the outside of the entryway.** This person is to remain in constant communications with the person making the entry for the entire duration of the entry and **may not be used for any other tasks.**
6. When toxic levels exceed (or have the potential to exceed) PEL's/TLV's, but remain below the IDLH level, have adequate warning concentrations, can be specifically monitored, and oxygen is 19.5% to 23.5%, an air-purifying cartridge respirator (APR) with the proper assigned protection factor (APF) can be worn using the correct cartridge.

Entries shall be made using an approved supplied air respirator (SAR) or self-contained breathing apparatus (SCBA) system when oxygen levels are below 19.5%. When a SAR is used, it must be equipped with an emergency supply of air for escape purposes.

7. All entries are to be made using appropriate chemical protective clothing as determined by the results of area characterization results.
8. **All confined space areas are to be isolated with lockout/tagout and blanking prior to any entry.** Isolation shall be confirmed by a person knowledgeable in the design of the area prior to entry. (NOTE: *A. Glewen & Sons Excavating, Inc.* employees are not to remove any pipe insulation or coverings during isolation efforts as they may contain asbestos, unless specifically instructed to do so by the Program Coordinator or his/her designated representative.)
9. **No entry is to be made without a completed, signed entry permit form,** placed or posted in close proximity to the entryway so that it is visible to entry personnel and can be checked immediately for completeness prior to entry (refer to permit procedures and Low-Hazard Confined Space section as shown below).
10. **Retrieval systems (lifelines) are always to be used in permitted confined space entries.**
11. A ladder or other appropriate means are to be used to ensure the safe entry and exit from a confined space when applicable.

CUTTING, WELDING AND BRAZING REQUIREMENTS

Cutting, welding, and brazing operations in confined spaces are specifically referenced in Subpart Q, Welding, Cutting and Brazing, 1910.252 (a) (4) Confined Spaces, 1920.252 (b) (4) Work in Confined Spaces, 1910.252 (c) (2) (i) (c) Ventilation for general welding and cutting, and in subpart J, Welding and Cutting, 1926.353 (b).

CONFINED SPACE ENTRY

CUTTING, WELDING AND BRAZING REQUIREMENTS *continued . . .*

Mechanical ventilation shall be provided in confined spaces and the ventilation shall be at the minimum rate of 2,000 cubic feet per minute per welder except where an approved supplied air respirator is provided and used. All welding and cutting operations carried on in confined spaces shall be adequately ventilated to prevent the accumulation of a toxic atmosphere or possible oxygen deficiency. This applies not only to the welder, but also to helpers and other personnel in the immediate area. All air replacing that is withdrawn shall be clean and respirable. **Oxygen**

shall never be used for ventilation.

Welding or cutting involving flux, coverings, or other materials that contain fluorine compounds; zinc-bearing base or filler metals or metals coated with zinc-bearing compounds and metals containing lead or involving metals coated with lead-bearing materials, including paint, requires that local exhaust ventilation or supplied air respirators or self-contained breathing apparatus shall be used to protect the workers performing the operation and those in the immediate area.

A. Glewen & Sons Excavating, Inc. does not have the air monitoring equipment available to perform atmospheric tests for the following compounds to determine that the worker's exposure is within the acceptable concentrations defined by 1910.1000, beryllium-containing base or filler metals, cadmium-bearing or cadmium-coated base metals and mercury-bearing materials including paint.

Any welding or cutting operations involving these 1910.1000 compounds will require the employee to wear a supplied air respirator, SAR or SCBA (Confined Space Hot Work Permit, Exhibit "B").

LOW-HAZARD (NON-PERMIT) CONFINED SPACE

For the purpose of this document, a low hazard confined space will mean any confined space of less than four feet in depth that is ***known not to have contained any hazardous material and AIR MONITORING indicates that the atmosphere is safe for entry.*** Entry into these areas for inspections or minor maintenance (i.e. adjustments, tightening of fittings, etc.) may be made without the use of retrieval systems or standby personnel.

CONTRACTOR'S ENTRY

All contractor or sub-contractor personnel acting under the control of *A. Glewen & Sons Excavating, Inc.* must comply with all applicable provisions of these procedures or show proof that their procedures and employee training are at least as effective as these procedures.

Contractors will be responsible for the permit space entry of their own personnel. They will be informed of (*Your Company's*) safety-procedures. They will not be permitted to enter space(s) until a supervisor from *A. Glewen & Sons Excavating, Inc.* has determined that they have a permit space entry program and that the contractor's program does not endanger *A. Glewen & Sons Excavating, Inc.* employees.

CONFINED SPACE ENTRY

CONTRACTOR'S ENTRY *continued . . .*

When a contractor's personnel and *A. Glewen & Sons Excavating, Inc.* personnel perform permit space entry operations in the same permit space at the same time, both the contractor and *A. Glewen & Sons Excavating, Inc.* will provide the entry supervisor. One or both parties may provide the attendant(s). The entry supervisors will coordinate the work so neither crew endangers the other.

Entrants will be instructed to comply with each other's evacuation orders and evacuation alarms.

Attendants will be instructed to immediately inform the other attendant if an evacuation order is issued or if an evacuation alarm is activated. This means the entrants of all employers will evacuate the permit space if any attendant, any entry supervisor, or any entrant issues an evacuation order. If there is a dispute over the necessity to evacuate, all entrants will evacuate and will remain outside of the permit space until the dispute is settled.

When contractors perform work that involves permit space entry, then:

1. Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with a permit space program meeting the requirements of the OSHA standard.
2. Apprise the contractor of the hazards identified for the confined space.
3. Apprise the contractor of any precautions or procedures that *A. Glewen & Sons Excavating, Inc.* has implemented for the protection of employees in or near the permit spaces where contractor personnel will be working.
4. Coordinate entry operations with the contractor(s) when both *A. Glewen & Sons Excavating, Inc.* personnel and contractor(s) personnel will be working in or near permit spaces.
5. *A. Glewen & Sons Excavating, Inc.* on-site supervisor will debrief the contractor at the conclusion of the entry operations regarding the procedures followed and regarding any hazards confronted.

UNAUTHORIZED ENTRY

Only trained and authorized personnel may enter a confined space. (*Your Company's*) on-site supervisor is responsible for ensuring that only qualified *A. Glewen & Sons Excavating, Inc.* employees make any entry into a confined space.

In addition, reasonable measures are to be taken to ensure that no unqualified individuals enter the confined space while it is under (*Your Company's*) control and responsibility. This includes securing hatchways, replacing manholes and placing of warning signs.

TRAINING

All employees must be trained to be able to recognize hazardous conditions, properly use monitoring equipment, space preparation, entry and work procedures, the permit system and emergency response actions.

CONFINED SPACE ENTRY

TRAINING *continued . . .*

Training shall be provided to each affected employee:

1. Before the employee is first assigned duties covered under this plan.
2. Before there is a change in assigned duties.

3. Whenever there is a change in permit space operations that present a hazard about which an employee has not previously been trained for.
4. Whenever the on-site supervisor has reason to believe that there may be a deviation required from the entry procedures required by this plan or that there are inadequacies in the employee's knowledge or use of the requirements of this plan.
5. Annually, a refresher program will be provided to all affected employees.

Confined space-entry training will include:

1. The written program and its requirements.
2. The proper use of air monitoring equipment.
3. The proper use and limitations of body harnesses, lifelines, retrieval systems, and other personal protective equipment.
4. The proper use of all respiratory equipment.
5. The typical hazards that may be encountered and the consequences of exposure to hazards.
6. Recognizing the signs and symptoms of exposure to hazards.
7. Understanding the duties specific to their role in confined space entry work as well as the duties of others that are involved as provided in this plan.
8. Evaluating and preparing a confined space for entry.
9. The proper use of the permit system.
10. The importance and methods of maintaining communications between entrants and attendants.
11. Conditions that require evacuation of the confined space.
12. The importance and requirements for maintaining site control.
13. The requirements for concluding an entry and terminating the permit.
14. Proper confined space non-entry rescue procedures.
15. Welding, cutting, and brazing in a confined space.
16. Adult CPR and basic first aid training provided by the American Red Cross, American Heart Association or Medic First Aid©.

CONFINED SPACE ENTRY

EQUIPMENT

Only tools and equipment supplied by or approved for use by *A. Glewen & Sons Excavating, Inc.* are to be used to conduct work activities associated with confined space entry activities. All air monitors, lighting devices, power tools, communications devices and all other electrical

devices must be intrinsically safe for use in class 1, Group B, C, and D atmospheres and Division 1 Hazardous Locations, Ground Fault Circuit Interrupter (GFCI) devices are to be used with all electrical devices.

All ventilation devices and air movers must be provided with grounding and bonding as necessary.

PPE and respiratory systems used in confined space work must comply with all federal, state and industry standards. All equipment must conform to the requirements of (*Your Company's*) PPE and respiratory protection programs as published elsewhere in this manual.

PERMIT SPACE ENTRY PROGRAM REVIEW

The Safety Manager will review the confined space entry program annually or whenever there is a change required or a deficiency corrected to ensure the safety of the employees.

The confined space entry permit and all cancelled entry permits will be reviewed annually to ensure that employees are using the permit system correctly and that all the necessary information on the permit exists and is properly being completed.

Employees are encouraged to report any deficiencies, program improvements, etc., to the attention of the Safety Manager.

EXHIBIT "A"

CONFINED SPACE ENTRY PERMIT

Page 1 of 3

INSTRUCTIONS (Nobody will enter a confined space until permit is complete)

1) Complete permit before entry begins. 2) Post permit at entrance to confined space until work in the confined space is complete. 3) Send permit to Safety Manager for review within 24 hours of completion of the work in the confined space.

GENERAL INFORMATION

JOBSITE:

PERMIT BEGINS: Date: _____ Time: _____ AM/PM

PERMIT EXPIRES: Date: _____ Time _____ LOCATION & DESCRIPTION OF CONFINED SPACE:

PURPOSE OF ENTRY:

<i>NAMES OF AUTHORIZED INDIVIDUALS (Please Print)</i>	
AUTHORIZED PERSON IN CHARGE:	WILL HE/SHE SUPERVISE ENTRY: YES NO
<u>AUTHORIZED ATTENDANTS</u>	<u>AUTHORIZED ENTRANTS</u>
1)	1)
2)	2)
3)	3)
4)	4)

METHOD OF COMMUNICATION

DESCRIBE:
EQUIPMENT REQUIRED FOR ENTRY ***RESPIRATORS REQUIRED FOR ENTRY***

<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Hard Hats</td> <td style="width: 10%;">YES</td> <td style="width: 10%;">NO</td> <td style="width: 10%;"></td> </tr> <tr> <td>Coveralls</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Boots</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Safety Glasses</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Safety Goggles</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Face Shield</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Ear Protection</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Encapsulated Suite</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Gloves</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Safety Lights</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Lockout Devices</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Warning Signs</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Fire Extinguisher (IDLH)</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Ventilator/Blower</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Non-Spark Tools</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Fall Protection</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Rescue Equipment</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td colspan="4">SERVICES:</td> </tr> <tr> <td>Other: _____</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Other: _____</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Phone number _____</td> <td></td> <td></td> <td></td> </tr> </table>	Hard Hats	YES	NO		Coveralls	YES	NO		Boots	YES	NO		Safety Glasses	YES	NO		Safety Goggles	YES	NO		Face Shield	YES	NO		Ear Protection	YES	NO		Encapsulated Suite	YES	NO		Gloves	YES	NO		Safety Lights	YES	NO		Lockout Devices	YES	NO		Warning Signs	YES	NO		Fire Extinguisher (IDLH)	YES	NO		Ventilator/Blower	YES	NO		Non-Spark Tools	YES	NO		Fall Protection	YES	NO		Rescue Equipment	YES	NO		SERVICES:				Other: _____	YES	NO		Other: _____	YES	NO		Phone number _____				<p>ARE RESPIRATORS REQUIRES? YES NO If Yes, What type:</p> <p>AIR PURIFYING: Half-Mask _____ Full-Face _____</p> <p style="padding-left: 100px;">Type of Filters: _____</p> <p>AIR SUPPLIED: Air Bottles ___ Compressor ___ Egress Bottles ___</p> <p>SELF-CONTAINED BREATHING APPARATUS (SCBA): _____</p> <p>NOTE: Air-supplied respirators with egress bottle or SCBA respirators are for atmospheres that are Immediately Dangerous To Life Or Health</p> <hr/> <p style="text-align: center;"><i>RESCUE EQUIPMENT REQUIRED FOR ENTRY</i></p> <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">SCBA</td> <td style="width: 10%;">YES</td> <td style="width: 10%;">NO</td> <td style="width: 50%;"><u>EMERGENCY</u></td> </tr> <tr> <td>Harness/Lifeline</td> <td>YES</td> <td>NO</td> <td>Phone Numbers</td> </tr> <tr> <td>Wristlets</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Tripod/Man-Lift</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Winch</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>First-Aid Kit</td> <td>YES</td> <td>NO</td> <td></td> </tr> <tr> <td>Stretcher</td> <td>YES</td> <td>NO</td> <td></td> </tr> </table>	SCBA	YES	NO	<u>EMERGENCY</u>	Harness/Lifeline	YES	NO	Phone Numbers	Wristlets	YES	NO		Tripod/Man-Lift	YES	NO		Winch	YES	NO		First-Aid Kit	YES	NO		Stretcher	YES	NO	
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EXHIBIT "A"

CONFINED SPACE ENTRY PERMIT

ISOLATION REQUIREMENTS (Please circle appropriate method, check YES or NO, and initial)

	<u>YES</u>	<u>NO</u>	<u>COMPLETED BY</u>
Electrical: DISCONNECT – LOCKOUT – TAGGED – Other _____	___	___	___
Mechanical Moving Parts: LATCH – CHAIN – CHOCK – BLOCK – Other _____	___	___	___
Hydraulics: BLANKED – BLEED – DISCONNECT – Other _____	___	___	___
Pipelines: BLANKED – BLEED – DISCONNECT – Other _____	___	___	___
Valves: LOCKOUT – DISCONNECT – TAG – Other _____	___	___	___
Belt Drives: DISCONNECT – TAG – Other _____	___	___	___
Chain Drives: DISCONNECT – TAG – Other _____	___	___	___
Shaft Drives: DISCONNECT – TAG – Other _____	___	___	___
Space Purged: INERT GAS – WATER – Other _____	___	___	___
Other _____	___	___	___
Other _____	___	___	___

ACCEPTABLE ENTRY CONDITIONS

OXYGEN: _____ %	FLAMMABLE COMBUSTIBLES: _____ %LEL	OTHER:
HYDROGEN SULFIDE: _____ PPM	CARBON MONOXIDE: _____ PPM	OTHER:

TESTING AND MONITORING CHECKLIST

MAKE, MODEL & SERIAL # OF TESTING EQUIPMENT: _____

DATE EQUIPMENT CALIBRATED: _____ INTERMITTENT TESTING: _____ CONTINUOUS _____

MONITORING:	TEST 1	TEST 2	TEST 3	TEST 4	TEST 5	TEST 6	TEST 7
Date:	_____	_____	_____	_____	_____	_____	_____
Time: _____ am/pm	_____ am/pm	_____ am/pm	_____ am/pm	_____ am/pm	_____ am/pm	_____ am/pm	_____ am/pm
Oxygen: _____ %	_____ %	_____ %	_____ %	_____ %	_____ %	_____ %	_____ %
LEL: _____ %	_____ %	_____ %	_____ %	_____ %	_____ %	_____ %	_____ %
CO: _____ ppm	_____ ppm	_____ ppm	_____ ppm	_____ ppm	_____ ppm	_____ ppm	_____ ppm
H2O: _____ ppm	_____ ppm	_____ ppm	_____ ppm	_____ ppm	_____ ppm	_____ ppm	_____ ppm
Tox: _____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
Tested by: _____	_____	_____	_____	_____	_____	_____	_____
(Initials) : _____	_____	_____	_____	_____	_____	_____	_____

CONFINED SPACE HAZARDS CHECKLIST (Please check YES or NO)

	YES	NO	IF YES, HOW IS HAZARD CONTROLLED:
Oxygen Deficiency (<19.5%)	_____	_____	_____
Oxygen Enriched (>22%)	_____	_____	_____
Toxic Atmosphere	_____	_____	_____
Flammable/Combustible Atmosphere	_____	_____	_____
Electrical	_____	_____	_____
Entrapment	_____	_____	_____
Pipelines	_____	_____	_____
Bacteria/Infectious	_____	_____	_____
Insects/Rodents	_____	_____	_____
Temperature	_____	_____	_____
Falls	_____	_____	_____
Other:	_____	_____	_____

EXHIBIT "A"

CONFINED SPACE ENTRY PERMIT

HOT WORK PERMIT

IS A HOT WORK PERMIT REQUIRED?	YES	NO	IF YES, IS IT ATTACHED TO THIS PERMIT?	YES
NO				

SIGNATURE OF ATTENDANTS AND ENTRANTS

The confined space job and its safety aspects have been explained to us, and we have read and understand the above permit. We consider it safe to proceed with the confined space entry work. (Please sign, date and initial below.)

<p>ATTENDANTS</p> 	<p>ENTRANTS</p>
---	---

1)	Date	Initials	1)	Date	Initials
2)	Date	Initials	2)	Date	Initials
3)	Date	Initials	3)	Date	Initials
4)	Date	Initials	4)	Date	Initials

SIGNATURE OF PERSON AUTHORIZING ENTRY			
SIGNATURE:	DATE:	TIME:	AM / PM

CANCELLATION OF PERMIT			
DATE CANCELED:	TIME CANCELED:	AM / PM	CANCELED BY: (Signature)
REASON PERMIT WAS CANCELED:			

EVALUATION (Review within 24 hours of completion of the work in the confined space).			
EVALUATED BY: (Signature)	DATE:	TIME:	AM / PM

Exhibit B

Welding & Cutting Hot Work Permit

Supervisor: _____ Date _____ Permit No. _____

Description of Work: _____

Location of Work: _____



List Names of Persons Performing Work

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____



“Fire Watch” Personnel _____

Check the Appropriate Boxes

Permits Required-List	Y	N	N A
Confined Space			
Excavation			
Hot Tapping			
Line Break			
Other			
<i>Training Verified</i>	Y	N	N A
Employees			
Fire Watch			
Confined Space Attendant			
Equipment Operators			
Fire Watch			
Other			
Drawings Reviewed	Y	N	N A
Flow Diagrams			
Underground Systems			
Electrical & Pneumatic			
Drains, Storage, Systems			
Other			

Equipment-Tools-Material	Y	N	NA
Scaffolds & Ladders			
Non Sparking Tools			
Fall Protection in place			
Temporary Platforms			
Airline Respiratory Systems			
Self Contained Breathing Units			
Monitoring Instruments			
Chemical, Acid, Thermal Suits			
Faceshields, Goggles, Hoods			
Fire Extinguishing Equipment			
Other			
Other			
Other			
Other			
Other			
Other			
Other			
Other			
Other			

Items Completed	Y	N	NA
Lines/ Vessels/Systems Purged			
Lines, Vessels, Systems Clean			
Mechanical Ventilation In Place			
Drains and Sewers Covered			
Valves Closed or Safe Position			
Energy Systems Locked Out			
Blinds Installed			
Systems De-energized, Isolated			
Checked for Benzene			
Checked for Lead			
Checked for Asbestos			
Checked for Combustibles			
Monitoring System in Place			
Other			
Other			
Other			
Other			
Other			
Other			

SAMPLING AND MONITORING RESULTS (This Section to be completed prior to work commencing)

Substance	Oxygen	Combustible	Other	Other	Other	Other	Other
% or LEL	%	LEL					
Date/Time							
Initials							

List Type of Sampling Equipment: _____

Calibrated Date: _____

Sampling Conducted by: _____

Date: _____

Time: _____

Special Instructions: _____

Reviewed by: _____

Approved by: _____

ELECTRICAL SAFETY

PURPOSE

To eliminate unsafe conditions involving electrical equipment and tools, including faulty insulation, improper grounding, loose electrical connections, defective parts, ground faults in equipment and unguarded live electrical parts.

REFERENCES

OSHA 29 CFR 1926.400 to 1926.449
National Electrical Code (NEC)

POLICY

General Requirements

- Each project must provide a safe place to work for every employee, which includes protecting the employee from electrical hazards such as fault currents to ground.
- When an electrical ground fault occurs, the current flows through the path with minimum impedance to ground. It is imperative that an employee does not inadvertently become the conductor of the current.
- There are two approved methods of protecting the worker from a ground fault. These methods are in addition to other requirements for equipment grounding conductors. They are:
 - Use of ground fault circuit interrupters (GFCI).
 - An assured equipment-grounding conductor program.

GROUND FAULT CIRCUIT INTERRUPTER (GFCI)

The two major aspects in the effective use of GFCI's are:

- Attention shall be given to the proper installation and maintenance of GFCI's within the requirements of the National Electric Code (NEC). The system shall be tested prior to being activated into service and the test results documented and kept on file.
- If fault trip-out occurs after the circuit has been tested and activated into service, a thorough investigation must be made to determine the cause. The necessary repairs or corrections shall be made before re-using. Application of a silicone solution may be helpful if the fault trip-out is due to excessive moisture.

In purchasing GFCI's, the specifications shall state that GFCI's shall conform to Underwriters Laboratories Standard 943, "Ground Fault Circuit Interrupters."

ELECTRICAL SAFETY

GROUND FAULT CIRCUIT INTERRUPTER (GFCI) *Continued* . . .

Each circuit protected by a circuit breaker GFCI requires its own neutral conductor.

Receptacle type GFCI's may be used on common neutral systems and where receptacles are more than 250 feet from the breaker.

ASSURED EQUIPMENT GROUNDING POLICY

The major aspects in the establishment of an effective program are:

- To establish and implement a program to reduce the potential of injuries caused by electric shock from cord sets, receptacles, and equipment connected by cord and plug.
- To meet the requirements of local, state, and federal rules and regulations.

It is recognized that in order to prevent injury from a ground fault, the integrity of the grounding system must be maintained at all times. To achieve this, a program of inspection and testing shall be implemented.

The project supervisor shall be responsible for the inspection and testing of each cord set, electric tool, and piece of electrical equipment and receptacle:

- Before first use.
- Before equipment is returned to service following repairs.
- Before equipment is used after any incident which can be reasonably suspected to have caused damage.
- Every three months.

The quarterly inspections shall be the responsibility of the project supervisor. Each cord set, electric tool, receptacle, and piece of electrical equipment shall be tested to ensure a continuous ground circuit, and that equipment grounding conductor is connected to its proper terminal. The testing equipment shall be capable of testing for ground conductor continuity and resistance line fault, and proper connection of conductors to terminals.

Receptacles which are a permanent part of the wiring of permanent buildings are excluded from the quarterly testing and inspection requirements of this procedure.

Before use, each cord set, electric tool or piece of electrical equipment shall be visually inspected daily for signs of damage. They shall be inspected for signs of frayed or damaged insulation, crushed cable, loose or missing covers or screws, missing ground prongs on plugs, and other similar substandard conditions. Equipment found to be damaged or defective shall not be used until repaired and equipment suspected of being damaged or defective shall be inspected and tested prior to using.

ELECTRICAL SAFETY

ASSURED EQUIPMENT GROUNDING POLICY *Continued . . .*

To verify inspection and testing, a piece of color-coded tape will be affixed to each item inspected by the inspector. Four colors of tape shall be used. The expiration date of each inspection period may be pre-printed on the tape to avoid conflicts with other similar color-coded tapes on the project. The color code system is as follows:

Color Coding Scheme (Quarterly)

January 1 through March 31	White
April 1 through June 30	Green

July 1 through September 30	Red
October 1 through December 31	Orange

The inspection tape shall not be used for any other purpose. The project supervisor shall strictly control use of tape. Color scheme may vary according to region.

Any electrical tool, cord set, or piece of electrical equipment which bears an expired inspection sticker or no inspection sticker shall be considered defective and is not to be used until it is inspected.

Only the electrical inspectors are authorized to remove inspection tape. Unauthorized removal or defacing of inspection tape shall be cause for disciplinary action.

It shall be the responsibility of each subcontractor to ensure that his electric tools and electrical equipment are tested and documented.

LIGHTING

- All fluorescent light fixtures in job trailers should have either a full cover or individual plastic sleeves over the tubes.
- Temporary lighting shall have lamps that are protected from accidental contact or breakage.

DAMAGED EXTENSION CORDS

If the outer insulation is cut or torn open one-half inch or less **and** the insulation of the conductors are not damaged (bare copper showing), electrical tape (at least two layers) may be used to protect the damaged area. Electrical shrink-wrap may be used in place of or in addition to the tape.

ELECTRICAL SAFETY

DAMAGED EXTENSION CORDS *Continued . . .*

If the cut or torn area is more than one-half inch in length and/or the conductor insulation is cut, cracked, mashed or has any bare copper showing, the cord is to be cut at the damaged area, tagged “out of service” (noting the problem), and sent back to the shop for repair.

If the insulation is pulled back away from either end connector (allowing the conductors to show - insulation may be good), the cord must be tagged “out of service” (noting the

problem), and sent back to the shop for repair. Or, if you are qualified, you may field repair this situation so that the outer insulation is under the strain relief section of the connector.

ENVIRONMENTAL PROTECTION

PURPOSE

To provide specific guidelines for handling hazardous waste in ways that will protect human health and the environment and to provide a means to control hazardous waste from the moment it is generated until its ultimate disposal.

REGULATORY REFERENCES

Except to the extent that more explicit or more stringent requirements are written directly into these procedures, the primary regulatory references relating to environmental protection practices during the conduct of *A. Glewen & Sons Excavating, Inc.* operations shall be:

- Title 40 Code of Federal Regulations Part 261
- Title 49 Code of Federal Regulations Part 172
- Title 29 Code of Federal Regulations Part 1910

Additional references:

- US EPA Document #530-SW-86-019; *Understanding the Small Quantity Generator Hazardous Waste Rules: A Handbook for Small Business*, September 1986.
- US EOA Document #530-SW-90-027; *Does Your Business Produce Hazardous Waste?*, January 1990
- Federal Register: March 24, 1986

POLICY

Risk Reduction

A. Glewen & Sons Excavating, Inc.'s operation will operate in a manner designed to minimize environmental, health, or safety hazards. *A. Glewen & Sons Excavating, Inc.* will minimize risk and protect our employees, and others in the vicinity of our operations, by providing specific hazard awareness training and information programs to employees, and where applicable, community residents. Additional chemical protection safeguards will be provided through the application of safe management technologies and operating procedures and by being prepared for emergencies.

ENVIRONMENTAL PROTECTION

Risk Reduction *continued...*

A. Glewen & Sons Excavating, Inc. will make available to our employees, and to the public, information related to any of our operations that we believe could cause environmental harm or pose health or safety hazards.

A. Glewen & Sons Excavating, Inc. will encourage employees to report any condition that creates a danger to the environment or poses health or safety hazards, and will provide confidential means for them to do so.

Waste Reduction, Recycling, Treatment and Disposal

A. Glewen & Sons Excavating, Inc. shall work to minimize the volume and toxicity of waste generated by *A. Glewen & Sons Excavating, Inc.* operations. Minimization of wastes results from the initiation and maintenance of process/production reviews, which will enable substitution, and/or reuse of potentially hazardous chemicals to take place.

A. Glewen & Sons Excavating, Inc. will initiate and maintain waste recycling programs, to the extent possible, as an effort to minimize the volume of generated wastes and to provide renewable resources within other industries.

A. Glewen & Sons Excavating, Inc. will not initiate activities that produce a demand for extensive chemical treatment operations, with the possible exception of small scale, waste stabilization efforts relating to transport of wastes.

Disposal of generated hazardous wastes shall be performed in conformance with the requirements established by Title 40 CFR Part 261, which details three important considerations related to waste management.

- That, depending on quantities generated, a generator must comply with specific storage time, quantity, and handling requirements for containers and tanks.
- That *A. Glewen & Sons Excavating, Inc.*, as a generator, may have to obtain specific storage, treatment, or disposal permits if storage, treatment, or disposal of wastes at the project location(s) is anticipated.

That *A. Glewen & Sons Excavating, Inc.*, as a generator, will be required to implement adequate precautions to prevent accidents, and that *A. Glewen & Sons Excavating, Inc.* must be prepared to handle them properly in the event that they do occur.

ENVIRONMENTAL PROTECTION

DEFINITIONS

US EPA – United States Environmental Protection Agency

Waste Generator – Any person or organization whose act or process produces hazardous waste, or whose act first causes a hazardous waste to become subject to regulation. The generator designation determines who is responsible for recordkeeping and compliance.

RCRA – Resource Conservation and Recovery Act (1976, 1984); Administered by the US EPA, the act regulates management and disposal of hazardous materials and disposal of hazardous materials and wastes currently generated, treated, stored, disposed or distributed.

Hazardous Waste – A waste solid or liquid form, which is no longer used. IT is material that is

thrown away or stored until the quantity warrants disposal. The material is deemed hazardous if it has certain properties that could pose dangers to human health and the environment after it is discarded. Hazardous wastes are classified by the US EPA as either “listed” or “characteristic” waste, depending on specific criteria.

Limited Waste – Material considered to be hazardous, based on the material appearing on any one of four hazardous waste lists contained in the US EPA regulations. These wastes have been listed because they either exhibit characteristics or contain any number of toxic constituents that have been shown to be harmful to health and the environment. The regulations list over 400 hazardous wastes, including wastes derived from manufacturing processes and discarded commercial chemical products.

Characteristic Waste – Even if a waste does not appear on one of the US EPA lists, it is considered hazardous if it has one or more of the following characteristics:

- **Ignitable:** it is easily combustible or flammable, e.g., degreasers, paint waste, solvents.
- **Corrosive:** it dissolves metals, other materials, or burns the skin, e.g., rust removers, waste acids, alkaline cleaning fluids, waste battery acid.
- **Reactive:** it is unstable or undergoes rapid or violent chemical reaction with water or other materials, e.g., metal plating, wastes, waste bleaches, waste oxidizers.
- **Toxic:** if an extract from the waste is tested and found to contain high concentrations of heavy metals (e.g., lead, cadmium, mercury, and certain pesticides) that could be released into the ground water.

Acutely Hazardous Waste – Wastes that the US EPA had determined to be so dangerous in small amounts that they are regulated the same way, as are large amounts of other hazardous wastes. This waste may include, but may not be limited to, certain pesticides and dioxin containing wastes.

EXCAVATION AND TRENCHING

PURPOSE

To provide guidelines to ensure the safety of all workers who are required to work in and around excavations.

REFERENCES

OSHA 29 CFR 1926.650; 1926.651; 1926.652

Scope and application.

This subpart applies to all open excavations made in the earth's surface. Excavations are defined to include trenches.

Definitions

"Accepted engineering practices" means those requirements which are compatible with standards of practice required by a registered professional engineer.

"Aluminum Hydraulic Shoring" means a pre-engineered shoring system comprised of aluminum hydraulic cylinders (crossbraces) used in conjunction with vertical rails (uprights) or horizontal rails (wales). Such system is designed specifically to support the sidewalls of an excavation and prevent cave-ins.

"Bell-bottom pier hole" means 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)" means 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" means 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 other wise injure and immobilize a person.

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

"Cross braces" mean 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" means any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.

EXCAVATION AND TRENCHING

Definitions continued...

"Accepted engineering practices" means those requirements which are compatible with standards of practice required by a registered professional engineer.

"Aluminum Hydraulic Shoring" means a pre-engineered shoring system comprised of aluminum hydraulic cylinders (crossbraces) used in conjunction with vertical rails (uprights) or horizontal rails (wales). Such system is designed specifically to support the sidewalls of an excavation and prevent cave-ins.

"Bell-bottom pier hole" means 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)" means 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" means 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.

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

"Cross braces" mean 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" means any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.

"Faces" or "sides" means the vertical or inclined earth surfaces formed as a result of excavation work.

"Failure" means 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" means 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.

"Kickout" means the accidental release or failure of a cross brace.

EXCAVATION AND TRENCHING

Definitions continued...

"Protective system" means 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" means 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" means 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" mean 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)" means 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 1926.652(c)(3) or (c)(4). Shields used in trenches are usually referred to as "trench boxes" or "trench shields."

"Shoring (Shoring system)" means 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)" means 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.

"Stable rock" means 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" means a ramp built of steel or wood, usually used for vehicle access. Ramps made of soil or rocks are not considered structural ramps.

EXCAVATION AND TRENCHING

Definitions continued...

"Support system" means a structure such as underpinning, bracing, or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.

"Tabulated data" means tables and charts approved by a registered professional engineer and used to design and construct a protective system.

"Trench (Trench excavation)" means 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). If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet (4.6 m) or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.

"Trench box" See "Shield."

"Trench shield" See "Shield."

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

"Wales" means 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.

EXCAVATION AND TRENCHING

Surface encumbrances.

All surface encumbrances that are located so as to create a hazard to employees shall be removed or supported, as necessary, to safeguard employees.

Underground installations.

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

Utility companies or owners shall be contacted within established or customary local response times, advised of the proposed work, and asked to establish the location of the utility underground installations prior to the start of actual excavation. When utility companies or owners cannot respond to a request to locate underground utility installations within 24 hours (unless a longer period is required by state or local law), or cannot establish the exact location of

these installations, the employer may proceed, provided the employer does so with caution, and provided detection equipment or other acceptable means to locate utility installations are used.

When excavation operations approach the estimated location of underground installations, the exact location of the installations shall be determined by safe and acceptable means.

While the excavation is open, underground installations shall be protected, supported or removed as necessary to safeguard employees.

Access and egress - Structural ramps.

Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a competent person qualified in structural design, and shall be constructed in accordance with the design.

Ramps and runways constructed of two or more structural members shall have the structural members connected together to prevent displacement. Structural members used for ramps and runways shall be of uniform thickness.

Cleats or other appropriate means used to connect runway structural members shall be attached to the bottom of the runway or shall be attached in a manner to prevent tripping.

Structural ramps used in lieu of steps shall be provided with cleats or other surface treatments on the top surface to prevent slipping.

EXCAVATION AND TRENCHING

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 (1.22 m) or more in depth so as to require no more than 25 feet (7.62 m) of lateral travel for employees.

Exposure to vehicular traffic.

Employees exposed to public vehicular traffic shall be provided with, and shall wear; warning vests or other suitable garments marked with or made of reflectorized or high-visibility material.

Exposure to falling loads.

No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped, in accordance with 1926.601(b)(6), to provide adequate protection for the operator during loading and unloading operations.

Warning system for mobile equipment.

When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system shall be utilized such as barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

Hazardous atmospheres

Testing and controls. In addition to the requirements set forth in subparts D and E of OSHA and (29 CFR 1926.50 - 1926.107) to prevent exposure to harmful levels of atmospheric contaminants and to assure acceptable atmospheric conditions, the following requirements shall apply:

Where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby, the atmospheres in the excavation shall be tested before employees enter excavations greater than 4 feet (1.22 m) in depth.

Adequate precautions shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions include providing proper respiratory protection or ventilation in accordance with subparts D and E of OSHA respectively.

Adequate precaution shall be taken such as providing ventilation, to prevent employee exposure to an atmosphere containing a concentration of a flammable gas in excess of 20 percent of the lower flammable limit of the gas.

EXCAVATION AND TRENCHING

Hazardous atmospheres continued...

When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, testing shall be conducted as often as necessary to ensure that the atmosphere remains safe.

Emergency rescue equipment.

Emergency rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, shall be readily available where hazardous atmospheric conditions exist or may reasonably be expected to develop during work in an excavation. This equipment shall be attended when in use.

Employees entering bell-bottom pier holes, or other similar deep and confined footing excavations, shall wear a harness with a lifeline securely attached to it. The lifeline shall be separate from any line used to handle materials, and shall be individually attended at all times while the employee wearing the lifeline is in the excavation.

Protection from hazards associated with water accumulation.

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. The precautions necessary to protect employees adequately vary with each situation, but could include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of a safety harness and lifeline.

If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operations shall be monitored by a competent person to ensure proper operation.

If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains will require an inspection by a competent person and compliance with paragraphs (h)(1) and (h)(2) of OSHA 1926.650.

Stability of adjacent structures.

Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning shall be provided to ensure the stability of such structures for the protection of employees. 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, such as underpinning, is provided to ensure the safety of employees and the stability of the structure; or

EXCAVATION AND TRENCHING

Stability of adjacent structures continued...

The excavation is in stable rock; or

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.

Sidewalks, pavements and appurtenant structure shall not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse of such structures.

Protection of employees from loose rock or soil.

Adequate protection shall be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection shall consist of scaling to remove loose material; installation of protective barricades at intervals as necessary on the face to stop and contain falling material; or other means that provide equivalent protection. Employees shall be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations. Protection shall be provided by placing and keeping such materials or equipment at least 2 feet (.61 m) from the edge of excavations, or by the use of

retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary.

Inspections.

Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated.

Where the competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

Fall protection.

Walkways shall be provided where employees or equipment are required or permitted to cross over excavations. Guardrails which comply with 1926.502(b) shall be provided where walkways are 6 feet (1.8 m) or more above lower levels.

EXCAVATION AND TRENCHING

Protection of employees in excavations.

Each employee in an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with this section except when:

Excavations are made entirely in stable rock; or

Excavations are less than 5 feet (1.52 m) in depth and examination of the ground by a competent person provides no indication of a potential cave-in.

Protective systems shall have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied or transmitted to the system.

Design of sloping and benching systems.

The slopes and configurations of sloping and benching systems shall be selected and constructed by the employer or his designee and shall be in accordance with the requirements of paragraph (b)(1); or, in the alternative, paragraph (b)(2); or, in the alternative, paragraph (b)(3); or, in the alternative, paragraph (b)(4), as follows:

(b)(1)

Option (1) - Allowable configurations and slopes.

Excavations shall be sloped at an angle not steeper than one and one-half horizontal to one vertical (34 degrees measured from the horizontal), unless the employer uses one of the other options listed below.

Slopes specified in paragraph (b)(1)(i) of this section, shall be excavated to form configurations that are in accordance with the slopes shown for Type C soil in Appendix B to this subpart.

(b)(2)

Option (2) - Determination of slopes and configurations using Appendices A and B. Maximum allowable slopes, and allowable configurations for sloping and benching systems, shall be determined in accordance with the conditions and requirements set forth in appendices A and B to this subpart.

(b)(3)

Option (3) - Designs using other tabulated data.

Designs of sloping or benching systems shall be selected from and in accordance with tabulated data, such as tables and charts.

EXCAVATION AND TRENCHING

Design of sloping and benching systems continued...

The tabulated data shall be in written form and shall include all of the following:

Identification of the parameters that affect the selection of a sloping or benching system drawn from such data;

Identification of the limits of use of the data, to include the magnitude and configuration of slopes determined to be safe;

Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data.

At least one copy of the tabulated data which identifies the registered professional engineer, who approved the data, shall be maintained at the jobsite during construction of the protective system. After that time the data may be stored off the jobsite, but a copy of the data shall be made available to the Secretary upon request.

(b)(4)

Option (4) - Design by a registered professional engineer.

Sloping and benching systems not utilizing Option (1) or Option (2) or Option (3) under paragraph (b) of this section shall be approved by a registered professional engineer.

Designs shall be in written form and shall include at least the following:

The magnitude of the slopes that were determined to be safe for the particular project;

The identity of the registered professional engineer approving the design.

At least one copy of the design shall be maintained at the jobsite while the slope is being constructed. After that time the design need not be at the jobsite, but a copy shall be made available to the Secretary upon request.

Design of support systems, shield systems, and other protective systems.

Designs of support systems, shield systems, and other protective systems shall be selected and constructed by the employer or his designee and shall be in accordance with the requirements of paragraph (c)(1); or, in the alternative, paragraph (c)(2); or, in the alternative, paragraph (c)(3); or, in the alternative, paragraph (c)(4) as follows:

EXCAVATION AND TRENCHING

Design of support systems, shield systems, and other protective systems continued...

(c)(1)

Option (1) - Designs using appendices A, C and D. Designs for timber shoring in trenches shall be determined in accordance with the conditions and requirements set forth in appendices A and C to this subpart. Designs for aluminum hydraulic shoring shall be in accordance with paragraph (c)(2) of this section, but if manufacturer's tabulated data cannot be utilized, designs shall be in accordance with appendix D.

(c)(2)

Option (2) - Designs Using Manufacturer's Tabulated Data.

Design of support systems, shield systems, or other protective systems that are drawn from manufacturer's tabulated data shall be in accordance with all specifications, recommendations, and limitations issued or made by the manufacturer.

Deviation from the specifications, recommendations, and limitations issued or made by the manufacturer shall only be allowed after the manufacturer issues specific written approval.

Manufacturer's specifications, recommendations, and limitations, and manufacturer's approval to deviate from the specifications, recommendations, and limitations shall be in written form at the jobsite during construction of the protective system. After that time this data may be stored off the jobsite, but a copy shall be made available to the Secretary upon request.

(c)(3)

Option (3) - Designs using other tabulated data.

Designs of support systems, shield systems, or other protective systems shall be selected from and be in accordance with tabulated data, such as tables and charts.

The tabulated data shall be in written form and include all of the following:

Identification of the parameters that affect the selection of a protective system drawn from such data.

Identification of the limits of use of the data;

Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data.

At least one copy of the tabulated data, which identifies the registered professional engineer who approved the data, shall be maintained at the jobsite during construction of the protective system. After that time the data may be stored off the jobsite, but a copy of the data shall be made available to the Secretary upon request.

EXCAVATION AND TRENCHING

Design of support systems, shield systems, and other protective systems continued...

