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Founded 1909

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August 22, 2019

Ms. Tanowa Troupe, Secretary
Ohio Power Siting Board
180 E. Broad St.
Columbus, OH 43215

Re: Case No. 13-990-EL-BGN
Case No. 15-1921-EL-BGA

Dear Ms. Troupe:

Please find attached the current Safety Plan Compliance Document and Complaint Resolution Plan for the Crossroads Wind Power project (f.k.a. the Greenwich Wind Farm project). Both of these documents were previously submitted to the OPSB Staff. Please post this correspondence and the attached documents to the above case dockets.

Please call if you have any questions regarding this correspondence.

Very truly yours,

/s/ Michael J. Settineri

Michael J. Settineri
Attorneys for Crossroads Wind Power, LLC f.k.a.
as 6011 Greenwich Windpark, LLC

COMPLAINT RESOLUTION PLAN

Crossroads Wind Power, LLC

1. Introduction

(A) This procedure defines the requirements and process for management of complaints received during the construction and operation of the wind energy facility being developed and constructed in accordance with Ohio Power Siting Board (“**OPSB**”) Opinion, Order and Certificate dated August 24, 2014, Case No. 13-990-EL-BGN in Huron County, Ohio (“**Facility**”). In all cases, Crossroads Wind Power, LLC (“**Crossroads**”) representatives will work to resolve or mitigate any issues with those who submit a complaint. Additionally, monthly reports will be provided to the Ohio Power Siting Board (“**OPSB**”) Staff.

(B) Crossroads will establish a toll-free phone number and will ensure that the phone number is provided to the county commissioners, township trustees, emergency responders, and the schools within the project area. A resident who has a complaint about the Facility may either call the toll-free phone number and leave a message 24 hours a day or go to the operations and maintenance building for the wind energy facility during regular business hours to register a complaint.

2. Noise, Shadow Flicker, and Miscellaneous Complaint Process

Throughout construction and operation of the Facility, Crossroads will document, investigate, evaluate, and attempt to resolve all Facility-related noise, shadow flicker, or other complaints. After commencement of commercial operations, Crossroads will conduct further review of the impact and possible mitigation of all Facility-related noise, shadow flicker, and other complaints. Crossroads will:

(A) Use the Complaint Resolution Form, attached as **Exhibit A** to document and respond to each complaint;

(B) Attempt to contact the person(s) making the complaint within 24 hours, or 72 hours if the complaint is made over the weekend;

(C) Conduct an investigation to determine the source of the complaint;

(D) To the extent reasonably possible, take feasible measures to reduce or prevent the recurrence of the complaint, if the complaint is Facility-related; and

(E) Submit a report to the OPSB Staff documenting the complaint and the actions taken. The report will summarize the complaint, including final results of reduction and prevention efforts, if applicable. The reports will be filed and maintained by Crossroads documenting resolution of the complaint.

3. Operational Restrictions

(A) Noise Restrictions

- (i) General construction activities will be limited to 7:00 a.m. to 7:00 p.m., or until dusk when sunset occurs after 7:00 p.m.
- (ii) Impact pile driving, hoe ram, and blasting operations, if required, will be limited to the hours between 10:00 a.m. to 5:00 p.m., Monday through Friday.
- (iii) Construction activities that do not involve noise increases above ambient levels at sensitive receptors are permitted outside of daylight hours when necessary.
- (iv) If Crossroads seeks to conduct construction activities on a temporary basis between the hours of 7:00 p.m. or from dusk when sunset occurs after 7:00 p.m. to 7:00 a.m., that will involve noise increases above ambient levels, Applicant will submit for Staff approval a plan that includes, but is not limited to, the following:
 - (a) a description of planned construction activities;
 - (b) the length of time for the temporary construction;
 - (c) noise model results for affected nonparticipating receptors;
 - (d) a list of affected nonparticipating receptors;
 - (e) a mitigation plan for nonparticipating receptors that will be impacted by noise increases above ambient levels; and
 - (f) a plan for noise monitoring at affected nonparticipating receptors.
- (v) The Facility will be operated so that the Facility noise contribution does not exceed the project area ambient nighttime L_{EQ} (46 dBA) by five dBA result at the exterior of any currently existing nonparticipating sensitive receptor.
- (vi) During daytime operation only from 7:00 a.m. to 10:00 p.m., the facility may operate at the greater of:
 - (a) the project area ambient nighttime L_{EQ} (46 dBA) plus 5 dBA; or
 - (b) the validly measured ambient L_{EQ} plus five dBA at the location of the sensitive receptor.

(vii) After commencement of commercial operations, Crossroads will conduct further review of the impact and possible mitigation of all Facility related noise complaints.

(B) Shadow Flicker Restrictions

(i) The Facility will be operated so that the turbine shadow flicker does not exceed 30 hours per year for any nonparticipating sensitive receptor.

Exhibit A
Crossroads Wind Energy, LLC
Complaint Resolution Form

| |
|---|
| <p>Complaint Date and Time: _____</p> <p>Complainant's name and address:</p> <p>Phone number/email:</p> |
| <p>Date of response to complainant: _____</p> |
| <p>Nature of complaint:</p> |
| <p>Description of complaint after investigation:</p> |
| <p>Description of corrective measures taken, if any, or additional follow-up with complainant:</p> |
| <p>Crossroads Representative's signature: _____ Date: _____</p> <p>(Attach additional pages and supporting documentation, as required.)</p> |

Mark Schaffer Excavating & Trucking, Inc.