(c)(4)

Option (4) - Design by a registered professional engineer.

Support systems, shield systems, and other protective systems not utilizing Option 1, Option 2 or Option 3, above, shall be approved by a registered professional engineer.

Designs shall be in written form and shall include the following:

A plan indicating the sizes, types, and configurations of the materials to be used in the protective system; and the identify of the registered professional engineer approving the design.

At least one copy of the design shall be maintained at the jobsite during construction of the protective system. After that time, the design may be stored off the jobsite, but a copy of the design shall be made available to the Secretary upon request.

Materials and equipment.

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

Manufactured materials and equipment used for protective systems shall be used and maintained in a manner that is consistent with the recommendations of the manufacturer, and in a manner that will prevent employee exposure to hazards.

When material or equipment that is used for protective systems is damaged, a competent person shall examine the material or equipment and evaluate its suitability for continued use. If the competent person cannot assure the material or equipment is able to support the intended loads

or is otherwise suitable for safe use, then such material or equipment shall be removed from service, and shall be evaluated and approved by a registered professional engineer before being returned to service.

Installation and removal of support

General.

Members of support systems shall be securely connected together to prevent sliding, falling, kickouts, or other predictable failure.

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.

Individual members of support systems shall not be subjected to loads exceeding those which those members were designed to withstand.

Before temporary removal of individual members begins, additional precautions shall be taken to ensure the safety of employees, such as installing other structural members to carry the loads imposed on the support system.

EXCAVATION AND TRENCHING

Installation and removal of support continued...

Removal shall begin at, and progress from, the bottom of the excavation. Members shall be released slowly so as to note any indication of possible failure of the remaining members of the structure or possible cave-in of the sides of the excavation.

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

Additional requirements for support systems for trench excavations.

Excavation of material to a level no greater than 2 feet (.61 m) 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.

Installation of a support system shall be closely coordinated with the excavation of trenches.

Sloping and benching systems.

Employees shall not be permitted to work on the faces of sloped or benched excavations at levels above other employees except when employees at the lower levels are adequately protected from the hazard of falling, rolling, or sliding material or equipment.

Shield systems

Shield systems shall not be subjected to loads exceeding those which the system was designed to withstand.

Shields shall be installed in a manner to restrict lateral or other hazardous movement of the shield in the event of the application of sudden lateral loads.

Employees shall be protected from the hazard of cave-ins when entering or exiting the areas protected by shields.

Employees shall not be allowed in shields when shields are being installed, removed, or moved vertically.

Additional requirement for shield systems used in trench excavations.

Excavations of earth material to a level not greater than 2 feet (.61 m) below the bottom of a shield shall be permitted, but only if the shield 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 shield.

EXCAVATION AND TRENCHING

Soil Classification:(a) Scope and application - (1) Scope. This appendix describes a method of classifying soil and rock deposits based on site and environmental conditions, and on the structure and composition of the earth deposits. The appendix contains definitions, sets forth requirements, and describes acceptable visual and manual tests for use in classifying soils.

(2) Application. This appendix applies when a sloping or benching system is designed in accordance with the requirements set forth in 1926.652(b)(2) as a method of protection for employees from cave-ins. This appendix also applies when timber shoring for excavations is designed as a method of protection from cave-ins in accordance with appendix C to subpart P of part 1926, and when aluminum hydraulic shoring is designed in accordance with appendix D. This Appendix also applies if other protective systems are designed and selected for use from data prepared in accordance with the requirements set forth in 1926.652(c), and the use of the data is predicated on the use of the soil classification system set forth in this appendix.

(b) Definitions. The definitions and examples given below are based on, in whole or in part, the following; American Society for Testing Materials (ASTM) Standards D653-85 and D2488; The Unified Soils Classification System; The U.S. Department of Agriculture (USDA) Textural Classification Scheme; and The National Bureau of Standards Report BSS-121.

"Cemented soil" means a soil in which the particles are held together by a chemical agent, such as calcium carbonate, such that a hand-size sample cannot be crushed into powder or individual soil particles by finger pressure.

"Cohesive soil" means clay (fine grained soil), or soil with a high clay content, which has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical sideslopes, and is plastic when moist. Cohesive soil is hard to break up when dry, and exhibits significant cohesion when submerged. Cohesive soils include clayey silt, sandy clay, silty clay, clay and organic clay.

"Dry soil" means soil that does not exhibit visible signs of moisture content.

"Fissured" means a soil material that has a tendency to break along definite planes of fracture with little resistance, or a material that exhibits open cracks, such as tension cracks, in an exposed surface.

"Granular soil" means gravel, sand, or silt (coarse grained soil) with little or no clay content. Granular soil has no cohesive strength. Some moist granular soils exhibit apparent cohesion. Granular soil cannot be molded when moist and crumbles easily when dry.

"Layered system" means two or more distinctly different soil or rock types arranged in layers. Micaceous seams or weakened planes in rock or shale are considered layered.

"Moist soil" means a condition in which a soil looks and feels damp. Moist cohesive soil can easily be shaped into a ball and rolled into small diameter threads before crumbling. Moist granular soil that contains some cohesive material will exhibit signs of cohesion between particles.

"Plastic" means a property of a soil which allows the soil to be deformed or molded without cracking, or appreciable volume change.

"Saturated soil" means a soil in which the voids are filled with water. Saturation does not require flow. Saturation, or near saturation, is necessary for the proper use of instruments such as a pocket penetrometer or shear vane.

"Soil classification system" means, for the purpose of this subpart, a method of categorizing soil and rock deposits in a hierarchy of Stable

EXCAVATION AND TRENCHING

Soil Classification Continued..

Rock, Type A, Type B, and Type C, in decreasing order of stability. The categories are determined based on an analysis of the properties and performance characteristics of the deposits and the characteristics of the deposits and the environmental conditions of exposure.

"Stable rock" means natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.

"Submerged soil" means soil which is underwater or is free seeping.

"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:

- (i) The soil is fissured; or
- (ii) The soil is subject to vibration from heavy traffic, pile driving, or similar effects; or
- (iii) The soil has been previously disturbed; or
- (iv) 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
- (v) The material is subject to other factors that would require it to be classified as a less stable material.

"Type B" means:

- (i) Cohesive soil with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa); or
- (ii) 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.
- (iii) Previously disturbed soils except those which would otherwise be

classed as Type C soil.

(iv) Soil that meets the unconfined compressive strength or cementation requirements for Type A, but is fissured or subject to vibration; or

(v) Dry rock that is not stable; or

(vi) 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.

"Type C" means:

(i) Cohesive soil with an unconfined compressive strength of 0.5 tsf (48 kPa) or less; or

(ii) Granular soils including gravel, sand, and loamy sand; or

(iii) Submerged soil or soil from which water is freely seeping; or

(iv) Submerged rock that is not stable, or

(v) 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.

"Unconfined compressive strength" means the load per unit area at which a soil will fail in compression. It can be determined by laboratory testing, or estimated in the field using a pocket penetrometer, by thumb penetration tests, and other methods.

"Wet soil" means soil that contains significantly more moisture than moist soil, but in such a range of values that cohesive material will slump or begin to flow when vibrated. Granular material that would exhibit cohesive properties when moist will lose those cohesive properties when wet.

EXCAVATION AND TRENCHING

Soil Classification continued...

- (c) Requirements - (1) Classification of soil and rock deposits. Each soil and rock deposit shall be classified by a competent person as Stable Rock, Type A, Type B, or Type C in accordance with the definitions set forth in paragraph (b) of this appendix.
- (2) Basis of classification. The classification of the deposits shall be made based on the results of at least one visual and at least one manual analysis. Such analyses shall be conducted by a competent person using tests described in paragraph (d) below, or in other recognized methods of soil classification and testing such as those adopted by the American Society for Testing Materials, or the U.S. Department of Agriculture textural classification system.
- (3) Visual and manual analyses. The visual and manual analyses, such as those noted as being acceptable in paragraph (d) of this appendix, shall be designed and conducted to provide sufficient quantitative and qualitative information as may be necessary to identify properly the properties, factors, and conditions affecting the classification of the deposits.
- (4) Layered systems. In a layered system, the system shall be classified in accordance with its weakest layer. However, each layer may be classified individually where a more stable layer lies under a less stable layer.
- (5) Reclassification. If, after classifying a deposit, the properties, factors, or conditions affecting its classification change in any way, the changes shall be evaluated by a competent person. The deposit shall be reclassified as necessary to reflect the changed circumstances.
- (d) Acceptable visual and manual tests. - (1) Visual tests. Visual analysis is conducted to determine qualitative information regarding the excavation site in general, the soil adjacent to the excavation, the soil forming the sides of the open excavation, and the soil taken as samples from excavated material.
- (i) Observe samples of soil that are excavated and soil in the sides of the excavation. Estimate the range of particle sizes and the relative amounts of the particle sizes. Soil that is primarily composed of fine-grained material is cohesive material. Soil composed primarily of coarse-grained sand or gravel is granular material.
- (ii) Observe soil as it is excavated. Soil that remains in clumps when excavated is cohesive. Soil that breaks up easily and does not stay in clumps is granular.
- (iii) Observe the side of the opened excavation and the surface area adjacent to the excavation. Crack-like openings such as tension cracks could indicate fissured material. If chunks of soil spall off a vertical side, the soil could be fissured. Small spalls are evidence of moving ground and are indications of potentially hazardous situations.
- (iv) Observe the area adjacent to the excavation and the excavation itself for evidence of existing utility and other underground structures, and to identify previously disturbed soil.
- (v) Observe the opened side of the excavation to identify layered systems. Examine layered systems to identify if the layers slope toward the excavation. Estimate the degree of slope of the layers.

EXCAVATION AND TRENCHING

Soil Classification

Aluminum Hydraulic Shoring

(a) Scope. This appendix contains information that can be used when aluminum hydraulic shoring is provided as a method of protection against cave-ins in trenches that do not exceed 20 feet (6.1m) in depth. This appendix must be used when design of the aluminum hydraulic protective system cannot be performed in accordance with 1926.652(c)(2).

(b) Soil Classification. In order to use data presented in this appendix, the soil type or types in which the excavation is made must first be determined using the soil classification method set forth in appendix A of subpart P of part 1926.

(c) Presentation of Information. Information is presented in several forms as follows:

(1) Information is presented in tabular form in Tables D-1.1, D-1.2, D-1.3 and D-1.4. Each table presents the maximum vertical and horizontal spacing that may be used with various aluminum member sizes and various hydraulic cylinder sizes. Each table contains data only for the particular soil type in which the excavation or portion of the excavation is made. Tables D-1.1 and D-1.2 are for vertical shores in Types A and B soil. Tables D-1.3 and D-1.4 are for horizontal waler systems in Types B and C soil.

(2) Information concerning the basis of the tabular data and the limitations of the data is presented in paragraph (d) of this appendix.

(3) Information explaining the use of the tabular data is presented in paragraph (e) of this appendix.

(4) Information illustrating the use of the tabular data is presented in paragraph (f) of this appendix.

(5) Miscellaneous notations (Footnotes) regarding Table D-1.1 through D-1.4 are presented in paragraph (g) of this appendix.

(6) Figures, illustrating typical installations of hydraulic shoring, are included just prior to the Tables. The illustrations page is entitled "Aluminum Hydraulic Shoring: Typical Installations."

(d) Basis and limitations of the data.

(1) Vertical shore rails and horizontal wales are those that meet the Section Modulus requirements in the D-1 Tables. Aluminum material is 6061-T6 or material of equivalent strength and properties.

EXCAVATION AND TRENCHING

Aluminum Hydraulic Shoring continued...

(2) Hydraulic cylinders specifications. (i) 2-inch cylinders shall be a minimum 2-inch inside diameter with a minimum safe working capacity of no less than 18,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer.

(ii) 3-inch cylinders shall be a minimum 3-inch inside diameter with a safe working capacity of not less than 30,000 pounds axial compressive load at extensions as recommended by product manufacturer.

(3) Limitation of application.

(i) It is not intended that the aluminum hydraulic specification apply to every situation that may be experienced in the field. These data were developed to apply to the situations that are most commonly experienced in current trenching practice. Shoring systems for use in situations that are not covered by the data in this appendix must be otherwise designed as specified in 1926.652(c).

(ii) When any of the following conditions are present, the members specified in the Tables are not considered adequate. In this case, an alternative aluminum hydraulic shoring system or other type of protective system must be designed in accordance with 1926.652.

(A) When vertical loads imposed on cross braces exceed a 100 Pound gravity load distributed on a one foot section of the center of the hydraulic cylinder.

(B) When surcharge loads are present from equipment weighing in excess of 20,000 pounds.

(C) When only the lower portion of a trench is shored and the remaining portion of the trench is sloped or benched unless: The sloped portion is sloped at an angle less steep than three horizontal to one vertical; or the members are selected from the tables for use at a depth which is determined from the top of the overall trench, and not from the toe of the sloped portion.

(e) Use of Tables D-1.1, D-1.2, D-1.3 and D-1.4. The members of the shoring system that are to be selected using this information are the hydraulic cylinders, and either the vertical shores or the horizontal wales. When a waler system is used the vertical timber sheeting to be used is also selected from these tables. The Tables D-1.1 and D-1.2 for vertical shores are used in Type A and B soils that do not require sheeting. Type B soils that may require sheeting, and Type C soils that always require sheeting, are found in the horizontal wale Tables D-1.3 and D-1.4. The soil type must first be determined in accordance with the soil classification system described in appendix A to subpart P of part 1926. Using the appropriate table, the selection of the size and spacing of the members is made. The selection is based on the depth and width of the trench where the members are to be installed. In these tables the vertical spacing is held constant at four feet on center. The tables show the maximum horizontal spacing of cylinders allowed for each size of wale in the waler system tables, and in the vertical shore tables, the hydraulic cylinder horizontal spacing is the same as the vertical shore spacing.

EXCAVATION AND TRENCHING

Aluminum Hydraulic Shoring continued...

(f) Example to Illustrate the Use of the Tables:

(1) Example 1:

A trench dug in Type A soil is 6 feet deep and 3 feet wide. From Table D-1.1: Find vertical shores and 2 inch diameter cylinders spaced 8 feet on center (o.c.) horizontally and 4 feet on center (o.c.) vertically. (See Figures 1 & 3 for typical installations.)

(2) Example 2:

A trench is dug in Type B soil that does not require sheeting, 13 feet deep and 5 feet wide. From Table D-1.2: Find vertical shores and 2 inch diameter cylinders spaced 6.5 feet o.c. horizontally and 4 feet o.c. vertically. (See Figures 1 & 3 for typical installations.)

(3) A trench is dug in Type B soil that does not require sheeting, but does experience some minor raveling of the trench face. the trench is 16 feet deep and 9 feet wide. From Table D-1.2: Find vertical shores and 2 inch diameter cylinder (with special oversleeves as designated by Footnote #2) spaced 5.5 feet o.c. horizontally and 4 feet o.c. vertically. Plywood (per Footnote (g)(7) to the D-1 Table) should be used behind the shores. (See Figures 2 & 3 for typical installations.)

(4) Example 4: A trench is dug in previously disturbed Type B soil, with characteristics of a Type C soil, and will require sheeting. The trench is 18 feet deep, and 12 feet wide 8 foot horizontal spacing between cylinders is desired for working space. From Table D-1.3: Find horizontal wale with a section modulus of 14.0 spaced at 4 feet o.c. vertically and 3 inch diameter cylinder spaced at 9 feet maximum o.c. horizontally, 3 x 12 timber sheeting is required at close spacing vertically. (See Figure 4 for typical installation.)

(5) Example 5: A trench is dug in Type C soil, 9 feet deep and 4 feet wide. Horizontal cylinder spacing in excess of 6 feet is desired for working space. From Table D-1.4: Find horizontal wale with a section modulus of 7.0 and 2 inch diameter cylinders spaced at 6.5 feet o.c. horizontally. Or, find horizontal wale with a 14.0 section modulus and 3 inch diameter cylinder spaced at 10 feet o.c. horizontally. Both wales are spaced 4 feet o.c. vertically, 3 x 12 timber sheeting is required at close spacing vertically. (See Figure 4 for typical installation.)

(g) Footnotes, and general notes, for Tables D-1.1, D-1.2, D-1.3, and D-1.4.

(1) For applications other than those listed in the tables, refer to 1926.652(c)(2) for use of manufacturer's tabulated data. For trench depths in excess of 20 feet, refer to 1926.652(c)(2) and 1926.652(c)(3).

(2) 2 inch diameter cylinders, at this width, shall have structural steel tube (3.5 x 3.5 x 0.1875) oversleeves, or structural oversleeves of manufacturer's specification, extending the full, collapsed length.

EXCAVATION AND TRENCHING

Aluminum Hydraulic Shoring continued...

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

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

(4) All spacing indicated is measured center to center.

(5) Vertical shoring rails shall have a minimum section modulus of 0.40 inch.

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

(7) Plywood shall be 1.125 inch thick softwood or 0.75 inch thick, 14 ply, arctic white birch (Finland form). Please note that plywood is not intended as a structural member, but only for prevention of local raveling (sloughing of the trench face) between shores.

(8) See appendix C for timber specifications.

(9) Wales are calculated for simple span conditions.

(10) See appendix D, item (d), for basis and limitations of the data.

EXCAVATION AND TRENCHING

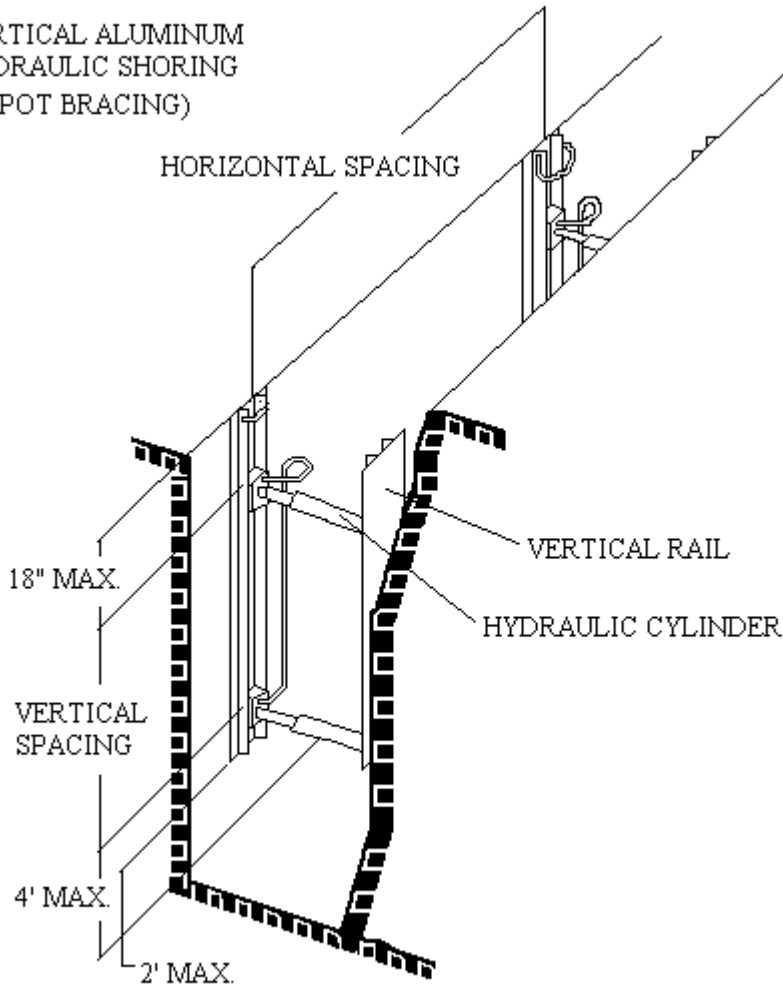
Aluminum Hydraulic Shoring continued...

ALUMINUM HYDRAULIC SHORING
TYPICAL INSTALLATIONS

Figure No. 1 - Vertical aluminum hydraulic shoring (spot bracing)

FIGURE NO. 1

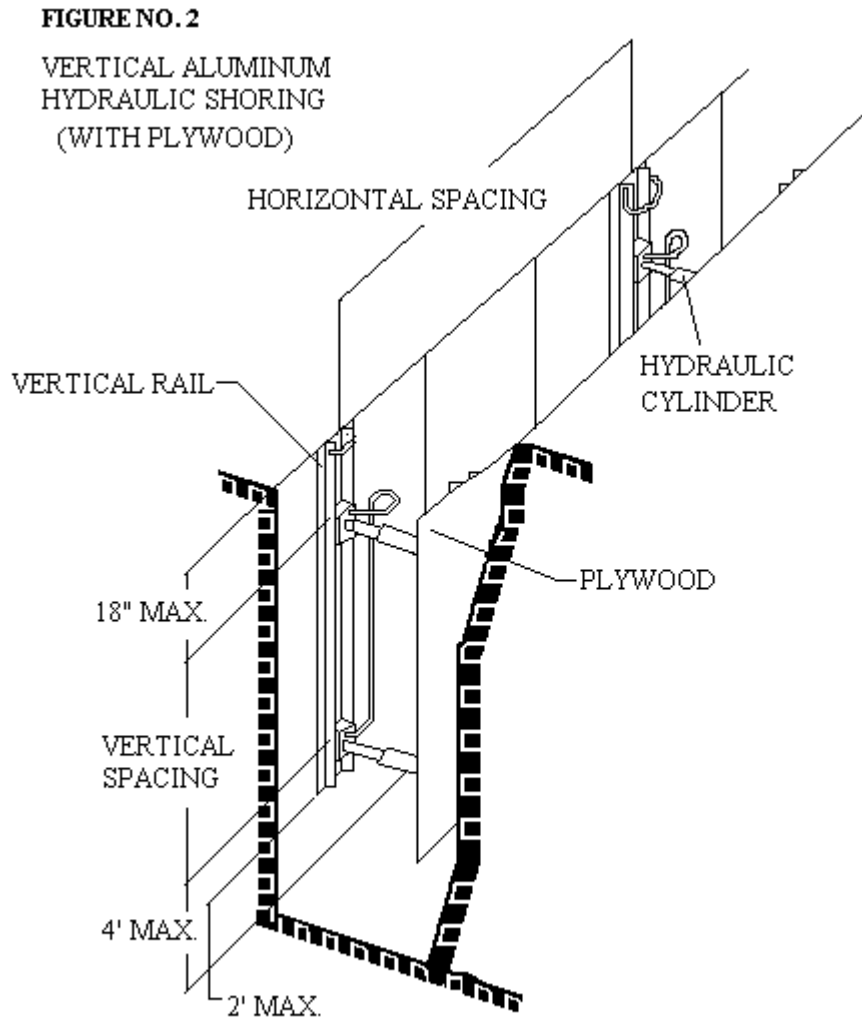
VERTICAL ALUMINUM
HYDRAULIC SHORING
(SPOT BRACING)



EXCAVATION AND TRENCHING

Aluminum Hydraulic Shoring continued...

Figure No. 2 - Vertical aluminum hydraulic shoring (with plywood)



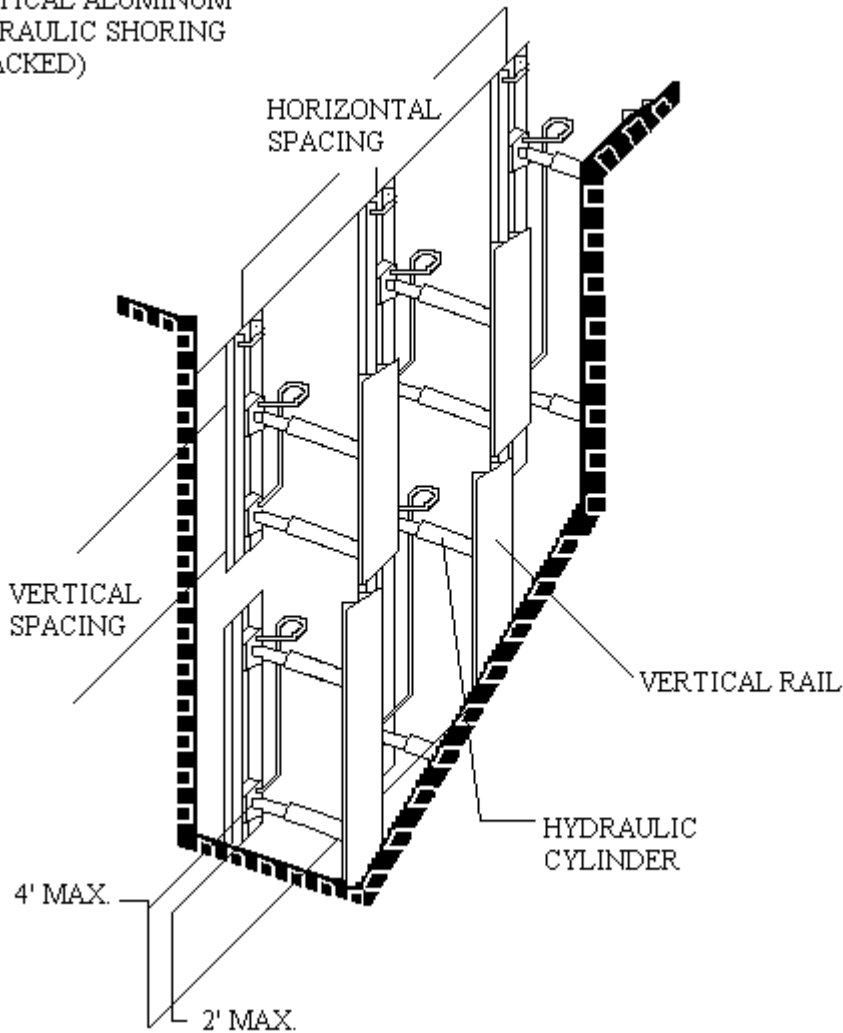
EXCAVATION AND TRENCHING

Aluminum Hydraulic Shoring continued...

Figure No. 3 - Vertical aluminum hydraulic shoring (stacked)

FIGURE NO. 3

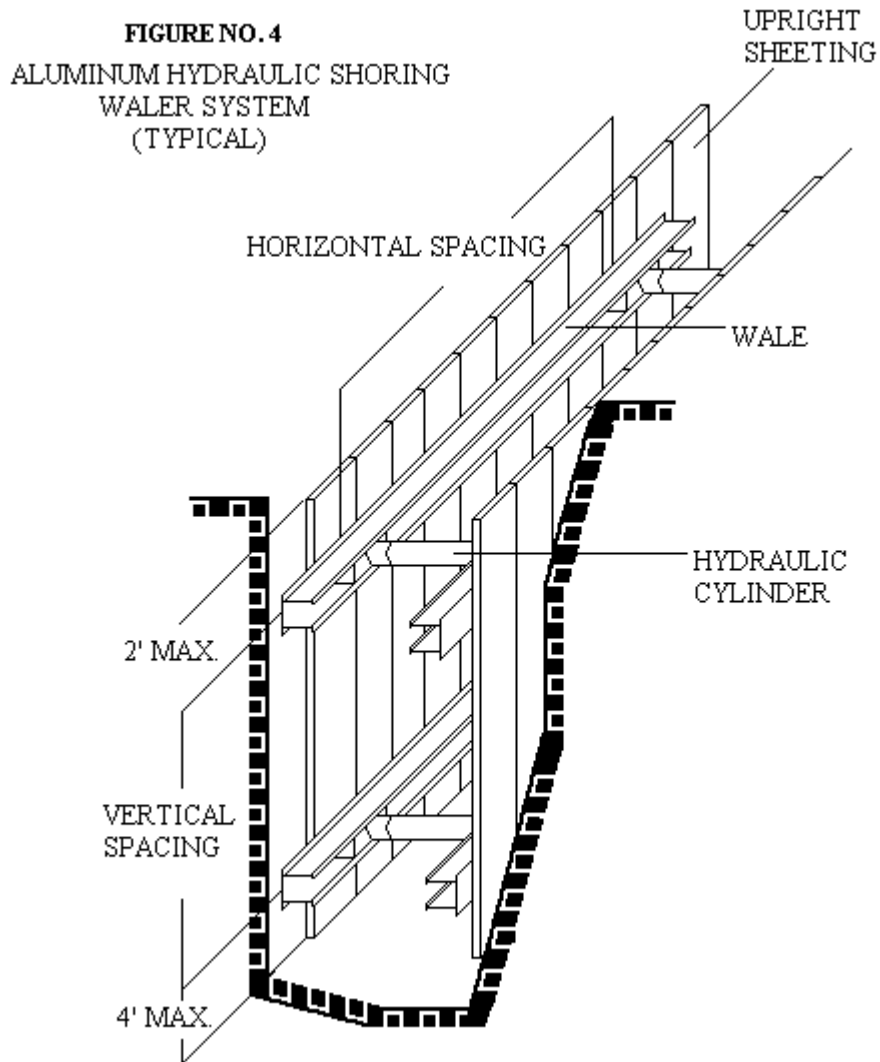
**VERTICAL ALUMINUM
HYDRAULIC SHORING
(STACKED)**



EXCAVATION AND TRENCHING

Aluminum Hydraulic Shoring continued...

Figure No. 4 - Aluminum hydraulic shoring - Waler System (typical)



EXCAVATION AND TRENCHING

Aluminum Hydraulic Shoring continued...

TABLE D - 1.1
ALUMINUM HYDRAULIC SHORING
VERTICAL SHORES
FOR SOIL TYPE A

DEPTH OF TRENCH (FEET)	HYDRAULIC CYLINDERS				
	MAXIMUM HORIZONTAL SPACING (FEET)	MAXIMUM VERTICAL SPACING (FEET)	WIDTH OF TRENCH (FEET)		
			UP TO 8	OVER 8 UP TO 12	OVER 12 UP TO 15
OVER 5 UP TO 10	8				
OVER 10 UP TO 15	8	4	2 INCH DIAMETER	2 INCH DIAMETER NOTE (2)	3 INCH DIAMETER
OVER 15 UP TO 20	7				
OVER 20	NOTE (1)				

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)

Note(1): See Appendix D, Item (g) (1)

Note(2): See Appendix D, Item (g) (2)

EXCAVATION AND TRENCHING

Aluminum Hydraulic Shoring continued...

TABLE D - 1.2
ALUMINUM HYDRAULIC SHORING
VERTICAL SHORES
FOR SOIL TYPE B

DEPTH OF TRENCH (FEET)	HYDRAULIC CYLINDERS				
	MAXIMUM HORIZONTAL SPACING (FEET)	MAXIMUM VERTICAL SPACING (FEET)	WIDTH OF TRENCH (FEET)		
			UP TO 8	OVER 8 UP TO 12	OVER 12 UP TO 15
OVER 5 UP TO 10	8				
OVER 10 UP TO 15	6.5	4	2 INCH DIAMETER	2 INCH DIAMETER NOTE (2)	3 INCH DIAMETER
OVER 15 UP TO 20	5.5				
OVER 20	NOTE (1)				

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)

Note(1): See Appendix D, Item (g) (1)

Note(2): See Appendix D, Item (g) (2)

EXCAVATION AND TRENCHING

Aluminum Hydraulic Shoring continued...

TABLE D - 1.3
ALUMINUM HYDRAULIC SHORING
WALER SYSTEMS
FOR SOIL TYPE B

DEPTH OF TRENCH (FEET)	WALES		HYDRAULIC CYLINDERS			
	VERTICAL SPACING	* SECTION MODULUS	WIDTH OF TRENCH (FEET)			
			UP TO 8		OVER 8 UP TO 12	
	(FEET)	(IN (3))	HORIZ SPACING	CYLINDER DIAMETER	HORIZ SPACING	CYLINDER DIAMETER
OVER 5 UP TO 10	4	3.5	8.0	2 IN	8.0	2 IN NOTE (2)
		7.0	9.0	2 IN	9.0	2 IN NOTE (2)
		14.0	12.0	3 IN	12.0	3 IN
OVER 10 UP TO 15	4	3.5	6.0	2 IN	6.0	2 IN NOTE (2)
		7.0	8.0	3 IN	8.0	3 IN
		14.0	10.0	3 IN	10.0	3 IN
OVER 15	4	3.5	5.5	2 IN	5.5	2 IN NOTE (2)

UP TO		7.0	6.0	3 IN	6.0	3 IN
20		14.0	9.0	3 IN	9.0	3 IN
OVER		NOTE (1)				
20						

EXCAVATION AND TRENCHING

Aluminum Hydraulic Shoring continued...

TABLE D - 1.3
ALUMINUM HYDRAULIC SHORING
WALER SYSTEMS
FOR SOIL TYPE B
[Continued]

DEPTH OF TRENCH (FEET)	WALES		HYDRAULIC CYLINDERS		TIMBER UPRIGHTS		
	VERTICAL SPACING (FEET)	* SECTION MODULUS (IN (3))	WIDTH OF TRENCH (FEET)		MAX. HORIZ SPACING (ON CENTER)		
		OVER 12 UP TO 15		HORIZ SPACING	CYLINDER DIAMETER	SOLID SHEET	2 FT
OVER		3.5	8.0	3 IN			
5	4	7.0	9.0	3 IN	---	---	3x12
UP TO							
10		14.0	12.0	3 IN			
OVER		3.5	6.0	3 IN			
10	4	7.0	8.0	3 IN	---	3x12	---
UP TO							
15		14.0	10.0	3 IN			

OVER		3.5	5.5	3 IN			
15	4	7.0	6.0	3 IN	3x12	---	---
UP TO		14.0	9.0	3 IN			
20							
OVER		NOTE (1)					
20							

EXCAVATION AND TRENCHING

Aluminum Hydraulic Shoring continued...

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g) Note(1): See Appendix D, Item (g) (1) Note(2): See Appendix D, Item (g) (2) *Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.

TABLE D - 1.4
ALUMINUM HYDRAULIC SHORING
WALER SYSTEMS FOR SOIL TYPE C

DEPTH OF TRENCH (FEET)	WALES		HYDRAULIC CYLINDERS				
	VERTICAL SPACING (FEET)	* SECTION MODULUS (IN (3))	WIDTH OF TRENCH (FEET)				
			UP TO 8		OVER 8 UP TO 12		
			HORIZ SPACING	CYLINDER DIAMETER	HORIZ SPACING	CYLINDER DIAMETER	
OVER		3.5	6.0	2 IN	6.0	2 IN	NOTE (2)
5	4	7.0	6.5	2 IN	6.5	2 IN	NOTE (2)
UP TO		14.0	10.0	3 IN	10.0	3 IN	
10							
OVER		3.5	4.0	2 IN	4.0	2 IN	NOTE (2)
10	4	7.0	5.5	3 IN	5.5	3 IN	

UP TO						
15		14.0	8.0	3 IN	8.0	3 IN
OVER		3.5	3.5	2 IN	3.5	2 IN NOTE (2)
15	4	7.0	5.0	3 IN	5.0	3 IN
UP TO						
20		14.0	6.0	3 IN	6.0	3 IN
OVER						
20		NOTE (1)				

EXCAVATION AND TRENCHING

Aluminum Hydraulic Shoring continued...

TABLE D - 1.4
ALUMINUM HYDRAULIC SHORING
WALER SYSTEMS
FOR SOIL TYPE C

[Continued]

DEPTH OF TRENCH (FEET)	WALES		HYDRAULIC CYLINDERS		TIMBER UPRIGHTS		
	VERTICAL SPACING (FEET)	* SECTION MODULUS (IN (3))	WIDTH OF TRENCH (FEET)		MAX. HORIZ SPACING (ON CENTER)		
			HORIZ SPACING	CYLINDER DIAMETER	SOLID SHEET	2 FT	3 FT
OVER		3.5	6.0	3 IN			
5	4	7.0	6.5	3 IN	3x12	---	---
UP TO							
10		14.0	10.0	3 IN			
OVER		3.5	4.0	3 IN			

10	4	7.0	5.5	3 IN	3x12	---	---
UP TO							
15		14.0	8.0	3 IN			
OVER		3.5	3.5	3 IN			
15	4	7.0	5.0	3 IN	3x12	---	---
UP TO							
20		14.0	6.0	3 IN			
OVER							
20		NOTE (1)					

EXCAVATION AND TRENCHING

Aluminum Hydraulic Shoring continued...

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)

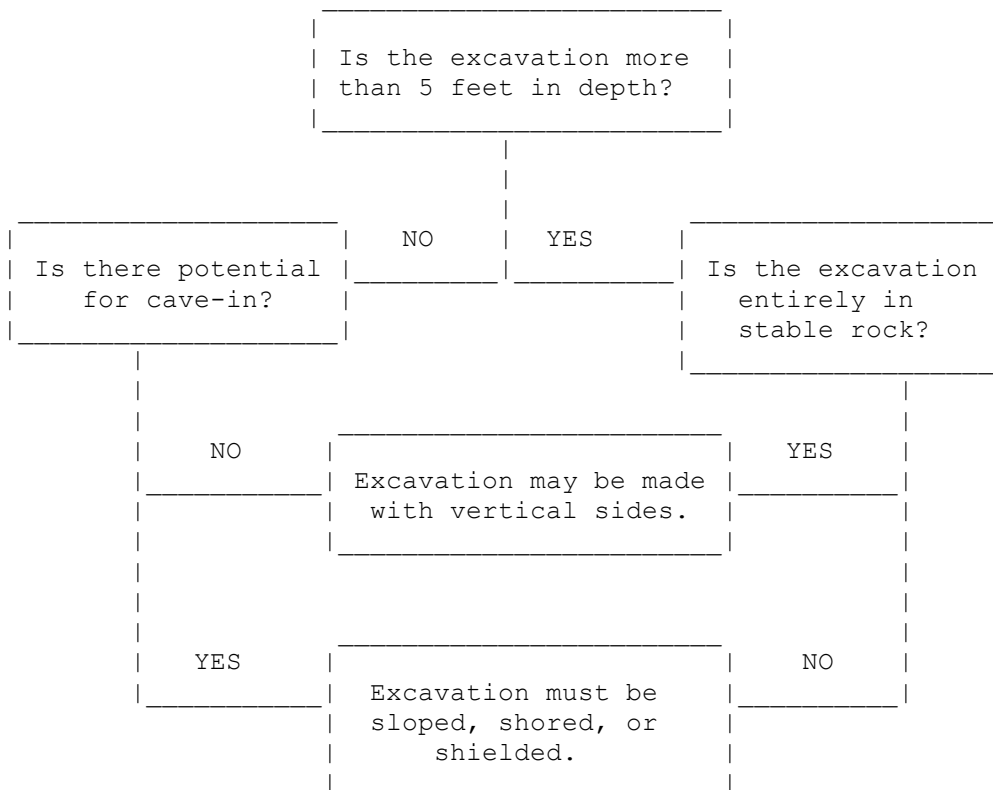
Note(1): See Appendix D, Item (g) (1)

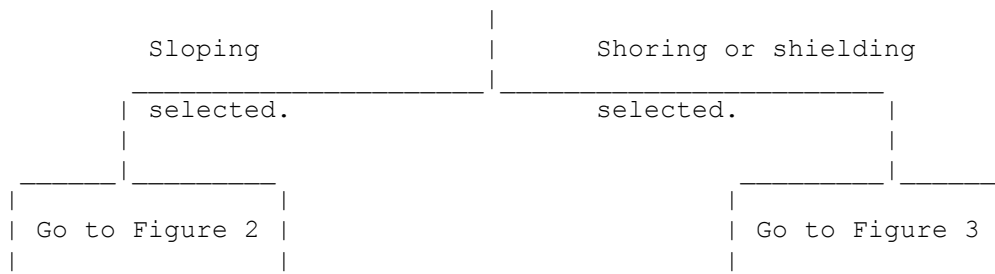
Note(2): See Appendix D, Item (g) (2)

* Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.

EXCAVATION AND TRENCHING

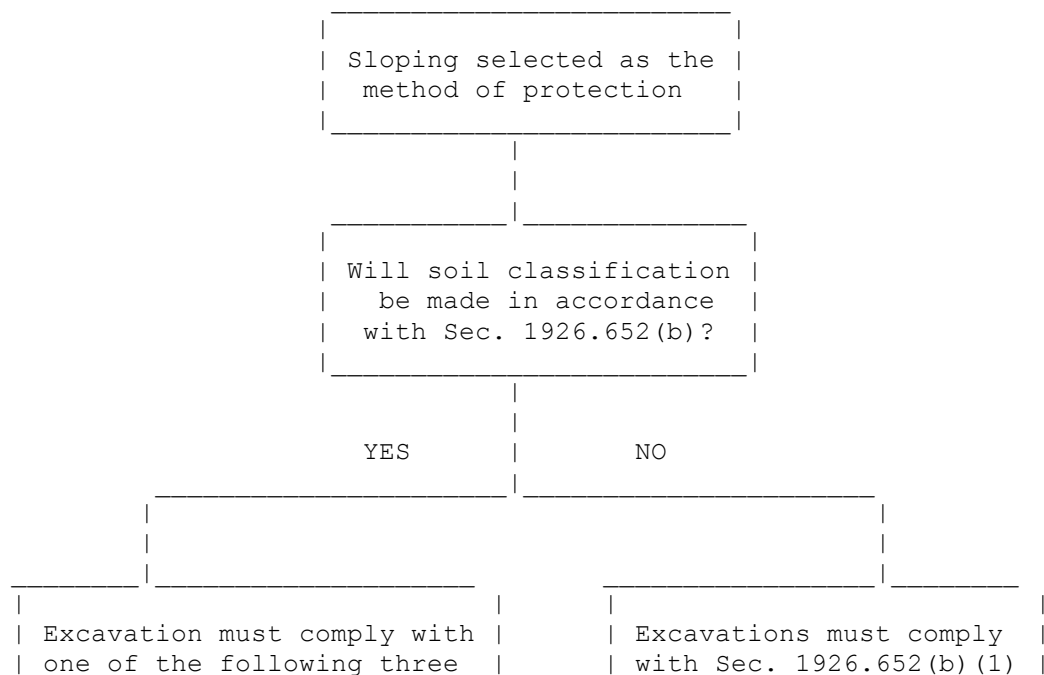
The following figures are a graphic summary of the requirements contained in subpart P for excavations 20 feet or less in depth. Protective systems for use in excavations more than 20 feet in depth must be designed by a registered professional engineer in accordance with 1926.652(b) and (c).





EXCAVATION AND TRENCHING

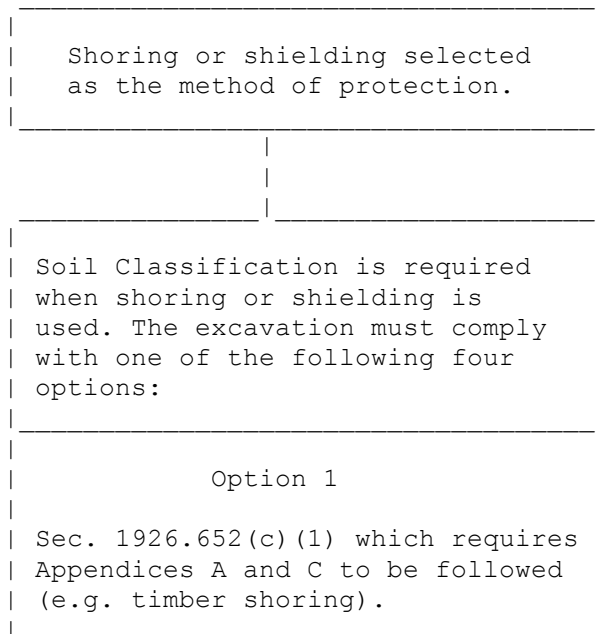
FIGURE 1 - PRELIMINARY DECISIONS



options:	which requires a slope of 1 1/2 H:1V (34 deg.).
Option 1: Sec. 1926.652(b) (3) which requires Appendices A and B to be followed	FIGURE 2 - SLOPING OPTIONS
Option 2: Sec. 1926.652(b) (3) which requires other tabulated data (see definition to be followed.	
Option 3: Sec. 1926.652(b) (4) which requires the excavation to be designed by a registered professional engineer.	

EXCAVATION AND TRENCHING

FIGURE 3 - SHORING AND SHIELDING OPTIONS



Option 2
Sec. 1926.652(c)(2) which requires manufacturers data to be followed (e.g. hydraulic shoring, trench jacks, air shores, shields).
Option 3
Sec. 1926.652(c)(3) which requires tabulated data (see definition) to be followed (e.g. any system as per the tabulated data).
Option 4
Sec. 1926.652(c)(4) which requires the excavation to be designed by a registered professional engineer (e.g. any designed system).

EXCAVATION AND TRENCHING

Sloping and Benching

(a) **Scope and application.** This appendix contains specifications for sloping and benching when used as methods of protecting employees working in excavations from cave-ins. The requirements of this appendix apply when the design of sloping and benching protective systems is to be performed in accordance with the requirements set forth in § 1926.652(b)(2).

(b) **Definitions.**

Actual slope means the slope to which an excavation face is excavated.

Distress means that the soil is in a condition where a cave-in is imminent or is likely to occur. Distress is evidenced by such phenomena as the development of fissures in the face of or adjacent to an open excavation; the subsidence of the edge of an excavation; the slumping of material from the face or the bulging or heaving of material from the bottom of an excavation; the spalling of material from the face of an excavation; and ravelling, i.e., small amounts of material such as pebbles or little clumps of material suddenly separating from the face of an excavation and trickling or rolling down into the excavation.

Maximum allowable slope means the steepest incline of an excavation face that is acceptable for the most favorable site conditions as protection against cave-ins, and is expressed as the ratio of horizontal distance to vertical rise (H:V).

Short term exposure means a period of time less than or equal to 24 hours that an excavation is open.

(c) **Requirements** –

(1) **Soil classification.** Soil and rock deposits shall be classified in accordance with appendix A to subpart P of part 1926.

(2) **Maximum allowable slope.** The maximum allowable slope for a soil or rock deposit shall be determined from Table B-1 of this appendix.

(3) **Actual slope.** (i) The actual slope shall not be steeper than the maximum allowable slope.

(ii) The actual slope shall be less steep than the maximum allowable slope, when there are signs of distress. If that situation occurs, the slope shall be cut back to an actual slope which is at least ½ horizontal to one vertical (½H:1V) less steep than the maximum allowable slope.

(iii) When surcharge loads from stored material or equipment, operating equipment, or traffic are present, a competent person shall determine the degree to which the actual slope must be reduced below the maximum allowable slope, and shall assure that such reduction is achieved. Surcharge loads from adjacent structures shall be evaluated in accordance with § 1926.651(i).

(4) **Configurations.** Configurations of sloping and benching systems shall be in accordance with Figure B-1.

EXCAVATION AND TRENCHING

Sloping and Benching continued...

**TABLE B-1
MAXIMUM ALLOWABLE SLOPES**

SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPES (H:V)(1) FOR EXCAVATIONS LESS THAN 20 FEET DEEP(3)
STABLE ROCK	VERTICAL (90°)
TYPE A (2)	3/4:1 (53°)
TYPE B	1:1 (45°)
TYPE C	1 ½:1 (34°)

Footnote(1) Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.

Footnote(2) A short-term maximum allowable slope of 1/2H:1V (63°) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth shall be 3/4H:1V (53°).

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

Figure B-1
Slope Configurations

(All slopes stated below are in the horizontal to vertical ratio)

B-1.1 Excavations made in Type A soil.

1. All simple slope excavation 20 feet or less in depth shall have a maximum allowable slope of $\frac{3}{4}:1$.

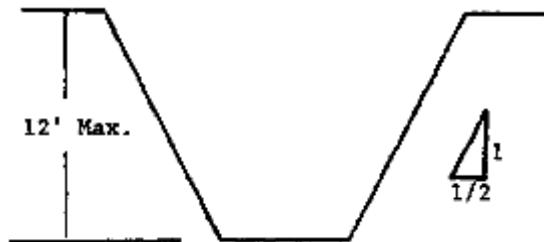


SIMPLE SLOPE -- GENERAL

Exception: Simple slope excavations which are open 24 hours or less (short term) and which are 12 feet or less in depth shall have a maximum allowable slope of $\frac{1}{2}:1$.

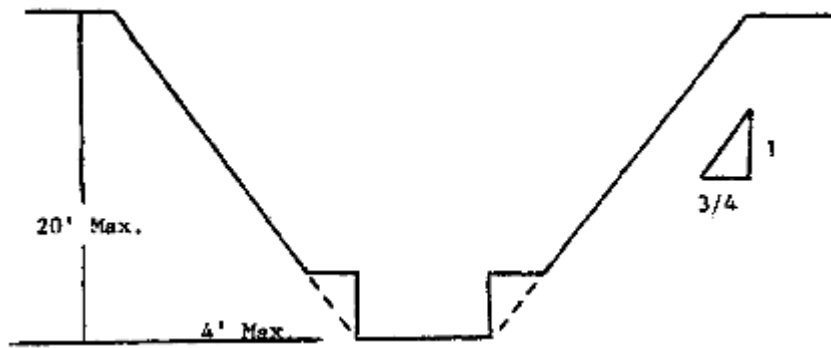
EXCAVATION AND TRENCHING

Sloping and Benching continued...

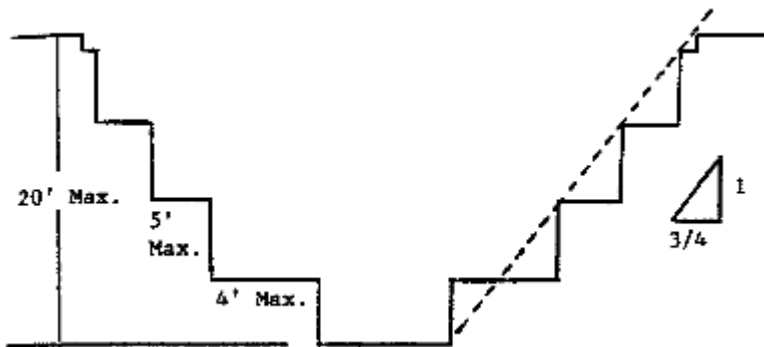


SIMPLE SLOPE -- SHORT TERM

2. All benched excavations 20 feet or less in depth shall have a maximum allowable slope of $\frac{3}{4}$ to 1 and maximum bench dimensions as follows:



SIMPLE BENCH

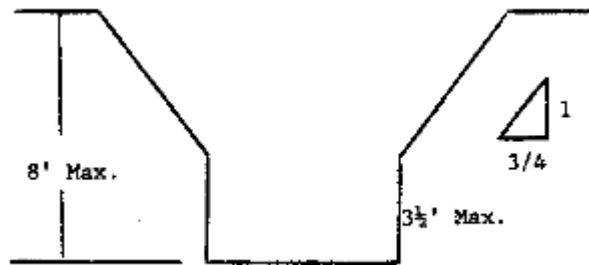


MULTIPLE BENCH

3. All excavations 8 feet or less in depth which have unsupported vertically sided lower portions shall have a maximum vertical side of 3½ feet.

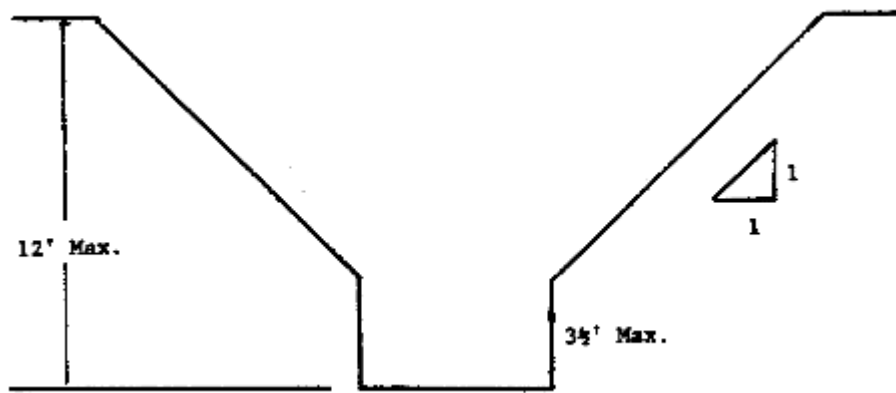
EXCAVATION AND TRENCHING

Sloping and Benching continued...



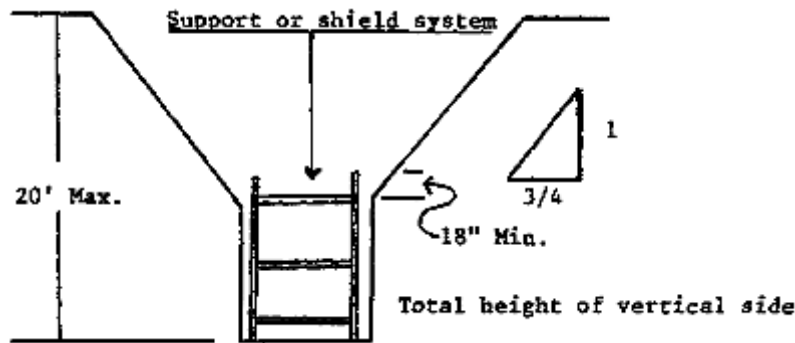
UNSUPPORTED VERTICALLY SIDED LOWER PORTION -- MAXIMUM 8 FEET IN DEPTH)

All excavations more than 8 feet but not more than 12 feet in depth with unsupported vertically sided lower portions shall have a maximum allowable slope of 1:1 and a maximum vertical side of 3½ feet.



UNSUPPORTED VERTICALLY SIDED LOWER PORTION -- MAXIMUM 12 FEET IN DEPTH)

All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of $\frac{3}{4}$:1. The support or shield system must extend at least 18 inches above the top of the vertical side.



SUPPORTED OR SHIELDED VERTICALLY SIDED LOWER PORTIO

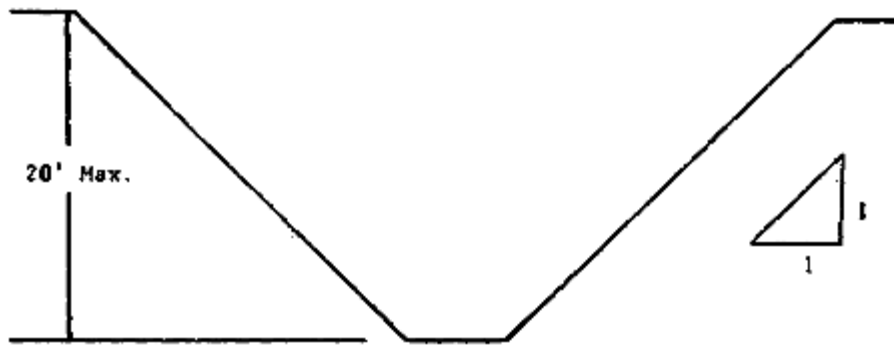
EXCAVATION AND TRENCHING

Sloping and Benching continued...

4. All other simple slope, compound slope, and vertically sided lower portion excavations shall be in accordance with the other options permitted under § 1926.652(b).

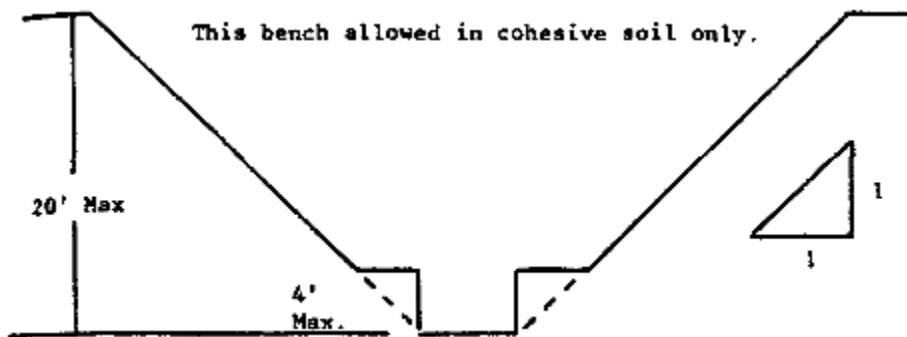
B-1.2 Excavations Made in Type B Soil

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1.

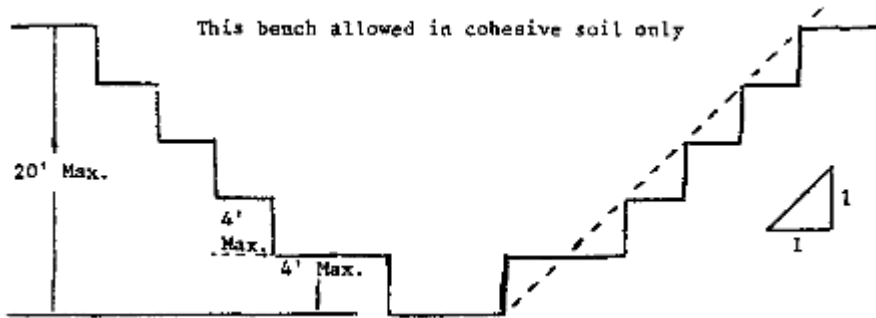


SIMPLE SLOPE

2. All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1 and maximum bench dimensions as follows:



SINGLE BENCH

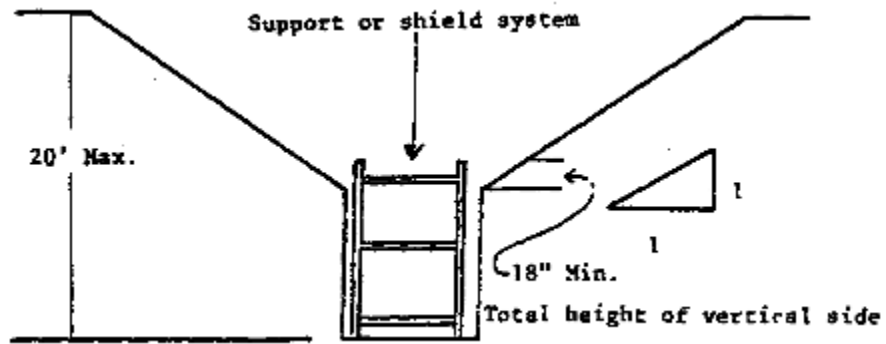


MULTIPLE BENCH

EXCAVATION AND TRENCHING

Sloping and Benching continued...

3. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1:1.

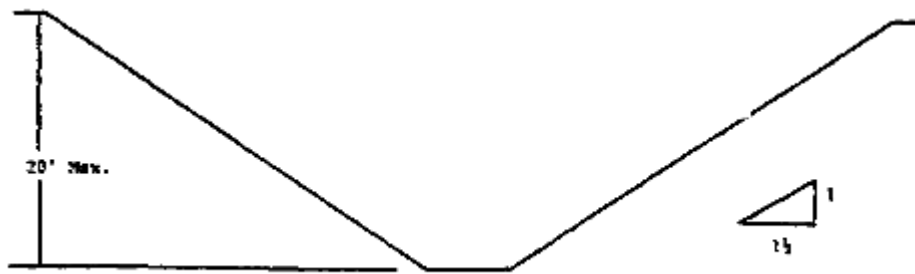


VERTICALLY SIDED LOWER PORTION

4. All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

B-1.3 Excavations Made in Type C Soil

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1½:1.

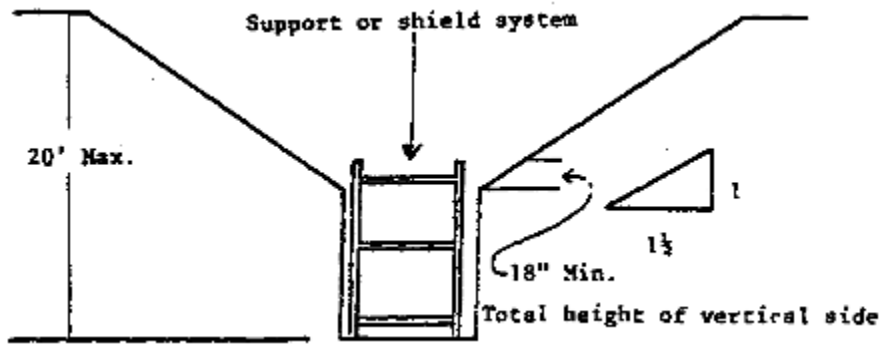


SIMPLE SLOPE

2. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1½:1.

EXCAVATION AND TRENCHING

Sloping and Benching continued...

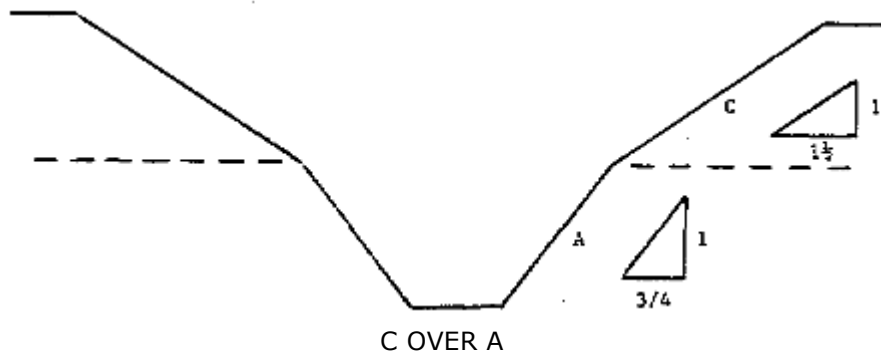
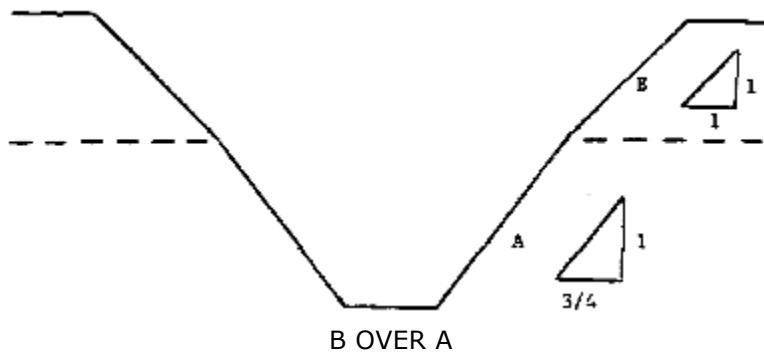


VERTICAL SIDED LOWER PORTION

3. All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

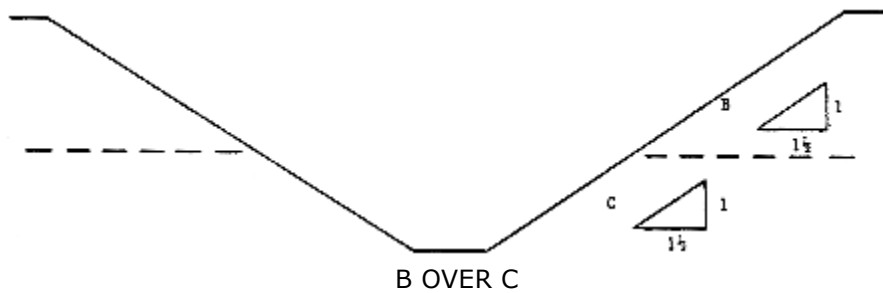
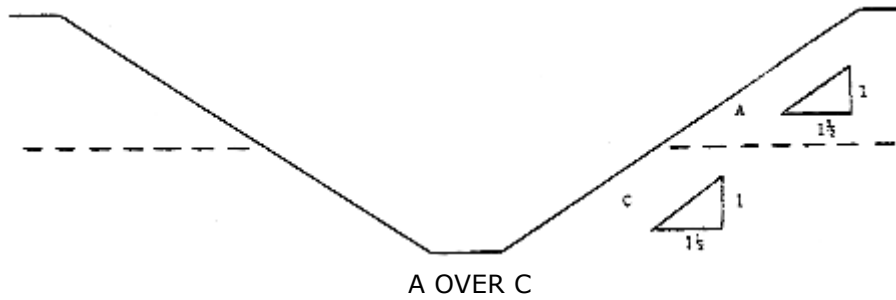
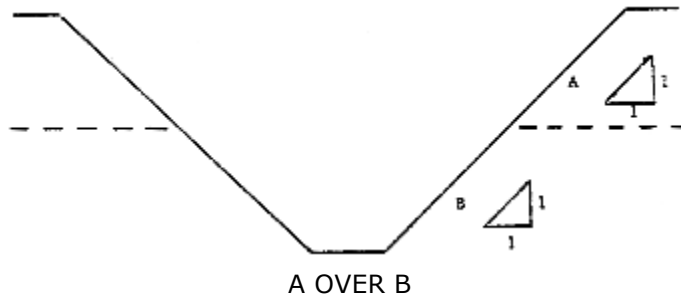
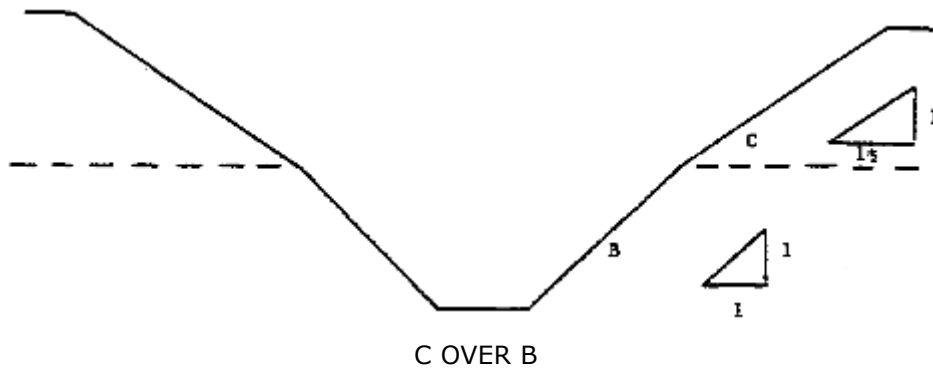
B-1.4 Excavations Made in Layered Soils

1. All excavations 20 feet or less in depth made in layered soils shall have a maximum allowable slope for each layer as set forth below.



EXCAVATION AND TRENCHING

Sloping and Benching continued...



2. All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

FALL PROTECTION

PURPOSE

To provide guidelines to ensure the safety of all employees involved in the duties of elevated work.

REFERENCES

OSHA 29 CFR 1926.21
OSHA 29 CFR 1926.28
OSHA 29 CFR 1926.500
OSHA 29 CFR 1926.750

POLICY

Prior to the start of work where new facilities will be constructed and/or where work will be performed at a client's existing facilities, construction management shall make an initial survey of the types of fall hazards which are expected to be encountered and develop a plan relative to providing the kind and number of safe guards that shall protect against these fall hazards.

DEFINITIONS

This section sets forth the definitions applicable to this procedure.

Fall Protection: Worker six (6) feet above the floor or ground level shall be protected from the possibility of a fall hazard which could result in injury or death.

100% Tie Off: Persons working in areas where the use of safety belts/harnesses with lanyard is required shall be used.

In areas where the 100% tie off requirement is not practical, other means of protection shall be used, i.e., scaffold's, catch platforms, nets, etc.

Anchorage: A secure point of attachment for lifelines, lanyards, or deceleration devices, which is capable of withstanding the forces specified in this procedure.

Approved: Means, for the purpose of this section; tested and certified by the manufacturer,, or any recognized national testing laboratory, to possess the strength requirements specified in this section.

Body Belt: Type 1 safety belt used in conjunction with lanyard or lifeline for fall restraint only.

Full Body Harness: Configuration of connected straps to distribute a fall arresting force over at least the thighs, shoulders and pelvis, with provisions for attaching a lanyard, lifeline or deceleration devices.

FALL PROTECTION

DEFINITIONS *continued . . .*

Full Body Harness System: A Class III full body harness and lanyard which is attached to an anchorage meeting the requirements of applicable OSHA or state regulations attached to a horizontal or vertical lifeline which is properly secured to an anchorage(s) capable of withstanding the forces specified in the applicable sections of

the applicable OSHA or state regulations.

Christmas Treeing: Lifting of more than one individual load from the load hook of a crane.

Competent Person: An individual knowledgeable of fall protection equipment, including the manufacturers recommendations and instructions for the proper use, inspection, and maintenance; and who is capable of identifying existing and potential fall hazards; and who has the authority to take prompt corrective action to eliminate those hazards; and who is knowledgeable of the rules contained in this section regarding erection, use, inspection and maintenance of fall protection equipment systems.

Continuous Fall Protection: The design and use of a fall protection system such that no exposures to an elevated fall hazard exists. This may require more than one fall protection system or a combination of protective measures.

Control Zone: Area between the warning line and the unprotected sides and edges of a building/structure floor or roof surface.

Deceleration Device: Any mechanism, such as a rope grab, rip-stitch lanyard, specifically woven lanyard or automatic self-tracing lifeline, which serves to dissipate more energy during a fall arrest than does a standard line or strap webbing lanyard.

Drop Line: An independent lifeline secured to an upper anchorage for the purpose of attaching lanyard or a fall protection device. This line must be at least a $\frac{3}{4}$ ' manila rope or a $\frac{1}{2}$ " nylon rope.

Fall Arrestor System: The use of multiple, approved safety equipment components such as: body harness, lanyards, deceleration devices, drop lines, horizontal and/or vertical lifelines and anchorages, interconnected and rigged as to arrest a free fall. Compliance with anchorage strength requirements specified in the applicable sections of OSHA or state regulations shall constitute approval of the anchorage.

Fall Protection Work Plan: A written document in which the employer identifies all areas on the jobsite where a fall hazard of six (6) feet or greater exists. The plan describes the method or methods of fall protection to be utilized to protect employees, and includes the procedures governing the installation, use, inspection, and removal of the fall protection methods, which are selected by the employer.

FALL PROTECTION

DEFINITIONS continued . . .

Fall-Restraint System: An approved device and any necessary components that function together to restrain an employee in such a manner as to prevent that employee from falling to a lower level. When standard guardrails are selected, compliance with applicable sections governing their construction and use shall constitute approval.

Fall Distance: The actual distance from the worker's support to the level where a fall

would stop.

Hardware: Meaning snap hooks, D-rings, buckles, carabineers, adjusters, O-rings, that are used to attach the components of a fall protection system together.

Horizontal Lifeline: A rail, wire rope, or synthetic rope that is installed in a horizontal plane between two anchorage's and used for attachment of a worker's lanyard or lifeline device while moving horizontally; used to control dangerous pendulum-like swing falls.

Lanyard: A flexible line of webbing rope, or cable used to secure a body belt or harness to a lifeline or an anchorage point usually 2, 4, or 6 feet long.

Leading Edge: Advancing edge of a floor, roof, or form work which changes location as additional floor, roof or form work sections are placed, formed or constructed. Leading edges not actively under construction are considered to be "unprotected sides and edges" and positive methods of fall arrest or fall restraint shall be required to protect exposed workers.

Lifeline: A vertical line from a fixed anchorage or between two horizontal anchorage's, independent of walking or working surfaces, to which a lanyard or device is secured. Lifeline as referred to in this text is one that is part of a fall protection system used as back-up safety for an elevated worker.

Locking Snap Hook: A connecting snap hook that requires two separate forces to open the gate; one to deactivate the gatekeeper and a second to depress and open the gate which automatically closes when released; used to minimize roll-out or accidental disengagement.

Low-Pitched Roof: A roof having a slope equal to or less than 4 in 12.

Positioning Belt: Single or multiple strap that can be secured around the worker's body to hold the user in a work position; for example, a lineman's belt, a rebar belt or saddle belt.

Restraint Line: Line from a fixed anchorage or between two anchorages to which an employee is secured in such a way as to prevent the worker from falling to a lower level.

FALL PROTECTION

DEFINITIONS continued . . .

Roll-Out: Unintentional disengagement of a snap hook caused by the gate being depressed under torque or contact while twisting or turning; a particular concern with single-action snap hooks that do not have a locking gatekeeper.

Rope Grab: A fall arrester that is designed to move up or down a lifeline suspended from a fixed overhead or horizontal anchorage point, or lifeline, to which the belt or

harness is attached. In the event of a fall, the rope grab locks onto the lifeline rope through compression to arrest the fall. The use of a rope grab device is restricted for fall restraint applications.

Safety Line: See Lifeline.

Safety Monitor System: A system of fall restraint used in conjunction with a warning line system only where a competent person as defined by this part, having no additional duties, monitors the proximity of workers to the fall hazard when working between the warning line and the unprotected sides and edges, including the leading edge of a low pitched roof or walking/working surface.

Self-Retracting Lifeline: A deceleration device which contains a drum-wound line which may 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.

Shock Absorbing Lanyard: A flexible line of webbing, cable or rope used to secure a body belt or harness to a lifeline or anchorage point that has integral shock absorbers.

Single-Action Snap Hook: A connecting snap hook that requires a single force to open the gate which automatically closes when released.

Snap Hook: A self-closing connecting device with a gatekeeper latch or similar arrangement that will remain closed until manually opened. This includes single action snap hooks that open when the gatekeeper is depressed and double action snap hooks that require a second action on a gatekeeper before the gate can be opened.

Static Line: See Horizontal Lifeline.

Strength Member: Any component of a fall protection system that could be subject to loading in the event of a fall.

Steep Roof: A roof having a slope greater than 4 in 12.

FALL PROTECTION

DEFINITIONS continued . . .

Unprotected Sides and Edges: Any side or edge (except at entrances to points of access) of a floor, roof, ramp or runway where there is no wall or guardrail system as defined in this section.

Walking/Line System: For the purpose of this section, any area whose dimensions are 45 inches or greater in all directions through which workers pass or conduct work.

Warning Line System: A barrier erected on a walking and working surface or a low

pitch roof (4 in 12 or less), to warn employees that they are approaching an unprotected fall hazard(s).

Work Area: That portion of a walking/working surface where job duties are being performed.

FALL PROTECTION WORK PLAN

Project management shall develop and implement a written fall protection work plan including each area of the work place where the employees are assigned and where fall hazards of six (6) feet or more exist. It is recommended that the written plan be upgraded every month.

The fall protection work plan shall:

- Identify all fall hazards in the work area as the project work progresses.
- Describe the method of fall arrest or fall restraint to be provided.
- Describe the correct procedures for the assembly, maintenance, inspection and disassembly of the fall protection system to be used.
- Describe the method of providing overhead protection for workers who may be in or pass through the area below the work site.
- Be available on the jobsite for inspection.

Prior to permitting employees into areas where fall hazards exist, the employer shall:

- Ensure that employees are trained and instructed in the items described above and . . .
- Inspect fall protection devices and systems to ensure compliance with applicable parts of this procedure.

Training of employees is required by this section and shall be documented and available on the jobsite. See Exhibit A.

FALL PROTECTION

FALL RESTRAINT, FALL ARREST SYSTEMS

When employees are exposed to a hazard of falling from a location six (6) feet or more in height, project management shall ensure that fall restraint or fall arrest systems are provided, installed, and implemented according to the following requirements:

Fall restraint protection shall consist of:

- Standard guardrails as described in applicable OSHA or state regulations.
- Safety harness attached to securely rigged restraint lines.
- Safety harness shall conform to ANSI standard.
- Class III full body harness

- All safety harnesses and lanyard hardware assemblies shall be capable of withstanding a tensile loading of 5,000 pounds without cracking, breaking, or taking a permanent deformation.
- Rope grab devices are prohibited for fall restraint applications unless they are part of a fall restraint system designed specifically for the purpose by the manufacturer and used in strict accordance with the manufacturer's recommendations and instructions.
- The project management shall ensure component compatibility.
- Components of fall restraint systems shall be inspected prior to each use for mildew, wear, damage, and other deterioration, and defective components shall be removed from service if their function or strength have been adversely affected.
- Anchorage points used for fall restraining shall be capable of supporting 3,000 pounds.
- Restraint protection shall be rigged to allow the movement of employees only as far as the sides and edges of the walking/working surface.
- A warning line system as prescribed in OSHA 1926.500 to protect worker engaged in duties between the forward edge of the warning line and the unprotected sides and edges, including the leading edge of a low pitched roof or walking/working surface.
- Warning line system as described in OSHA 1926.500 are prohibited on surfaces exceeding a 4 in 12-pitch, and on any surface whose dimensions are less than 45 inches in all directions.

Fall arrest protection shall consist of:

Full Body Harness

- An approved Class III body harness shall be used.
- Body harness system or components subject to impact loading shall be immediately removed from service and shall not be used again for employee protection.
- All safety lines and lanyards shall be protected against being cut or abraded.

FALL PROTECTION

FALL RESTRAINT, FALL ARREST SYSTEMS

Full Body Harness *continued* . . .

- Body harness system shall be rigged to minimize free fall distance with a maximum free fall distance allowed of 6 feet, and such that the employee will not contact any lower level.
- Hardware shall be drop forged, pressed or formed steel, or made of materials equivalent in strengths.

- Hardware shall have a corrosion-restraint finish and all surfaces and edges shall be smooth to prevent damage to the attached body harness or lanyard.
- When vertical lifelines (*drop lines*) are used, not more than one employee shall be attached to any one lifeline.
- Full body harness systems shall be secured to anchorage's capable of supporting 5,000 pounds per employee except:
 - When self-retracting lifelines or other deceleration devices are used which limit free fall to two feet, anchorages shall be capable of withstanding 3,000 pounds.
 - Independent lifelines (*drop lines*) shall have a minimum tensile strength of 5,000 pounds, except the self-retracting lifelines and lanyards which automatically limit free fall distance to two feet or less shall have a minimum tensile strength of 3,000 pounds.
 - Horizontal lifelines shall have a tensile strength capable of supporting a fall impact load of at least 5,000 pounds per employee using the lifeline applied anywhere along the lifeline.
 - Lanyards shall have a minimum tensile strength of 5,000 pounds.
 - All components of body harness systems whose strength is no otherwise specified shall be capable of supporting a minimum fall impact load of 5,000 pounds applied at the lanyard point of connection.
 - Full body harness systems shall be inspected prior to each use for mildew, wear, damage, and other deterioration, and defective components shall be removed from service if their function or strength has been adversely affected.

FALL PROTECTION

FALL RESTRAINT, FALL ARREST SYSTEMS

Safety Nets

- Safety nets shall be installed as close as practicable under the walking/working surface on which employees are working, but in no case more than 10 feet below such level.
- Safety nets shall be installed with sufficient clearance under them to prevent contact with the surface or structures below when subjected to an impact force equal to the drop test specified below.

- Safety nets shall extend outward at least 8 feet from the outermost projection of the work surface.
- Safety nets and their installations shall be capable of absorbing an impact force equal to that produced by the drop test specified below.
- Safety nets and safety net installations shall be drop-tested at the jobsite before used as a fall protection system.

Exception:

The drop-test shall consist of a 400 pound bag of sand 30 plus or minus 2 inches in diameter dropped into the net from the highest walking/working surface on which employees are to be protected.

Exception:

When the employer can demonstrate that a drop-test is not feasible or practicable, the net and net installation shall be certified by a qualified person to be in compliance with the provisions of this section.

- Safety nets shall be inspected weekly for mildew, wear, damage, and other deterioration and defective components shall be removed from service.
- Materials, scrap pieces, and tools which have fallen into the safety net shall be removed as soon as possible from the net and at least before the next work shift.
- The maximum size of each safety net mesh opening shall not exceed 36 square inches nor be longer than six inches on any side measured center-to-center of mesh ropes or webbing. All mesh crossing shall be secured to prevent enlargement of the mesh opening.
- Each safety net (or section of it) shall have a border rope for webbing with a minimum breaking strength of 5,000 pounds.
- Connections between the safety net panels shall be as strong as integral net components and shall be spaced not more than six inches apart.

Fall Protection

GUARDING OF LOW-PITCHED ROOF PERIMETERS

General Provisions

During the performance of work on low pitched roof with a ground to eaves height greater than 6 feet, project management shall ensure that employees engaged in such work be protected from falling from all unprotected sides and edges of the roof as follows:

- By the use of a fall restraint or fall arrest system, as defined in applicable OSHA or state regulations.

- By the use of a warning line system erected and maintained as provided elsewhere in this section.
- Mechanical equipment shall be used or stored only in areas where employees are protected by a warning line system, or fall restraint, or fall arrest systems as described in applicable OSHA or state regulations.

Exception:

- The provisions of this section do not apply at points of access such as stairways, ladders and ramps, or when employees are on the roof only to inspect, investigate, or estimate roof level conditions.

Catch Platforms

- A catch platform shall be installed within 6 vertical feet of the work area.
- The catch platform’s width shall equal the distance of the fall but shall be a minimum of 45 inches wide and shall be equipped with standard guardrails on all open sides.

Independent lifelines used in areas where the lifeline may be subjected to cutting or abrasion, shall be a minimum of 7/8 inch wire core manila rope. For all other lifeline applications, a minimum of 3/4 inch manila or equivalent, with a minimum breaking strength of 5,000 pounds shall be used.

Warning Line Systems

- Warning lines shall be erected around all sides of the work area.
- When mechanical equipment is not being used, the warning line shall be erected not less than six feet from the roof edge.
- When mechanical equipment is not being used, the warning line shall be erected not less than six feet from the roof edge which is parallel to the direction of mechanical equipment operation and not less than 10 feet from the roof edge which is perpendicular to the direction of mechanical operation.

FALL PROTECTION

GUARDING OF LOW-PITCHED ROOF PERIMETERS Continued . . .

- The warning line shall consist of a rope, wire, or chain and supporting stanchions erected as follow:
 - The rope, wire, or chain shall be flagged at not more than six feet intervals with high-visibility material.
 - The rope, wire, or chain shall be rigged and supported in such a way that its lowest point (including sag) is no less than 34 inches from the roof surface and its highest point is no more than 39 inches from the roof surface.

- After being erected with the rope, wire or chain attached, stanchions shall be capable of resisting without tipping over, a force of at least 16 pounds applied horizontally against the stanchion, 30 inches above the roof surface, perpendicular to the warning line, and in the direction of the roof edge.
 - The rope, wire, or chain shall have a minimum tensile strength of 500 pounds and after being attached to the stanchions, shall be capable of supporting, without breaking the loads applied to the stanchions.
 - The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.
- Access paths shall be erected as follows:
 - Points of access, materials handling areas and storage areas shall be connected to the work area by a clear access path formed by two warning lines.
 - When the path to a point of access is not in use, a rope, wire or chain equal in strength and height to the warning line shall be placed across the path at the point where the path intersects the warning line erected around the work area.

FALL PROTECTION

Roof edge materials handling areas and materials storage

Employees working in a roof edge material handling or materials storage area location on a low-pitched roof with a ground to eaves height greater than 6 feet shall be protected from falling along all unprotected roof sides and edges of the area.

- When guardrails are used at hoisting areas, a minimum of four feet of guardrail shall be erected on each side of the access point through which materials are hoisted.
- A chain or gate shall be placed across the opening between the guardrail sections when hoisting operations are not taking place.
- When guardrails are used at bitumen pipe outlets, a minimum of four feet of guardrail shall be erected on each side of the rope.
- When harnesses and lanyards are used, they shall not be attached to the hoist.
- When fall restraint systems are used, they shall be rigged to allow the movement of employees only as far as the roof edge.
- Materials shall not be stored within six feet of the roof edge unless guardrails are erected at the roof edge.