Safety Plan Compliance Document

“Crossroads Wind”

Wind farm project

Crossroads Wind Power, LLC

Swift Current Energy

Greenwich, Ohio

Huron County, Ohio





1623 Old State Road * Norwalk, Ohio 44857
Phone: (419) 668-5990 Fax: (419) 663-0984
An Equal Opportunity Employer

July 17, 2019

Crossroads Windpower LLC

Swift Current Energy
184 Hight St., 7th Floor
Boston, MA 02110

Dear Dave Fowler,

Mark Schaffer Excavating & Trucking, Inc. certifies that it has read, understood and will comply with the safety requirements of the SPCD. Mark Schaffer Excavating & Trucking, Inc. will not deviate from the approved SPCD unless written approval is granted.

Sincerely,
Mark Schaffer Excavating & Trucking, Inc.

Ted Mann
Project Manager

INTRODUCTION

The Contractor shall have sole and complete responsibility for the implementation of a worksite safety plan and shall take necessary precautions for the health and safety of employees and fully comply with applicable provisions of all sections of 29 CFR 1926-OSHA Construction Industry Safety and Health Standards, 29 CFR 1910-OSHA General Industry Safety and Health Standards, National Fire Protection Association codes, and all standards or codes referred to in the listed document and any other applicable standards.

Due to the changing nature of health and safety regulations, and because new information is constantly becoming available, this plan is subject to change.

TABLE OF CONTENTS

Statement of Company Policy

Section 1 Purpose and Scope

Section 2 Safety and Emergency Contact

Section 3 Accident/Incident Investigation

Section 4 Training

Section 5 Occupational Health

Section 6 Job Specific Elements (Based on Scope of Work)

☐ Housekeeping- 29 CFR 1910.22 and/or 29 CFR 1926.25

☐ Trenching and Shoring- 29 CFR 1926 Subpart P

☐ PPE- 29 CFR 1910 Subpart I

☐ Lock-out/ Tag-out- 29 CFR 1910.147

Mark Schaffer Excavating & Trucking, Inc. (MSE)
SITE -SPECIFIC SAFETY PLAN (SSSP)
Crossroads Wind
Huron County, Ohio

THE SITE-SPECIFIC SAFETY PLAN (SSSP)

MSE has the project goal of ZERO accidents and ZERO injuries, with work tasks designed to minimize or eliminate hazards to personnel, processes, equipment, and the general public. No worker should ever perform a task that may endanger their own safety and health or that of others.

This SSSP outlines the Environment, Safety, and Health (ES&H) requirements and guidelines developed for Crossroads Wnd. These requirements are written to help protect site personnel, visitors, and the general public from exposure to potential E S &H hazards on this job site. There are several plans and actions that are included to ensure that we act to protect the environment, the general public, as well as our workforce during the construction phase of this project. This plan shall be updated if there are major changes to project conditions, situations, or exposures, and those revisions shall be noted on the document. An employee acknowledgement form documents that each employee understands the SSSP and will implement these safety and health requirements on this job site.

SECTION 1: SCOPE OF WORK – Phase I

MSE will be installing private access roads from the public road to the location of the turbine pads. MSE will be stripping topsoil, performing embankment for roadway, installing culverts as needed, and installing the aggregate surface of these private roads.

This work will occur in farm fields in Huron County, Ohio.

MSE will not be using any subcontractors for this work.

Section 2: Safety and Emergency Contacts

Superintendent on-site:

Ken Pelham

419-681-6835

msesuper2@gmail.com

Project Manager:

Mike Schatzel

419-681-6828

mike@markschaffer-excavating.com

Safety Director:

Greg Russell

419-656-0342

greg@markschaffer-excavating.com

Vice-President:

Jason Schaffer

419-681-6826

jason@markschaffer-excavating.com

3rd Party Safety Representative

Becki DePasquale

Safety Resources Co. of Ohio, Inc.

330-477-1100

Section 3: Accident and Incident Investigation

All accidents/incidents are investigated by the Project Superintendent/ Safety Manager per the following procedure from the MSE Safety Policy:

Accident Prevention





The investigation of accidents and incidents are an essential part of Mark Schaffer Excavating & Trucking, Inc.'s accident prevention program. A thorough investigation, reconstructing the chain of events leading to an accident or incident, identifies unsafe acts and conditions requiring corrective action. An accident/incident investigation and subsequent implementation of the corrective action minimizes the potential for future accidents or incidents.

| | |
|--|--|
| <p>Responsibilities</p> <p><i>OSHA</i></p> <p><i>Supervisor</i></p> <p><i>Safety Director</i></p> | <p>OSHA investigates all major accidents resulting in death or catastrophe (hospitalization of 1 or more employees, amputation, or loss of an eye). Call OSHA's Emergency number at 1-800-321-OSHA (6742) within 8 hours of the fatality or 24 hours of the catastrophe.</p> <p>The responsible supervisor completes the initial report and gathers pertinent witness statements when:</p> <ul style="list-style-type: none"> ▪ An employee involved in a minor occupational accident is unable to work the subsequent full shift due to a resulting illness or injury, or; ▪ The employee receives medical treatment from other than a Mark Schaffer Excavating & Trucking, Inc. trained first aid provider, or; ▪ Events and conditions involving an incident or non-injury accident indicate there was a high probability of serious injury, illness or significant property damage. <p>The Safety Director is responsible for reviewing the Supervisor's Accident/Incident Investigation Form and initiating and implementing corrective action to prevent accident reoccurrence. The Safety Director may authorize a Competent Person to perform his duties. In the absence of an MSE Safety Director, report to MSE Vice President.</p> |
| <p>Investigation</p> <p><i>Preserving the Site</i></p> <p><i>Investigation</i></p> <p><i>Participants</i></p> <p><i>Involved Person(s) Statement</i></p> <p><i>Witness(es) Statement</i></p> <p><i>Evaluation Factors</i></p> | <p>The supervisor, upon notification of an accident or incident, immediately reports the incident to Mark Schaffer Excavating & Trucking, Inc.'s Safety Director. Mark Schaffer Excavating & Trucking, Inc.'s Safety Director will then report the accident or incident to any host or client if applicable (within 24 hours).</p> <p>The Supervisor is to ensure that the accident/incident site is preserved as it was when the event occurred. Equipment involved in and/or evidence from a major accident is not to be moved unless it is necessary for victim removal or accident prevention. Safety Director (or Approved Representative) authorizes removal of equipment involved in a major accident.</p> <p>The Supervisor is to immediately investigate a minor accident (i.e., First Aid only). Accidents involving more than "First Aid Only" treatment will be investigated by Mark Schaffer Excavating & Trucking, Inc.'s Safety Director (or approved representative) within 24 hours of the accident/incident. While the objective of an investigation is to determine the accident/incident cause an initial identification of evidence immediately following an accident/incident is crucial to the investigation. Evidence may include, but is not limited to, a list of witnesses or people involved, record of environmental factors (wind, rain, temperature, etc.), illumination, noise, ventilation, etc. After the cause is determined, the Supervisor is to provide corrective action immediately. The corrective action(s) should eliminate or minimize the potential of reoccurrence. The name of the person responsible for the corrective actions the date the corrective actions were complete will be recorded.</p> <p>Investigation participants may include the immediate supervisor of the injured/involved employee, witnesses, an employee representative, and any other person with the special expertise to evaluate the facts relating to the cause of the accident/incident.</p> <p>The involved person(s) must complete all applicable forms including the First Report of Injury/Illness and/or a Written Statement. They may also be interviewed. A witness to the accident/incident must complete a Written Statement or be interviewed by properly trained personnel. Follow-up interviews may be required so be sure to obtain contact information for all involved persons.</p> <p>Refer to the Supervisor's Accident/Incident Investigation Form for factors to evaluate during an accident/incident investigation.</p> |