LEADING EDGE CONTROL ZONE

When performing leading edge work, project management shall ensure that a control zone be established according to the following requirements:

- The control zone shall begin a minimum of 6 feet back from the leading edge to prevent exposure by employees who are not protected by fall restraint or fall arrest systems.
- The control zone shall be separated from other areas of the low-pitched roof or walking/working surface by the erection of a warning line system.
- The warning line system shall consist of wire, rope, or chain supported on stanchions, or a method which provides equivalent protection.
- The spacing of the stanchions and support of the line shall be such that the lowest point of the line (including sag) is not less than 39 inches from the walking/working surface, and its highest point is not more than 45 inches from the working/walking surface.
- Each line shall have a minimum tensile strength of 500 pounds.
- Each line shall be flagged or clearly marked with high visibility materials at intervals not to exceed 6 feet.

FALL PROTECTION

Additional procedures that require the use of fall restraint and/or fall arrest protection for employees are listed below:

- Ladder
- Suspended Scaffold

- Two Points Suspension Scaffold
- Bosun's Chain Scaffold
- Needle Beam Scaffold
- Ladder Jack Scaffold
- Window Jack Scaffold
- Float or Ship Scaffold
- Pump Jack Scaffold
- Boom Supported Elevating Work Platforms
- Vehicle Mounted Elevated and Rotating Work Platforms
- Crane and Derrick Supported Work Platforms
- Open Sided Floors
- Pile Driving
- Vertical Slip Forms
- Placing and Removal of Forms
- Steel Erection Temporary Floor

RECORDS

The Safety Department shall maintain the Fall Protection Plan and keep documentation of training in the use of fall protection on file.

EXHIBIT "A"

**FALL PROTECTION PLAN
(SAMPLE)
Page 1 of 4**

In accordance with the Safety Program, the following fall protection program is hereby formulated for

Located at the following jobsite address:

A. Identify all fall hazards in the work area during construction.

1. Elevations of six (6) feet or greater
 - a) Leading Edges _____
 - b) Perimeter Edge _____
 - c) Elevator Openings _____
 - d) Stairway Openings _____
 - e) Vent, Mechanical Openings _____
 - f) Open-Sided Floors _____
 - g) Articulated Snorkel Lifts _____
 - h) Scaffolds _____
 - i) Stairways _____
 - j) Other (Explain) _____

B. Method of Fall Arrest/Restraint Provided.

1. Elevations of six (6) feet or greater (Leading Edge, Roof, Etc.)
 - Safety Harness/Lanyards _____
 - Safety Belt/Lanyards _____
 - Horizontal Lines _____
 - Standard Guardrails _____
2. Deck/Floor Openings
 - Standard Guardrails _____
 - Other (Explain) _____

EXHIBIT "A"

**FALL PROTECTION PLAN
(SAMPLE)
Page 3 of 4**

Fall Protection System Procedures

1. Assembly

- By Whom (Explain)

2. Maintenance of Equipment or Systems Used

- By Whom (Explain)
- As Needed

3. Inspection of Equipment or Systems Used

- Person(s) Assigned _____

- Date of Inspection(s) _____
- Equipment or Systems Inspected (Explain)

4. Procedures for Handling, Storage and Securing Tools and Materials

- Describe how materials will be moved within jobsite.
- Cranes _____ Fork Lifts _____ Other _____
- Limit Overhead Hazards _____
- Material Secured When Placed in Position _____
- Equipment Secured When Not in Use _____

EXHIBIT "A"

**FALL PROTECTION PLAN
(SAMPLE)
Page 4 of 4**

5. Method(s) of Providing Overhead Protection

- Barricading (Eliminating Access)_____
- Warning Signs Posted _____
- Hard Hats Required _____
- Toeboards Installed Around Floor Opening_____
- Other (Explain)_____

E. Method for Prompt, Safe Removal of Injured Worker

1. Initiate emergency medical system – 911 _____
2. Utilize lift truck with personnel platform _____
3. Utilize articulated boom lift basket _____
4. Erect ladders _____
5. Use drop lines or retraction device _____
6. Assist medical, fire or emergency response teams _____
7. Other (Explain)

F. Other Safety Measures, Systems to be used to Insure and Establish an Adequate Fall Protection Program.

1. (Explain)

Fire Protection

Purpose

To provide guidelines for fire protection and prevention in shops and on jobsites.

References

OSHA 29 CFR 1926.150; 1926.151; 1926.152; 1926.154

Do not smoke except in an area designated by the foreman as a "designated smoking area."

Extinguish cigarettes, pipes, cigars, matches, etc. and dispose of in proper receptacles.

Wooden (kitchen type) matches are not allowed inside the warehouse. Disposable lighters are not allowed in any area where welding is in progress. Use approved lighters or safety matches only.

Flammable liquids are identified as such. Know the flammables on your job and how to handle them.

Store flammables only in approved containers.

Do not smoke while using flammable liquids.

Open containers of flammables used to clean splices must be kept closed when not in use.

All bulk flammables shall be stored in the heated room in the warehouse. This area shall be maintained free of obstructions to facilitate access in an emergency.

All flammable liquid storage areas shall be clearly defined and posted as "No Smoking Areas."

Bulk storage of flammable liquids in yard areas, parking areas or adjacent to the warehouse shall be approved, in advance, by the Safety Coordinator.

Fire Protection

All bulk containers, drums, caddies, etc., that contain flammable liquids, shall be provided with a grounding system to prevent accumulation of static electrical charge. Any pumps used shall be of the approved type and have bonding wires between the bulk container and the container being filled.

Bulk storage of flammable liquids shall not be allowed in the open warehouse.

Flammable liquids to be stored in foreman's trucks shall not exceed 60 gallons or the quantity needed for that days work whichever is least. Individual containers shall not exceed 5 gallon capacity and shall be marked as to their contents.

Approved safety cans shall be used for storing and dispensing small quantities of flammable liquids. Such containers shall be stored in approved metal cabinets or at least 25 feet from the warehouse.

Metal cabinets that contain flammable liquid storage shall be identified as follows:

Painted in yellow and lettered in red: "**FLAMMABLE**"

The use of open containers and glass containers is strictly prohibited. Flammable liquids shall not be placed, stored or transported in such containers.

Flammable liquid containers (safety cans) shall be maintained in good mechanical order. All integral parts or devices such as seals, closing springs, flash arresters and similar items shall be maintained. Each container shall be inspected prior to use by those using it and defects reported to the foreman.

All flammable liquid containers shall be plainly marked or identified.

A supervisor to ensure proper working order shall periodically inspect safety cans. All defective cans shall be removed from service and be disposed of.

Fire Protection

Under no circumstances shall employees be allowed to dismantle, alter or repair safety cans without permission of the Safety Coordinator.

The application of air pressure or compressed gas to any flammable liquid container for any purpose is strictly prohibited.

Flammable liquids shall not be used or stored within 20 feet of sources of heat or ignition. Conditions or circumstances may dictate greater distances or complete isolation.

Defective faucets, spigots or pumps on bulk containers shall be replaced immediately.

Only approved explosion proof electrical devices and/or connectors shall be used in the presence of flammable liquids or vapors.

Only approved lights shall be used during cleaning and painting operations inside confined spaces.

Adequate forced air ventilation to prevent accumulation of vapor shall be introduced by explosion proof equipment, in all confined spaces, surface areas and where large areas are being painted or cleaned with flammable liquids.

Rags or other combustible materials used to absorb or wipe up flammable liquids shall be disposed of in approved receptacles. If rags are to be washed and reused, keep in covered metal container.

All employees required to work with flammable liquid shall be thoroughly instructed in the proper use, handling and storage of them.

Employees shall not use, handle or transport flammable liquids unless authorized to do so by supervision.

The transportation of flammable liquids inside passenger compartment of company owned or operated vehicles is prohibited.

Non-approved cloth type gloves shall not be worn while using flammable liquids.

Fire Protection

Gloves and aprons of non-absorbent materials shall be worn in any operation where clothing is likely to become wetted with flammables, acids or caustics.

All containers, valves, faucets, hoses, spout assemblies, transfer pumps and similar items used to store, convey, or transfer flammable materials shall comply with the specifications established by Underwriters Laboratories or Factory Mutual. Check with the Safety Coordinator if you have any questions.

Temporary heating devices

Fresh air shall be supplied in sufficient quantities to maintain the health and safety of workmen. Where natural means of fresh air supply is inadequate, mechanical ventilation shall be provided.

When heaters are used in confined spaces, special care shall be taken to provide sufficient ventilation in order to ensure proper combustion, maintain the health and safety of workmen, and limit temperature rise in the area.

Temporary heating devices shall be installed to provide clearance to combustible material not less than the amount shown in Table F-4.

Temporary heating devices, which are listed for installation with lesser clearances than specified in Table F-4, may be installed in accordance with their approval.

TABLE F-4

Heating appliances	Minimum clearance, (inches)		
	Sides	Rear	Chimney Connector
Room heater, circulating type.....	12	12	18
Room heater, radiant type.....	36	36	18

Fire Protection

Heaters not suitable for use on wood floors shall not be set directly upon them or other combustible materials. When such heaters are used, they shall rest on suitable heat insulating material or at least 1-inch concrete, or equivalent. The insulating material shall extend beyond the heater 2 feet or more in all directions.

Heaters used in the vicinity of combustible tarpaulins, canvas, or similar coverings shall be located at least 10 feet from the coverings. The coverings shall be securely fastened to prevent ignition or upsetting of the heater due to wind action on the covering or other material.

Heaters, when in use, shall be set horizontally level, unless otherwise permitted by the manufacturer's markings.

Solid fuel salamanders. Solid fuel salamanders are prohibited in buildings and on scaffolds.

Oil-fired heaters.

Flammable liquid-fired heaters shall be equipped with a primary safety control to stop the flow of fuel in the event of flame failure. Barometric or gravity oil feed shall not be considered a primary safety control.

PURPOSE

To provide guidelines for the safe use of hand tools.

REFERENCES

OSHA 29 CFR 1926.300; 1926.301

POLICY

General Requirements

- Use hand tools only for the purpose for which they were designed.
- Use tools that are in good condition. Worn or broken tools must be repaired or replaced.
- Always use appropriate safety equipment
- Store tools that are not in use. Proper storage includes tool boxes, tool racks, and cabinets.
- Do not leave tools on overhead work areas where they may fall and strike someone below.
- Do not carry a sharp or pointed tool in pockets or belts unless the point or edge is protected with a cover.

HAMMERS AND SLEDGES

- Always wear appropriate eye protection.
- Check behind you before swinging a hammer or sledge.
- Keep your eye on the object to be hit.
- Never use a damaged hammer or sledge.

CHISELS AND PUNCHES

- Always wear appropriate eye protection.
- Keep chisels sharp and in good condition. Repair or replace dull or damaged tools.
- Strike blows squarely; aim chisel/punch away from your body.
- All mushroom heads of chisels and punches shall be ground down to prevent spalling.

HAND TOOLS

WRENCHES

- Never use a “cheater” to increase leverage.
- Whenever possible, pull on the wrench handle rather than push. Adjust your stance to avoid a fall if the wrench slips.
- Repair or discard any worn or damaged wrenches.
- Never use hand sockets on power or impact tools.
- Never use a hammer on a wrench unless it is the striking face type.

PLIERS

- Do not use pliers for cutting hardened wire unless specifically made to do so.
- Never use pliers as a striking tool.
- Use dielectric pliers and shut off power when working with electricity.

SCREWDRIVERS

- Use a screwdriver with the right type of blade, and one that properly fits the size of screw.
- Never use a bent or damaged screwdriver.
- Do not use a screwdriver as a prybar or a chisel.
- Keep handles free of grease and oil.

HAND SAWS

- Always wear appropriate eye protection.
- Keep saw blades sharp; re-sharpen, or replace blades that have lost good cutting teeth.
- Lubricate hacksaw blades with light machine oil to prevent heat build-up, which can cause the blade to break.
- Store saws so that there is no chance for someone to fall onto or bump into the blade.

HOUSEKEEPING AND SANITATION

PURPOSE

To provide the basic guidelines necessary for a good housekeeping program which will be a part of the daily routine at each jobsite, with clean-up being a continuous operation.

REFERENCES

OSHA 29 CFR 1926.25 and 29 CFR 1926.51

POLICY

Good housekeeping is an important element of accident prevention and must be a primary concern to all superintendents and foremen. Good housekeeping will be planned at the beginning of a job and will be carefully supervised and followed through to the final clean-up. A clean and orderly work place will not only contribute greatly to the prevention of accidents and injuries, but will also lend itself to the proper utilization of available facility space.

HOUSEKEEPING

Responsibility for good housekeeping shall be assigned to each Supervisor. If the size of the job and working force merit, a crew should be specifically detailed to continuously clean up. In any event, regardless of the size of the work force, housekeeping shall not be left un-done and left to someone else's discretion. Duties shall be assigned to one or more responsible persons.

Storage Areas: All materials stored in tiers will be secured to prevent sliding, falling or collapse. Aisles and walkways shall be kept clear of loose materials and tools. Combustible material shall not be stored under stairways. Stored materials will not obstruct exits.

Work Areas: Clean up loose materials, waste, etc., immediately. This is especially important on scaffolds and in the vicinity of ladders, ramps, stairs and electrical or mechanical equipment. Tools and loose materials shall be removed immediately if a hazard is created.

Areas Used by Personnel: Empty bottles, containers, papers, and discarded equipment shall not be allowed to accumulate where lunches are taken on the jobsite. Trash disposal cans shall be provided with covers and their use enforced.

Oil and Grease: Spills of oil, grease, or other liquids shall be removed immediately or sprinkled with sand or "Oil-Dry".

Disposal of Waste: An effective means of preventing litter is the provision of suitable receptacles for waste, scrap, etc. Combustible waste, such as oily rags, paper, etc., shall be stored in a safe place, such as a covered metal container, and disposed of regularly as a hazardous waste. All containers shall be labeled as to permissible contents.

HOUSEKEEPING AND SANITATION

HOUSEKEEPING *continued . . .*

Note: Common trash, which does not contain any hazardous waste, shall not be stored or

disposed of in bags or containers marked for hazardous waste.

Protruding Nails: Protruding nails shall either be removed or bent over in such a way that they no longer present a risk. This shall be done as the hazard develops and not at a later time. Cleaned lumber shall be stacked in orderly piles. Workers performing this task shall wear heavy gloves and hard-soled work shoes.

Lighting: Adequate lighting shall be provided in or around all work areas, passageways, stairs, ladders, and other areas used by personnel.

Minimum Illumination Intensities in Foot-Candles

Foot-Candles	Area of Operation
5	General construction area lighting.
3	General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas.
5	Indoors: warehouse, corridors, hallways, and exitways.
5	Tunnels, shafts, and general underground work areas: (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines approved cap lights shall be acceptable for use in the tunnel heading).
10	General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active store rooms, mess halls and indoor toilets and workrooms).
30	First aid stations, infirmaries, and offices.

Unobstructed Access: There must be unobstructed access, at all times, to such areas as electrical panels, safety disconnect switches, fire extinguishers, emergency exits, etc.

HOUSEKEEPING AND SANITATION

SANITATION

Contaminated drinking water or lack of proper sanitation at the jobsite could cause typhoid fever,

dysentery, and other diseases. It is essential that the provision of adequate sanitary facilities to accommodate the number of workers involved be one of the first operations initiated at the jobsite.

Temporary toilets shall be maintained in accordance with local, state and federal ordinances. Toilets shall be constructed so as to shield the occupants from view and protect against weather and falling objects. They shall be lighted and ventilated, and all windows and vents screened. Adequate tissue shall be provided. All toilet facilities shall be cleaned and emptied when necessary.

DRINKING WATER

An adequate supply of fresh, portable water, from a city water line if possible, shall be provided at a readily accessible location for drinking purposes. Portable water containers, used to dispense drinking water, must be capable of being tightly closed, sealed and equipped with both a tap and a paper cup dispenser. Where paper cups are supplied, a receptacle for disposing of the used cups should be provided. The use of pails and dippers or a common drinking cup for dispensing drinking water is prohibited. When city water is not used, periodic testing of the water is required.

Any container used to distribute drinking water must be clearly marked as to the nature of its contents and not used for any other purpose. If for any reason water, which is unfit for human consumption, is provided at the jobsite, it must be identified and labeled to clearly indicate that the water is unsafe for drinking, washing, or cooking purposes. Any worker observed removing the lid of a water container, except for those workers assigned to sanitize and clean such containers, shall be subject to disciplinary action including possible discharge.

Portable water containers must be cleaned daily.

JOB SITE REQUIREMENTS

TEMPORARY FACILITIES:

- A) GFCI's or assured grounding program.
- B) Site/storage layout for placement of materials, shanties, equipment, etc..
- C) Communication system.
- D) Water including drinking water, and sanitary facilities.

- E) Job site security equipment, fencing, lights, etc..
- F) Temporary access and parking facilities.

PAPER WORK REQUIREMENTS:

- A) Copy of OSHA 300 and standards.
- B) Posting area for employee notices.
- C) Emergency phone numbers.
- D) OSHA 300A posted during February, March and April
- E) Copy of assured grounding program if in use.
- F) Maintenance records for equipment; cranes material hoists, etc.
- G) Contractor's safety program and rules.
- H) Approvals for deep trenches, high scaffolds, demo surveys, shoring, etc..
- I) Proof of training and safety instructions for lasers, powder actuated tools, first aid, etc.
- J) Written respiratory program, if respirators are used.
- K) Required signs (hard hats, no trespassing, danger, caution, etc.
- L) Workers comp notice, EEO, minimum wage, U/C posters.
- M) Accident and treatment report forms.
- N) Written hazard communication program.

EMERGENCY NEEDS:

- A) Trained first aid providers.
- B) First aid kit (check weekly).
- C) Emergency evacuation plans.

PROTECTIVE EQUIPMENT:

- A) Hard hats.
- B) Safety glasses.
- C) Respirators.
- D) Ear plugs.
- E) Guarding material for scaffolds and floor holes.
- F) Safety cans for flammable liquids.
- G) Tagged alloy steel chains when used for rigging.
- H) Safety belts, lifeline, and lanyards or nets where fall hazards exist.
- I) Trench and excavation shoring materials when necessary.
- J) Personal protective equipment for visitors.
- K) Flashers, signals, barricades and reflective clothing for traffic control.

LADDERS

PURPOSE

To provide guidelines for the selection and design of ladders for the use intended in the construction of job built ladders, and in the maintenance, inspection and proper use of ladders.

REFERENCES

OSHA 29 CFR 1926.1053; 29 CFR 1926.951, ANSI Standards

POLICY

General Requirements

Ladders present one of the major hazards in construction work, and their improper use is the cause of many serious accidents. An analysis of accidents involving ladders revealed that the five principal causes of such accidents are:

- Ascending or descending improperly
- Failure to secure ladder at top and/or bottom
- Structural failure of the ladder itself
- Carrying objects in hands while ascending or descending ladder
- Employees leaning out from the ladder (over reaching)

LADDER SELECTION

Great care should be taken in the selection of the proper size and design of the ladder for the use intended.

STRAIGHT LADDERS

Ladders must be selected to be of sufficient length to extend not less than thirty-six inches (36") above any platform or landing which they serve, and must be secured on top and/or bottom.

All portable straight ladders must be equipped with approved safety shoes.

All metal ladders are electrical conductors. Their use around electrical circuits of any type, or places where they may come in contact with such circuits, is not recommended. Metal ladders should be marked with signs reading **“CAUTION: DO NOT USE AROUND ELECTRICAL EQUIPMENT.”**

LADDERS

STEP LADDERS

Step ladders sometimes referred to as “A” frame ladders, must have positive locking spreaders which will be fully spread and locked when the ladder is in use.

Step ladders will not be used as straight ladders. They should be of sufficient height to preclude the necessity of employees using the top two steps of the ladder. Workers will not be allowed to

work from the top two steps of a step ladder.

Step ladders shall be firm and well constructed. Special care shall be taken when setting any ladder on grating. Often the feet of a step ladder can slip through the grating causing the ladder to fall. Step ladders shall be tied off or a worker shall hold the ladder when the user is 6 feet or more above the floor.

LADDER USAGE

The feet of the ladder shall be placed approximately one-quarter of its supported length away from the vertical plane of its top support. Only light, temporary work should be performed from ladders. Workers should be cautioned frequently about the danger of trying to reach too far from a single setting.

Since, in most ladder applications, the weight of the worker is unevenly distributed over an area of approximately 3 inches long by 3 inches wide, any effort which tends to shift the balance of the worker should be discouraged. This includes using the upper torso for activities as pulling, pushing, prying, etc.

Ladders shall not be placed in front of doors which open toward the ladder unless the door is locked or otherwise guarded.

Ladder feet shall be placed on a firm base and the area in the vicinity of the bottom of the ladder shall be kept clear.

When using straight ladders, both the top and bottom of the ladder shall be secured to prevent displacement. Use ladder shoes, stakes, or other means of securing the ladder.

Ladders leading to landings, walkways, platforms, etc., must extend thirty-six inches above this point and must be securely fastened to prevent moving. Long ladders must be braced at intermediate points as necessary to prevent springing.

When ascending or descending ladders, workers are to face the ladder and use both hands to hold onto the side rails or rungs. If material must be moved from one level to another, a rope, block and tackle, or other means must be used. Materials are not to be hand carried on ladders.

Ladders must never be used in horizontal position as runways or scaffolds.

LADDERS

JOB-BUILT LADDERS

When it is deemed necessary to build a job-built ladder, it must comply with the following:

- All materials must be thoroughly seasoned, straight-grained, and free from knots, decay and other defects. All surfaces must be planed and free of splinters, and edges where handrails are used should be beveled. Improper design, inferior materials, and poor workmanship are often the cause of ladder failure or falls from ladders.

- Rung spacing must be uniform and not over 12 inches or less than 10 inches on centers. The wood for the rungs must be clear, straight-grained and entirely free of knots. The slope of the grain in the cleats should not be less than 1 in 15 and preferably the cleats should be straight-grained. Single cleat ladders must not exceed thirty feet in length.
- Rungs or cleats should be recessed a half-inch into the rails, or filler strips of the same thickness as the cleats should be inserted between the cleats and nailed to the side rails.

LADDER INSPECTION

Wood ladders must be inspected prior to each use and monthly for deterioration and damage. Close visual inspection is recommended in preference to load testing. Jumping on a ladder which is supported horizontally subjects the ladder to more severe loads than it is intended to carry and may result in damage that can lead to sudden failure while in use.

Metal ladders require frequent inspection. All parts should be checked for wear, corrosion and structural failure.

No employee will be allowed to use for any reason any ladder that has broken, loose or cracked rungs, side rails or braces. Any ladder found in this condition will be removed from service immediately. All inspections shall be documented.

LADDER MAINTENANCE

Wood ladders should be periodically treated with a clear preservative such as varnish, shellac, or linseed oil. Ladders must not be painted as painting covers up structural defects. All metal fittings on wood ladders should be carefully checked for rusting or corrosion.

Metal ladders should have the rungs cleaned to prevent accumulation of materials that might destroy their non-slipping properties and all metal fittings should be carefully checked for rust and corrosion.

When not in use, all types of ladders shall be stored under suitable cover protected from the weather. Ladders stored horizontally should be supported at both ends and at intermediate points to prevent sagging of the middle section, which tends to loosen the rungs and warp the rails. A rope should be spliced onto one of the top rungs of a ladder to provide a ready method to secure the ladder or the ladder to the support.

LOCKOUT/TAGOUT

PURPOSE

To establish the minimum required procedures for lockout and tagout of energy sources. This policy shall be used to provide the maximum safe working conditions for employees performing maintenance or service activities where the unexpected energization, start up or release of stored energy could occur and cause injury. All potentially hazardous energy shall be isolated, locked and tagged out.

POLICY

All employees shall be instructed in the safety significance of lockout and tagout procedures. Subcontractors shall designate a qualified person to train affected employees on the purpose and proper use of the procedure. Documentation of such training shall be submitted to the *A. Glewen & Sons Excavating, Inc.* Project Superintendent.

POLICY FOR LOCKOUT/TAGOUT

A survey shall be made by *A. Glewen & Sons Excavating, Inc.* supervision and/or subcontractor supervision to locate and identify all energy sources to be certain which switch, valve or other energy isolating devices apply to the equipment to be locked or tagged out. More than one energy source (electrical, mechanical and/or others) may be involved. Questionable energy source problems shall be resolved before job authorization is obtained and lockout/tagout commences . . . ***“If in doubt – Lock it out!”***

The project shall supply lockout locks and tags. All subcontractors shall use project-supplied locks and tags for this procedure.

All locks shall be individually keyed with a unique number engraved on the face of the lock and keys.

All locks shall have two and only two keys. One key will be issued to the employee with the lock. The second key will be placed in a secured area within the job trailer under the supervision of *A. Glewen & Sons Excavating, Inc.* supervisor. The second key will be issued to the employee’s supervisor only after completion of the steps outlined below (**“Removing an Abandoned Lock”**). Locks that are damaged and/or found with more than two keys or only having one key will be removed from service and will be destroyed.

A charge of twenty (\$20) dollars will be assessed to any employee who loses the key that have been assigned to him/her.

A master log of all locks issued to employees will be kept in the *A. Glewen & Sons Excavating, Inc.* job trailer. The log will show which locks (by number) are issued to which employee (by name and company, Exhibit “A”).

LOCKOUT/TAGOUT

POLICY FOR LOCKOUT/TAGOUT *Continued . . .*

The *A. Glewen & Sons Excavating, Inc.* project superintendent or his/her authorized appointee will issue the locks, keys and tags and will maintain the lock/key/tag log.

SEQUENCE OF LOCKOUT PROCEDURE

1. Notify all affected employees that a lockout/tagout is required and the reason therefore.
2. If the equipment is operating, shut it down by normal procedures.

3. Operate the switch, valve or other energy-isolating device so that each energy source (electrical, mechanical, hydraulic, etc.), is isolated from the equipment. Stored energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems and air, gas, steam or water pressure) shall be dissipated or restrained by methods such as grounding, repositioning, blocking or bleeding down.
4. Lockout and tagout the isolating devices with an assigned individual lock. Employee shall also sign and date the tag indicating name, company and his/her home telephone number.
5. After ensuring that no personnel are exposed, and as a check, having isolated the energy sources, operate the hand switch or other normal operating controls to make certain the equipment will not operate.
6. **CAUTION: Return operating controls to neutral or “off” position after the test.**
7. The equipment is now locked and tagged out.
8. On completion of work or shift, ensure all tools and equipment are clear. Leave controls in off or neutral position. Remove all locks and tags and return them to the *A. Glewen & Sons Excavating, Inc.* job trailer to be checked in by the authorized person.

PROCEDURE INVOLVING MORE THAN ONE PERSON

In the preceding step, if more than one person is required to lock and tagout equipment, each shall place his/her assigned lock and tag on the energy-isolating device. Multiple lock devices will be issued when checking out the locks and tags.

RULES FOR USING LOCKOUT/TAGOUT PROCEDURE

All equipment shall be locked and tagged out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve or other energy-isolating device bearing a lock and/or tag. To do so shall result in severe disciplinary action, including dismissal from the project.

LOCKOUT/TAGOUT

REMOVING AN ABANDONED LOCK

This procedure will be used for removing locks of employees who are no longer on site.

1. Identify the owner of the lock by checking the master list at the *A. Glewen & Sons Excavating, Inc.* job trailer.

2. Contact the employee assigned to the lock regardless of whether the employee is at work or at home. The employee shall remove the lock.
3. If the employee cannot be found:
 - a) The employee's supervisor shall contact the *A. Glewen & Sons Excavating, Inc.* Superintendent.
 - b) The *A. Glewen & Sons Excavating, Inc.* Superintendent and the employee's Supervisor will fill out the "Emergency Removal of Employee's Safety Lock" form, Exhibit "B".
 - c) The *A. Glewen & Sons Excavating, Inc.* Superintendent and the employee's Supervisor will walk the entire system to ensure that all work is complete, all clean-up is performed and that the system is safe to remove the lock.
 - d) The *A. Glewen & Sons Excavating, Inc.* Superintendent will then give the second key (which was in the secured area in the job trailer) to the employee's Supervisor, so that he/she may remove the lock/tag.
4. The employee's supervisor shall ensure that the employee whose lock was removed is notified before returning to work that his lock was removed.
5. The procedure shall be on file with the *A. Glewen & Sons Excavating, Inc.* Safety Department.

EXHIBIT "A"
KEY LOG

Name	Number	Number	Tag Number	Date Out	Date In	Initials

EXHIBIT "B"

EMERGENCY REMOVAL OF EMPLOYEE'S SAFETY LOCK

To: _____ From: _____

Date: ____/____/____ Time: _____ AM / PM

Location/Equipment: _____

Lock Assigned To: _____

Comments: _____

Attempts To Notify Lock Owner:

<u>Name</u>	<u>Date</u>	<u>Time</u>	<u>Successful (YES / NO)</u>
_____	____/____/____	_____	_____
_____	____/____/____	_____	_____
_____	____/____/____	_____	_____

Lock Owner Notified When He/She Returned To Site:

<u>Name</u>	<u>Date</u>	<u>Time</u>	<u>Employee Signature</u>
_____	____/____/____	_____	_____

Approvals:

Project Manager: _____

Safety Representative: _____

MATERIALS STORAGE AND HANDLING

PURPOSE

To provide guidelines enabling individual supervisory personnel to develop and implement procedures for the safe handling and storage of materials.

POLICY

Both temporary and permanent storage should be neat and orderly. When planning material storage, a minimum of 24 inches of clearance must be allowed under sprinkler heads. Automatic sprinkler controls and electrical panel boxes must be kept free and unobstructed.

There must be unobstructed access to fire hoses and extinguishers, and access to emergency exits and aisles shall always be maintained. Areas immediately outside of emergency exits shall also be left clear for egress.

Materials shall be segregated as to kind, size and length and placed in neat, orderly piles that are safe from falling. If the piles are high, they shall be stepped back as the height increases, and shall be secured by cross piling or cross tying. Piles of materials shall be arranged so as to allow for passageways.

Storage of materials will be facilitated and hazards reduced with the use of storage bins and racks, which are in good condition. Storage racks shall be secured to the wall and/or floor as well as to each other. Damaged racks shall not be used for storage and employees shall not be allowed to climb racks.

LUMBER STORAGE

Lumber shall be stacked on solid, level sills. Cross-strips or cross-pilings shall be used where the pile is more than four feet high. The top of each pile shall be kept as level as possible when lumber is being removed. Used lumber shall have nails removed before it is piled. Two workers shall carry long boards, and care should be exercised at corners and crosswalks.

STEEL STORAGE

Reinforcing steel shall be stored in separate piles according to size and length. Corrugated and sheet steel must be stacked in flat piles. Spacing strips shall be placed between each bundle.

PIPE STORAGE

Pipe shall be stored on special designed sills or racks and shall be safely blocked to prevent rolling. When removing pipe, men shall work from the end of the pile as much as possible. Pipe larger than two (2) feet in diameter should be handled by using mechanical equipment. Two workers should carry long lengths of pipe and care shall be maintained at corners. Stored sewer pipe shall be blocked.

MATERIALS STORAGE AND HANDLING

PETROLEUM PRODUCT STORAGE

Petroleum products delivered to the jobsite and stored there in drums shall be protected during handling to prevent loss of identification through damage to drum markings, tags, etc. Unidentified petroleum products may result in improper use, with possible fire hazard, damage to equipment, or operating failure.

Bulk delivery and storage of petroleum products requires care in identification and particular attention to fire hazards during handling and storage. Appropriate fire extinguishers must be easily accessible in the immediate storage location. The storage area is to be diked to prevent the spread of accidentally released material (outside storage of bulk material).

FAMMABLE LIQUID AND GAS STORAGE

All gases and liquids should be considered as flammable unless the label clearly indicates that no such exposure exists. Conditions on construction sites change so rapidly that extreme care is necessary whenever flammable liquids or gases are being used. Flammable liquids and gases can be ignited by open flames, sparks, or excessive heat, so it is necessary that each of these factors be considered when setting up safe storage facilities for the items. Oxygen cylinders shall be separated from fuel gas cylinders by a distance of 20 feet and stored outside of buildings.

No other equipment or materials should be contained in the area where flammable or combustible liquids or gases are stored. This is especially true for compressed gases and petroleum products.

All areas that are to be used for the storage of flammable liquids and gases should be conspicuously designated as such and “No Smoking” signs posted. Combustible materials shall not be stored within 20 feet of any fuel gas or oxygen cylinder storage area.

The “No Smoking” must be vigorously enforced. These areas shall always be located so that local fire protection will always have access to the material.

Only approved containers can be used for the storage of flammable liquids, and each container must have an emergency-venting device, a flash arresting screen, and spring closing lid and spout collar. Steel or polyethylene (with plated steel fittings) safety cans may be used. All containers from which flammable liquids are to be dispensed shall be grounded and when transferring flammable liquids, the dispensing container shall be bonded to the receiving container.

SAFE PRACTICES

Recognizing that proper storage and material handling procedures and methods will provide for conservation of materials and equipment, increase productivity by providing a smooth flow of materials as needed, and reduce the number of accidents and injuries usually associated with this function, the following practices must be followed.

MATERIALS STORAGE AND HANDLING

SAFE PRACTICES *continued* . . .

- Proper storage methods and designated areas for flammable and combustible liquids.
- Proper stacking of materials as regard to size, type, and length in piles, shelves, racks or bins as necessary.
- Maintenance of good housekeeping procedures throughout the jobsite at all times.
- Proper disposal of scrap and waste materials.
- Segregation of non-compatible materials.
- Material handling methods and procedures, which will provide safe and orderly storage in accordance with recognized practices.
- Posting of warning signs, tags, or bulletins as may be required.
- Providing the necessary grounding and bonding required for specific materials.
- Assuring that only properly trained personnel are used in the handling of hazardous materials and to assure that proper material handling methods are used.
- Prompt reporting of any unsafe condition or practice which can not be corrected within the scope of his authority.

When a medical facility is not reasonably accessible, a person trained to render First Aid/CPR will be available at the work site. First Aid supplies must be readily available.

Telephone numbers of physicians, hospitals, or ambulances must be conspicuously posted.

MOBILE CRANES

PURPOSE

To provide guidance for the protection of personnel operating mobile cranes or working in the area of operation.

REFERENCES

29 CFR 1926.550

POLICY

Equipment Inspection and Testing

Upon its arrival and before its use on the project and at 30-day intervals thereafter, a competent person will inspect each mobile crane for mechanical defects. Maintenance records will be completed and retained. A third party inspector approved by the Department of Labor will perform all annual crane inspections. When a crane has been dismantled or has had major repairs, a third party inspector approved by the Department of Labor will inspect it.

It is recommended that the equipment be load-tested only in accordance with the manufacturer's specifications and limitations and American National Standard Institute (ANSI) B30.5 Current, Mobile and Locomotive Cranes.

No modifications or alterations that affect the capacity or safe operation of the equipment will be made by the project or an individual without the manufacturer's written approval.

Operator Authorization

All mobile crane operators must be instructed in or given the opportunity to read and understand the manufacturer's Operators Manual for assigned make and model machine, and applicable OSHA and ANSI standards. The mobile crane operator must be trained and authorized to operate the specific make and model crane assigned.

Operations

Each day, the operator, prior to starting work, will check all safety features of the cranes. These include but are not limited to:

- Fire extinguisher
- Seat belts
- Tire pressure
- Widow glass

MOBILE CRANES

Operations *continued...*

- Horn
- Back-up alarm
- Lights
- Signs

Accessible areas within the swing radius of the rotating superstructure counterweight of a crane will be barricaded to prevent employees from being struck or crushed by the counterweight unless the superstructure is elevated 7-feet or more.

The ground shall be level to within 1° of the horizon. All applicable danger signs shall be posted. This includes but is not limited to: 1) Danger Electrical Hazard; 2) Swing Radius Warnings; 3) Step Warnings.

The hand signals to be used are those prescribed by the ANSI standard applicable to each crane. Only one individual will assume the signaling duties and no other person shall signal during the lift, with the exception of a person giving an emergency stop signal.

A copy of the manufacturer's Operator's Manual for each make and model machine must be on the project site and the manufacturer's specifications and limitations noted in it will be observed.

In the operations and use of any hydraulic crane, when both an auxiliary and main hoist lines are reeve, an anti-two blocking warning system is required on both auxiliary and main hoist lines.

Attachments used with cranes will not exceed the capacity rating or scope recommended by the crane manufacturer.

No person will ride the headache ball, the hook, or the load being handled by the crane. All operations involving the use of suspended personnel baskets or platforms shall comply with OSHA regulations and the crane shall be equipped with a positive action anti-two blocking device.

Equipment will not be lubricated while in use unless it is designed for safe lubrication application while in use.

No person(s) shall ride in the machine; the machine should not be used for personnel transportation or be equipped with a personnel carrier, unless specific approval from the Safety Department is secured.

MOBILE CRANES

Electrical Hazards

A crane will not be operated, under any circumstances, wherein any part of the crane or load will come within 10 feet of energized distribution lines rated 50 kV or below unless the following conditions are met:

- The lines have been de-energized and are grounded at the point of work.
- Insulating barriers that are not part of the hoisting equipment have been erected.

For lines rated over 50 kV, the minimum clearance between lines and any part of the machine or load will be 10 feet plus 0.4 inch for each kilovolt over 50 kV or twice the length of the line insulator. The clearance will not be less than 10 feet.

All lines will be considered energized unless the person or utility owning the lines indicates that they are not energized and that the lines are grounded at the point of operation.

Traveling With a Load (Pick and Carry)

Traveling with a load (pick and carry) is not recommended as a means of transporting loads from one location to another on the project and should be used as a last resort. The use of farm wagons, forklifts, boom trucks, and flatbed trucks should be used to transport these loads rather than “pick and carry” operations.

Traveling with suspended loads entails many variable, i.e., the type of terrain, boom length, momentum in starting and stopping, etc. Therefore, it is impossible to formulate a single standard procedure with any assurance of safety. Thus, when traveling with a load, the operator must evaluate the prevailing conditions and determine the applicable safety precautions. No matter what, manufacturer guidelines shall not be exceeded.

The following precautions would fall into a general category:

- **DO NOT** exceed rated “on rubber” capacity chart.
- Position the boom parallel to the direction of travel.
- Engage the swing (house) lock.
- Maintain as short a boom length and as low a boom angle as possible.
- Secured load off carrier.
- Provide tag or restraint lines to snub load swing.
- Load should be carried close to ground.

MOBILE CRANES

Traveling With a Load (Pick and Carry) *continued...*

- Do not start and travel until outriggers are fully stowed (retracted).
- Terrain must be smooth, firm, and level.

- Maintain travel speed suitable to terrain.
- Avoid sudden starting and stopping.
- Maintain correct tire pressure for type of tires used.
- Always use flagmen, both front and rear, to give directions and watch for hazards.
- Signalman should watch for power lines and other overhead obstructions.
- No person shall ride on the machine during “pick and carry” operations.

Wire Rope

Wire rope with one or more of the following defects will be removed or replaced immediately. If one wire rope of a set (Pendant lines, multi-leg slings, etc.) requires replacement, entire set of ropes will be replaced.

- In standing ropes, more than two broken wires in one lay in areas beyond end connections or more than one broken wire at an end connection.
- In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay
- Wear of one-third of the original diameter of the outside individual wires caused by abrasion, scrubbing, flattening, or peening.
- Kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure.
- Evidence of heat damage from any cause.
- Reduction from nominal diameter of more than: 1/64 inch for diameters up to and including 5/16 inch; 1/32 inch for diameters from 3/8 inch up to and including 1/2 inch; 3/64 inch for diameters 9/16 inch to and including 3/4 inch; 1/16 inch for diameters from 7/8 inch up to and including 1 1/8 inches; 3/32 inch for diameters from 1 1/4 inches up to and including 1 1/2 inches.

MOBILE CRANES

Notices and Posting

Rated load capacities, recommended operating speeds, special hazards warnings, operating notes, and special instructions will be posted on all equipment and will be visible to the operator while he is at the control station. Illustrations of the hand signals used in connection with the operation

of equipment will be posted at the project site.

RECORDS

Maintenance records shall be maintained at the project.

**EXHIBIT "A"
LIFTING PLAN**

LOCATION: _____ DATE OF LIFT: _____

LOAD DESCRIPTION: _____

LIFT DESCRIPTION: _____

- | | | | | |
|------------------------|-------|------------|--------------------------------|------------|
| A. WEIGHT | | | | |
| 1. Equipment Condition | New r | Used r | | |
| 2. Weight Empty | | _____ lbs. | 3. Weight of Headache Bail | _____ lbs. |
| | | | 4. Weight of Block | _____ lbs. |
| | | | 5. Weight of Lifting Bar | _____ lbs. |
| | | | 6. Weight of Slings & Shackles | _____ lbs. |

- 7. Weight of Jib Erect r Stored r _____ lbs.
 - 8. Weight of Headache Ball on Jib _____ lbs.
 - 9. Weight of Cable (Load Fall) _____ lbs.
 - 10. Allowance for Unaccounted Material or Equipment _____ lbs.
 - 11. OTHER _____ lbs.
- TOTAL WEIGHT** lbs.

Source of Load Weight: _____
 Weights Verified By: _____

B. JIB

- Erected _____ Stored _____
- 1. If Jib to be used _____
- 2. Length of Jib _____
- 3. Angle of Jib _____
- 4. Rated Capacity of Jib (From Chart) lbs.

C. CRANE PLACEMENT

- 1. Any Deviation from Smooth Solid Foundation in the Area? _____

- 2. Electrical Hazards in Area? _____

- 3. Obstacles or Obstructions to Lift or Swing? _____

- 4. Swing Direction and Degree (Boom Swing) _____

D. CABLE

- 1. Number of Parts of Cable _____
- 2. Size of Cable _____

E. SIZING OF SLINGS

- 1. Sling Section
 - a. Type of Arrangement _____

- b. Number of Sings in Hook-up _____
- c. Sling Size _____
- d. Sling Length _____
- e. Rated Capacity of Sling _____
- 2. Shackle Selection
 - a. Pin Diameter (inches) _____
 - b. Capacity (tons) _____
 - c. Shackle Attached to Load By _____
 - d. Number of Shackles _____

F. CRANE

- 1. Type of Crane _____
- 2. Crane Capacity _____ Tons
- 3. Lifting Arrangement
 - a. Max Distance—Center of Load to center pin of crane _____
 - b. Length of Boom _____
 - c. Angle of Boom at Pick-up _____ Degrees
 - d. Angle of Boom at Set _____ Degrees
 - e. Rated Capacity of crane under severest lifting conditions (from chart)
 - 1. Over Rear _____ lbs.
 - 2. Over Prong _____ lbs.
 - 3. Over Side _____ lbs.
 - 4. From Chart—Rated Capacity of Crane for this lift
 - 5. Max. Load on Crane _____
 - 6. Lift is of Crane's Rated Capacity

G. PRE-LIFT CHECKLIST

	YES	NO
1. Matting Acceptable	<input type="checkbox"/>	<input type="checkbox"/>
2. Outriggers fully extended	<input type="checkbox"/>	<input type="checkbox"/>
3. Crane in good condition	<input type="checkbox"/>	<input type="checkbox"/>
4. Swing Room	<input type="checkbox"/>	<input type="checkbox"/>
5. Head Room Checked	<input type="checkbox"/>	<input type="checkbox"/>
6. Max Counterweights used	<input type="checkbox"/>	<input type="checkbox"/>
7. Tag Line Used	<input type="checkbox"/>	<input type="checkbox"/>
8. Experienced Operator	<input type="checkbox"/>	<input type="checkbox"/>
9. Experienced Flagman (Designated)	<input type="checkbox"/>	<input type="checkbox"/>
10. Experienced Rigger	<input type="checkbox"/>	<input type="checkbox"/>
11. Load Chart in Crane	<input type="checkbox"/>	<input type="checkbox"/>
12. Wind Conditions _____		
13. Crane Inspected By _____		
14. Functional Test of Crane By _____		

EXHIBIT "A"

LIFTING PLAN
 Page 2 of 2

SPECIAL INSTRUCTIONS OR RESTRICTIONS FOR CRANE, RIGGING, LIFT, ETC.

DIAGRAM CRANE AND LOAD PLACEMENT	DIAGRAM RIGGING CONFIGURATION
----------------------------------	-------------------------------

MULTIPLE CRANE LIFTS REQUIRE A SEPARATE LIFT PLAN FOR EACH CRANE.

ANY CHANGES IN THE CONFIGURATION OF THE CRANE, PLACEMENT, RIGGING, LIFTING SCHEME, ETC., OR CHANGES IN ANY CALCULATIONS REQUIRE THAT ANEW LIFT PLAN BE DEVELOPE

OFFICE SAFETY

PURPOSE

To establish guidelines for providing safety in both general office and project office locations.

POLICY

Office Machines

Machines should not be placed near the edge of tables or desks.

Machines that creep or vibrate during operation should be secured in a manner to prevent movement.

File Cabinets

File cabinets should be placed against walls or columns. When possible, the cabinets should be secured against tipping.

Do not overload drawers. Open only one drawer at a time to prevent the cabinet from tipping over,

Do not leave file drawers open.

Floors

All floor finishes and/or carpets should be selected for anti-slip qualities. Well maintained floors/carpets will provide protection against slips and falls.

Defective tile or carpet should be repaired immediately.

Passageways/Aisles

A minimum of four (4) feet should be established for aisles. Obstructions such as waste baskets, telephone and electrical outlets, low tables and office equipment must be kept where they do not present tripping hazards.

Stairways should be protected with anti-slip material.

Doors should not open into the path of employee travel.

Electrical

Electrically operated machines and extension cords require that outlets and extension cords be arranged to avoid tripping hazards. IF extension cords are required, they must be secured and covered to eliminate tripping hazards. Extension cords shall be capable of carrying intended power loads.

Circuits providing power to office machines must be adequately sized.

Do no overload wall outlets.

OFFICE SAFETY

Material Storage

Materials should be stored so that in gaining access to these materials, normal office traffic does not have to be crossed.

Materials should be stored neatly so that they will not fall or cause a tripping hazard. Flammable or hazardous liquids used in offices must be stored and dispensed from approved safety containers. Bulk storage must be in a properly constructed fireproof room or cabinet.

Lighting and Ventilation

Adequate lighting and ventilation must be provided in accordance with applicable standards.

Ladders/Stools

Ladders and stools used for reaching high storage should have either non-skid safety feet attached, or be equipped with brakes that automatically lock when weight is applied.

Fire Protection, Prevention, and Emergencies

Good housekeeping is essential in preventing fires. No open flame in the office (candles, oil lamps, etc.) as this presents a serious fire hazard.

Portable fire extinguishers must be conspicuously located and labeled. Extinguishers must be inspected and tagged annually and maintained in a fully charged condition.

Smoke detectors and/or alarm systems should be checked once a month for proper operation. A fire emergency procedure and a basic emergency plan must be developed for each office complex. Emergency phone numbers for fire, police or medical emergencies must be posted at each phone.

ERGONOMICS – OFFICE WORKSTATION

Chair

- Adjust the height of the chair so that the employee's feet are flat on the floor, with the knees bent at approximately 90 degrees (if the feet are not flat on the floor with the chair to the lowest position, a foot rest will be needed).
- The employee should be sitting with his/her back against the seat back to provide good lumbar support. The employee may wish to try another type of chair. Another solution may be a back support pillow to provide lumbar support.

OFFICE SAFETY

Keyboard

- Raise or lower the keyboard surface so that the home row of keys (ASDFGHKL) are about level with the employee's elbows. The elbows should be at approximately 90 degrees, with the wrists straight.
- The employee's hands should not be resting on the desk during typing; this may lead to bent wrists and put pressure on the tendons and nerves in the wrists. Ample space should be available in front of the keyboard to rest hands between periods of typing or for an optional wrist rest.

Mouse

- The mouse should be positioned as close as possible to the keyboard to avoid reaching or sitting with an outstretched arm.

Monitor

- Place the monitor in front of the employee.
- Raise or lower the monitor surface so the top of the monitor is at eye level. (Note: For employees wearing bifocal glasses, the monitor may need to be lowered.)
- If hardcopy documents are used during typing, the document should be placed next to the monitor, same height and same distance from the employee as the monitor. Use an appropriate document holder.

Eye Discomfort

- Brightness and contrast controls should be set at a comfortable level. If there is glare on the screen, locate the source and take measures to eliminate or reduce it. A glare screen may help as a last resort.
- Employees should move their eyes in a directions periodically throughout the day to relieve eye strain. Look into the distance periodically. Try to blink often and close eyes from time to time.

Telephone

- If the employee is required to type on a computer while speaking on the phone for the majority of the workday, the use of a headset will eliminate the need to cradle the phone between the neck and shoulder.

Work Surface Layout

- Employees need to minimize reaching. Employees should position equipment so frequently used items are within comfortable arm's reach and less used items are located further away.

OSHA INSPECTIONS

PURPOSE

A. Glewen & Sons Excavating, Inc. Safety and Health Program

To provide guidelines in the event of an inspection by a compliance officer of the Occupational Safety and Health Administration (OSHA) caused by an employee complaint, accident or a scheduled general inspection.

DEFINITIONS

Compliance Safety and Health Officer (CSHO) – Designated representative of OSHA who conducts inspections.

Inspections – Inspections by OSHA are generally conducted during regular work hours.

- **Catastrophe or Fatality** – Inspections occur after the employer has notified the nearest OSHA office of any employment related fatality or accident, which results in the hospitalization of three or more employees.
- **General (including follow-up)** – Inspections are initiated by OSHA and contemplate a wall-to-wall inspection of the employer’s work place.
- **Complaint (including imminent danger)** – Inspections occur as a result of OSHA receiving a complaint about a possible violation from either an employee or a representative of employees.

The scope of complaint inspections by their nature focus on a more limited area of the work place (i.e., the location of the suspected violation(s)). However, under the broad authority of the Act, OSHA is likely to desire to expand such inspections into complete wall-to-wall inspections of the work place.

POLICY

Inspections are intended to serve the overall purpose of the Act, which is to make the employee’s work place as safe as possible. OSHA attempts to accomplish this overall purpose during inspections by observing and citing violations of OSHA safety and health standards thereby causing the employee’s work environment to be made safer and by assessing penalties and recording violations thereby encouraging employers not to violate safety and health standards.

A. Glewen & Sons Excavating, Inc. is committed to the remedial objectives of the Act and pursues these objectives in the highest professional manner. However, we believe the portion of the Act providing for penalties does little to further the overall remedial purpose. Therefore, the company’s objective is to assert its legal rights under the Act in order to limit the scope of all OSHA inspections and exposure to penalties and records of citations.

OSHA INSPECTIONS

LIMITING INSPECTIONS BY AGREEMENT OR WARRANT

The scope of all types of OSHA inspections (catastrophe or fatality, general and complaint) may be effectively limited by:

A. Glewen & Sons Excavating, Inc. Safety and Health Program

- Agreement with OSHA
- Insistence on a warrant (not recommended)

The ability to limit the inspection may be exercised at any time during the course of an OSHA inspection. It is **IMPORTANT** to remember, however, that once the Compliance Officer has completed his inspection, the company's ability to limit the inspection is gone.

CONTACT CORPORATE OFFICE

When OSHA or a state OSHA agency appears at A. Glewen & Sons Excavating, Inc. jobsite, Project Supervision should request that the Compliance Safety and Health Officer (CSHO) wait while your respective office is contacted for instructions. The CSHO is not entitled to start the inspection until you give the company's consent. All decisions and questions concerning the proposed inspection will be made and answered through a coordinated effort involving site personnel and corporate office. Your clear understanding of the information, procedures, and guidelines in this section is of the utmost importance in effectively responding to requested inspections by OSHA agencies.

The process by which the company may be able to limit the scope of the inspection by negotiation or the decision to require a warrant involves important considerations and a thorough analysis of all factors. Therefore, the corporate office should always be contacted when OSHA arrives on a site and prior to any decision being made to negotiate a limited scope inspection or require a warrant.

Contact Owner – Notify the owner that OSHA has requested an inspection. Recommend that a representative of the owner be present during an inspection and in all conferences with OSHA.

REQUIRING A WARRANT

If the company decides to require a warrant, OSHA would have to go to a Federal Court magistrate and request the issuance of a warrant. Current law would require OSHA to show the magistrate "reasonable cause" to believe that violations of Safety and Health Standards exist at the company's facility.

In a **GENERAL INSPECTION** request, that requirement would be satisfied if OSHA could demonstrate that the requested general inspection was the result of a broad plan developed by the Secretary of Labor to inspect certain industries for specific reasons, such as those with a high incidence of injuries and that the company's site was selected from among other facilities on some reasonable basis.

OSHA INSPECTIONS

REQUIRING A WARRANT *continued . . .*

In a **COMPLAINT INSPECTION**, OSHA would be required to show specific evidence that a violation may exist at the company's site. Fairly specific testimony by an employee would satisfy a magistrate and result in a warrant being issued.

The occurrence of a **CATASTROPHE** or **FATALITY** would serve to provide a magistrate with the necessary evidence to show that a violation may exist at the company's facility.

A warrant based on a complaint, or a catastrophe/fatality would most likely be limited to the specific area(s) involved in the possible violation. A warrant issued for a general inspection may recite specific hazards peculiar to our industry that the inspection plan is designed to monitor and the reason why the company's site fits within that plan. The company should be able to insist that OSHA limit its inspection to the scope of possible violations of hazards described in a warrant.

FOCUSED INSPECTION

OSHA has determined that 90% of all construction fatalities were a result of four causes. They are:

- Falls from elevations 33%
- Struck by 22%
- Caught in/between 18%
- Electrical shock 17%

In order to qualify, the following conditions must be met:

- The project safety and health program/plan meets the requirements of 29 CFR 1926 Subpart C, General Safety and Health Provisions.
- There is a designated competent person responsible for and capable of implementing the program/plan.

As all management and supervisory personnel follow the A. Glewen & Sons Excavating, Inc. policy (which includes Subpart C of OSHA), they are the designated competent person(s) on the jobsite. Therefore, ALL A. Glewen & Sons Excavating, Inc. jobsites qualify for the focused inspections.

The Compliance Safety and Health Officer (CSHO) will then conduct an abbreviated walk around focusing on:

- Verification of the Safety and health program/plan effectiveness by interviews and observations.
- The four leading hazards listed above.
- Other *serious* hazards observed by the CSHO.

OSHA INSPECTIONS

COMPLAINT INSPECTIONS

Under the Act, complaints are authorized only from employees or a representative of employees, who file a written complaint specifically identifying a violation or hazard alleged to exist (Exhibit “B”). When a CSHO attempts a COMPLAINT INSPECTION, the Project Manager and/or Project Supervision should:

1. Examine the complaint carefully.
2. Determine if the complaint lacks necessary information. It should indicate that it was received by an:
 - Employee(s)
 - Representative of employees, or
 - Other (specify)
3. Confirm that the complaint was in fact made by an employee(s) or representative of employees. If not, the company may refuse to allow the inspection.
4. Confirm that OSHA received a signed, written complaint. If not, (or OSHA refuses to confirm if they received a signed, written complaint), the company may refuse to allow the inspection.
5. If the complaint fails to specifically describe the alleged violation or hazard and its location, the company may refuse to allow the inspection.

If the complaint meets requirements 2 through 5, the company will attempt to have the CSHO agree to strictly limit the inspection to the description of the alleged violation or hazard and its location.

If the complaint fails to meet the above requirements and a decision is made to refuse to allow the inspection, make it clear to the CSHO that the company will allow an inspection if a proper complaint is presented.

GENERAL INSPECTIONS

When confronted with a request to conduct a general inspection, the Project Manager/Supervision should ask the following questions:

- Describe the plan under which OSHA proposed to conduct the inspection:
 - **Why the construction industry?**
The answer should relate to a nationwide plan or program developed because of a high incidence of injuries or fatalities.
 - **Why this A. Glewen & Sons Excavating, Inc.?**
If there are several major job sites in the state, why this one?
If based on employee complaints, how does A. Glewen & Sons Excavating, Inc. compare to other area sites?
What specific hazards is OSHA concerned about in its plan to inspect the construction industry and this construction site?

OSHA INSPECTIONS

GENERAL INSPECTIONS *continued . . .*

The Compliance Safety Health Officer is unlikely to be able to answer these questions. Make it clear that the company will permit the inspection if OSHA is requesting the general inspection pursuant to such a plan. The CSHO may contact his/her Area Director to determine if such a plan exists and the specifics of the plan. Encourage him/her to do so.

At this point, it would be advisable to have corporate personnel talk directly to the Area Director and repeat the company's qualified refusal to permit the inspection. If possible, the agreed scope of inspection should be limited to any specific industry problem identified in such an inspection plan.

If the Compliance Safety Health Officer or Area Director refuses or is unable to answer your questions, the company may refuse to allow the inspection (after consulting with the corporate office). If a decision is made to refuse the inspection, ask whether OSHA intends to seek a warrant.

INSPECTION PROCEDURES

The OSHA Compliance Safety Health Officer, when intending to inspect a site, will normally first seek the owner, or its agent. The CSHO will present his/her credentials and state the nature and scope of the inspection. A. Glewen & Sons Excavating, Inc. should notify all contractors whose work area will be subject to inspection, and insist that all be provided an opening conference prior to actual inspection.

Walk around – Employee Representative

The employees on the company's site are entitled under the Act to have a representative selected by them to accompany the Compliance Safety Health Officer during the inspection. The Act also obliges the employer to pay the employee representative for time spent accompanying the inspection team (Compliance Safety Health Officer and company representatives).

It is A. Glewen & Sons Excavating, Inc.'s policy to restrict the paid representative to one individual. This should be made clear to the Compliance Safety Health Officer in the opening conference. If special circumstances require an additional representative of employees (without pay) he/she may participate in a limited portion of the walk around inspection. The decision to permit an additional employee representative to accompany the walk around inspection should be made only after consultation with the corporate office.

Establish Ground Rules

Before the actual physical walk around inspection begins, inform the Compliance Safety Health Officer:

OSHA INSPECTIONS

A. Glewen & Sons Excavating, Inc. Safety and Health Program

Establish Ground Rules *continued*

The company will be taking notes on all facts involved in potential violations, including identification of involved employees, crafts, and supervisors

- The company will be taking photographs and/or videotape.
- The company will not impede the Compliance Safety Health Officer's progress, BUT the company must be able to learn facts, names of employees, their title, and their supervisors.
- Corporate policy requires a company representative to be present when employees express a preference that a company representative be present for the interview.
- The company will expect the Compliance Safety Health Officer to inform us of suspected violations including:
 - The applicable standard.
 - What specifically is wrong?
 - The abatement procedures or measures that are necessary.

SITE INSPECTION

Take notes of everything the Compliance Safety Health Officer says relative to possible violations (what was wrong, what standard, and what should have been done). Exhibit "B" is provided to assist in the fact-finding procedure.

Take the same photographs that are taken by the Compliance Safety Health Officer. If photographs from other angles will better illustrate the area the Compliance Safety Health Officer is concerned with, take such photographs also.

DO NOT talk about violations or safety conditions on the site in general.

NOTE: The only procedure that company representative may explain is the operation of our safety program.

IN ALMOST 9 OUT OF 10 INSTANCES, it is the statements made by employer representatives trying to be cooperative that result in a citation being issued and affirmed by the OSHA court.

DO NOT demonstrate any equipment or answer any questions about equipment or operations. Simply explain to the CSHO that the company is not obligated to demonstrate equipment or explain any operations.

DO NOT correct any mistakes made by the CSHO in identifying locations on the site, type or identify of equipment, or nature of operations.

OSHA INSPECTIONS

A. Glewen & Sons Excavating, Inc. Safety and Health Program

SITE INSPECTION *continued*

If a potential violation involves employee conduct or action (Example: violation of a safety rule, unpredictable conduct, etc.), learn the identity of the employee, how long he/she was involved in the conduct, the employee's supervisor, the assignment and instructions given to the employee by his/her supervisor, and whether the supervisor knew about the employee's conduct. This information should be sought out as soon as possible, even before the CSHO completes the inspection.

When the Compliance Safety Health Officer observes a possible violation in an existing condition (Example: equipment or materials improperly stored) or activity taking place over an extended period of time (minutes, hours, days), observe carefully if the Compliance Safety Health Officer determines how long the violation has been in existence or taking place. Whether or not the CSHO investigates the duration of such a possible violation, through your own investigation, determine how long the possible violation existed or was taking place and whether company supervisory personnel were aware of it or should have been aware of it.

If employees present oral complaints to the Compliance Safety Health Officer, ask the CSHO if he/she intends to take a formal written complaint. If yes, ask for a copy. If the CSHO does not take a written complaint, ask why it is being received on the basis of an informal rather than a formal complaint. Note the CSHO's answer.

Expansion of Limited Scope of Inspection. Regardless of limitations contained in a warrant or agreed on between the company and the CSHO, OSHA may properly cite any violations **within plain view**. If the CSHO locates a possible violation beyond the scope of the authorized inspection, **IT IS EXTREMELY IMPORTANT** to ask him/her how and when he/she determined that the possible violation existed. If it was not possible to know of the condition until the area outside the scope was inspected, carefully note the CSHO's answer on how he/she know of the violation. If possible, have the representative of employees confirm or admit that the possible violation was not in plain view.

CLOSING CONFERENCE

Record the conference (preferably a tape recording). If requested, advise the Compliance Safety Health Officer that he/she is free to record the conference if he/she wishes to also.

Learn as much as possible about the Compliance Safety Health Officer's background (education, training, and experience). Question the Compliance Safety Health Officer specifically about his/her personal education and training. Note any refusal to answer or evasive answers. Determine the nature of other facilities that the CSHO has inspected and whether he/she has inspected any similar types of facilities.

OSHA INSPECTIONS

CLOSING CONFERENCE *continued* . . .

A. Glewen & Sons Excavating, Inc. Safety and Health Program

Ask the Compliance Safety Health Officer to go over each possible violation. Ask if he/she intends to recommend that a citation be given (remember it is not the CSHO's decision, it is likely that he/she will be asked for his/her recommendation). If the CSHO refused to state what his/her recommendation is, be sure that is noted.

DO NOT discuss possible violations or any safety problems or correct any mistakes made by the CSHO. Only ask questions that might disclose the basis and weaknesses in the ultimate OSHA conclusions about violations.

GUIDANCE FOR EMPLOYEES SUBJECTED TO THIRD PARTY INTERROGATION

After a jobsite accident, safety violation, or other similar occurrence, one or more employees may be required to submit to questioning by representatives of state or local law enforcement agencies, agencies responsible for the enforcement of safety regulations, or the owner.

Third party investigations of this sort can generally be placed into two categories: (1) Criminal Investigations (District Attorney's or Prosecutor's Office), and (2) Administrative Interrogation or Interview (OSHA or state equivalent). The former are rare and occur only in the most serious cases.

In cases involving criminal investigation, contact the Corporate Insurance Department or Legal Department immediately.

In cases involving administrative interrogation or interview, ask the agency conducting the investigation whether the person being interviewed may have a company representative present during the interview. If possible, have the person interrogated accompanied by the Project Manager or his/her designee.

Contact the Corporate Legal Department; explain that corporate policy requires the presence of a corporate representative.

In cases where the company is unable or not permitted to accompany the employee during the interview, it is helpful to have guidelines to assist the employee during the interrogation. These guidelines are as follows:

- Listen carefully to the question before answering. Ask to have the question repeated, if necessary. Ask for clarification if the question is ambiguous.
- Answer the question directly and honestly. Do not volunteer any information not asked for. Answer "yes" or "no," or if narrative is required, respond briefly.
- If you do not know the answer, say so. Do not assume or speculate about facts or make conclusions in your answer.

OSHA INSPECTIONS

GUIDANCE FOR EMPLOYEES SUBJECTED TO THIRD PARTY INTERROGATION

Continued . . .

- Do not offer your opinion or respond to hypotheticals. For example, do not state whether you think a job, a person, a piece of equipment, an activity, etc., is safe or unsafe. Do not discuss whether you would have done anything differently, whether the accident could have been prevented, etc.
- Read carefully any written statement that you are asked to sign. Require that it can be changed if it does not conform exactly to what you said or you **intended** to say.
- Ask for a copy of any written statement that you sign or that will be transcribed from the interrogator's notes or dictating machine.
- Report back to your supervisor after questioning. A record should be made of the interview, including a summary of what was said.

RECORDS

At the conclusion of the inspection, prepare a detailed report including all the matters outlined herein. On all matters identified by the CSHO to be possible violations and/or ones that the CSHO will recommend for a citation:

- Find out how long the condition or activity was in existence or taking place.
- Who created the condition or was involved in the activity? If another contractor, when did the company first learn about the condition?
- Identify any company supervisor who knew about the possible violations. If no supervisor knew about a violation, determine why, or if in your opinion supervision should have known about the possible violation.
- When employee conduct is involved which may constitute a possible violation, by sure you know the employee's identity, length of time the conduct was taking place, identity of the employee's supervisor, assignment and specific instructions, and whether the employee was known to have participated in the same act previously.
- Locate any safety memoranda or minutes of safety meetings where any of the potential violations were discussed with supervision and/or employees.
- Post OSHA Citation(s) at or near the worksite involved. Each citation, or copy thereof, must remain posted until the violation has been abated, or for three working days, whichever is longer.

The report is very important to the company's determination of whether or not to contest any citations issued by OSHA and the company's ability to develop its defenses to citations. Therefore, the Project Manager shall prepare this report after every OSHA inspection. When completed, the report should be marked **CONFIDENTIAL** and mailed to:

Safety Manager
 A. Glewen & Sons Excavating, Inc.
 N3228 Marshview Rd.
 Waupun, WI 53963

EXHIBIT "A"
CONSTRUCTION FOCUSED INSPECTION GUIDELINE

This guideline is to assist the professional judgment of the compliance officer to determine if there is an effective project plan, to qualify for a Focused Inspection.

Yes/No

PROJECT SAFETY AND HEALTH COORDINATION - Are there procedures in place by the general contractor, prime contractor or other such entity to ensure that all employers provide adequate protection for their employees? _____

Is there a **DESIGNATED COMPETENT PERSON** responsible for the implementation and monitoring of the project safety and health plan who is capable of identifying existing and predictable hazards and has authority to take prompt corrective measures? _____

PROJECT SAFETY AND HEALTH PROGRAM/PLAN* that complies with 1926 Subpart C and addresses, based upon the size and complexity of the project, the following:

- _____ Project Safety Analysis at initiation and at critical stages that describes the sequence, procedures and responsible individuals for safe construction.
- _____ Identification of work/activities requiring planning, design, inspection or supervision by an engineer, competent person or other professional.
- _____ Evaluation/monitoring of subcontractors to determine conformance with the Project Plan (The Project Plan may include, or be utilized by subcontractors).
- _____ Supervisor and employee training according to the Project Plan including recognition, reporting, and avoidance of hazards and applicable standards.
- _____ Procedures for controlling hazardous operations such as: cranes, scaffolding, trenches, confined spaces, hot work, explosives, hazardous materials, leading edges, etc.
- _____ Documentation of: training, permits, hazard reports, inspections, uncorrected hazards, incidents and near misses.
- _____ Employee involvement in hazard: analysis, prevention, avoidance, correction and reporting.
- _____ Project emergency response plan.

The walk around and interviews confirmed that the Plan has been implemented, including:

- _____ The four leading hazards are addressed: falls, struck by, caught in/between, electrical.
- _____ Hazards are Identified and corrected with preventative measures instituted in a timely manner.
- _____ Employees and supervisors are knowledgeable of the project safety and health plan, avoidance of hazards, applicable standards and their rights and responsibilities.

THE PROJECT QUALIFIED FOR A FOCUSED INSPECTION

EXHIBIT "B"
OSHA INSPECTION REPORT
Page 1 of 4

Project _____

A. Glewen & Sons Excavating, Inc. Safety and Health Program

Address _____

Compliance Officer (CSHO) Information

Name _____

Office _____

Address _____

Phone Number _____

Time First Appearance _____

Date _____

First Person Contacted _____

Was the compliance officer asked to wait for the corporate safety director? YES NO

Present At Opening Conference

Held

Not Held

Name of Company

EXHIBIT "B"

OSHA INSPECTION REPORT

Page 2 of 4

Reason For The Inspection

- Compliant
- Referral

- Accident
- General Schedule

Walk around Attendees

Name

Company

Employees Interviewed

EXHIBIT "B"

OSHA INSPECTION REPORT

Page 3 of 4

A. Glewen & Sons Excavating, Inc. Safety and Health Program

Alleged Violations Noted For Possible Citation (Type and Location)

1. _____

Witnesses _____

2. _____

Witnesses _____

3. _____

Witnesses _____

4. _____

EXHIBIT "B"

OSHA INSPECTION REPORT

Page 4 of 4

- | | | | | |
|--|--------------------------|-----|--------------------------|----|
| Did the CSHO take photos? | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| Did you take photos? | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| Did the CSHO take videos? | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| Did you take videos of the alleged violations? | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| Did abatement take place before OSHA left? | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
-
-

Completed By:

Signature

Date

Print Name and Job Title

PERSONAL PROTECION EQUIPMENT

PURPOSE

To ensure the use of appropriate company approved personal protective equipment wherever and whenever there is a potential for exposure, either real or assumed, to hazardous working conditions, or where a hazardous condition exists and a need is indicated for using such equipment to adequately reduce the hazard to its personnel, visitors and/or subcontractors

REFERENCES

- OSHA 29; CFR 1926.28; .52; 100 through 104; 106; 353; 551; and 951.
- Applicable Current ANSI Standards.

POLICY

A. Glewen & Sons Excavating, Inc. reserves the right to select and/or approve all personal protective equipment to be issued and used by its employees visitors and/or subcontractors, and only such equipment issued or approved will be allowed on it's job sites. Failure to comply with this procedure will result in disciplinary action up to and including termination.

HARD HATS (Mandatory at ALL Times)

ALL construction workers must wear company issued hard hats at all times when working on construction projects or areas of an existing facility which has been designated as a 'HARD HAT Area," This includes visitors subcontractor, engineers, inspectors and anyone else who has authorization to be on the project.

Hard hats that have been altered by drilling or cutting will not be permitted. When it is necessary to use additional personal protective equipment, which must be attached to the hard hat, only those hard hats designed for this purpose may be used.

Headband assemblies must be in good condition and should be exchanged whenever They become broken or weakened. The area between the top of the headband and the top of the hard hat should never be used for storage.

SHOES AND BOOTS (Mandatory)

Leather work shoes/boots are required and safety shoes are recommended for use by All construction workers. All safety shoes shall meet nationally recognized standards. When working with 'wet concrete, workers must wear rubber boots, Shoes and boots must be kept in good repair, and those with worn heels or thin or worn soles should not be permitted. In addition, the wearing of sneakers, sandals, or shoes that have been slit or have holes cut in them, will not be permitted. **Safety toe tennis shoes are not allowed on A. Glewen & Sons Excavating, Inc. projects.**

PERSONAL PROTECTIVE EQUIPMENT

EYE AND FACE PROTECTION (Mandatory)

Approved eye and face protection must be worn while on site, ANSI approved safety glasses with full side shields must be worn in all circumstances. The wearing of contact lenses is prohibited in a chemical facility or when handling chemicals. Full-face shields must also be used when doing such work as grinding or chipping.

Welders must wear a welder's hood with lenses, which have the correct color density for the type of welding involved. Welders' helpers must wear the same, or at the minimum, must wear burning goggles with the correct color density lenses. See Exhibit A & B, Safety glass must be worn behind the welders' shaded lenses.

GLOVES

Where needed, construction workers should wear work gloves in good condition which are suited to the type of work involved. However, employees who are required to operate or work around drill presses, power saws, and similar rotating machinery should not wear gloves. Use of special type gloves such as neoprene or rubber to handle chemicals shall be issued to those workers who have a need for them, Welders shall wear gloves during welding operations.

RESPIRATORS

Company issued respiratory protective devices, appropriate for the hazard, must be used where airborne contaminants, such as fibers, dust, smoke, vapors, mist, etc, exist. Respiratory protective devices must be used in accordance with the provisions of the Corporate Safety Policy.

SAFETY BELTS/HARNESSES AND LANYARDS

Safety harnesses with lanyards, must be worn by all employees who are working at elevated levels which are not protected by standards handrails, or safety nets or when working from suspended scaffolds.

Employees are required to wear and use safety harnesses to protect them from falling when they are exposed to falls from heights of six (6) feet or more if they are working over machinery), moving equipment or objects posing an implement hazard, or in the case of entering a confined space, with an attended lifeline.

All safety harnesses and lanyards shall be inspected and each inspection documented with the harness serial number. Inspections shall be performed by the employee who is to wear and use the equipment- Quick release belts shall only be used when working over bodies of water. Lanyards shall have locking snaps that require two actions to open.

PERSONAL PROTECTIVE EQUIPMENT

FLOTATION VESTS

U.S. Coast Guard approved flotation vests must be worn by all employees who are working on barges or floating pipelines, or on structures extending over water, that are not protected by adequate standard handrails. In addition, any employee who is working over the side of a vessel or in any area where a drowning hazard exists must wear an approved flotation vest.

TRAFFIC VESTS

Whenever employees are required to work in the immediate vicinity of moving traffic, all personnel must be required to wear, as a minimum, a fluorescent orange or lime green traffic safety vest, which will be provided by the company.

PERSONAL WORK CLOTHING

The minimum work clothing that is acceptable for all employees working on a construction site is: long pants, good work shoes or boots, and a shirt that completely covers the worker's shoulders and provides adequate protection against such hazards as concrete splash, abrasions to the skin, oil or grease spills, and slag from welding or cutting. Tank top type shirts are not allowed on A. Glewen & Sons Excavating, Inc. projects.

Welders should be cautioned against wearing any type of highly flammable clothing, such as polyesters, double-knits etc. Clothing that has become torn, ragged, or frayed is not acceptable, since it presents a hazard of catching on rough corners or machine parts which could cause the wearer to trip or fall.

For the most part, construction workers should wear clothing that is reasonably snug, particularly about the neck, wrists, and ankles. Workers shall be cautioned against wearing loose clothing, rings, watches, and necklaces or having long hair, all of which may catch in power driven equipment.

HEARING PROTECTION

When employees are subject to sound levels exceeding those in Exhibit C, hearing protection will be provided and used to reduce the sound levels. Training in the proper use and care of hearing protection equipment will be provided. Monitoring and training shall be by competent persons.

EXHIBIT "A"

FILTER LENS SHADE NUMBERS FOR PROTECTION AGAINST RADIANT ENERGY

Welding Operations

	Shade Number
Shielded metal-arc welding 1/16, 3/32, 1/8, 5/32 inch diameter electrodes	10
Gas-shielded arc welding (non-ferrous) 1/16, 3/32, 1/8, 5/32 inch diameter electrodes	11
Gas-shielded arc welding (ferrous) 1/16, 3/32, 1/8, 5/32 inch diameter electrodes	12
Shielded metal-arc welding 3/16, 7/32, 1/4 inch diameter electrodes	12
Shielded metal-arc welding 5/16, 3/8 inch diameter electrodes	14
Atomic hydrogen welding	12 to 14
Carbon arc welding	14
Torch soldering	2
Torch brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1 inch to 6 inches	4 or 5
Heavy cutting, over 6 inches	5 or 6
Gas welding (light), up to 1/8 inch	4 or 8
Gas welding (medium), 1/8 inch to 1/2 inch	4 or 5
Gas welding (heavy), over 1/2 inch	6 or 8

EXHIBIT “B”

APPLICATIONS CHART

Operations	Hazards	Protectors *
Acetylene - Burning	Sparks, Harmful rays	5, 6, or 7
Acetylene – Cutting	molten metal	5, 6, or 7
Acetylene-Welding	flying particles	5, 6, or 7
Chemical handling	Splash, acid burns	3 (for severe exposure add 8)
Chipping	Flying particles	1, 2 (for severe exposure add 8)
Electric (arc)	Sparks intense rays	8 with tinted lenses
Welding	Molten metal	(in combination with 1)
Furnace Operations	Glare, heat molten	5, 6, 7 (for severe metal exposure, add 8)
Grinding - Light	Flying particles	1, 2 (for severe exposure add 8)
Grinding-Heavy	Flying particles	2 (for severe exposure add 8)
Laboratory	Chemical splash	3 (for severe glass breakage exposure add 8)
Molten Metals	Heat, glare, sparks, splash	5, 6 (8 in combination with 1 in tinted lenses)
Spot Welding	Flying particles sparks	1, 2 (tinted lenses advisable; for severe exposure, add 8)

EXHIBIT "C"

PERMISSIBLE NOISE EXPOSURE

[OSHA 29 CFR 1910.95 (b)]

Duration Per Day (Hours)	Sound Level (dba)
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

EXHIBIT "D"

CONSTRUCTION NOISE

[Average dB Level]

<u>Equipment</u>	<u>Sound Level (db)</u>
All Purpose Saw	107
Breaker	115
Chainsaw	112
Chipping Gun	110
Circular Saw	100
Compressor	100
Drill	95
Generator	88
Grinder	98
Hammer Drill	102
Hilti gun	103
Jackhammer	115
Ramset	103
Roller	108
Saber saw	94
Sawzall	94
Vibra-plate	107
Wacker (compactor)	108
Water Pump	95

PURPOSE

To establish guidelines for the safe use of personnel hoisting platforms, where no other method is feasible.

REFERENCES

OSHA 29 CFR 1926.550

POLICY

The use of a crane or other similar hoisting equipment to hoist a personnel lift platform to allow workers to perform work at elevated heights is strictly forbidden unless the use of conventional methods would be more hazardous.

It is the responsibility of management to determine that no other method is capable of getting the task done in a safer manner. It is also management's responsibility to ensure that these procedures are strictly adhered to when using personnel hoisting platforms.

GENERAL REQUIREMENTS

- No lifting, lowering, holding, swing or travel shall be done while anyone is in the hoisting platform, until after all of the following conditions have been complied with:
 - The Project Manager or Project Superintendent shall determine that there is not a practical safe alternative method to perform the needed work.
 - Evidence must be developed and documentation provided that other less hazardous methods of access, egress or work activity are not available or practical.
 - There must be documented reasons why other alternative means of access, egress and work activity were eliminated.
 - Ladders, scaffolding, aerial lifts, etc., must be used wherever practical for access, egress and work activity.

GENERAL REQUIREMENTS *Continued . . .*

- Cranes will not be used to hoist or suspend personnel on a hoisting platform in situations where other equipment designed for the purpose is feasible.
- Time and money factors should not be applied to alternative methods of access and egress that are considered.

Prior to lifting any personnel, the hoisting device shall be inspected and documentation will be made and maintained of the inspection in accordance with the requirements for that particular piece of equipment.

The hoisting machine must be equipped with a shut off anti-two block device.

A firm footing, uniformly level with 1 percent (1 foot in 100 feet), shall be provided for all boom type cranes.

A meeting for planning the lift and work activities will be attended by the operator of the hoisting equipment (signal person(s), person(s) to be lifted, the Safety Manager and Superintendent of the work activity; and the Project Manager). A step by step discussion will be made of the work procedure from start through completion. Notes will be made of entire meeting and will be maintained for future use.

Voice communication between the operator, signal person and the person(s) being lifted shall be maintained whenever voice communication is available. If 2-way radios are used, an isolated frequency for the personnel lifting operation will be used.

Hoisting equipment in no instance shall exceed a speed of 100 feet per minute.

When welding is being performed from suspended personnel hoisting platform, welding leads shall be protected from contact with any surface of the platform.

Employees on the platform shall wear safety harnesses and lanyards attached to the platform at all times.

PERSONNEL HOISTING

GENERAL REQUIREMENTS *Continued . . .*

The operator of the lifting equipment will remain at the controls and maintain visual/voice contact with the signal person(s) the entire time the personnel hoisting platform is elevated.

The number of employees to be hoisted shall be kept to a minimum, and in no situation shall the number exceed four (4). Employees using the hoisting platform shall be considered as weighing 250 pounds each.

The hoisting platform shall not be used during high winds, electrical storms, snow, or other adverse weather conditions, which could endanger personnel on the hoisting platform.

All lifts shall be made in accordance with the hoisting equipment manufacturer's lifting recommendations.

PERSONNEL PLATFORMS

The platforms used for lifting personnel must be designed with a minimum safety factor of five, and a qualified engineer who is competent in structural design, must design them. The suspension system must be designed to minimize tipping when personnel move on the platform.

Each personnel platform must be provided with a standard guardrail system that is enclosed from the toe board to the mid-rail to keep tools, materials, and equipment from falling on employees below. Also, the platform must have a grab rail, overhead protection, adequate headroom for employees and a plate or other permanent marking that clearly indicates the platform's weight and rated load capacity or maximum intended load.

An access gate must not swing outward during hoisting and must have a restraining device to prevent accidental opening.

Employees must not be exposed to any rough edges on the platform.

PERSONNEL HOISTING

PERSONNEL PLATFORMS *Continued . . .*

A qualified welder who is knowledgeable of weld grades must perform all welding and types as well as the materials specified in the platform design.

LOADING

The rated load capacity of the platform must not be exceeded.

Only authorized personnel, their tools, equipment and materials needed for the job are allowed on the platform.

Materials and tools must be secured and evenly distributed to balance the load while the platform is in motion.

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 between the legs. Bridles used as a connection for the personnel platform must not be used for any other purpose.

Attachment assemblies such as hooks must close and lock to keep the hook throat from opening. An alloy anchor type shackle with a bolt, nut, and retaining pin may be used as an alternative.

“Mouseing” (using wire to close the hook opening) is not permitted.

A separate wire rope choker will be utilized as a “safety” and will be connected to a shackle on the load line directly above the headache ball to the pad eye or shackle to the hoisting platform (Exhibit “B”).

INSPECTION AND TESTING

A trial lift must be made before employees are allowed to be hoisted. During the trial lift, the personnel platform must be loaded to twice its anticipated lift weight. The lift must start at ground level or at the location where employees will enter the

PERSONNEL HOISTING

INSPECTION AND TESTING *Continued . . .*

A. Glewen & Sons Excavating, Inc. Safety and Health Program

platform and proceed to each location where the personnel platform is to be hoisted and positioned (Lifting Plan, Exhibit “A”).

The crane or derrick operator must check all systems, controls, and safety devices to ensure that:

- They are functioning properly.
- There are no interferences.
- All configurations necessary to reach work locations will allow the operator to remain within the 50-percent load limit of the hoist’s rated capacity.

If a crane or derrick 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 personnel platform must be hoisted a few inches and inspected to ensure that it remains secured and is properly balanced.

Before employees are hoisted, a designated person must check to ensure the following:

- Hoist ropes are free of kinks.
- Multiple part lines are not twisted.
- The primary attachment is centered over the platform.
- There is no slack in the wire rope. If the rope is slack, the hoisting system must be inspected.