Accident Prevention (cont.)

| | |
|---|--|
| <p>Investigation Report</p> <p><i>Lessons Learned & Communication</i></p> | <p>After the investigation and within 48 hours of the incident, the Safety Director completes a written Accident/Incident Report. Written incident reports should include an incident report form and a detailed narrative statement concerning the events. The format of the narrative report may include an introduction, methodology, summary of the incident, investigation board member names, narrative of the event, findings and recommendations. Photographs, witness statements, drawings, and all other pertinent documents should be included. The report should be routed as follows:</p> <ul style="list-style-type: none"> ▪ Original – Safety Director ▪ Copy – Approved Representative or Designated Competent Person <p>A copy of the original will be made and routed to any personnel Mark Schaffer Excavating & Trucking, Inc.'s Safety Director feels are pertinent to the accident/incident.</p> <p>After completion of the final report lessons learned should be reviewed and communicated to all affected personnel. Changes to processes must be placed into effect to prevent reoccurrence or similar events.</p> |
| <p>Assistance</p> <p><i>Training</i></p> <p><i>Equipment</i></p> <p><i>First Responders</i></p> <p><i>Loss Control</i></p> | <p>Contact Mark Schaffer Excavating & Trucking, Inc.'s Safety Director if assistance is required in conducting an accident/incident investigation or completing the required report(s).</p> <p>Personnel will be trained in their roles and responsibilities for incident response and investigation techniques. All employees will be trained to be aware of Mark Schaffer Excavating & Trucking, Inc.'s Accident Prevention program. Supervisors & management (or a designated competent person) will be trained in accident investigation. All training will be provided upon employment with Mark Schaffer Excavating & Trucking, Inc. and reviewed whenever a change in procedure is made.</p> <p>All proper accident/incident investigation forms are attached as part of this document. Any additional equipment such as cameras, measurement equipment, audio recorders, etc., will be provided as needed.</p> <p>In the absence of an infirmary, clinic, hospital, or physician, that is reasonably accessible in terms of time and distance to the worksite, which is available for the treatment of injured employees, a person who has a valid certificate in first-aid training from the U.S. Bureau of Mines, the American Red Cross, or equivalent training that can be verified by documentary evidence, shall be available at the worksite to render first aid.</p> <p>Only those employees certified to provide first aid shall do so. If you are ever in any doubt, or if you are not comfortable with the injured/ill employee's situation, always call 911.</p> <p>After and accident/incident actions to prevent further loss should occur. If needed personnel will be available to aid in the prevention of any additional loss, for example: maintenance could be summoned to prevent further damage to equipment or buildings, properly trained personnel called for hazardous chemical clean-up, etc.</p> <p>Additional assistance may be provided by our outside safety consulting agency:</p> <p style="text-align: center;">Safety Resources Co. of Ohio, Inc. 4650 Southway St., S.W. Canton, Ohio 44706 Phone: 330-477-1100 or 888-256-8544 Fax: 330-477-1200</p> |

WHAT TO DO WHEN...