MOVEMENT OF CRANES

Personnel hoisting is prohibited while the crane is traveling except when the employer demonstrates that this is the least hazardous way to accomplish the task or when portal, tower or locomotive cranes are used.

When cranes are moving while hoisting personnel, the following rules apply:

- Travel must be restricted to a fixed track or runway.

PERSONNEL HOISTING

MOVEMENT OF CRANES *Continued . . .*

- Travel also must be limited to the radius of the boom during the lift.
- The boom must be parallel to the direction of travel.
- There must be a complete trial run before employees occupy the platform.
- If the crane has rubber tires, the condition and air pressure of the tires must be checked and the chart capacity for lifts must be applied to remain under the 50-percent limit of the hoist's rated capacity.

SUSPENDED PERSONNEL HOISTING PLATFORM AUTHORIZATION

After all requirements have been properly complied with, and PRIOR to the use of the personnel hoisting platform, the *Suspended Personnel Hoisting Platform Authorization Form* must be completed by the Project Manager. The Project Manager will approve the use of the personnel hoisting device only after all other approval signatures have been obtained.

The Suspended Personnel Hoisting Platform Authorization Permit – Exhibit “A” must be signed and dated by the appropriate Foremen, General Superintendent, Project Manager and the Safety Manager.

RECORDS

The company must retain at the jobsite and produce when requested, documentation of all meeting notes pertaining to the lift, construction and testing of the hoisting platform and Suspended Personnel Hoisting Platform Authorization (Exhibit “A”)

A copy of the Suspended Personnel Hoisting Platform Authorization must be posted by the equipment superintendent in the cab of the hoisting equipment being utilized for personnel hoisting.

EXHIBIT "A"

SUSPENDED PERSONNEL HOISTING PLATFORM AUTHORIZATION

DATE: ____/____/____ TIME: _____ a.m./p.m. PROJECT NO: _____

I _____ as Project Manager, approve the use of a
suspended personnel hoisting platform at _____

_____.

The use of the platform is in accordance with OSHA regulations concerning Hoisting Personnel Baskets/Platforms from Cranes and Derricks, 29 CFR 1926.550 Paragraph (g) (Effective October 3, 1988). All established criteria as required by Federal Law for use of the personnel hoisting platform have been complied with and no SAFE alternative means of work area access exists.

APPROVAL SIGNATURES

Immediate Foreman

Project Manager

General Superintendent

Safety Manager

Distribution: Foreman
General Superintendent
Safety Manager
Project Manager

PURPOSE

To provide guidelines for the safe use of power tools.

REFERENCES

OSHA 29 CFR 1926.300; 1926.302

POLICY

General Requirements

- Follow all manufacturers' instructions regarding the safe storage, operation, and maintenance of power tools.
- Do not use a power tool unless you have been trained on how to use it properly and safely.
- All guards must be in place before operating the tool.
- Appropriate eye protection must be worn when operating or working near power tools.
- Do not wear loose fitting clothing or jewelry when using power tools.
- Disconnect the tool before changing blades, bits, etc.
- Remove chuck keys, etc. before using a power tool.
- Disconnect power tools from the power source by pulling out the plug – do not pull on the power cord.
- Make sure that tools are either double insulated, or have three prong plugs with grounded extension cords and receptacles.
- Keep your finger off the trigger and make sure the switch is “off” before plugging in a tool.
- Do not use electric tools that have worn or damaged plugs or cords.
- Secure small pieces of work with a clamp, or in a vise.
- When using power tools, keep the work area free of any trip hazards, or slippery conditions.
- Never use compressed air to blow off equipment or clothing; use a brush.

SAWS

- Do not jam or force saws into the work.
- Portable saws should have a spring-loaded operating switch.
- Stay out of the saw's line of cutting.
- Start and stop the saw outside the work piece.
- Wear appropriate eye and hearing protection.

CIRCULAR SAWS

- Do not retract the lower guard while the blade is moving.
- Use the retracting handle or safety lift lever to move the lower guard.
- Do not clamp or tie the guard open.
- Do not operate the saw if the guard is not working properly.
- Keep your hand away from the blade while using the saw.
- Keep the power cord out of the line of the saw cut.

RECIPROCATING SAWS

- Do not lock the trigger if the saw needs to be stopped quickly.
- Do not use the saw unless the insulating boot is in place.
- Be especially careful to keep your hands away from the blade when using this tool.

PORTABLE BAND SAWS

- Return dull or damaged blades to the tool room. Do not leave blades in work area. They create serious trip hazards.

RADIAL ARM SAWS

- The radial arm shall be self-retracting.
- Do not remove any manufacture's guards.
- Only approved and trained employees are to use a radial arm saw.

DRILLS

- Wear appropriate eye protection.
- Do not use dull or chipped bits.
- Let the bit cool down before changing or adjusting.
- Do not force the drill into the work.
- Use light oil to keep bit lubricated and cool during use.

PNEUMATIC TOOLS

- Wear appropriate eye and hearing protection.
- Pneumatic power tools must be securely attached to the compressed air hose.
- Do not make adjustments to pneumatic tools until you are sure that no air pressure is being supplied to the hose or tool.
- Do not hoist or carry a tool by the hose.
- Pneumatic impact tools must have safety clips or retainers to retain tool bits.
- Follow the manufacturer's guidelines for safe operating pressures.
- Locate all air hoses so they do not present a tripping hazard.

GRINDERS

- Wear appropriate eye protection.
- Grinding wheels must be covered with a safety guard.
- Tool rests must be well supported and be no more than 1/8" from the wheel. Never adjust a tool rest while the wheel is in motion.
- Do not grind on the side of the wheel unless it is designed to be used as a slide grinder.
- Never leave a running grinder unattended.
- Make sure the work area around the grinder is clear before starting it up. Stand off to one side of the grinder at start-up.
- Bench grinders shall be set up in a non-traffic area.

MAGNETIC BASE DRILLS

- Always use a safety chain to secure magnetic drills to work.
- Tag electrical cord connections.

PORTABLE GRINDERS

- Always wear full-face shield over safety glasses.
- Always tuck shirt in when using grinders.
- Do not operate grinders without proper guards.
- Do not use a portable side grinder as a replacement for a bench grinder.

BENCH GRINDERS

Abrasive wheel bench or stand grinders must have safety guards strong enough to withstand bursting wheels. Adjust work rests on grinders to a clearance not to exceed 1/8 inch between rest and tool surface. Inspect and ring test abrasive wheels before mounting. Always leave wheel in working condition for the next user.

POWDER-ACTUATED TOOLS

PURPOSE

To establish procedures for the safe use of powder-actuated tools.

REFERENCES

OSHA 29 CFR 1926.302

ANSI A10.3 – 1977

POLICY

General Requirements

All manufacturers' recommendations and applicable local laws governing the proper use, inspections and maintenance of power-actuated tools shall be followed.

Only authorized, certified employees will be allowed to use powder-actuated tools.

General precautions applicable to all types of powder-actuated stud guns:

- The explosive powder-actuated tool and ammunition must be kept in a locked box at all times (other than when being used) to prevent unauthorized use.
- Storage of the tool, ammunition and studs shall be controlled so that only **AUTHORIZED TRAINED PERSONNEL** can withdraw them for use.
- The manufacturer's representative of the tool to be used shall train, qualify, and certify site employees in the proper use and maintenance of the stud gun.
- A current certification card for the powder-actuated tool being used must be in the operator's possession while tool is being used.

The powder actuated tool shall not be used where the stud is to be driven into surface hardened steel, cast iron, glazed brick or tile, marble, granite, live rock or similar brittle materials.

Tools must not be used in any location where explosives, flammable gasses, vapors or dusts are present.

The tool operator and nearby workers must wear safety glasses or goggles when the tool is being used. Ear protection shall be used 100% of the time when this tool is used. Other workers in the near vicinity shall wear ear protection.

The utmost care must be exercised to insure that ammunition, studs, nails, etc., are of the proper specification.

The tool must at all times be equipped with the proper ricochet or spall guard.

POWDER-ACTUATED TOOLS

General Requirements *Continued* . . .

Signs shall be posted warning of the use of powdered-actuated tools in use.

HIGH VELOCITY GUNS

Only the “captive stud” type gun should be used. Guns capable of firing a stud into free flight at high velocity are prohibited.

No stud is to be driven closer than three inches to the edge of brick, concrete or masonry surfaces because of their tendency to split or crack. Exception to this rule may be made where steel safety shields are placed on the sides of the surfaces as in the case of concrete curbs to prevent flying spalls.

In case of misfire, the tool shall be kept in operating position for one full minute and then placed in vertical position, muzzle down while the charge is removed.

The tool shall never be pointed at anyone. The line of fire, whether up, down, or across, must be clear of personnel. Do not assume the stud will not shoot all the way through something.

Studs shall never be driven through pre-drilled or pre-punched holes in fixtures or material without a special guard designed for this type operation.

LOW VELOCITY, HIGH INERTIA GUNS

Where stud or fastener velocity does not exceed 300 FPS at 6.5 feet from muzzle – “Powder-Actuated Tool Manufacturer’s Institute, Inc.” code:

This type of gun employs the principle of a powder-actuated captive piston (high mass) driving a free stud at low velocity. Stud-driving energy is derived from piston inertia. Once free of the piston, the stud alone has insufficient inertia to produce free flight, ricochets, penetration, etc. This type gun is recommended from both safety and productivity standpoints.

Adherence to the general precautions as noted in this section will afford adequate protection.

POWERED AERIAL WORK PLATFORMS

PURPOSE

To provide guidelines for the protection of personnel engaged in operating and using aerial lifts, vehicle-mounted work platforms, or powered platforms.

REFERENCES

OSHA 29 CFR 1926.453; 1926.952; 1926.955

POLICY

All employees who work with aerial lifts, vehicle-mounted work platforms or powered platforms are responsible for following all safe procedures established by this procedure as well as those established by the manufacture of the equipment being used.

INSPECTION

Inspection of aerial lifts, vehicle-mounted elevated and rotation work platforms or powered platforms will be made in accordance with manufacturer recommendations and company, state and federal inspection requirements and regulations.

OPERATION

No employee will be permitted to use or operate lifts or platforms unless he/she has been instructed, trained, and certified by a competent person in the use and operation of such equipment.

Powered aerial work platforms being utilized near electrical distribution or transmission lines shall comply with standards set forth in OSHA 29 CFR 1926.555.

Equipment will not be moved when the boom is elevated in a working position with workers in the basket or on the platform unless equipment was manufactured to perform these functions.

Manufacturer's specifications and limitations shall be observed.

Safety harnesses will be worn by employees working from the basket, with the lanyard being attached to the basket. Under no circumstances will the lanyard be attached to a pole, the structure or other equipment.

Employees, who tamper with controls and/or bypass safety devices, such as dead man switches, etc., are subject to termination.

OPERATION *continued* . . .

Avoid using mobile and self-propelled lifts and platforms in outside work activities where exposure to severe wind conditions exists.

Extended boom aerial lifts or work platforms in outside areas are prohibited during electrical storms.

Outriggers must be used for that equipment equipped with same.

OPERATOR CERTIFICATION AND TRAINING

The operator's knowledge of operating and safety procedures and requirements for this equipment must be verified by a manipulative test, and by observation of his/her performance during the first month of operation.

A competent person, designated at each project by the project superintendent, will conduct the manipulative test to determine an applicant's operating ability.

A manipulative test will be used to determine an applicant's ability on each type and model of equipment to be operated.

Training will be provided for each operator in the compliance with Equipment Operator Training Procedures specified by the company.

RECORDS

A training and testing record of each employee designated as an operator of equipment specified in this section will be maintained in the file in the Safety Department.

RESPIRATORY PROTECTION

PURPOSE

To establish uniform guidelines for complying with the requirements of the Occupational Safety and Health Administration (OSHA) for Respiratory Protection, Title 29, 1926.103, which provides procedures for the proper selection, use and care of respiratory protective equipment.

REFERENCES

Respiratory Protection

Title 29 Code of Federal Regulations, Part 1910.134; 1926.103

Access to Employee Exposure and Medical Records

Title 29 Code of Federal Regulations, Part 1910.20

NIOSH/MSHA Approvals for Regulators

Title 30, Part II of the Code of Federal Regulations

American National Standards Institute (ANSI)

American National Standards Practices for Respiratory Protection, Z88.2-1980

DEFINITIONS

Abrasive-blasting respirator – A respirator designed to protect the wearer against inhalation of abrasive material and against impact and abrasion from rebounding abrasive material.

Aerosol – A system consisting of particles, solid or liquid, suspended in air.

Air-regulating valve – An adjustable valve used to regulate, but which cannot complete shut off, the airflow to the face piece, helmet, hood, or suit of an air-line respirator.

Air-supply device – A hand-operated or motor-operated blower for the hose mask, or a compressor or other source of respirable air for the air-line respirator.

Approved – Tested and listed as satisfactory by the Bureau of Mines (BM) of the U.S. Department of Interior, or by the National Institute for Occupational Safety and Health (NIOSH) of the U.S. Department of Health and Human Services, or jointly by the Mine Safety and Health Administration (MSHA) of the U.S. Department of Labor and the National Institute for Occupational Safety and Health (NIOSH) of the U.S. Department of Health and Human Services.

Breathing tube – A tube through which air or oxygen flows to the face piece, moth piece, helmet, hood, or suit.

Canister--(air-purifying) – A container with a filter, sorbent, or catalyst, or any combination thereof, which removes specific contaminants from the air drawn through it.

Canister—(oxygen-generating) – A container filled with a chemical which generates oxygen by chemical reaction.

RESPIRATORY PROTECTION

DEFINITIONS *continued...*

Carcinogen – A substance known to cause cancer.

Catalyst – In respirator use, a substance which converts a toxic gas (or vapor) into a less-toxic gas (or vapor).

Ceiling concentration – The concentration of an airborne substance that shall not be exceeded.

Confined space – An enclosure – such as a storage tank, process vessel, boiler, silo, tank car, pipeline, tube, duct, sewer, underground utility vault, tunnel, or pit – having limited means of egress and poor natural ventilation and which may contain hazardous contaminants or be oxygen deficient.

Contaminant – A harmful, irritating, or nuisance materials that is foreign to the normal atmosphere.

Emergency respirator use – Wearing a respirator when a hazardous atmosphere suddenly occurs that requires immediate use of a respirator either for escape from the hazardous atmosphere or for entry into the hazardous atmosphere to carry out maintenance or some other task.

Exhalation valve – A device that allows exhaled air to leave a respirator and prevents outside air from entering through the valve.

Eyepiece – A gas-tight, transparent window(s) in a full facepiece, helmet, hood, or suit, through which the wearer may see.

Facepiece – That portion of a respirator that cover the wearer's nose and mouth in a quarter-mask (above the chin) or half-mask (under the chine) facepiece or that covers the nose, mouth, and eyes in a full facepiece. It is designed to make a gas-tight or particle-tight fit with the face and includes the headbands, exhalation valve(s), and connections for an air-purifying device or respirable gas source, or both.

Face shield – A device worn in front of the eyes and a portion of, or all of, the face, whose predominant function is protection of the eyes and face.

Filter – A media component used in respirators to remove solid or liquid particles form the inspired air.

Goggles – A device, which contour-shaped eyecups with glass or plastic lenses, worn over the eyes and held in place by a headband or other suitable means for the protection of the yes and eye sockets.

RESPIRATORY PROTECTION

DEFINITIONS *continued...*

Hazardous atmosphere – Any atmosphere, either immediately or not immediately dangerous to life and health, which is oxygen deficient or which contains a toxic or disease-producing contaminant exceeding the legally established Permissible Exposure Limit (EPL) or, where applicable, the Threshold Limit Value (TLV) established by the American Conference of Governmental Industrial Hygienists (ACGIH).

Head harness – That part of a facepiece assembly which secures the facepiece to the wearer.

Helmet – That portion of a respirator which shields the eyes, face, neck, and other parts of the head.

Hood – That portion of a respirator which completely covers the head, neck, and portions of the shoulders.

Immediately Dangerous to Life or Health (IDLH) – Any atmosphere that poses an immediate hazard to life and produces immediate irreversible debilitating effects on health.

Inhalation valve – A device that allows respirable air to enter a respirator and prevents exhaled air from leaving the respirator through the valve.

Irrespirable – Unfit for breathing.

Maximum Use Concentration of filter, cartridge, or canister – The maximum concentration of a contaminant for which an air-purifying filter, cartridge, or canister is approved for use.

Mouthpiece – That portion of a respirator which is held in the wearer's mouth and is connected to an air-purifying device or respirable gas source, or both. It is designed to make a gas-tight or particle-tight fit with the mouth.

Negative pressure respirator – A respirator in which the air pressure inside the respirator-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.

Nose clamp – A device used with a respirator equipped with a mouthpiece that closes the nostrils of the wearer (sometimes called a nose clip).

Odor threshold limit – The lowest concentration of a contaminant in air that can be detected by the olfactory sense.

Oxygen deficiency – The concentration of oxygen, by volume, below which atmosphere supplying respiratory protection must be provided. It exists in atmospheres where the percentage of oxygen, by volume, is less than 19.5 percent oxygen.

RESPIRATORY PROTECTION

DEFINITIONS *continued...*

Particle matter – A suspension of fine solid or liquid particles in air, such as: dust, fog, fume, mist, smoke, or spray. Particulate matter suspended in air is commonly known as an aerosol.

Permissible Exposure Limit (PEL) – The legally established time-weighted average (TWA) concentration of a contaminant that shall not be exceeded.

Rescue respirator use – Wearing a respirator for entry into a hazardous atmosphere to rescue a person(s) in the hazardous atmosphere.

Resistance – Opposition to the flow of air, as through a canister, cartridge, particulate filter, orifice, valve or hose.

Respirable – Suitable for breathing.

Respiratory-inlet covering – That portion of a respirator which connects the wearer's respiratory tract to an air-purifying device or respirable gas source, or both. It may be a facepiece, helmet, hood, suite, or mouthpiece/nose clamp.

Routine respirator use – Wearing a respirator as a normal procedure when carrying out a regular and frequently repeated task.

Sanitation – The removal of dirt and the inhibiting of the action of agents that cause infection or disease.

Service life – The period of time that a respirator provides adequate protection to the wearer – for example, the period of time that an air-purifying device is effective for removing a harmful substance from inspired air.

Sorbent – A material which is contained in a cartridge or canister and which removes toxic gases and vapors from inspired air.

Supplied-air suit – A suit that is impermeable to most particulate and gaseous contaminants and that is provided with an adequate supply of respirable air.

Time-Weighted Average (TWA) – The average concentration of a contaminant in air during a specific time period.

Valve (air or oxygen) – A device which controls the pressure, direction, or rate of flow of air or oxygen.

Vapor – The gaseous stage of a substance that is solid or liquid at ordinary temperature and pressure.

RESPIRATORY PROTECTION

DEFINITIONS *continued...*

Welding helmet – A device designed to provide protection for the eyes and face against intense radiant energy and molten metal splatter encountered in the welding and cutting of metals.

Window indicator – A device on a cartridge or canister that visually denotes the service life of the cartridge or canister.

GENERAL REQUIREMENTS

Every consideration will be given to the use of effective engineering controls to eliminate or reduce exposure to respiratory hazards to the point where respirators are not required; however, when feasible engineering controls are not effective in controlling toxic substances, appropriate respiratory protective equipment will be provided by the company at no charge to the employee.

These respiratory protective devices will be of the type approved by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) or acceptable to the U.S. Department of Labor (OSHA) for the specific containment to which the employee is exposed.

Employees required to use respiratory protective devices because of exposure to toxic substances would do so as a condition of employment. Employees required to use respirators will be properly fitted, appropriately tested, medically screened, and thoroughly trained in their use.

PURCHASE OF APPROVED EQUIPMENT

In order to comply with the provisions of OSHA's standard, all respiratory protective equipment purchased by *A. Glewen & Sons Excavating, Inc.* will have been tested by the National Institute for Occupational Safety and Health and will carry a joint NIOSH/MSHA approval number for that specific respirator assembly.

WORK AREA SURVEILLANCE

The Respiratory Protection Standard 29 CFR 1910.134 standard requires "appropriate surveillance." This should include identification of the contaminant, nature of the hazard, concentration at the breathing zone, and, if appropriate, biological monitoring. The Industrial Hygienist, who is conducting the air sampling, should carefully and fully document any apparent deficiencies in surveillance necessary to the respirator program.

RESPIRATORY PROTECTION

RESPIRATOR SELECTION

In selecting the correct respirator for a given circumstance, the following factors must be taken into consideration:

Nature of the Hazard. In order to make subsequent decisions, the nature of the hazard must be identified to ensure that an overexposure does not occur. These include oxygen deficiency, physical properties of the hazard, chemical properties of the hazard, physiologic effects on the body, actual concentrations of the toxic substances, the Permissible Exposure Limits (PEL), and the warning properties.

Nature of the Hazardous Operation. For proper respirator selecting, it is necessary to know the details of the operations, which require employees to use respiratory devices. These include operation or process characteristics, work area characteristics, materials used or produced during the process, the employee's duties and actions, and any abnormal situation characteristics which may necessitate alternate respirator selection.

Location of the Hazardous Area. This is important in the selection process so that a backup system may be planned if necessary. Respirable air locations must be known prior to entry into a hazardous area so escape or emergency operations may be planned.

Time Respiratory Protection is Required. The length of time a respirator will have to be worn by an employee is a factor that must be evaluated. This is most pronounced when using SCBA equipment, where, by definition, the air supply is finite. However, time is also a factor during routine use of air-purifying respirators when the employee's breathing and comfort become affected by a clogged filter cartridge which needs changing.

Employee's Health. Effective usage of a respirator is dependent on an individual's ability to wear a respirator, as determined by a physician. Most respiratory devices increase physical stress on the body, especially the heart and lungs. Care should be taken to ensure that a medical determination has been made that an individual is capable of wearing a respirator for the duration of the work assignment.

Work Activity. The type of work activities to be performed while wearing a respirator is vitally important in the respirator selection. The proper respirator will be one, which is least disruptive to the task being conducted yet providing the desired protection.

Respirator Characteristics, Capabilities and Limitations. The Tables in Exhibits "A" and "B" have been reproduced from ANSI Z88.2-1980. They provide a description of various respirator characteristics, capabilities and limitations.

Protection Factors. The protection afforded by respirators is dependent upon the type of respirator used, seal of the facepiece to the face, leakage around valves, and leakage through or around cartridges or canisters. Depending on these criteria, the degree of protection may be ascertained and a relative safety factor assigned. Protection factors are only applicable if all elements of an effective respirator program are in place and being enforced.

RESPIRATORY PROTECTION

COMFORT

Once the type of respirator has been selected that is applicable and suitable for the purpose intended, the selection process should give consideration to the fit and comfort of the respirator.

The employee should be given the opportunity to select a respirator that provides the most comfortable fit. Since each respirator represents a different size and shape, a respirator which fits better during selection will provide better protection after fit testing. The employee should be shown how to assess a comfortable device and should eliminate those that are obviously ill-fitting.

An assessment of comfort should include the following points:

- Chin properly placed
- Fit across nose bridge
- Positioning of mask on nose
- Room for safety glasses
- Strap tension
- Distance from nose to bridge
- Room to talk
- Tendency to slip
- Cheeks filled out
- Hindrance to movement

ISSUANCE OF EQUIPMENT

The issuance of respirators to employees shall be, at a minimum, based on the following considerations:

- A person must have received appropriate, documented training and must have received medical clearance, where applicable.
- A person who has hair, e.g., beard growth, moustache, sideburns, stubble, low hairline, bangs, which passes between the face and the sealing surface of the respirator facepiece shall not be permitted to wear such a respirator.

RESPIRATORY PROTECTION

ISSUANCE OF EQUIPMENT *continued...*

- A person who has hair which interferes with the function of a respirator valve(s) shall not be permitted to wear the respirator.
- A corrective vision spectacle which has temple bars or straps which pass between the sealing surface of a full face piece and the wearer's face shall not be permitted.
- A head covering which passes between the sealing surface of a respirator facepiece and the wearer's face shall not be permitted.
- The wearing of a spectacle, a goggle, a face shield, a welding helmet, or other eye and face protective device, which interferes with the seal of a respirator to the wearer, shall not be permitted.
- If scars, hollow temples, excessively protruding cheekbones, deep creases in facial skin, the absence of teeth or dentures, or unusual facial configurations prevent a seal of a respirator facepiece to a wearer's face, the person shall not be permitted to wear the respirator.
- If missing teeth or dentures prevent a seal of respirator mouthpiece in a person's mouth, the person shall not be allowed to wear a respirator equipped with a mouthpiece.
- If a person has a nose of a shape or size that prevents the closing of the nose by the nose clamp or a mouthpiece/nose-clamp type of escape respirator, the person shall not be permitted to wear this type of respirator.

Where practical, and where the above considerations are deemed acceptable, respirators should be assigned to individual employees for their exclusive use and labeled for identification in such a way as not to affect the performance of the respirator.

MEDICAL SURVEILLANCE REQUIREMENTS

Prior to the use of respiratory protection devices, a medical examination shall be required for all personnel in the following categories:

- Employees who are or may be exposed to OSHA regulated airborne contaminants at or above the established Action Level (AL) or 30 or more days per year.
- Employees who are or may be exposed to OSHA regulated airborne contaminants at or above the established Permissible Exposure Limit (PEL) for 10 or more days per year.

RESPIRATORY PROTECTION

MEDICAL SURVEILLANCE REQUIREMENTS *continued...*

- Employees who are or may be required to use a Self-Contained Breathing Apparatus (SCBA), e.g., as a member of a confined space entry team, as a member of a first aid/rescue team, or during hazardous material response operations.
- Employees who use negative pressure, air purifying respirators in work areas that contain asbestos.

A licensed physician shall determine what physiological and psychological conditions are pertinent for the wearing of different types of respirators. The respirator program administrator or his designee, using guidelines established by the physician, shall determine whether or not a person may be assigned to a task requiring the use of a respirator.

When applicable, medical surveillance, including bioassay, shall be carried out periodically to determine if respirator wearers are receiving adequate respiratory protection. The licensed physician shall determine the requirements of the surveillance program.

Employees included in the medical surveillance program shall, as a minimum, be provided with annual surveillance examinations. If the examining physician determines that any of the examinations should be provided more frequently than specified, *A. Glewen & Sons Excavating, Inc.* would provide such examinations to affected employees at the frequencies specified by the physician.

MEDICAL FORMS

In addition to the standardized questionnaires, the physician must also be furnished with a copy of the latest OSHA Standard governing the type of exposure the employee will be subjected to. A description of the employee's duties as they relate to the exposure, the anticipated exposure level, a description of the respiratory protection equipment to be used, and any available information from previous medical examinations of the employee must also be furnished to the physician.

At the conclusion of the examination, the physician will submit a written opinion to A. Glewen & Sons Excavating, Inc.. This will contain the results of the examination, any conditions discovered by the physician that will prohibit the employee from using a respirator and any recommendations from the physician regarding the employee's limitations. It will also contain a statement from the physician that he/she has informed the employee of the results of the examination.

The company must furnish a copy of the physician's opinion to the employee within 30 days of its receipt by the company.

RESPIRATORY PROTECTION

SPECIAL PROBLEMS – VISION

When a respirator user must wear corrective lenses, a protective spectacle or goggle, a face shield, a welding helmet, or other eye and face protective device, the item shall be fitted to provide good

A. Glewen & Sons Excavating, Inc. Safety and Health Program

vision and shall be worn in such a manner as not to interfere with the seal of the respirator to the wearer.

Temple bars or straps of a corrective spectacle which pass between the sealing surface of a full facepiece respirator and the wearer's face may prevent a good seal of the facepiece to the face and therefore such a spectacle shall not be used when a full facepiece respirator is worn. Special corrective lenses, which are made to be mounted inside a full facepiece, are available, from each specified respirator manufacturer, and should be provided by the employer for the employee who needs corrective lenses.

The wearing of contact lenses by persons who must wear a respirator in a contaminated atmosphere is prohibited.

TRAINING

Respirators will not be issued to individuals (including company officials, subcontractors, or visitors) who have not received the appropriate respirator training and a medical clearance.

Training Program

The extent and frequency of employee training depends primarily on the nature and extent of the hazard. As a minimum, all employees and supervisory personnel will be trained in basic respirator practices. It must be remembered that respirators are effective only when they are acceptable to the employee and worn properly by him/her. Because proper use depends especially upon the wearer's motivation, it is important that the need for the respirator be explained fully.

The basic respirator training program must include:

- A discussion of the nature of airborne contaminants against which the employee must be protected, and why engineering controls have not been effective in controlling exposure to the point where respirators are not required.
- A discussion of why the respirator which has been selected for this job is the proper device for this particular purpose.
- An explanation of the differences between air-purifying and supplied air respirators and how their use is controlled by the amount of exposure.

RESPIRATORY PROTECTION

Training Program *continued...*

- Instruction on the respirator's limitations, emphasizing such things as oxygen deficiency, toxic contaminants which are immediately dangerous to life or health, particulates, such as asbestos, which are not immediately dangerous to life or health, and the need to change filter cartridges

when indicated to do so by testing, or when breathing resistance increases to an uncomfortable level.

- Instructions in how to inspect the respirator and ensure that it is in proper working condition.
- Instructions on how to put on the respirator, how it should be positioned on the face, how to set strap tension, and how to wear the respirator comfortably.
- Instructions on the method of fit testing used and the proper way to conduct positive and negative pressure tests each time the respirator is put on. During this instruction, the wearer must be made to understand that the respirator cannot be used when conditions prevent a satisfactory facepiece-to-face seal. If this condition cannot be corrected, the employee cannot be allowed into the area requiring the use of a respirator.
- Instructions in the proper care and maintenance of the respirator.
- A discussion on the value of medical surveillance and air-sample monitoring.
- Field training to recognize and cope with any type of emergency while using a respirator.

FITTING

After the employee has been shown how to assess a respirator, he/she should be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine a proper fit.

Note: This instruction should take the form of a review and should not be considered the employee's formal training.

The employee should hold each facepiece up to the face and eliminate those that obviously do not give a comfortable or proper fit.

FAMILIARIZATION

Once the proper fitting respirator has been selected, the employee should don the device, adjusting the facepiece and tensioning the straps. The employee should wear the mask for at least five minutes before taking it off and putting it on several times, adjusting the straps each time to become familiar with the respirator and adept at setting the proper tension on the straps.

RESPIRATORY PROTECTION

FIT-TESTING REQUIREMENTS

OSHA requires that respirators be fitted properly, and that they be tested for their facepiece-to-face seal. There are currently two methods acceptable for conducting these tests; Qualitative and Quantitative Fit-Testing. The Qualitative method is a fast, easily conducted test that can be

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performed almost anywhere, while the Quantitative methods require the use of bulky test chambers and electronic equipment. The Quantitative method applies only to negative pressure, non-powered air-purifying respirators.

Due to the high potential for exposure in the type of work in which *A. Glewen & Sons Excavating, Inc.* is presently involved, the numerous field locations in which fit-testing must be accomplished, the Qualitative fit-testing method will be utilized throughout the *A. Glewen & Sons Excavating, Inc.* organization. In keeping with *A. Glewen & Sons Excavating, Inc.*'s high regard for employee safety, Corporate policy will continue to require qualitative fit-testing for both negative pressure and powered air-purifying respirators (PAPR).

Qualitative fit-testing is based on the wearer's subjective response to a challenge atmosphere, of which three popular tests are: the irritant smoke test, the odorous vapor test, and the ammonia irritant test. (See Exhibit "C" for procedures). The following represents a brief summary of how to conduct each of these tests.

Irritant Smoke Test: The irritant smoke test is performed by directing an irritant smoke, usually either stannic chloride or titanitic tetrachloride, from a smoke tube towards the respirator being worn. If the wearer cannot detect the irritant smoke, a satisfactory fit is assumed to be achieved.

The respirator wearer will react involuntarily, usually by coughing or sneezing, to a leakage around or through the respirator. Since this type of test provokes an involuntary response from the employee, it is the preferred testing method when available. In this type of qualitative test, the person administering the test should be interested in any response to the smoke and not necessarily to the degree of the response.

When an air-purifying respirator is being tested in this method, it has to be equipped with a high efficiency filter cartridge.

NOTE: The test substances are irritants to the eyes, skin and mucus membranes. Therefore, the respirator wearer should keep his/her eyes closed during testing.

RESPIRATORY PROTECTION

Odorous Vapor Test: The odorous vapor test relies on the respirator wearer's ability to detect an odorous material, usually isoamyl acetate (banana oil) inside the respirator. The test is performed by passing an isoamyl acetate saturated material around the outside of the respirator. If the wearer is unable to smell the chemical, then a satisfactory fit is assumed to be achieved.

When an air-purifying respirator is tested by this method, it should be equipped with an organic-

vapor cartridge that removes the test vapor from the air.

NOTE: This test is solely dependent upon the employee's honest response, since there is no involuntary reaction.

Ammonia Irritant Test: The ammonia irritant test relies upon the wearer's ability to detect an irritant organic chemical substance, usually an ammonia inhalant. The test is performed by placing an enclosure over the respirator wearer's head and shoulders and administering the inhalant vapor from an ampule. If the wearer does not react to the chemical, then a satisfactory fit is assumed to be achieved.

NOTE: This test is not dependent on the wearer's honest indication of taste. There is an involuntary response, and therefore is preferred as a method of testing.

FIELD TESTS

There are two tests that are used in the field to check the seal of the respirator. These are known as the positive and negative pressure sealing tests. Each of these two tests must be performed every time a respirator is put on and prior to entering a contaminated area.

NOTE: Although both the positive and negative pressure tests are considered essential to a good respiratory protection program and should always be used prior to entering an area of exposure, they are recognized solely as a field test and cannot be substituted for the qualitative fit test.

Positive Pressure Test

- This test only applies to those respirators that have an exhalation valve that can be blocked. The exhalation valve cover may have to be removed for the test.
- Close or "block off" the exhalation valve.
- Exhale gently into the facepiece.
- If a slight positive pressure is built up with no apparent outward leakage around the seal, then the face piece-to-face seal is satisfactory.

RESPIRATORY PROTECTION

FIELD TESTS *continued...*

Negative Pressure Test

- Close the inlet opening or hose of the respirator facepiece with the hand(s), tape, or other means.
- Inhale gently so that the facepiece collapses slightly and hold the breath for ten seconds.

- If the facepiece remains slightly collapsed and no inward leakage occurs, then the facepiece-to-face seal is deemed to be satisfactory.

CARE AND MAINTENANCE

Personnel involved in respirator maintenance must be thoroughly trained. Substitution of parts from different brands or types of respirators invalidates approval of the device. Repairs and adjustments should never be made beyond the manufacturer's recommendations.

Cleaning the Respirator

Respirators must be cleaned and disinfected after each day's use when they are assigned to one individual or after each use if they are assigned to more than one person. The following procedures are recommended for cleaning and disinfecting respirators:

- If required, remove and discard any filters or cartridges.
- Wash facepiece and breathing tube in detergent and warm water (120°) or a cleaner/disinfectant solution. Use a soft brush to facilitate removal of dirt. Cleaner/disinfectant solutions are available from respirator manufacturers or it can be made by using a solution of water and household chemicals, such as two tablespoons of chlorine bleach to one gallon of water, or one teaspoon of tincture of iodine to one gallon of water. A two minute immersion of the respirator into either solution is sufficient for disinfection.
- Rinse completely in clean, warm water.
- Air dry in clean air.
- Clean out other parts as recommended by the manufacturer.
- Inspect the valves, headstraps and other parts and replace with new parts if defective.
- Place facepiece in a plastic bag or container for storage in an assigned area.
- Insert new filters or cartridges prior to use, making sure the seals are tight.

RESPIRATORY PROTECTION

CARE AND MAINTENANCE *continued...*

Storing the Respirator

When they are not being used, respirators should be individually sealed in plastic bags and stored at convenient locations in order to protect them against dust, sunlight, extreme temperatures, excessive moisture, or damaging chemicals. They should be stored in such a way, that the facepiece and

exhalation valve are not being distorted.

Inspecting the Respirator

All respirators should be inspected before and after use and at least monthly by a competent person to ensure that they are in satisfactory working condition. A general inspection check list should include:

- Tightness of connections.
- Conditions of face piece, straps, connecting tubes, and cartridges.
- Condition of exhalation and inhalation valves. If the sides of the exhalation valve gap even slightly, it must be replaced with a new valve.
- Pliability and flexibility of rubber parts. Deteriorated rubber parts must be replaced. Unused rubber parts should be worked, stretched and manipulated with a massaging action.
- Condition of lenses should be checked. Lenses must be tight and scratched or damaged lenses replaced.
- On self-contained breathing apparatus, the charge of the compressed air cylinders should be checked and fully charged.

PROGRAM EVALUATION

The program administrator should periodically assess the effectiveness of the respiratory protection program during all phases of operation in which respirators are being used. Frequent walk-through inspections during these activities should be conducted to monitor and document supervisory and worker compliance with the requirements of the program. In addition to general assessment of the overall respiratory protection program, specific calculations of the respirator cleaning, inspection, maintenance, repair, storage, and use procedures should be frequently conducted to ensure that the desired results of these operations are consistently achieved.

RESPIRATORY PROTECTION

REPORTING RESPIRATOR PROBLEMS

Occasionally, the company may find a defect in the design or performance of a respirator. The best course to follow is to report these findings to the administrator of the company's respiratory protection program, who in turn should report these findings to the *A. Glewen & Sons Excavating, Inc.* Safety Manager.

If the respirator carries with it the approval of the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH), the Corporate Safety Manager will report the findings to the respirator's manufacturers and to NIOSH.

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This will be done by notifying the manufacturer of the defect in a report format, and forwarding a copy of the report to NIOSH. The report will include the following:

- The name, address and telephone number of *A. Glewen & Sons Excavating, Inc.*
- The name of the respirator's manufacturer.
- The model number of the respirator.
- The name and part number (if possible) of the defective part.
- The lot number and/or serial number of the respirator and/or defective part.
- A brief description of the respirator's use when the defect was discovered.
- A description of the defect.
- A description of the defect's adverse effect on the respirator's performance.

This report should be addressed to the NIOSH Division of Safety Research, Testing and Certification Branch, 944 Chestnut Ridge Rd., Morgantown, West Virginia 26505.

RESPIRATORY PROTECTION

RECORDS

Respirator Training Records

Upon completion of the basic respirator training program, the employee will be required to read and sign a Respirator Training Record (See Exhibit "D") attesting to the fact that they have received the basic training program and feel confident in their ability to use the respirator properly.

The signed and dated Respirator Training Record will then become a part of the employees' medical records and will be retained for the same period of time as those records.

Recordkeeping of Test Results

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A summary of the test results for each employee on whom a qualitative fit test was conducted, will be documented on the Respirator Fit Test Record (See Exhibit “E”). This record will then become a part of the employee’s medical record and will be retained for the same time period as the medical records.

Care and Maintenance Records

A written record should be maintained of the Care and Maintenance Program. Information contained on this record should include inspection reports, replacement parts used, dates of repair, cleaning and type of disinfectant used and the names of persons doing the work. The respirator should be identified by manufacturer, model and approval number. Records should be retained for a period of five years.

Medical Records

All records pertaining to the employee’s medical examination and evaluation must be retained for a period in excess of thirty (30) years.

Additional Information

Additional information about Respiratory Protection can be obtained from the Safety Manager.

EXHIBIT “A”

CAPABILITIES AND LIMITATIONS OF RESPIRATORS AIR-PURIFYING RESPIRATORS

Page 1 of 2

GENERAL LIMITATIONS

Air-purifying respirators do not protect against oxygen-deficient atmospheres or against skin irritations by, or absorption through the skin, or airborne contaminants.

The maximum contaminant concentration against which an air-purifying respirator will protect is determined by the design efficiency and capacity of the cartridge, canister, or filter and the facepiece-to-face seal on the user. For gases and vapors, the maximum concentrations for which the air-purifying element is designed is specified by the manufacturer or is listed on labels of cartridges and canisters.

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Non-powered air-purifying respirators will not provide the maximum design protection specified unless the face piece of mouth piece/nose clamp is carefully fitted to the wearer's face to prevent inward leakage. The time period, over which protection is provided is dependent on canister, cartridge, or filter type, concentration of contaminant, humidity levels in the ambient atmosphere, and the wearer's respiratory rate.

The proper type of canister, cartridge, or filter must be selected for the particular atmosphere and conditions. Non-powered air-purifying respirators may cause discomfort due to a noticeable resistance to inhalation. This problem is minimized in powered respirators. Respirator facepieces present special problems to individuals required to wear prescription lenses. These devices do not have the advantage of being small, light, and simple in operation.

Use of air-purifying respirators in atmospheres immediately dangerous to life or health is limited to specific devices under specified conditions.

VAPOR AND GAS-REMOVING RESPIRATORS

Limitations: No protection is provided against particulate contaminants. A rise in canister or cartridge temperature indicates that a gas or vapor is being removed from the inspired air.

An uncomfortably high temperature indicates a high concentration of gas or vapor and requires an immediate return to fresh air.

Use should be avoided in atmospheres where the contaminant(s) lack sufficient warning properties (that is: odor, taste, or irritation at a concentration in air or above the permissible exposure limit.) Vapor- and gas-removing respirators are not approved for contaminants that lack adequate warning properties.

Not for use in atmospheres immediately dangerous to life or health unless the device is a powered-type respirator with escape provisions.