| | |
|---|--|
| <p>You have an accident involving "Property Damage" (the customers or Mark Schaffer Excavating & Trucking, Inc.'s property) equaling or exceeding a combined dollar amount over \$2500.00.</p> | <ol style="list-style-type: none"> 1. Call Mark Schaffer Excavating & Trucking, Inc.'s Office and report the accident to the Safety Director. In the absence of an MSE Safety Director, report to MSE Vice President. 2. Call Safety Resources at 330-477-1100. If the office is closed the answering machine will give you a list of emergency numbers. Please feel free call our cell phones at any time. |
| <p>You have an <u>injury/illness that involves First Aid Only Treatment</u> by an emergency responder on the job site.</p>  | <ol style="list-style-type: none"> 1. Call Mark Schaffer Excavating & Trucking, Inc.'s Office and report the accident/illness to the Safety Director. In the absence of an MSE Safety Director, report to MSE Vice President. 2. Call Safety Resources at 330-477-1100. If the office is closed the answering machine will give you a list of emergency numbers. Please feel free call our cell phones at any time. 3. Complete as much of the First Report of Injury/Illness Form as you can. |
| <p>You have an <u>injury/illness that involves transporting the employee</u> to a medical care facility.</p>  <p>NOTE: Refer to the "Treatment Facilities & Guidelines" section of this manual for further clarification on when you should utilize an ambulance, or other emergency response service to transport an employee to a medical care facility and when it is acceptable for you to transport the injured/ill employee to the medical care facility.</p> <p>If ever in any doubt, or if you are not comfortable with the injured/ill employee's situation, always call for emergency transportation.</p> <p><u>Do not</u> attempt to transport the employee yourself.</p> | <ol style="list-style-type: none"> 1. If the Health Care Facility has a pre-registration phone number (i.e., Ault Works, Work, Health & Safety Services) call that number now and tell them that you have an accident/illness. At this point they will ask you additional questions. 2. Either transport the injured/ill employee to the medical care facility for treatment, or call your job sites posted emergency response number (see the "<u>Emergency Instruction Form</u>") and inform them that you have an injured/ill employee and require emergency transportation (i.e., ambulance, emergency squad). <u>Under no circumstance</u> should you allow the employee to drive or make their own transportation arrangements (such as, calling a family member or friend to come to the job site and get them) to a medical care facility. 3. Call Mark Schaffer Excavating & Trucking, Inc.'s Office and report the accident/illness to the Safety Director. In the absence of an MSE Safety Director, report to MSE Vice President. 4. Call Safety Resources at 330-477-1100. If the office is closed the answering machine will give you a list of emergency numbers. Please feel free call our cell phones at any time. 5. Complete as much of the First Report of Injury/Illness Form as you can. |

WHAT TO DO WHEN...

| | |
|--|--|
| <p>You have a work related death or catastrophe (hospitalization of 3 or more employees).</p> | <ol style="list-style-type: none">1. Call Safety Resources at 330-477-1100. If the office is closed the answering machine will give you a list of emergency numbers. Please feel free call our cell phones at any time.2. Call Mark Schaffer Excavating & Trucking, Inc.'s Safety Director immediately.3. Call OSHA's Emergency number at 1-800-321-OSHA (6742) within 8 hours of the fatality or catastrophe. |
| <p>OSHA shows up at a job site.</p>  | <ol style="list-style-type: none">1. Ask OSHA Compliance officer to wait in the job trailer.2. Call Safety Resources at 330-477-1100. If the office is closed the answering machine will give you a list of emergency numbers. Please feel free call our cell phones at any time.3. Call Mark Schaffer Excavating & Trucking, Inc.'s Safety Director. In the absence of an MSE Safety Director, report to MSE Vice President. |

Safety Resources Co. of Ohio, Inc.

4650 Southway St. SW

Canton, Ohio 44706

Toll Free: 888-256-8544

Phone: 330-477-1100 • Fax: 330-477-1200

Cell Phones

Rebecca (Becki) DePasquale
Cell Phone: 330-704-5918

Curt Speck
Cell Phone: 330-704-5958

| | | | | | |
|---|---|---|--|-------------------------------------|---------------|
| OSHA 300 Log Case No. _____ | | Sections in red are required by OSHA and must be completed. | | | |
| First Report of Injury/Illness (also used to report Property Damage) Must Be Completed within 24 hours of event. | | | | | |
| Employee's Section | | | | | |
| Name | | SS # | | Phone # | |
| Address | | City | State | Sex (circle one) M F | Date of Birth |
| | | | Zip | | Date of Hire |
| Check if the answer is yes. <input type="checkbox"/> Were you injured in an accident? <input type="checkbox"/> Are you reporting an occupational illness? | | | <input type="checkbox"/> Did the accident involve property damage? <input type="checkbox"/> Was a motorized vehicle (i.e. towmotor, truck, car) involved? | | |
| Describe body part(s) affected, or injured, and how affected or injured: | | | | | |
| Date of Injury or Illness | Time of Event: <input type="checkbox"/> am <input type="checkbox"/> pm <input type="checkbox"/> (check if cannot be determined) | | | Time Employee Began Work | |
| Exact location of accident/illness (<i>Work Site, Department, Building, Floor, Geographical Location</i>): | | | | | |
| Activity you were performing when injury or illness occurred, or immediately prior to injury or illness; include any tools, materials or equipment you were using at the time (<i>an example would be, climbing a ladder while carrying roofing materials</i>): | | | | | |
| Was this part of your normal duties? <input type="checkbox"/> Yes <input type="checkbox"/> No If no, explain why you were performing these duties? | | | List Witnesses: | | |
| Report prepared by (if different from injured/ill employee): _____ | | | | | |
| Employee Signature | | | (Name) (phone number) | | |
| Date: | | | | | |
| Supervisor's Section | | | | | |
| Name of Supervisor Completing This Form (please print): | | | This accident/illness was reported to me on: | | |
| Telephone No. _____ | | | _____ at _____ (date) (time include am/pm) | | |
| | | | by: _____ | | |
| Describe body part(s) affected, or injured, and how affected or injured (<i>example - 2nd degree burn, lower left forearm</i>): | | | | | |
| Activity employee was performing when injury or illness occurred, or immediately prior to injury or illness; include any tools, materials or equipment you were using at the time (<i>example - cutting metal plate for flooring</i>): | | | | | |
| How the injury or illness occurred (<i>an example would be ... employee stepped back to inspect work and slipped on some scrap metal, as worker fell, worker fell onto the hot metal plate</i>): | | | | | |
| What object or substance directly harmed the employee (<i>example - acetylene cutting torch, metal plate</i>) If this questions does not apply, you may leave it blank: | | | | | |



Written Statement

| | | | | | |
|---|------------------------|-------------------|--|--------------------------------------|--|
| Name | | Company | | Job Title | |
| Accident/Incident Date | Accident/Incident Time | Incident Location | | Cell/Home Telephone | |
| Name of Involved/Injured Employee | | | | Did the employee appear injured/ill? | |
| <p>If the employee appeared injured or ill, please describe the body part that was involved, what the injury was, and the apparent cause (in your opinion)</p> | | | | | |
| <p>Where were you in proximity to accident/incident? (in front, back, next to, number of feet, etc.)</p> | | | | | |
| <p>Describe the general work or activity being performed by you and the involved/injured employee</p> | | | | | |
| <p>Describe the accident/incident. Include specific work/activity involved; tools and equipment used; the use or nonuse of personal protective equipment. Written/oral rules; any verbal statements made; general site conditions, e.g., lighting, noise, unusual odors, housekeeping; weather.</p> | | | | | |

Add additional pages if necessary for additional space or drawings.