EXHIBIT "A"

CAPABILITIES AND LIMITATIONS OF RESPIRATORS AIR-PURIFYING RESPIRATORS

Page 2 of 2

VAPOR AND GAS-REMOVING RESPIRATORS *continued...*

1. **Full Facepiece Respirator.** Provides protection against eye irritation in addition to respiratory protection.
2. **Quarter Mast and Half Mask Facepiece Respirator.** A fabric covering (facelet) available from some manufactures should not be used.
3. **Mouthpiece Respirator.** Shall be used **only** for escape applications. Mouth breathing prevents detection of contaminant by odor. Nose clamp must be securely in place to prevent nasal

breathing.

A small lightweight device that can be donned quickly.

PARTICULATE-REMOVE RESPIRATORS

Limitations: Protection against nonvolatile particles only. No protection against gases and vapors.

Not for use in atmospheres immediately dangerous to life or health unless the device is a powered-type respirator with escape provisions.

1. **Full Facepiece Respirator.** Provides protection against eye irritation in addition to respiratory protection.
2. **Quarter Mast and Half Mask Facepiece Respirator.** A fabric covering (facelet) available from some manufactures should not be used unless approved for use with respirator.
3. **Mouthpiece Respirator.** Shall be used **only** for escape applications. Mouth breathing prevents detection of contaminant by odor. Nose clamp must be securely in place to prevent nasal breathing.

A small lightweight device that can be donned quickly.

COMBINATION PARTICULATE- & VAPOR- & GAS-REMOVING RESPIRATORS

The advantages and disadvantages of the component sections of the combination respirator as described above apply.

EXHIBIT “B”

CAPABILITIES AND LIMITATIONS OF RESPIRATORS ATMOSPHERE-SUPPLY RESPIRATORS

Page 1 of 2

Atmosphere-supplying respirators provide protection against oxygen deficiency and toxic atmospheres. The breathing atmosphere is independent of ambient atmospheric conditions.

GENERAL LIMITATIONS

Except for some air-line suits, no protection is provided against skin irritation by materials such as ammonia and hydrogen chloride, or against sorption of materials such as hydrogen cyanide, tritium, or organic phosphate pesticides through the skin. Facepieces present special problems to individuals required to wear prescription lenses. Use of an atmosphere-supplying respirator in atmospheres immediately dangerous to life or health is limited to specific devices under specified

conditions.

SELF-CONTAINED BREATHING APPARATUS (SCBA)

The wearer carries his own breathing atmosphere.

Limitations: The period over which the device will provide protection is limited by the amount of air or oxygen in the apparatus, the ambient atmospheric pressure (service life of open-circuit devices is cut in half by a doubling of the atmospheric pressure), and the type of work being performed. Some SCBA devices have a short service life (less than 15 minutes) and are suitable only for escape (self-rescue) from an irrespirable atmosphere.

Chief limitations of SCBA devices are their weight or bulk, or both, limited service life, and the training required for their maintenance and safe use.

(1) **Closed-Circuit SCBA.** The closed-circuit operation conserves breathing air and permits longer service life at reduced weight. The negative-pressure type produces a negative pressure in the respiratory-inlet covering during inhalation, and this may permit inward leakage of contaminants; whereas the positive-pressure type always maintains a positive pressure in the respiratory-inlet covering and is less apt to permit inward leakage of contaminants.

(2) **Open-Circuit SCBA.** The demand type produces a negative pressure in the respiratory-inlet covering during inhalation, whereas the pressure-demand type maintains a positive pressure in the respiratory-inlet covering during inhalation and is less apt to permit inward leakage of contaminants.

EXHIBIT “B”

CAPABILITIES AND LIMITATIONS OF RESPIRATORS ATMOSPHERE-SUPPLY RESPIRATORS

Page 2 of 2

SUPPLIES-AIR RESPIRATORS

The respirable air supply is not limited to the quantity the individual can carry, and the devices are lightweight and simple.

Limitations: Limited to use in atmospheres from which the wearer can escape unharmed without the aid of the respirator.

The wearer is restricted in movement by the hose and must return to the respirable atmosphere by retracing his route of entry. The hose is subject to being severed or pinched off.

(1) **Hose Mask.** The hose inlet or blower must be located and secured in a respirable atmosphere.

(a) **Hose mask with blower.** If the blower fails, the unit still provides protection, although a negative pressure exists in the facepiece during inhalation.

(b) **Hose mask without blower.** Maximum hose length may restrict application of device.

(2) **Air-Line Respirator (Continuous Flow, Demand, and Pressure-Demand Types).** The demand type produces a negative pressure in the facepiece on inhalation, whereas continuous-flow and pressure-demand types maintain a positive pressure in the respiratory-inlet covering and are less apt to permit inward leakage of contaminants.

Air-line suits may protect against atmospheres that irritate the skin or that may be absorbed through the unbroken skin.

Limitations: Air-line respirators provide no protection if the air supply fails. Some contaminants, such as tritium, may penetrate the material of an air-line suit and limit its effectiveness.

Other contaminants, such as fluorine, may react chemically with the material of an air-line suit and damage it.

Combination Airline Respirators with Auxiliary SC Air Supply. The auxiliary self-contained air supply on this type of device allows the wearer to escape from a dangerous atmosphere. This device with auxiliary self-contained air supply is approved for escape and may be used for entry when it contains at least a 15-minute auxiliary self-contained air supply.

EXHIBIT "C"

AIR-PURIFYING RESPIRATOR QUALITATIVE FIT TEST PROCEDURE

Page 1 of 6

Subsequent to respirator training and medical approval, all personnel who request or are required to wear a respirator will be fit-tested with an air-purifying respirator (APR) prior to respirator assignment and use. Fit testing will be accomplished using qualitative methods, which incorporate pressure tests and administration of challenge aerosols (irritants or vapors). Personnel will be allowed to select a respirator that is comfortable and achieves a proper face-to-mask seal.

NOTE: To ensure proper fitting, personnel without clean-shaven faces will not be allowed to undergo fit testing nor will they be allowed to wear respirators on the job. (Moderate length moustaches are permitted if not interference is encountered.)

A written record of the fit-test result will be generated for inclusion into the project's master file and for the employee's records. The Safety Manger shall be responsible for conducting the fit test and generating the appropriate record.

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Personnel will be instructed in the use, maintenance, inspection, and limitations of APRs. It will be stressed that any breakthrough (odor, taste, or irritation) or an increased inhalation resistance is reason to exit the respirator use area. Cartridges will be replaced as appropriate or specified by regulation.

RESPIRATOR SELECTION

1. The test subject should understand that he/she is being asked to select the respirator that provides the most comfortable fit for him/her. Each respirator represents a different size and shape and, if fitted and utilized properly, will provide adequate protection.
2. The test subject shall be allowed to select the most comfortable respirator from an array of various sizes and manufacturers that includes at least three sizes of elastomeric facepieces and units of at least two manufacturers.
3. The selection process shall be conducted in a room separate from the fit-test room to prevent olfactory fatigue. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to access a “comfortable” respirator. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This will not constitute his formal training on respirator use, only a review.
4. The test subject will hold each face piece up to his face and eliminate those that are obviously not giving a comfortable fit.

EXHIBIT “C”

AIR-PURIFYING RESPIRATOR QUALITATIVE FIT TEST PROCEDURE

Page 2 of 6

RESPIRATOR SELECTION *continued...*

5. The more comfortable facepieces will be recorded the most comfortable mask will be worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in Item 6 below. If the test subject is not familiar with using a particular respirator, he/she shall be directed to don the mask several times and to adjust the straps each time, so that he/she becomes adept at setting proper tension on the straps.
6. Assessment of comfort shall include reviewing the following points with the test subject:
 - Proper chin placement
 - Positioning of mask on face
 - Strap tension

- Room for prescription spectacle insert(s)
- Room to talk
- Tendency to slip
- Cheeks filled out
- Self-observation in mirror
- Adequate time for assessment

7. Each test subject shall wear his/her respirator for at least 10 minutes before starting the fit test.

FIT TESTING

Qualitative fit testing involves four distinct steps:

- Performance of positive/negative pressure checks
- Administration of stannic chloride smoke challenge
- Administration of ammonia inhalant vapor challenge
- Administration of isoamyl acetate vapor challenge

EXHIBIT “C”

AIR-PURIFYING RESPIRATOR QUALITATIVE FIT TEST PROCEDURE

Page 3 of 6

FIT TESTING *continued...*

The test procedures incorporate aerosols, which are designed to produce an involuntary cough reflex and/or olfactory stimulation subject to face to seal breakthrough or leakage.

Fit Testing Procedure

1. Each respirator used for the fit testing shall be equipped with combination organic vapor and high-efficiency particulate cartridges (black/magenta).
2. After selecting, donning, and properly adjusting a respirator, the test subject shall wear it to the fit testing room. This room shall be separate from the room used for respirator selection, and shall be well-ventilated, as by an exhaust fan, to prevent general room contamination by the challenge aerosol.
3. This test subject shall conduct the conventional negative- and positive-pressure fit checks (e.g., see ANSI Z889.2-1980). Before conducting the negative- or positive-pressure check, the subject shall be told to check and confirm the mask seal by rapidly moving the head side-to-side

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and up and down, taking a few deep breaths.

4. The test subject is now ready for fit testing.
5. The test conductor shall review this protocol with the test subject before testing.
6. Advise the test subject that the aerosol can be irritating to the eyes and instruct him/her to keep his eyes closed while the test is performed.
7. Break both ends of a ventilation smoke tube containing stannic oxychloride, such as the MSA part No. 5645, or equivalent. Attach a short length of tubing to one end of the smoke tube. Attach the other end of the smoke tube to an aspirator bulb.
8. The test conductor shall direct the stream of irritant aerosol from the tube towards the face seal area of the test subject. The conductor shall begin at least 12 inches from the facepiece and gradually move to within one inch, moving the whole perimeter of the mask.

EXHIBIT "C"

AIR-PURIFYING RESPIRATOR QUALITATIVE FIT TEST PROCEDURE

Page 4 of 6

Fit Testing Procedure *continued...*

9. The following exercises shall be performed while the aerosol is challenging the respirator seal. Each shall be performed for one minute.
 - Normal breathing
 - Deep breathing, being certain that breaths are deep and regular.
 - Turning head from side-to-side, being certain that movement is complete. Alert the test subject not to bump the respirator on the shoulders. Have the test subject inhale when the head is at either side.
 - Nodding head up and down. Be certain motions are complete and made about every second. Alert the test subject not to bump the respirator on the chest. Have the test subject inhale when his head is in the fully up position.
 - Talking. Talk aloud and slowly for several minutes. The following paragraph is called the Rainbow Passage. Reading it will result in a wide range of facial movements, and thus be

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useful to satisfy this requirement. Alternative passages, which serve the same purposes, may also be used.

Rainbow Passage

“When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.”

- Normal breathing.
10. Repeat fit testing steps 5 through 9, this time using vapors from an ammonia inhalant ampoule (MSA P/N 2156, or equivalent) as a secondary challenge atmosphere.
 11. Repeat fit testing steps 5 through 9, this time using vapors from an isoamyl acetate ampoule (North P/N 7002, or equivalent) as a third challenge atmosphere.

EXHIBIT “C”

AIR-PURIFYING RESPIRATOR QUALITATIVE FIT TEST PROCEDURE

Page 5 of 6

Fit Testing Procedure *continued...*

12. If the irritant aerosols produce an involuntary reaction (cough) or if the test subject notices odors, the test conductor shall stop the test. In this case, the test respirator is rejected and another respirator shall be selected.
13. Each test subject passing the challenge tests without evidence of a response shall be given a sensitivity check of the aerosols to determine whether he reacts to them. Failure to evoke a response shall void the fit test.
14. After passing the fit test, the test subject shall be questioned again regarding the comfort of the respirator. If it has become uncomfortable, another model of respirator shall be tried.
15. The test subject shall be given the opportunity to select a different facepiece and be re-tested if during the use the chosen facepiece becomes unacceptably uncomfortable.
16. Protection Factors (PF)

If a respirator passes the qualitative tests, it can be work in concentrations determined by the assigned PF. The Maximum Use Concentration (MUC) is calculated by multiplying the TLV of the

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contaminant by its PF. PFs for air purifying respirators are:

Half-face mask: 10

Full-face mask: 50

Example: MUC (ppm) = PF x TLV If TLV = 0 ppm and PF = 10;

Then, MUC = 10 x 10 = 100 ppm

Thus, for a substance with a TLV of 10 ppm, and half-mask respirator provides protection up to a maximum concentration of 100 ppm of the substance.

EXHIBIT “C”

AIR-PURIFYING RESPIRATOR QUALITATIVE FIT TEST PROCEDURE

Page 6 of 6

SEMI-ANNUAL TESTING

The qualitative fit-test should be repeated at least once every six months, if the user is assigned a new respirator or whenever one or more of the following occur:

- The employee has a weight change of 20 pounds or more;
- Facial scarring occurs in an area of the face seal;
- The employee has significant dental changes;
- The employee has reconstruction or cosmetic surgery of the face; and
- Any other condition that may interfere with the facepiece seating.

RECORDKEEPING

The Respirator Fit Test Record, shown in Exhibit 8, must be completed after each fit-test.

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EXHIBIT “D”

RESPIRATOR TRAINING RECORD

Employee’s Name (print) _____
(Last) (First) (M.I.)

Craft _____ SSN: _____

Project Name: _____ Job No.: _____

Your signature on this Respirator Training Record will attest to your having received and understood the basic respirator training program which both *A. Glewen & Sons Excavating, Inc.* and the Occupational Safety and Health Administration (OSHA) require as part of an acceptable respiratory protection program.

The basic respirator training program consists of the following elements:

- The reasons for the need of respiratory protection.
- The nature, extent, and effects of respiratory hazards to which the person may be exposed.
- An explanation of why engineering controls are not being applied or are not adequate and of what effort is being made to reduce or eliminate the need for respirators.
- An explanation of the operation and the capabilities and limitations of the respirator selected.

COMFORT FACTOR

Very Comfortable

Comfortable

Tolerable

Uncomfortable

Very Uncomfortable

COMMENTS: _____

PERSON ADMINISTERING TEST: _____

TITLE: _____

ACKNOWLEDGEMENT OF FIT:

NAME: _____ DATE: _____

(Signature)

EXHIBIT “F”

PROGRAM FOR THE VOLUNTARY USE OF DUST MASKS

This program is designed to protect employee health even though it has been determined that respirators are not required. Filtering face piece dust masks will be allowed for those employees who wish to use them. This program is designed for compliance with OSHA Standard 29 CFR 1910.134(c)(2)(i) with the exception in 1910.134(c)(2)(ii).

The Safety Manager has determined that respirators are not required for the following jobs, tasks, or departments: Concrete, Masonry, Plumbing, Steel, Earthwork, Millwright, and Carpentry.

The use of dust mask respirators by employees is strictly voluntary.

The Safety Manager will provide and employees are to read Appendix D of the OSHA Respirator Standard 29 CFR 1910.134, a copy of which follows:

Appendix D 1910.134 (Non-Mandatory) Information for Employees Using Respirators When Not Required Under the Standard

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

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You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warning regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

EXHIBIT "G"

RESPIRATORY PROTECTION PROGRAM FOR THE VOLUNTARY USE OF AIR PURIFYING RESPIRATORS OTHER THAN DUST MASKS (FILTERING FACEPIECES)

Page 1 of 2

This program is designed to protect employee health even though it has been determined that respirators are not required. This program is designed for compliance with OSHA Standard 29 CFR 1910.134(c)(2).

The Safety Manger is responsible for administering this program.

The Safety Manager has determined that respirators are not required for the following jobs, tasks or departments: Concrete, Masonry, Plumbing, Steel, Earthwork, Millwright, and Carpentry.

The following is required for employees who voluntarily use respirators other than filtering facepieces:

1. The employee will contact Human Resources to initiate the medical evaluation.
2. The designated health care provider is _____. They will perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information as the medical questionnaire (information required is contained in 1910.134 Appendix C). This evaluation will be administered confidentially at no cost to the employee, during the employee's normal working hours or at a time and place convenient to the employee, and in a manner the employee understands. The employee will have an opportunity to discuss the questionnaire and examination results with _____.

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3. The Safety Manager will provide _____ with the following supplemental information:
 - a) The type and weight of the respirator to be used by the employee
 - b) The duration and frequency of respirator use (including use for rescue and escape)
 - c) The expected physical work effort
 - d) Additional protective clothing and equipment to be worn
 - e) Temperature and humidity extremes that may be encountered
 - f) A copy of this written respiratory protection program
 - g) A copy of the respiratory protection standard (29 CFR 1910.34)
4. An additional medical evaluation may be necessary as determined by _____.
5. The Safety Manager will receive and keep on file _____'s written opinion on the employee's ability to use the respirator.
6. Respirators will be cleaned and disinfected according to the manufacturer's recommendations or those found in Appendix B-2 of the standard.

EXHIBIT "G"

RESPIRATORY PROTECTION PROGRAM FOR THE VOLUNTARY USE OF AIR PURIFYING RESPIRATORS OTHER THAN DUST MASKS (FILTERING FACEPIECES)

Page 2 of 2

7. All respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the face piece and exhalation valve.
8. The Safety Manager will provide a copy of an d employees are to read Appendix D of the OSHA Respirator Standard 29 CFR 1910.134, a copy of which follows:

Appendix D 1910.134 (Non-Mandatory) Information for Employees Using Respirators When Not Required Under the Standard

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

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warning regarding the respirators limitations.

2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator

ROPE, CABLE, AND SLING INSPECTION

PURPOSE

To provide guidelines for the inspection of all ropes and cables used for personnel and material handling prior to use and as deemed necessary during their use, in order to ensure the safety of workers.

REFERENCE

29 CFR 1926.251; 29 CFR 1926.550

POLICY

Although OSHA Standard 29 CFR 1926.251 pertains primarily to rigging equipment for material handling, the rope, cable and sling portions of the standard will be applied to all hoisting equipment, winches, puller, and safety lines in use by the company. The OSHA guidelines regarding visual and detailed inspections, disposition of damaged items and lubrication procedures, will be the policy of this organization *A. Glewen & Sons Excavating, Inc.*

The use of ropes, cables and slings, regardless of whether they are made of natural or synthetic fibers, steel wire, or metal mesh are subject to certain hazards that cannot be removed by mechanical means, but only by the exercise of intelligence, care, and common sense. It is therefore essential to have personnel involved in the proper care, use and inspection of this equipment who are competent, careful and well trained.

VISUAL INSPECTION

Since safety depends on the proper use and care of all types of ropes, cables, and slings an appointed person must perform a visual inspection of these items daily. Items to look for while conducting the visual inspection should include the following:

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- Kinks or severe twists
- Nicks, breaks, frayed or unraveled edges
- Deformed, worn or flattened surfaces
- Corroded or pitted surfaces, or
- Shortened or lengthened rope lays

ROPE, CABLE, AND SLING INSPECTION

DETAILED INSPECTION

The following, more detailed inspection must be performed by a designated person at least monthly, or at more frequent intervals, depending on operating conditions and use:

- Run out rope completely and note conditions such as number of broken strands, broken wires in one lay, reduction in rope diameter, corrosion, shorting of the lay, or fraying.
- Run a soft cloth, preferably cotton, over the entire length of wire rope and examine any rope lays which pick up threads of the cloth.
- Determine the extent of damage due to broken wires, nicks, cuts, frayed or unraveled edges.
- Ensure that wire rope is properly lubricated.

When any of the above conditions exist and show evidence of abnormal deterioration, the item must be watched and re-inspected daily. If this condition continues to worsen, the item must be condemned and replaced.

DISPOSITION OF DAMAGED RUNNING ROPE

The length and type of service, as well as the severity of operation must be taken into consideration before determining the disposition of ropes or cables which show signs of damage. Where failure of the rope or cable might endanger life or equipment, the rope or cable must be condemned and replaced immediately. In all cases, the rope or cable must be condemned and replaced if any of the following conditions are found to exist:

- **Broken Wires:** Six or more wires broken in any one wire lay. Three or more wires broken in any one strand of one rope lay.

- **Worn Outside Wires:** Wearing of one-third or more of the original diameter of any of the outside individual wires.
- **Broken Strand:** One or more broken strands.
- **Kinking, Crushing, Un-stranding, or Other Damage:** Rope severely kinked, crushed, cut, frayed, bird-caged, un-stranded, or unraveled, or any damage resulting in distortion of the rope structure.
- **Heat or Weld Damage:** Any evidence of heat damage or weld splatter.
- **Corrosion:** Considerable corrosion in the valleys between strands or corroded or broken wires at end connections.
- **Reduction in Diameter:** Noticeable reduction from normal rope diameter.

ROPE, CABLE, AND SLING INSPECTION

SLINGS

Slings are generally used in conjunction with other material handling equipment for the movement of material by hoisting. Slings are made of alloy steel chain, wire rope, metal mesh, natural or synthetic fiber, or fibers woven into a web. Many manufacturers of slings will produce their slings with a safety mark already on them. An example of this would be a sling with a red colored strand woven right into the material. If the sling has been cut or nicked to the point where the red colored strand is visible, the sling should be replaced immediately.

However, since not all manufacturers make this safety mark, it will have to be up to the inspector to determine when the sling should be replaced.

SLING INSPECTION

Each day, before each use, the sling and all fastenings and attachments must be inspected for damage or defects by a competent person designated by the company. Damaged slings shall be removed from service per manufacturer recommendations.

Additional monthly inspection should be performed during sling use, and where service conditions warrant. Damaged or defective slings must be immediately removed from service and/or replaced.

Wire rope slings shall not be used if in any length of eight diameters, the total number of visible broken wires exceeds 10% of the total number of wires, or if the rope shows other signs of excessive wear, corrosion or defect.

In the case of alloy steel chain slings, the inspection shall include a thorough check for wear, defective welds, deformation of the links, and increase in length. Where such defects or deterioration are present, the chain sling must be immediately removed from use.

ROPE CLIPS

Fixtures are usually attached to wire rope by means of wire rope clips, commonly referred to as either “*U*” *Clips* or “*U*” *Bolts* (Exhibit “A”). These wire rope clips are also used when making a loop at the end of a wire rope. There is a right way and a wrong way to use a wire rope clip. The correct method for installing a wire rope clip is to attach the clip with the base or saddle of the clip against the live or long end of the wire rope. This will allow the clip to develop 80 to 90 percent efficiency and is the **only** correct method of attaching wire rope clips. The saying, “*never saddle a dead horse*” will help prevent incorrect mounting of wire rope clips.

RECORDS

Inspection Records shall be maintained in the Project Safety files.

Safety Education and Training

All employees should be subject to safety awareness training on a regularly scheduled basis. It is the responsibility of management to instruct each employee to recognize, avoid and prevent unsafe and hazardous conditions connected with particular job assignments, be aware of and understand those safety regulations applicable to particular work assignments, and document incidents. These instructional efforts are important to A. Glewen & Sons Excavating, Inc. overall loss control concept.

Safety Education and Training: Supervisors

Each supervisor of A. Glewen & Sons Excavating, Inc. shall implement respective training programs in their areas of responsibility, as required by Company Policy, the Occupational Safety and Health Act, and specific regulations such as the Hazard Communication Standard. These programs shall be utilized under the following situations:

- A.** Specific safety instructions for new hires, as required.
- B.** Safety training for existing employees or for those beginning an unusual job task.
- C.** CPR and first aid training, as required.
- D.** Training on the use of specific personal protective equipment, as required by law.
- E.** Training for those employees who are exposed to hazardous chemicals and/or substances either on a routine basis or in a foreseeable emergency.
- F.** Annual training for those supervisors in operating positions. This type of training should include, but is not limited to:
 - 1. Conducting safety meetings and workplace inspections.
 - 2. Accident investigation.
 - 3. Job planning.
 - 4. Job instruction-training methods.
 - 5. Job safety analysis.
 - 6. Leadership skill

Safety Education and Training: On-the-Job Training

It is A. Glewen & Sons Excavating, Inc. policy that all personnel, prior to be assigned a
A. Glewen & Sons Excavating, Inc. Safety and Health Program

job, be checked out by their immediate supervisor to determine if the person is qualified to perform the job. If not properly qualified, the employee will be trained prior to a job assignment.

The responsibility for teaching job skills is usually with the worker's immediate supervisor. This training will include the use of necessary safety equipment and proper job procedures that address the safety of the employee. On-the-job training (OJT) may also be utilized because the employee can be productive while being trained. The training program should be carefully planned and organized so the employee understands what is expected and necessary to accomplish the assigned task. The supervisor should demonstrate the proper procedure, and observe and correct the employee when necessary.

Safety Education and Training

Safety Education and Training: Regular Safety Education Efforts

Regularly scheduled safety meetings and training sessions are important to the success of our Safety and Health Program, because they serve as a constant reminder to employees that their safety is of utmost importance to A. Glewen & Sons Excavating, Inc. Management can thus provide visible support by taking part in safety meetings within their area of control. Regularly weekly scheduled meetings will consist of job-site meetings and Tool Box Talks.

Safety Training Topics

The following is a list of topics affected employees at A. Glewen & Sons Excavating, Inc. will be trained in:

Company safety policies	Company safety rules
Safety orientation	Hazard communication
Lockout/tagout	Personal protective equipment
Fall protection procedures	Ladders and scaffold safety
Electrical safety	Fire extinguisher/fire prevention
Disaster preparedness procedures	Hazard recognition and avoidance
First aid and CPR training	Material handling/back safety
Reporting unsafe acts and conditions	Reporting injuries and illnesses
Other topics as needed	

SCAFFOLD SAFETY

PURPOSE

To provide safety guidelines for erecting and dismantling elevated work platforms.

DEFINITIONS

Fixed Scaffolds – includes the following: tubular welded frame, bracket scaffolds, tube and coupler (tube Lox) scaffolds, woodpile scaffolds and trestle scaffolds.

Suspended Scaffolds – includes the following: two-point suspended scaffolds, multilevel suspended scaffolds, floats, needle-beam scaffolds, boatswain's chair and electric hoist platforms.

REFERENCES

OSHA 29 CFR 1926.451 – Scaffolding

ANSI A10.8 – Safety Requirements for Scaffolding

POLICY

General Requirements

Any elevated work presenting a potential fall hazard; therefore, it is essential the precautionary measures be thorough.

All working platforms must be capable of sustaining a minimum working load of 75 psf on 6 ft. spans or have as safety factor of 4 to 1 for the intended load.

Posts shall be plumb and scaffold platforms shall be level.

A stationary scaffold shall be secured to the building or a fixed structure vertically every 26 ft. starting at the base of the scaffold and horizontally every 30 ft. This rule shall also apply to rolling scaffolds at their working stations. Outriggers may be used in lieu of tying off, or

scaffolds may be clamped together so that the height does not exceed four times the smallest base dimension without additional stabilization.

A qualified person shall determine the structural integrity of structural steel, reinforcing steel, and concrete or building members prior to the attachment of scaffolds by bracing or tying off.

Where persons are required to work or walk under scaffolding, a screen or mesh guard, or solid panels shall be provided between the toeboard and handrail. The screen or panels must withstand a horizontal force of at least 150 lbs.

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SCAFFOLD SAFETY

General Requirements *continued* . . .

All workers shall tie off with a safety harness when there is no or incomplete handrail, when there are openings over 18 in. in the working platform or when on suspended working platforms.

Where there is danger of tools, materials, or equipment falling from a scaffold and striking employees below, a toeboard of at least 3 ½ in. shall be installed. Toeboards shall withstand a horizontal force of at least 50 lbs.

Swinging stages floats and boatswains shall be tested before using (test by applying a dead load with unit close to floor or ground).

Crews requiring scaffolds shall requisition them well in advance to avoid delays and to allow time to provide the best scaffold for the job.

Scaffold erection crews shall inspect all components for defects as the erection proceeds. Any components found to be defective shall be set aside and tagged for repair or disposal.

Daily inspections shall be performed under the direction of competent supervision responsible for the work being performed. All defects shall be corrected at once or have “defective” tags attached.

FIXED SCAFFOLDS REQUIREMENTS

Fixed scaffolds include tubular welded-frame scaffolds, bracket scaffolds, tube and coupler (Tube-lox) scaffolds, trestle scaffolds and wood pole scaffolds.

Tubular Welded-Frame Scaffolds Requirements

- Scaffolds of 6 feet or more in height shall include diagonal braces, handrails, midrails, toeboards, and 2 in. x 10 in. or 2 in. x 12 in. scaffold planks or manufactured scaffold decking which will provide a complete working deck without gaps or openings. All legs shall have the metal base plates in place. On soft ground, wooden sills of at least 2 in. x 10 in. lumber. Scaffold planks may be rough cut undressed lumber. Scaffold planks may be

painted on each end for 12 in. to designate it as an inspected plank only to be used for scaffolding and marking for overhang limits.

- When scaffold sections are erected, only scaffold pins are to be used for the corner post connections (do not use tie-wire or welding rods). Pigtail pins, latch type pins, or nuts and bolts may be used.

When casters are used for a rolling scaffold, they shall be locked except when the scaffold is being moved. No one shall be permitted on a scaffold while it is being moved.

A. Glewen & Sons Excavating, Inc. Safety and Health Program

SCAFFOLD SAFETY

Tubular Welded-Frame Scaffolds Requirements *continued . . .*

- Scaffold screw jacks shall be extended in accordance with the manufacturer's recommendations but in no case shall they be extended in excess of 12 in. Whenever screw jacks and casters wheels are not used, metal base plates must be used for adequate base support. All supports are to be pinned and secured.
- Scaffolds shall have solid footing and shall be erected so that vertical members are always plumb and the platform is as horizontal as practical. Scaffold planks are to be cleated, wired down, or otherwise secured against accidental displacement.
- Wedge shims shall not be used. Work from incomplete scaffolds, when approved, will require that the employee take added precautions to meet accident prevention requirements.
- Safety harness must be worn if handrails are missing or the platform is incomplete or other fall hazards exist.
- Horizontal braces of 2 in. x 4 in. lumber or equivalent shall be secured across corner posts when it is necessary to remove the diagonal braces. Diagonal braces shall not be removed from more than one section in a series of sections unless there are four braces sections between.
- Ladders shall be used if access to the scaffold platform is blocked or the scaffold climbing devices are more than 16 in. apart.
- Every scaffold higher than 50 ft. must be inspected and approved by a licensed professional engineer and by the Safety Manager prior to use. This inspection shall be documented and filed in the site safety office.
- Toeboards shall be secured in a firm manner by interlocking at the corner posts with notches, wiring, nailing, U-clamping to the bearing members, or by use of approved commercial toeboard systems.

- Employees gaining access to scaffolds shall have both hands free at all times and shall use the hand-over-hand method of climbing on the rungs. Employees shall not use toeboards as handholds or footholds to gain access to the platform.

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SCAFFOLD SAFETY

Bracket Scaffolds Requirements

The procedure when using bracket scaffolds on reinforcing steel wall installations is as follows:

- Where more than one layer of horizontal bars has been placed and conditions permit, the scaffold shall be secured to an inside horizontal bar.
- If conditions do not permit attaching the bracket scaffold to an inside horizontal bar, the scaffold shall be secured with a minimum of three 3/8 in. diameter U-bolts attached to each end and middle of the outer horizontal or vertical bar. Additionally, No. 9 wire shall be placed at a minimum of every fourth tie location.
- The horizontal reinforcing bar shall be secured to a vertical reinforcing bar that is either embedded concrete or has been spliced by an approved method.
- Each scaffold shall have a 4 ft. x 1/4 in. safety chain attached to the ends of the scaffold and secured to an inner rebar other than the bar that is supporting the scaffolds.
- Guardrails and toeboards shall be installed on all open sides and ends of scaffolds.
- No more than three persons plus the necessary tools and equipment shall be permitted on a single scaffold section at any one time. The load is not to go beyond the scaffold's designed capacity. Bracket scaffolds shall be constructed to support 1,550 lbs. and the capacity shall be posted on the scaffold.
- Men working with safety harnesses shall have the lanyard secured above the point of operation, but under no circumstances shall it be attached to the scaffold.
- Scaffolds may be painted "caution yellow" to give the adjacent crane operators a better perspective when working close to them during the day or night.

Tube and Coupler (Tube-Lox) Scaffolds

- Posts shall be erected on suitable bases and maintained plumb.
- Diagonal cross bracing shall be provided as follows:

- Horizontally every third section
- Vertically every fourth section
- Whenever posts are farther apart than 7 ft., the braces shall be at a 45-degree angle.
- Runners shall be erected along each side vs. the scaffold at the bottom and top of each section.
- Bearers and braces shall extend past the posts a minimum of 4 in., but not more than 12 in. Extensions of these shall not protrude into walking or climbing areas.

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SCAFFOLD SAFETY

Wood Pole Scaffolds

- Wood pole scaffolding shall be designed and erected so that loading capacity is at least 75 psf on 6 ft. spans, or at least have a safety factor of four times the intended load.
- Foundations for pole scaffolds shall be capable of sustaining the pole loads without sinking or shifting. Wood sill must be a minimum of 2 in. x 10 in. lumber.
- When poles are spliced, 4 ft. wood splice plates or better shall be installed on at least two adjacent sides at the same height and length.
- Pole scaffolds shall be secured at intervals of 25 ft. vertically.
- Diagonal and cross bracing of sufficient quantity and strength shall be utilized in accordance with good practices for scaffold erection to prevent any scaffold movement.
- Where there is concern that combustible materials not be used in a work area, metal scaffolds should be used in place of wood scaffolds. Aluminum grating is excellent for this use.

SUSPENDED SCAFFOLDS REQUIREMENTS

Suspended scaffolds include two-point suspended scaffolds, multilevel suspended scaffolds, floats, needle-beam scaffolds, boatswain's, chairs and electric hoist platforms.

Two-Point Suspended Scaffolds

When two-point suspended scaffolds are used, the following rules will apply:

- These scaffolds shall have standard toeboards, midrails and handrails.
- A lifeline for each man shall be provided and secured independently from the scaffold support lines.
- Workers shall be tied off at all times when on the scaffold, using a triple sliding hitch or catch hardware.
- Workers must be provided with a safe method of moving to and from the scaffold.

- When moving the scaffold roof supports, workers must remain behind the guardrail or be tied off with a safety belt to an independent support if there is no guardrail.
- Protection for areas below the work shall be provided by the use of signs and barricades and screened staging when applicable.
- Do not lower the scaffold below the point of three turns of the supporting cables on the drum of a swinging stage scaffold. Supporting cables shall be marked or painted to include limits.

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SCAFFOLD SAFETY

Two-Point Suspended Scaffolds *Continued . . .*

- Check the loading on the stage 1 ft. off the ground before using it.
- Outrigger beams, when required, should extend from 1 ft. to 6 ft. beyond the edge of the building, and the inboard length from the fulcrum should be at least 1 ½ times the outboard length from the fulcrum. A mechanical stop to retain the supporting cables shall be secured at the outer end of the outrigger.
- If cornice hooks are used, each hook must be tied back to something solid. All hooks must be latched.

Multilevel Suspended Scaffolds Requirements

- Multilevel suspended scaffolds are used primarily for large-area vertical work such as installation of siding.
- The rules listed for two-part suspended scaffolds apply here, except those rules for tying men off:
 - Multilevel suspended scaffolds shall have two lifelines attached to the scaffold, independent of the supporting lines.
 - Men on the top stage will tie off with a safety harness to an independent lifeline.
 - Men on the lower stages will tie off with a safety harness to the scaffold itself.

Floats

- Floats shall be installed in accordance with standard rigging practices, using a 1 in. manila rope or equivalent. The supporting ropes shall be run diagonally under the platform from corner to corner.
- Men working on floats shall tie off with a safety harness before getting on a float and untie after getting off a float.

- Floats are to be constructed to the standard 4 ft. x 6 ft. size and additional support shall be given to the platform with diagonal 1 in. x 4 in. braces on the bottom.
- The platform shall be of ¾ in. plywood or equivalent with 4 in. x 1 in. minimum edging on top to prevent items from rolling off.

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SCAFFOLD SAFETY

Needle-Beam Scaffolds

- Needle-beam scaffolds shall be supported by 1 in. manila rope, ½ in. wire rope cable, ¼ in. or high test chain or equivalent, using a standard scaffold hitch or eye splice with supports on the beam not to be more than 10 ft. apart for the 4 in. x 6 in. timbers.
- Needle-beams shall be at least 4 in. x 1 in. construction-grade lumber, with a minimum of 1,500-psi fiber stress.
- The platform span between needle-beams shall not exceed 8 ft. when 2 in. scaffold plank is used. The overhang of scaffold planks shall not be less than 6 in. no more than 12 in.
- Handrails and toeboards shall be used and men/women shall wear safety harnesses.

Boatswain's Chairs

- Seats shall be a minimum of 12 in. x 24 in. and 2 in. thick. Cleats fastened on the underside shall prevent splitting of the board.
- Boatswain's chairs shall be suspended with the standard 5/8 in. nylon rope boatswain's sling through four corner holes
- The worker shall be tied off to an independent lifeline with a safety harness.

Electric Hoist Platforms

- When working platforms are suspended from electric hoist mechanisms and used to raise and lower men/women to and from working positions, a safety harness shall be worn and properly attached to a lifeline secured independently from the platform support line.
- Such platforms shall have sides 42 in. in height above the platform.
- Prior to each use, the hoist mechanism shall be visually inspected and the load support checked at 1 ft. off the ground.
- The cable and the lay of the cable on the spool shall be checked constantly.

SCAFFOLD ERECTION AND DISMANTLING REQUIREMENTS

A serious accident potential may exist when scaffolds are being erected or dismantled. All individuals working on scaffolds at these times shall comply with the following safety rules and regulation

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SCAFFOLD SAFETY

SCAFFOLD ERECTION AND DISMANTLING REQUIREMENTS

Continued . . .

Workers must keep both hands empty for secure handholds when moving about on scaffolds. Pockets, pouches, and tool belts are to be used to carry the necessary tools for the work.

Scaffold members shall be hoisted or lowered with a hand line or passed from hand to hand. Throwing items up to co-workers or dropping them is not permitted.

Constant fall prevention measures must be maintained. Provisions shall be established for using a safety harness and working on firm scaffold decks when this can be done safely.

Scaffold feet shall be established on a firm and level base of support.

When scaffolds are to be secured to fixed structures or outriggers are to be used, they shall be installed as soon as possible. When dismantling a scaffold, these should be left on as long as is practical.

The coordination of this activity with surrounding operations and environment shall be given prior consideration.

MOUNTING AND DISMOUNTING SCAFFOLDS REQUIREMENTS

This activity is most associated with scaffold accidents. Therefore, all individuals mounting and dismantling scaffolds shall comply with the following safety rules and regulations:

- When scaffold platforms are more than 2 ft. above or below a point of access, portable ladders, hook-on ladders, attachable ladders, stairway-type ladders, stair towers, ramps, walkways, integral prefabricated scaffold access shall be used. **Cross braces shall not be used as a means of access.**
- Do not carry objects in hands, but keep both hands empty for climbing handholds.
- Step only on secured ladder or access rungs.
- Hook-on, attachable ladders, and climbable end frames shall have uniformly spaced rungs with a maximum spacing between rungs of 16 ³/₄ in. "Walk-through" end frames are **not** designed to be climbable.
- Give full attention to stability while getting on and off the working platform. Do not use the toeboard as a handhold or foothold.

- Pay attention to each step and handhold; most falls occur near the top of the ladder or near the bottom.

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SCAFFOLD SAFETY

SCAFFOLD TAGGING

General scaffold Tagging Requirements

- This scaffold tagging procedure is designed to ensure the safe use of all jobsite scaffolds.
- A scaffold, which is ready for use, shall be tagged with either a green or a yellow tag.
- A green scaffold tag designates a complete scaffold, as defined by the manufacturer.
- A yellow scaffold tag designates a scaffold which is not complete but which is altered to suit a specific job and may be used safely. A yellow scaffold tag shall detail the reason or reasons the scaffold is incomplete and safety measures needed.
- If a scaffold is in the process of being erected, changed, or dismantled, it shall have a red tag. A scaffold, which contains a red scaffold tag, shall be considered unsafe and shall not be used.
- If a scaffold has been damaged or is defective, a “Red Tag” must be attached.

Tag Description

The yellow, red, and green scaffold tags are approximately 3 in. wide by 5 in. long. See Exhibits A,B and C.

Installation and Removal of Scaffold Tags

- The Superintendent/Foreman shall determine whether a useable scaffold receives a yellow or a green tag. He/She shall be responsible for completing all pertinent information on the tag and affixing the tag to any scaffold erected under his/her supervision.
- The Scaffold tag shall be affixed to each scaffold access ladder approximately 5 ft. 6 in. from the base, where it will not interfere with normal access.
- The Superintendent/Foreman or Safety Manager may remove a scaffold tag from a scaffold which has been damaged, has been improperly modified, is missing components, or is deficient in any safety aspect. A red tag may be used in these circumstances.
- After a scaffold has been repaired, the Superintendent/Foreman shall inspect it to determine whether it is ready to be re-tagged and shall do so accordingly.
- Periodic inspections shall be performed to ensure that all tags are legible and in good condition.
- Inspection, attention, and stability are three keys to scaffold safety.

- No tag on a scaffold shall be considered the same as a red tag.

A. Glewen & Sons Excavating, Inc. Safety and Health Program
SCAFFOLD SAFETY

Inspection and Testing – Scaffold Planks

- Scaffold planks shall be inspected and tested upon receipt, prior to use, and users shall examine each plank visually prior to each use.
- Examine planks for knots, excessive grain slope, shakes, decay, dry rot and other defects.
- Density of lumber should be equivalent to Douglas Fir and capable of supporting four times the intended load. Moisture content should not exceed 20 percent.
- All scaffold planks shall be scaffold grade or equivalent as recognized by approved grading rules. See Exhibit “I”.
- Planks shall be 2 in. x 10 in. or 2 in. heavy duty (75 psi on 6 ft. span).
- Discard the plank if evidence of a defect is noted.

SPECIAL SCAFFOLDING

Any scaffold, which must be especially adapted to the work place where the above requirements cannot be met, must be approved by a qualified Supervisor, Project Manager, and Safety Manager.

STORAGE OF SCAFFOLDING

- Scaffold materials shall be temporarily stored in a manner that will protect and prevent damage to them.
- Scaffold materials shall not be left in work areas where they obstruct traffic and/or cause fire hazards.

EXHIBIT “A”

SCAFFOLD TAG-GREEN

**THIS SCAFFOLD HAS BEEN ERECTED TO
MEET FEDERAL/STATE STANDARDS AND IS
SAFE FOR ALL CRAFTWORK.**

DO NOT ALTER

DATE: _____

LOCATION: _____

SIGNED: _____

(COMPANY LOGO HERE)

No. _____

A. Glewen & Sons Excavating, Inc. Safety and Health Program

EXHIBIT “B”

SCAFFOLD TAG-YELLOW

**THIS SCAFFOLD DOES NOT MEET
FEDERAL/STATE STANDARDS.**

**EMPLOYEES WORKING FROM THIS SCAFFOLD
MUST WEAR AND USE APPROVED SAFETY
HARNES AND LANYARDS.**

DATE: _____

LOCATION: _____

SIGNED: _____

(COMPANY LOGO HERE)

No. _____

EXHIBIT “C”

SCAFFOLD TAG-RED

DO NOT USE THIS SCAFFOLD

KEEP OFF

**THIS SCAFFOLD IS BEING
ERECTED OR TAKEN DOWN**

**ONLY AUTHORIZED EMPLOYEE USING REQUIRED PERSONAL
PROTECTIVE EQUIPMENT MAY WORK ON THIS SCAFFOLD**

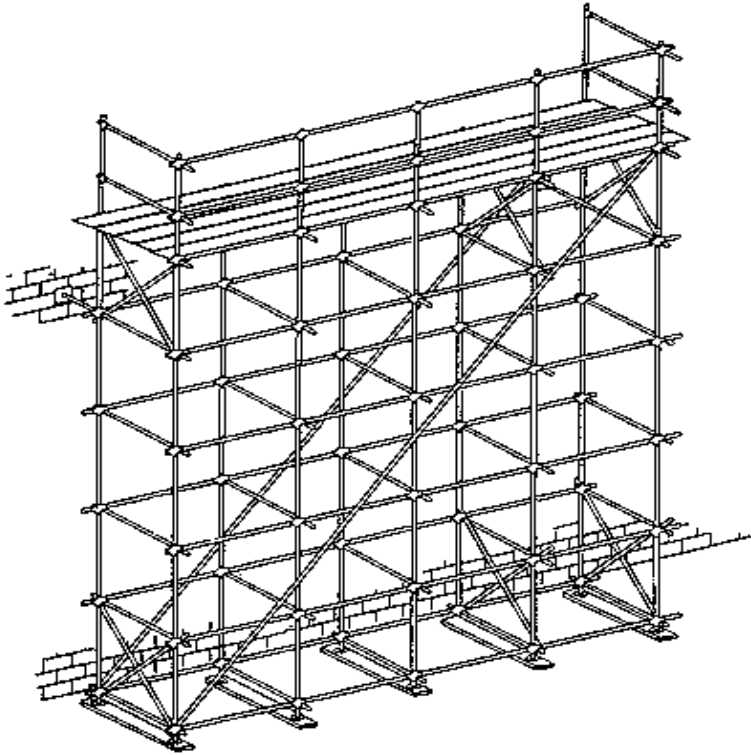
DATE: _____

LOCATION: _____

SIGNED: _____

(COMPANY LOGO HERE) **No.** _____

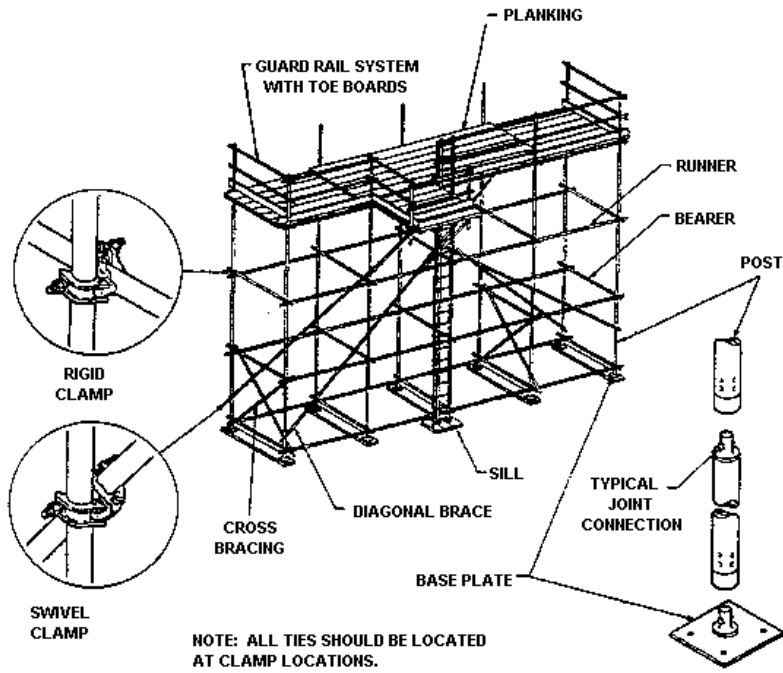
BRACING - TUBE & COUPLER SCAFFOLDS



A. Glewen & Sons Excavating, Inc. Safety and Health Program

EXHIBIT "E"

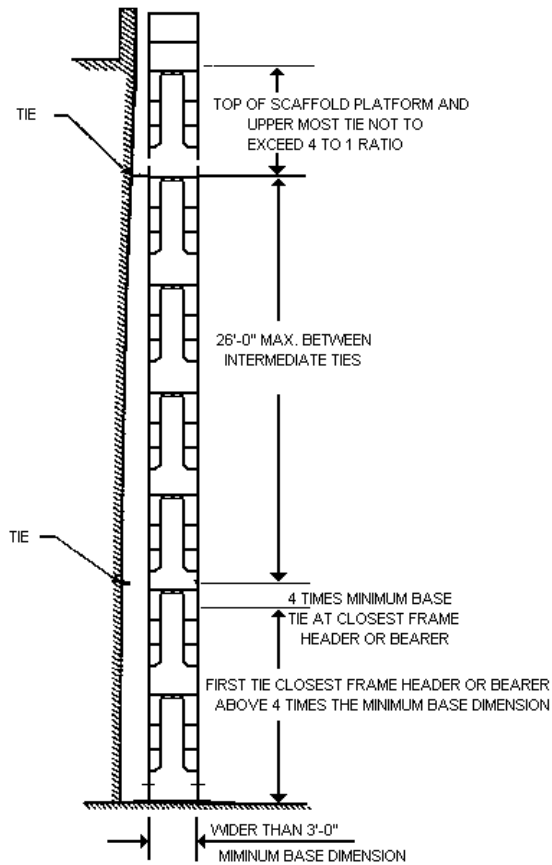
TUBE and COUPLER SCAFFOLD



A. Glewen & Sons Excavating, Inc. Safety and Health Program

EXHIBIT "F"

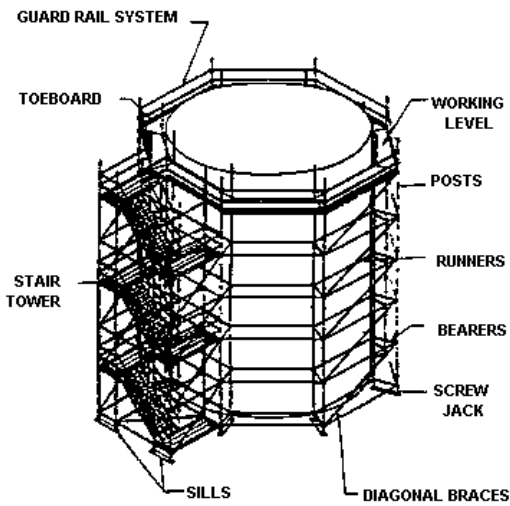
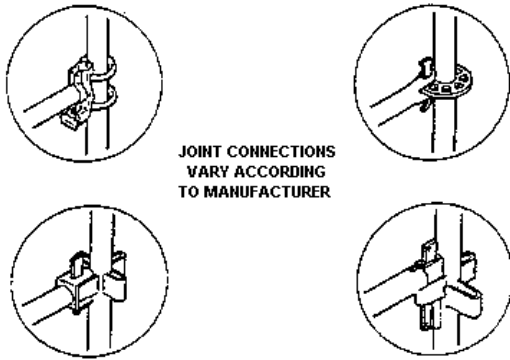
MAXIMUM VERTICAL TIE SPACING WIDER THAN 3'-0" BASES



A. Glewen & Sons Excavating, Inc. Safety and Health Program

EXHIBIT "G"

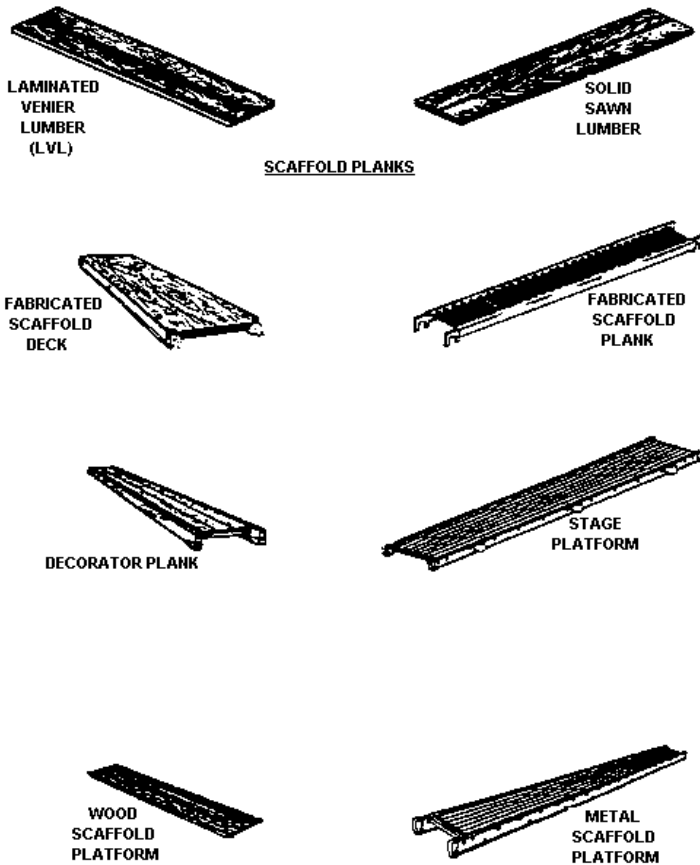
SYSTEM SCAFFOLD



A. Glewen & Sons Excavating, Inc. Safety and Health Program

EXHIBIT "H"

SCAFFOLDING WORK SURFACES



A. Glewen & Sons Excavating, Inc. Safety and Health Program

EXHIBIT "I"

SPIB® DNS IND 65
KD19 S-DRY (7)
SCAFFOLD PLANK

Grade stamp courtesy of Southern Pine Inspection Bureau

MILL 10
WC LB® **SEL STR**
SCAF PLK
D. FIR S. DRY

Grade stamp courtesy of West Coast Lumber Inspection Bureau

A. Glewen & Sons Excavating, Inc. Safety and Health Program

TOOL BOX TALK MEETINGS

PURPOSE

The purpose of this policy is to:

- Provide guidelines for developing, scheduling and delivery of safety awareness training for employees on the jobsite.
- Encourage safety awareness.
- Get employees actively involved in safety.
- Motivate employees to follow proper safety procedures.
- Eliminate safety hazards.
- Introduce workers to new safety rules, practices and equipment.

REFERENCES

- Films, videocassettes and written material available from the ABC of WI Safety Library.
- CFR 29 1926 OSHA Standards for Construction,
- Equipment manufactures representatives, suppliers, etc.
- Job site safety personnel.
- A. Glewen & Sons Excavating, Inc. Corporate Safety Policy.

POLICY

Weekly Safety Talk Meeting

Superintendents/Foremen will be required to conduct a weekly Safety Talk meeting. These meetings are to provide employees with up-to-date safety information. The Superintendent/Foreman will discuss various aspects of job safety and health as it pertains to the work to be performed for the week.

Superintendents/Foremen will be required to conduct a supplement Safety Talks meeting for those employees who missed the regular scheduled meeting.

These meetings should be held early in the week, in the morning, and should last no longer than 15 minutes.

A. Glewen & Sons Excavating, Inc. Safety and Health Program

SAFETY TALK MEETING

Weekly Safety Talk Meetings *continued*

The Safety Manager is responsible to develop issue and present the safety information to members of the Safety Committee concerning the weekly Safety Talk

meetings.

Quarterly Safety Harness Inspection Safety Talk Meetings

At the beginning of each quarter (**Jan/April/July/Oct.**) as part of the weekly “Safety Talks”, Foreman/Superintendents should remind their employees to bring in their harnesses and lanyards. **At the beginning of each quarter, have your employees do a formal check of their harness** (everyone SHOULD do a visual check every time they put on a harness). This should only take 10-15 minutes time to make sure they are in good condition, their lives depend on it!

Foremen/Superintendents can use Safety Talks Topic “Safety Harness Inspection”,

If employees do not have the required harness and lanyard, this should be considered a policy violation and subject to disciplinary action in accordance with our disciplinary policy in the employee manual.

RECORD KEEPING

The Superintendent/Foreman, will enter the date, job name, job number, safety topic(s) discussed, and any safety concerns on the weekly jobsite safety meeting sheet.

- To keep track of attendance, each employee will sign the weekly jobsite safety meeting sheet.
- If the Superintendent/Foreman is on vacation for an entire week, still turn in a safety meeting sheet indicating “On Vacation”.
- If the Superintendent/Foreman attends the general crews’ Safety Talk meeting, he/she should put their name in the Field Supervisor section alongside the supervisor giving the Safety Talk
- If the Superintendent/Foreman does not have a crew for that week, he/she is still required to select a topic to review and fill out the weekly jobsite safety meeting sheet, indicating in the Attended By section, “No Crew”.
- The weekly jobsite safety meeting sheets will be maintained in the safety department for record retention.

A. Glewen & Sons Excavating, Inc. Safety and Health Program

Weekly Jobsite Safety Meeting

Date _____ / _____ / _____

Job Number _____

Job Name _____

Field Supervisor(s) _____

Safety Topic _____

Attended by: Please Print – First and Last Name

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Safety Concerns (unsafe acts, unsafe conditions, other safety problems)

1. _____
2. _____
3. _____
4. _____
5. _____

A. Glewen & Sons Excavating, Inc. Safety and Health Program

VEHICLE SAFETY

PURPOSE

To establish guidelines for proper use of equipment and procedures for safe vehicle operation.

POLICY

General Requirements

- All employees operating vehicles and the passengers in these vehicles are required to wear seat belts at all times except for D.O.T. exempted vehicles.
- Drivers must have a current, valid vehicle operator's license.
- Drivers must comply with all federal, state, and local traffic regulations.

TRANSPORTING PERSONNEL AND MATERIAL

- Personnel will not be used to support or steady loads while a vehicle is in motion.
- Truck running boards may not be ridden.
- Employees must be seated, with arms and legs within the confines of the vehicle. Employees may mount or dismount vehicles only when fully stopped. Personnel may not ride in the bed of a pick-up truck.
- Personnel are to vacate all vehicles being loaded by a crane, backhoe, shovel, loader, etc., and are to move away from the vehicle.
- Loads extending beyond the bed of the truck or wagon are to be flagged, and marked at night with red lanterns or clearance lights. Loads are to be secured to prevent any movement.
- Only three (3) people may ride in the cab of a truck, unless designed to accommodate more. Seat belts must be used.
- When left unattended, vehicles must be shut off, and left in gear with brakes set. For vehicles with automatic transmission, the Park Position will be used. If vehicle is parked on a grade of incline, wheels must be chocked. Vehicles are not to be left running while unattended.

A. Glewen & Sons Excavating, Inc. Safety and Health Program

VEHICLE SAFETY

VEHICLE EQUIPMENT

All vehicles used on site will be equipped in accordance with state and local laws and regulations. A. Glewen & Sons Excavating, Inc. Safety Standards require the following equipment:

- Non-glare rear view mirror.
- Left-hand outside rear view mirror.
- Seat belts to accommodate all passengers.
- Turn signal.
- Three flares for emergency use. Flares should be placed 300' behind, 150' behind and adjacent to disable vehicle.
- Two windshield wipers.
- Back-up lights.
- First-aid kit.
- Snow tires and chains, where conditions warrant.
- A minimum 2-1/2 pound ABC rated fire extinguisher.
- A working horn.

**POWERED INDUSTRIAL TRUCKS
(Forklifts, Platform Lift trucks, Motorized Hand Trucks, etc.):**

- All new powered industrial trucks shall meet requirements established in ANSI B 56.1-1969.
- All nameplates and markings shall remain in place and be maintained in a legible condition.
- Only trained and authorized operator shall be permitted to operate powered industrial trucks. Operators shall be trained in the safe operation of each powered industrial truck used at the facility.
- No person shall be allowed to stand or pass under the elevated portion of any truck, whether loaded or empty.
- No person shall ride on the lifting mechanism of a forklift, or use the forklift as a work platform. Manufacturer-approved personnel basket may be used if all stipulations of the manufacturer are met (Exhibit "A").

A. Glewen & Sons Excavating, Inc. Safety and Health Program

VEHICLE SAFETY

POWERED INDUSTRIAL TRUCKS *continued...*

- When a powered industrial truck is left unattended, loads shall be fully lowered, controls neutralized, power shut off, and brakes set. Wheels shall be blocked if the truck is parked on an incline.
- If a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition. Authorized personnel shall make all repairs.

RECORDS

All vehicles or forklift will be inspected daily using the vehicle or forklift safety inspection checklist (Exhibit “B” or Exhibit “C”). Completed inspection forms will be filed in the safety office.

A. Glewen & Sons Excavating, Inc. Safety and Health Program

EXHIBIT “A”

FORKLIFT MOUNTED WORK PLATFORMS

When personnel are being lifted on work platforms/scaffold platforms, on forklifts that are not equipped with controls elevatable with the lifting carriage, there must be compliance with the following guidelines:

The platform shall:

- Be sufficiently strong to support any load(s) that may be imposed on it.

- Be securely attached to the lifting carriage or forks, which shall be secured so they do not pivot upward.
- Not extend more than 10 inches either side of the load bearing tires.
- Be designed so that employees will not be exposed to an ingoing nip point, which can be created between the rear of the platform and the structure of the powered industrial truck, as platform is raised and lowered.
- Be designed so that personnel on the platform are protected from moving parts of the truck.
- Be horizontal and centered and not tilted forward or rearward when elevated.
- Be moved in a smooth steady fashion when personnel are on it.
- Be moved only when the personnel on it specifically request that it be moved.
- Be moved after it has been elevated when there are personnel on it only when there is a need for minor horizontal adjustments.
- Be provided with a fall protection system if it is elevated more than 4 feet (10 feet for scaffold platforms) above the waling/working surface or is above or adjacent to dangerous equipment. If a guardrail system is used it shall consist of a top rail approximately 38 inches in height, a midrail approximately 21 inches in height, and a toeboard if operating conditions necessitate.
- Be provided with fall protection, at the opening used for access and egress from it, which provides protection equivalent to that of a standard guardrail system.
- Be provided with fall protection, at the opening used for access and egress from it, which provides protection equivalent to that of a standard guardrail system.
- Have a slip resistant surface.

The truck shall:

- Be operated on a level surface and have firm and level footing.
- Be operated so that the overhead obstructions are avoided.
- Be operated so that the personnel do not come closed to electric equipment than permitted by 1910.333 or 1926.41

A. Glewen & Sons Excavating, Inc. Safety and Health Program

**EXHIBIT “B”
EQUIPMENT CHECKLIST (DAILY)**

MAKE	MODEL		UNIT NO.		WEEK ENDING	
CHECK ITEM	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Engine Oil						
Lubrication						
Starting System						

minutes to 8 hours depending on schedule demands.

The work suspension is being put in to give workers time to come in from out of the cold to warm up. For example: steel workers assembling columns and beams may work for 45 minutes, warm up for 15 minutes, repeating the cycle. Work and warm up times may vary as the situation dictates and at the discretion of the superintendents.

LIGHTNING STORMS

When lightning is observed in the area, even though it may not be raining at the time, the trade Foreman and the project Superintendent should confer about suspending work and get personnel under cover until the storm and/or threat of lightning strikes has passed. The ultimate decision as to shutting down the job and for how long rests with the project Superintendent. However, ANY workers may refuse to work without fear of discipline, if he/she feels in danger of lightning strikes. He/she must confer with his/her foreman or supervisor.

When lightning is observed and it is determined (by sight or electronic means at the site) that lightning is moving toward the site, the crane operation must suspend crane operations and lower the boom to its lowest point. If a load must be suspended and held in position during the lightning storm, the operator should stay in the cab, but not touch the controls (unless they are isolated) or unless an emergency situation exists, i.e. high winds which would swing the load uncontrollably and would endanger human life.

EXTREME HEAT

Excess heat can place an abnormal stress on a worker's body. When body temperatures rise even a few degrees above normal (98.6°F) one can experience muscle cramps, become weak, disoriented and dangerously ill unless the body temperature cools down. If body temperature rises above 105°F, it could be fatal. The following guidelines will help keep a person cool in the heat and avoid the dangerous consequences of heat stress.

HOW HOT IS TOO HOT?

Do not work when the heat index is 130° or above. Shut the job down as working in that range could be dangerous to life. When the heat index (usually announced on the local radio or TV) is 90° - 130°, certain precautions should be taken.

A. Glewen & Sons Excavating, Inc. Safety and Health Program

WEATHER

- Adapt to the Heat

The National Institute for Occupational Safety and Health (NIOSH) suggests to all workers exposed to extreme heat gradually get used to their environment over a one-week period. This means that on the first day in a hot environment, a worker may only be able to do half of the work that a fully adapted worker would do. Each day increase the workload slightly until they are able to work at “full steam”.

- Drink Water Frequently

Sweating is one of the ways your body cools itself down. Sweating results in water loss and the only way to replace the loss (and help your body continue to cool itself) is to drink water frequently. Ideally, you should drink at least eight ounces of water every 20-20 minutes while working in hot environments. Make sure the job site has plenty of water.

- Take Frequent Breaks

Working eight hours in a hot environment is stressful. Take more frequent breaks (every hour for 10 minutes). Have workers take their breaks in air conditioning if possible or at least in some shade. You may have to place fans in various areas to circulate the hot stale air and to cool employees. (Event a warm breeze will help evaporate the sweat leading to cooling.)

- Know First Aid Techniques for Heat Stress

If you or someone on the site suffers from heat exhaustion, cramps, or other signs of heat stress get medical attention immediately.

- Keep Your Cool

Heat stress is dangerous, but it's also preventable. See Exhibit A.

A. Glewen & Sons Excavating, Inc. Safety and Health Program

EXHIBIT "A"
PREVENTIVE HEALTH
ASSESSING THE DANGER OF HEAT

This heat index chart provides general guidelines for assessing the potential severity of heat stress. Individual reactions to heat will vary. It should be remembered that heat illness can occur at lower temperatures than indicated on the chart. In addition, studies indicated that susceptibility to heat illness tends to increase with age.

HOW TO USE THE HEAT INDEX CHART

1. Across the top of the chart, locate the **environmental temperature** i.e., the air temperature.
2. Down the left side of the chart, locate the **relative humidity**.
3. Follow across and down to find the **apparent temperature**. Apparent temperature is the combined index of heat and humidity. It is an index of the body's sensation of heat caused by the temperature and humidity (the reverse of the "wind chill factor").

Note: Exposure to full sunshine can increase heat index values by up to 15 degrees.

Apparent Temperature **Heat stress risk with physical activity and/or prolonged exposure**

	90 - 105	Heat cramps or heat exhaustion possible
	105 - 130	Heat cramps or heat exhaustion likely, heatstroke possible
	130 and Up	Heatstroke highly likely

Heat Index

Environmental Temperature in Degrees

	70	75	80	85	90	95	100	105	110	115	120
Relative Humidity	Apparent Temperature*										
0%	64	69	73	78	83	87	91	95	99	103	107
10%	65	70	75	80	85	90	95	100	105	111	116
20%	66	72	77	82	87	93	99	105	112	120	130
30%	67	73	78	84	90	96	104	113	123	135	148
40%	68	74	79	86	93	101	110	123	137	151	
50%	69	75	81	88	96	107	120	135	150		
60%	70	76	82	90	100	114	132	149			
70%	70	77	85	93	106	124	144				
80%	71	78	86	97	113	136					
90%	71	79	88	102	122						
100%	72	80	91	108							

*Combined index of heat and humidity...what it "feels like" to the body.
Source: National Oceanic and Atmospheric Administration

A. Glewen & Sons Excavating, Inc. Safety and Health Program

WELDING AND CUTTING

PURPOSE

To provide guidelines for the safe operation of welding and cutting equipment and to itemize some of the fundamental hazards inherent with the use of this equipment.

DEFINITIONS

Industrial Gases

Oxygen – Oxygen itself is not flammable but the presence of pure oxygen accelerates the combustion reaction. Oil and grease in the presence of oxygen, become highly explosive.

Oxygen must not be allowed to contact petroleum based substances.

Fuel Gases

Acetylene – Acetylene is an unstable gas when compressed above 15 psig. Acetylene cylinders are filled with a porous material and saturated with liquid acetone. Acetylene, when pumped into the cylinder dissolves in the acetone and is held in a stable condition. If the acetylene cylinder is stored or used in the horizontal position, the acetone may leak out, leaving an explosive mixture of acetylene. It is for this reason, that all acetylene cylinders must be stored and used in the upright or vertical position.

MAPP Gas – MAPP is a stabilized mixture of methylacetylene and has considerably fewer tendencies to backfire than acetylene. Maximum allowable use pressure is 94 psig verses 15 psig for acetylene.

REFERENCES

29 CFR 1926.350; 1926.354; 1926.153; 1926.102

SETTING UP EQUIPMENT

All operators of welding and/or cutting equipment must be trained to operate the equipment they will use. Appropriate safety procedures must be reviewed and understood prior to use of this equipment.

Second stage of regulator must be closed before opening the cylinder valve.

Open valves 1/4 turn only on fuel gas cylinders (propane, acetylene, and natural gas). Open oxygen cylinder valve wide open. Keep valve wrench in place during use.

When using acetylene, do not exceed 15 psig on the torch side of the gauge.

A. Glewen & Sons Excavating, Inc. Safety and Health Program

WELDING AND CUTTING

SETTING UP EQUIPMENT *Continued . . .*

Reverse flow check valves must be used at the regulator end on both fuel and oxygen hoses. It is strongly recommended that they also be used at the torch end of the lines. These valves are inexpensive and provide a great degree of insurance against the possibility of mixings gases in the hose and regulator, which could result in an explosion.

Remember that you never stand directly in front or in back of a regulator when opening the cylinder valve and always check for leaks on all threaded connections. If valve handles are missing and it is necessary to use a wrench to open the valves, the wrench must remain in place on the valve while the unit is in use.

LIGHTING THE TORCH

Open the oxygen valve on the torch handle and adjust the oxygen regulator to the desired pressure. Allow the gas to flow a minimum of 10 seconds for every 50 feet of hose. Now close the oxygen valve on the torch.

With the regulator valve backed out, open the fuel valve on the cylinder. Remember, for acetylene the valve is only opened a maximum of one full turn. Open the fuel gas valve on the torch and adjust the fuel gas regulator to the desired setting. Purge the lines the same way as described above for oxygen. Now, close the fuel valve on the torch.

Hold the torch in one hand and spark lighter in the other. Open the torch fuel valve approximately one-half turn and ignite the gas. Keep opening the fuel valve until the flame stops smoking and leaves the end of the tip about 1/8". Then slightly reduce the fuel supply to bring the flame back to the tip.

Open the oxygen fuel valve on the torch until a bright neutral flame is reached. If you experience a backfire or flashback, immediately turn off the oxygen valve and then the fuel valve. Begin again by holding the torch in one hand and the spark lighter in the other and proceed from there.

SHUTTING OFF THE TORCH

First, shut off the torch oxygen valve and then shut off the torch fuel valve. If this procedure is reversed, a "*pop*" may occur which will cause carbon to form in the torch. Now close both cylinder valves. Open the torch oxygen valve to release the pressure in the system. Now close the torch oxygen valve and release the adjusting screws on the oxygen regulator. Now do the same for the fuel valves.

A. Glewen & Sons Excavating, Inc. Safety and Health Program

WELDING AND CUTTING

SAFETY CONSIDERATIONS

The following safety procedures need to be thoroughly re-emphasized.

- Never use oil or grease on any fittings or apparatus in contact with oxygen.
- Blow out the cylinder valves before attaching the regulators to the cylinders.
- Release the adjusting screw prior to opening the cylinder valves.
- Never stand directly in front or in back of a regulator when opening the cylinder valve; stand so that the cylinder valve is between you and the regulator.
- Always open the cylinder valve slowly. If a wrench is used, keep it on the valve.
- An acetylene cylinder should never be opened more than one full turn.

- Always purge the oxygen and fuel passages individually before lighting the torch.
- Follow the procedures as outlined. Do not take short cuts or use defective equipment.
- Never begin any welding or cutting without the proper permits.
- Always check to see that you have appropriate fire protection equipment immediately available before doing any welding or cutting.
- Welders must not wear flammable or disposable-type clothing.

ARC WELDING AND CUTTING

Protective Clothing

Welders must wear head and eye protection that is required in the area in which they are working. They must wear appropriate welding helmets, long sleeve shirts, leathers and welders gloves. If grinding, chipping buffing is done, a face shield must be worn. If respirators are required, these also must be used. As a minimum, fitters who are working with welders should wear long sleeve shirts, leathers and welders gloves, and appropriately tinted eye goggles or glasses with side shields.

Heli-arc, MIG (Metallurgical Inert Gas), and TIG (Tungsten Inert Gas) welding operations emit intense ultraviolet radiation which can result in third degree burns to exposed skin areas as well as painful flash burns to the eyes. Welding hoods must be checked periodically to insure they are light tight. Arc gouging generally produces a great deal of slag and hot metal sparks. Additional personal protective equipment such as boots, Nomex suits and mini goggles may be appropriate.

A. Glewen & Sons Excavating, Inc. Safety and Health Program

WELDING AND CUTTING

EQUIPMENT AND INSPECTION

Equipment must be industrial rated, in good condition, and conform to OSHA requirements governing application, installation, and operation of arc welding and cutting equipment. Some, but not all of the OSHA requirements are repeated in this standard for emphasis. Trained and qualified people should make a complete preventative maintenance inspection at least annually. The last inspection date should be stenciled on the equipment. Open circuit voltage measurements should also be made annually and stenciled and dated on the equipment.

Before each use, the following items must be inspected:

- All leads for broken or cut insulation.

- Electrode holders or broken insulator or worn holders.
- Oil and fuels on gas or diesel powered units.
- Both power and return leads to ensure they are the same lengths so that the return lead can be attached as close as possible to the work.

ELECTRIC SHOP HAZARD

Almost all electric currents present some degree of potential shock hazard. Under optimum conditions, even welding voltages as low as 30 volts can be serious. Operating voltages listed on the ID nameplates are usually much lower than open circuit voltages. Open circuit voltages should not exceed 100 volts D.C. or 80 volts A.C.

A.C. or D.C. current can be used for welding and although both present serious shock hazard, A.C. is potentially more hazardous. Be certain not to use any equipment that is either wet now or has been drenched recently. Welding units that are powered by A.C. must be adequately grounded and in order to change polarity, the unit must be shut down.

Electrodes should never be changed with bare hands or wet gloves, or when standing on a wet floor or grounded surface. Whenever possible, welding receptacles should be interlocked so that the power must be shut off before the plug can be withdrawn. Cables that become worn enough to present a hazard must be replaced immediately. Keep welding cables away from power supply cables and high voltage wires and do not dip hot electrode holders in water to quick cool them. GFCI's cannot be used on welding machines with D.C. current.

A. Glewen & Sons Excavating, Inc. Safety and Health Program

WELDING AND CUTTING

INERT AND TOXIC GAS EXPOSURE

Many welding procedures require an inert gas, such as argon and/or helium. These gases present an asphyxiation hazard and welders and fitters need to keep these points in mind:

- Large diameter pipe will contain larger volumes of inert gas and greater potential problems.
- Temporary enclosures over field installations should be checked for oxygen level before use and monitored continuously when in use.
- Argon will register "*hot*" when checked using an explosion meter but will measure correctly when using an oxygen meter.

Welders should be familiar with special hazards related to rod coatings containing such items as

cadmium, beryllium and fluorides. Proper ventilation with these rods is very important. Lead, mercury and cadmium require special written procedures. Ventilation in work areas must be checked and should conform to good safety practices. In enclosed areas, such as tanks, vessels, and columns, the Safety Manager should be contacted for appropriate ventilation rates.

STORAGE OF COMPRESSED GAS CYLINDERS

Cylinders shall be kept away from radiators and other sources of heat.

Inside of building, cylinders shall be stored in a dry, well-ventilated, well-protected location. Assigned storage spaces shall be located where cylinders will not be knocked over or damaged by passing or falling objects, or subject tampering by unauthorized persons. Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards.

Empty cylinders shall have their valves closed.

Storage of empty cylinders shall be separated from charged cylinders. Storage racks shall be identified as to compressed gas cylinder content and condition (“Full” or “Empty”).

Valve protection caps, where cylinder is designed to accept a cap shall always be in place, hand tight (except when cylinders are in use or connected for use).

Protection from solar radiant heat shall be provided where cylinders are directly exposed to sunlight.

Compressed gas cylinders shall be secured in an upright position at all times, including when being hoisted or transported.

A. Glewen & Sons Excavating, Inc. Safety and Health Program

WELDING AND CUTTING

STORAGE OF COMPRESSED GAS CYLINDERS continued...

- Retention chains or straps will be provided on storage racks and carts so that compressed gas cylinders will be secured against falling.
- Small, handheld compressed gas cylinders used for propane torches, gas detector test cylinders, etc. may be stored without use of retention chains or straps. However, attention should be given to storing these cylinders away from open flames or sources of heat and in a manner that will protect the cylinder from being knocked over or damaged by work activities.

Compressed gas cylinder storage area.

- A 20 pound ABC rated fire extinguisher (minimum) shall be placed no closer than 25 feet but not further than 75 feet to fuel gas storage areas.

- Warning signs shall be conspicuously placed and shall read; **“Danger – No Smoking, Matches or Open Lights or Flames”** or other equivalent wording.
- Inside buildings, cylinders (except those in actual use or attached for use) shall be limited to a total gas capacity of 2,000 cubic feet or 300 pounds of liquefied petroleum gas.

Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease) a minimum of 20 feet or by a noncombustible barrier at least five feet high having a fire-resistant rating of at least one-half (1/2) hour.

RECORDS

A hot Work Permit must be issued for specific areas prior to the start of any welding, burning, grinding or other hot work. The permit will be issued to the fire watch and will cover a one-shift period only.

A copy of the Hot Work Permit (Exhibit “A”) will be kept at the jobsite office for the duration of the job and becomes part of the job records.

A. Glewen & Sons Excavating, Inc. Superintendent or Foreman will issue the Hot Work Permit.

A. Glewen & Sons Excavating, Inc. Safety and Health Program

Exhibit A

Welding & Cutting Hot Work Permit

Supervisor: _____ Date _____ Permit No. _____

Description of Work: _____

Location of Work: _____

List Names of Persons Performing Work

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

“Fire Watch” Personnel _____

Check the Appropriate Boxes _____

Permits Required-List	Y	N	NA
Confined Space			
Excavation			
Hot Tapping			
Line Break			
Other			
<i>Training Verified</i>	Y	N	NA
Employees			
Fire Watch			
Confined Space Attendant			
Equipment Operators			
Fire Watch			
Other			
Drawings Reviewed	Y	N	NA
Flow Diagrams			
Underground Systems			
Electrical & Pneumatic			
Drains, Storage, Systems			
Other			

Equipment-Tools-Material	Y	N	NA
Scaffolds & Ladders			
Non Sparking Tools			
Fall Protection in place			
Temporary Platforms			
Airline Respiratory Systems			
Self Contained Breathing Units			
Monitoring Instruments			
Chemical, Acid, Thermal Suits			
Faceshields, Goggles, Hoods			
Fire Extinguishing Equipment			
Other			
Other			
Other			
Other			
Other			
Other			
Other			
Other			
Other			
Other			

Items Completed	Y	N	NA
Lines/ Vessels/Systems Purged			
Lines, Vessels, Systems Clean			
Mechanical Ventilation In Place			
Drains and Sewers Covered			
Valves Closed or Safe Position			
Energy Systems Locked Out			
Blinds Installed			
Systems De-energized, Isolated			
Checked for Benzene			
Checked for Lead			
Checked for Asbestos			
Checked for Combustibles			
Monitoring System in Place			
Other			
Other			
Other			
Other			
Other			
Other			

SAMPLING AND MONITORING RESULTS (This Section to be completed prior to work commencing)

Substance	Oxygen	Combustible	Other	Other	Other	Other	Other
% or LEL		%	LEL				
Date/Time							
Initials							

List Type of Sampling Equipment: _____ Calibrated Date: _____

Sampling Conducted by: _____ Date: _____ Time: _____

Special Instructions: _____

Reviewed by: _____

Approved by: _____

A. Glewen & Sons Excavating, Inc. Safety and Health Program

WOOD WORKING EQUIPMENT

TABLE SAW:

- Feed with body to side of stock.
- Use proper blade height.
- Have splitter and anti kickback fingers in place when ripping.
- Keep stock firm to fence.
- Remove rip fence for cross cuts.
- Keep blade guard in place.

CIRCULAR SAW:

- Blade guard in place.
- Keep from binding.
- Correct blade.
- Blade tight to arbor.
- Proper support for work.
- No obstructions.
- Correct speed for material being cut.
- Hands and fingers in safe positions.

RADIAL ARM SAW:

- Rip in direction of feed with anti kickback fingers in place.
- Blade guards in place.
- Pull for cross cuts.
- End plates on track-arm tight.
- Clamp handles tight.
- Material tight to fence.
- Return cutter to rear of track.
- Hands and fingers in safe position.

BAND SAW:

- Feed with body to side of stock.
- Guard clearance 1/8" from stock.
- Correct type/tension on blade.
- Release cuts before long curves.
- Stop machine before removing scrap/ending incomplete cut.
- Use flat stock.
- Use push stick for small parts.

A. Glewen & Sons Excavating, Inc. Safety and Health Program

WOOD WORKING EQUIPMENT

JOINTER/PLANER:

- Correct depth of cut.
- Correct length of cut.
- Sharp cutters.
- Roper hand position.
- Push stick for small stock.
- Guard in place.

WOOD SHAPER:

- Clamp work piece.
- Correct Guard.
- Feed into Knives.
- Do not feed between fence and cutters.
- Collar and starting pin for irregular work.
- Fence open only enough to clear cutters.
- Use stock as guard by shaping underside of stock.
- Spindle nut tight.

SHAPER:

- Shape only pieces 10" or shorter.
- Proper type of cutters.

SANDER:

- Keep hands away from abrasive surface.
- Proper ventilation.
- Belt/Disc in good condition.
- Sand on downward side of disc.

LATHE:

- Stock without defects- glued side dry.
- Power off when changing speed on V belts lathes.
- Tool rest close to stock.
- Hold tools firmly in both hands.
- Remove tool rest when sanding or polishing.

A. Glewen & Sons Excavating, Inc. Safety and Health Program

EMPLOYEE SIGN - OFF SHEET***A. Glewen & Sons Excavating, Inc.***

DETACH AND RETURN THIS FORM TO YOUR FOREMAN AFTER YOU HAVE READ THIS SAFETY MANUAL:

Violation of these rules and regulations will endanger the life and safety of the

individual and fellow employees. Deliberate violation of these rules is sufficient cause for disciplinary action and/or dismissal.

I also understand that in case I am injured, no matter how slight, while in the course of my work with A. Glewen & Sons Excavating, Inc. I must report immediately to my foreman.

I hereby confirm that I have read thoroughly, and understand the safety rules of A. Glewen & Sons Excavating, Inc. and will to the best of my ability abide by them.

I understand that there is a Hazardous Material Booklet available for my inspection.

Signature

Date

Print Name

A. Glewen & Sons Excavating, Inc. Safety and Health Program

Appendix A

Tool Box Talks



A. Glewen & Sons Excavating, Inc. Safety and Health Program

This written program is not intended to provide legal advice or opinion and may not cover every regulation which A. Glewen & Sons Excavating, Inc. may be subject to. Further, due to the degree and changing nature of regulations in this area at the federal, state and local levels, Associated Builders & Contractors of Wisconsin, Inc. cannot, and does not, warrant that adherence to the suggestions of this program will constitute

compliance with every federal, state and local regulation which might be applicable to A. Glewen & Sons Excavating, Inc..

**For additional safety consultation or questions, contact the ABC
Safety Director or Construction Safety Specialist
at 800-236-2224 or 608-244-5883.**