Continued on back.



Written Statement (cont.)

| | |
|--|--|
| Did you speak to the involved/injured employee at or near the time of the incident? _____ Yes _____ No | If so, what did he/she tell you? |
| Did you offer any assistance? _____ Yes _____ No | If so, please describe. |
| Have you had any subsequent discussions with the involved/injured employee regarding this incident? _____ Yes _____ No | If so, when and what did he/she tell you on this occasion? |
| Please add any additional comments you may have regarding this incident: | |

I have had a chance to read and correct my statement, consisting of _____ pages.

| | |
|------------------|-------------|
| Signature | Date |
|------------------|-------------|



Supervisor's Accident/Incident Investigation Form

| | | |
|--------------------------|---------------------------|---------------------------|
| Employee Name | Job Site/Location | Accident Date |
| Supervisor's Name | Supervisor's Title | Investigation Date |

Check all factors contributing to the accident/incident/illness:

- | | | |
|---|--|--|
| <input type="checkbox"/> Human Training Task Performance Protective Equipment Work History | <input type="checkbox"/> Site Conditions Physical Layout Walking/Working Surfaces Lighting Weather | <input type="checkbox"/> Equipment/Tools/Materials Operation Safety Guards & Controls Condition & Maintenance Labels/Signs/Tags |
| <input type="checkbox"/> Time Factors Work Shift Cause/Effect Relationship Sequence of Events | <input type="checkbox"/> Policies & Procedures Safety Policies & Procedures Operating Specifications Regulations & Standards | <input type="checkbox"/> Occupational Exposures Air Contaminants Chemicals Noise Biohazards, Human Body Fluids |

Explain all checked factors in the space below. Add additional pages for more space and to provide any necessary drawings.

List all recommended corrective action(s). Add additional pages if needed.

| | |
|---|---|
| Name of Person Responsible for Corrective Action | Department Responsible for Corrective Action |
| Anticipated Date of Corrective Action | Actual Date of Corrective Action |

| | | | |
|------------------------------------|-------------|-----------------------------|-------------|
| Supervisor's Signature | Date | Employee's Signature | Date |
| Safety Director's Signature | | | Date |

FACTORS OF AN ACCIDENT

UNSAFE ACTS

Construction project accidents cause too many painful injuries and claim far too many lives. The primary concern behind an accident is to find a way to prevent a recurrence. Construction workers control the first cause, unsafe acts. The following is a list of these unsafe acts:

- A worker may use equipment that is defective or damaged.
- A worker may use good equipment in a careless or other unsafe manner.
- Disregarding posted warning signs
- Failure to wear a hard hat
- Smoking near flammables or explosives
- Working too close to power lines
- Handling chemicals or other hazardous materials improperly

- Putting any part of your body onto or into shafts or openings and lifting material incorrectly.

UNSAFE CONDITIONS

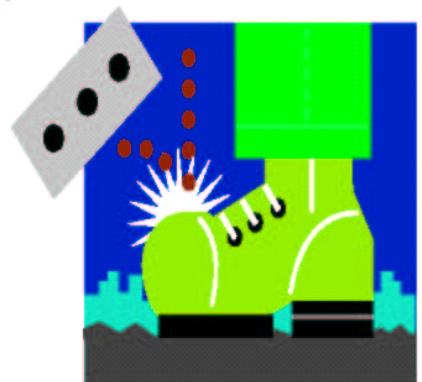
Many construction sites have the second accident factor, unsafe conditions. Keep a watch out for the following unsafe conditions:

- Inadequate or improperly installed guard rails
- A lack of any guarding at all
- Insufficient illumination
- Poor ventilation
- Electrical grounding requirements not observed
- Too few fire extinguishers available
- Containers that are not labeled
- Careless disposal of waste or excess material

These unsafe conditions can be caused by co-workers, subcontractors, or the general contractor. YOU can make a difference by taking the time to perform your work safely and by reporting any unsafe conditions you discover to your supervisor immediately.

After the cause of an accident is found, you'll find that safety on the job plays a major part in preventing that accident from happening again.

By everyone on the job cooperating, injury and death statistics will be reduced and it will be much safer for you to do your job



Section 4: Training

MSE has a comprehensive safety and health training program tailored to the scope of work for this project. All employees receive a project safety orientation upon new hire and upon assignment to the project. Topics include but are not limited to:

- ☐ *General Safety Guidelines*
- ☐ *Trenching & Excavation*
- ☐ *PPE*
- ☐ *Housekeeping*
- ☐ *Lock Out/ Tag Out*

Training records are maintained electronically at our office. Should OSHA visit our job site, these training records are one indication of our implementation of an active safety program on this site.

“All hands” safety meetings are scheduled to review safety inspections, findings, and corrective actions taken; critical safety procedures, discuss recent workplace incidents, and to celebrate safety milestones. The Project Manager/Superintendent should schedule routine “all hands” meetings in advance or set a regular date/time to be sure that all workers can plan to attend this safety meeting. Records of these meetings are on file in the job site office with attached attendance sheets.

Contractor shall conduct a project specific safety orientation for all Subcontractor personnel who work on the project.

Contractor shall hold weekly “toolbox” safety meetings prior to the start of each work week. The meeting shall have a duration of 10 to 15 minutes and must be documented

Section 5: Occupational Health

Medical Services

The following clinic and/or hospital provide emergency medical treatment to workers injured on this job.

Mercy Willard Hospital

1100 Neal Zick Rd.

Willards, Ohio

419-964-5000

Emergency Medical Response

The Contractor displays posters with emergency telephone numbers and locations of emergency facilities in visible locations (on bulletin board located on our yellow Conex container). The following information is provided:

- ☐ *Hospital name, location, and number (consistent with selected medical treatment facilities)*
- ☐ *Map to the nearest hospital*

Section 6: Site Specific Safety Plan

These OSHA standards listed below should be included in your SSSP if they are applicable to your scope of work. Included in each element are questions that if applicable should be answered according to your company's safety policies.

General Safety Guidelines



Responsibilities

Employer Responsibilities

Mark Schaffer Excavating & Trucking, Inc. shall:

- furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees, and
- comply with all local, state and federal occupational safety and health standards.

Employee Responsibilities

Each employee shall:

- comply with occupational safety and health standards and all rules, regulations, and orders issued which are applicable to his/her own actions and conduct.

Contractor Requirements

As a condition of doing business with Mark Schaffer Excavating & Trucking, Inc., all Contractors must comply with applicable local, state, federal regulatory requirements and Mark Schaffer Excavating & Trucking, Inc. safety policies and procedures. These include, but are not limited to:

- Provide access to SDS material upon request and follow the OSHA Hazard Communication Standard requirements.
- Conduct daily safety inspections of all assigned areas.
- Identify and correct hazards.
- Provide Contractor Employees with required personal protective equipment.
- Ensure Contractor Employees have the proper training for assigned tasks.
- Coordinate with Mark Schaffer Excavating & Trucking, Inc. for safety related issues.
- Establish and maintain an effective Safety and Health Program.
- Establish and maintain an effective Housekeeping Program.
- Site Specific Safety Plans and/or Requirements

Any contractor that does not meet these requirements will not be permitted to work for Mark Schaffer Excavating & Trucking, Inc. To ensure compliance, Mark Schaffer Excavating & Trucking, Inc. reserves the right to review contractors' safety programs, safety training documents and safety statistics.

All contractor employees shall adhere to all other Mark Schaffer Excavating & Trucking, Inc. policies, including but not limited to: drug and alcohol policies, Mark Schaffer Excavating & Trucking, Inc. equipment, use of controlled substances, firearm & explosive restrictions, and harassment of other persons.

Contractors are required to participate in pre-job meetings, safety orientations, safety meetings, job safety analysis or hazard assessments, on job safety inspections, etc.

Post-job safety performance reviews will be conducted on all contractors.

General Safety Requirements

- Job sites, materials, equipment, and tools will be frequently and regularly inspected by a competent person designated by Mark Schaffer Excavating & Trucking, Inc. to ensure safety.
- The use of any machinery, tool, material, or equipment which is not in compliance with any applicable requirement is prohibited. Such machine, tool, material, or equipment shall either be identified as unsafe by tagging or locking the controls to render them inoperable or shall be physically removed from its place of operation.
- Only those employees qualified by training or experience shall be permitted to operate equipment and machinery.
- Employees shall be instructed in the recognition and avoidance of unsafe conditions and the regulations applicable to his/her work environment to control or eliminate any hazards or other exposure to illness or injury.
- Employees required to handle, or use, harmful substances, flammable liquids, gases, or toxic materials shall be instructed in the safe handling and use of these materials and made aware of the potential hazards, and personal protective measures required. (See Mark Schaffer Excavating & Trucking, Inc.'s Hazard Communication Program for additional information.)
- All employees required to enter into confined or enclosed spaces shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required. The employer shall comply with any specific regulations that apply to work in dangerous or potentially dangerous areas. (See Mark Schaffer Excavating & Trucking, Inc.'s Confined Space Policy for additional information.)

Trenching & Excavating



In the construction industry, excavation work such as trenching can be extremely hazardous. A trench is defined as a narrow excavation made below ground in which the depth is greater than the width, which is 15 feet or less.

The most common type of trenching accident, cave-in, is also the deadliest. Cave-ins are usually the result of unsafe work practices:

- Not using shoring;
- Using inadequate shoring;
- Excavating too close to a building or utility pole;
- Misjudging the stability of the soil;
- Vibrations caused by construction work; or
- Weather conditions that change the soil around the excavation.

General Requirements

- ❑ **Surface Encumbrances** – All surface encumbrances, such as trees, boulders, adjacent structures, utility poles, large equipment, etc. that are located so as to create a hazard to employees will be removed or supported as necessary to safeguard employees against cave-ins. **Underground Installations** – Before any excavation, underground installations must be determined. This can be accomplished by either contacting the local utility companies or the local “one-call” center for the area. All underground utility locations must be documented on the proper forms. All overhead hazards (surface encumbrances) that create a hazard to employees must be removed or supported to eliminate the hazard.
 - If underground installations are uncovered, they will be properly supported to protect employees.
- ❑ **Access & Egress** – A stairway, ladder, ramp or other means of egress will be located in any trench that is 4 feet or more in depth so as to require no more than 25 feet of lateral travel for employees.
 - **Ladders** must be secured at the top and extend a minimum of 36 inches above the top of the excavation.
 - **Metal ladders** should be used with extreme caution, particularly when electrical utilities are present.
 - **Structural ramps** may be designed by a “Competent Person” unless they are used by equipment. If this is the case, the design will be developed by a “Competent Person” qualified in structural design.
- ❑ **Vehicular Traffic** – Employees exposed to vehicular traffic shall be provided with and required to wear reflective vests or other suitable garments marked with or made of reflectorized or high-visibility materials.
 - **Trained flag persons** signs and barricades must be utilized to ensure the safety of employees, vehicular traffic, and pedestrians.
- ❑ **Exposure to Falling Loads** – All employees, subcontractors, and visitors on a Mark Schaffer Excavating & Trucking, Inc. excavation site, must wear hard hats. (See Mark Schaffer Excavating & Trucking, Inc.’s Personal Protective Equipment Policy).
 - Employees are not allowed to work under raised loads.

- Employees are not allowed to work under loads being lifted or moved by heavy equipment used for digging or lifting.
- Employees are required to stand away from equipment that is being loaded or unloaded to avoid being struck by falling materials or spillage.
- ❑ **Mobile Equipment** – The following steps should be taken to prevent vehicles from accidentally falling into the trench:
 - **Barricades** must be installed where necessary.
 - **Hand or mechanical signals** must be used as required.
 - **Stop logs** must be installed if there is danger of vehicles falling into the trench. Or a warning system shall be utilized (i.e., barricades, hand or mechanical signals)
 - **Soil should be graded away** from the excavation; this will assist in vehicle control and channeling of run-off water.
 - **Trenches left open overnight** shall be fenced and barricaded.
- ❑ **Stability of Adjacent Structures** – Support systems such as shoring, bracing or underpinning will be used to provide stability whenever the stability of adjoining buildings, walls or other structures is endangered by excavation operations.
- ❑ Employees should be spaced out in a trench unless there is a necessity of working together. They should also stay out of the immediate area of excavating equipment, and not work ahead of the shoring.
- ❑ When employees are working on hard surface roads, where a flow of traffic is being maintained, it is important that small stones be removed off the road. Stones are sometimes thrown with great speed by the tires of passing cars and can cause serious accidents.
- ❑ Broken arms and legs and other injuries can result when workers fall into construction trenches. They result because they fail to look where they are going, when they walk too close to the edge, or when they attempt to leap across the trench.
- ❑ Rocks and tools thrown near the edge of a trench are not only a hazard to employees working in the trenches, but can cause falls into the trench by employees working on the surface.
- ❑ Employees should use extra care when venturing near the edges of trenches and other excavations when the weather is bad and there are icy or muddy conditions.

Soil Classification & Identification

The OSHA Standards define soil classifications within the Simplified Soil Classification Systems, which consists of four categories: Stable rock, Type A, Type B, and Type C. Stability is greatest in stable rock and decreases through Type A and B to Type C, which is the least stable. Appendix A of the Standard provides soil mechanics terms and types of field tests used to determine soil classification

- ❑ **Stable Rock** – Natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.
- ❑ **Type A Soil** – Most Stable:
 - Cohesive soils with an unconfined compression strength of 1.5 tons per square foot (TSF) or greater.
 - Cemented soils like caliche and hardpan are considered Type A.
 - Soil is not type A if:
 - If is fissured;
 - The soil is subject to vibration from heavy traffic, pile driving or similar effects;

- The soil has been previously disturbed;
 - The material is subject to other factors that would require it to be classified as a less stable material;
 - The exclusions for Type A most generally eliminate it from most construction situations.
- **Type B Soil – Medium Stability:**
- Cohesive soil with an unconfined compressive strength greater than .5 TSF, but less than 1.5 TSF.
 - Granular cohesionless soil including angular gravel, silt, silt loam, and sandy loam.
 - The soil has been previously disturbed except that soil classified as Type C soil.
 - Soil that meets the unconfined compressive strength requirements of Type A soil, but is fissured or subject to vibration.
 - Dry rock that is unstable.
- **Type C Soil – Least Stable:**
- Cohesive soil with an unconfined compressive strength of .5 TSF or less.
 - Granular soils including gravel, sand and loamy sand.
 - Submerged soil or soil from which water is freely seeping.
 - Submerged rock that is not stable.
- **Layered Geological Strata (where soils are configured in layers)** – The soil must be classified on the basis of the soil classification of the weakest soil layer. Each layer may be classified individually if a more stable layer lies below a less stable layer (i.e., where a Type C soil rests on top of stable rock).
- Only the “Competent Person” in charge of the excavation may classify the soil as other than a type C, according to the Testing Methods outlined in this policy and procedure.

Soil Testing Methods

- The “Competent Person” will classify the soil on the basis of at least one visual and one manual analysis.
- These tests should be run on freshly excavated samples from the excavation and are designed to determine stability based on a number of criteria:
- | | |
|------------------------------|-----------------------------------|
| ▪ Cohesiveness | ▪ Presence of Fissures |
| ▪ Presence & Amount of Water | ▪ Unconfined Compressive Strength |
| ▪ Duration of Exposure | ▪ Undermining |
| ▪ Presence of Layering | ▪ Prior Excavation & Vibration |
- **Visual Test** – The “Competent Person” should perform a visual test to evaluate the conditions around the site. In a visual test, the entire excavation site is observed, including the soil adjacent to the site and the soil being excavated. The “Competent Person” should also check for vibration.
- During the visual test, the “Competent Person” should check for crack-line openings along the failure zone that would indicate tension cracks, look for existing utilities that indicate that the soil has been previously disturbed, and observe the open side of the excavation for indications of layered geologic structuring.
 - This person should also look for signs of bulging or sloughing, as well as for signs of surface water seeping from the sides of the excavation or from the water table.

- The area adjacent to the excavation should be checked for signs of foundations or other intrusions into the failure zone, and the evaluator should check for surcharging and the spoil distance from the edge of the excavation.
- ❑ **Manual Tests:**
 - **Thumb Penetration Test** – Attempt to press the thumb firmly into the soil in question. If the thumb penetrates the full length of the nail, it is probably Type B soil. If the thumb penetrates the full length of the thumb, it is Type C soil. It should be noted that the thumb penetration test is the least accurate testing method.
 - **Dry Strength Test** – Take a sample of dry soil. If it crumbles freely or with moderate pressure into individual grains it is considered granular (Type C). Dry soil that falls into clumps that subsequently break into smaller clumps (and the smaller clumps can only be broken with difficulty) it is probably clay in combination with gravel, sand, or silt (Type B).
 - **Plasticity or Wet Thread Test** – Take a moist sample of the soil. Mold it into a ball and then attempt to roll it into a thin thread approximately 1/8 inch in diameter by 2 inches in length. If the soil sample does not break when held by one end, it may be considered Type B.
 - **Pocket Penetrometer Test** – This instrument is most accurate when soil is nearly saturated. This instrument will give unconfined compressive strength in tons per square foot.
 - **Pocket Penetrometer Test (cont.)** – The spring operated device uses a piston that is pushed into a coil up to a calibration groove. An indicator sleeve marks and retains the reading until it is read. The reading is calibrated in tons per square foot (TSF) or kilograms per cubic centimeter.
 - **Shearvane Test** – Measures the approximate shear strength of saturated cohesive soils. The blades of the vane are pressed into a flat section of undisturbed soil, and the knob is turned slowly until soil failure. The dial is read directly when using the standard vane. The results will be in tons per square foot or kilograms per cubic centimeter.
- ❑ The “Competent Person” will perform several tests of the excavation to obtain consistent, supporting data along its depth and length. The soil is subject to change several times within the scope of an excavation and the moisture content will vary with weather and job conditions. The “Competent Person” must also determine the level of protection based on what conditions exist at the time of the test, and allow for changing conditions.

Excavation Protection Systems

- ❑ All excavations or trenches 5 feet or greater in depth shall be appropriately benched, shored, or sloped according to the procedures and requirements set forth in OSHA’s Excavation Standard, 29 CFR 1926.650, .651, and .652.
- ❑ Excavations or trenches 20 feet deep or greater must have a protective system designed by a Registered Professional Engineer.
- ❑ Excavations under the base of footing of a foundation or wall require a support system designed by a Registered Professional Engineer.
- ❑ Sidewalks and pavement shall not be undermined unless a support system or another method of protection is provided to protect employees from their possible collapse.

- **Sloping** – Maximum allowable slopes for excavations less than 20' based on soil type and angle to the horizontal are as follows:

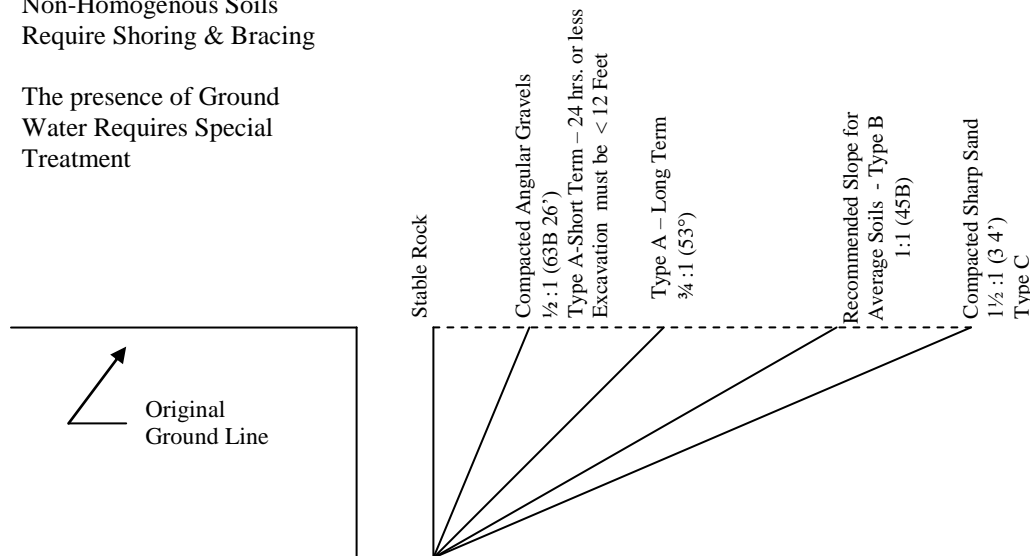
| Soil Type | Height/Depth Ratio | Slope Angle |
|---------------|--------------------|-------------------|
| Type B | 1:1 | 45 degrees |
| Type C | 1½ : 1 | 34 degrees |

- A 10-foot-deep trench in Type B soil would have to be sloped to a 45-degree angle, or sloped 10 feet back in both directions. Total distance across a 10-foot-deep trench would be 20 feet, plus the width of the bottom of the trench itself.
- In Type C soil, the trench would be sloped at a 34-degree angle, or 15 feet back in both directions for at least 30 feet across, plus the width of the bottom the trench itself. (See *Illustration 1*)

Illustration 1: Approximate Angle of Repose for Sloping of Sides of Excavations

Note: Clays Silts, Loams or
Non-Homogenous Soils
Require Shoring & Bracing

The presence of Ground
Water Requires Special
Treatment



All sloping systems for excavations 5 to 20 feet in depth must be constructed under the instruction of the designated “Competent Person”.

- **Benching** – Benching *is not* allowed in Type C soil.
 - In Type B soil, the vertical height of the benches must not exceed 4 feet. Benches must be below the maximum allowable slope for that soil type. In other words, a 10-foot deep trench in Type B soil must be benched back 10 feet in each direction, with the maximum of a 45-degree angle.
 - Benching systems for excavations 5 to 20 feet in depth must be constructed under the instruction of the designated “Competent Person”.
- **Shoring/Shielding** is used when the location or depth of the cut makes sloping back to the maximum allowable slope impractical. Shoring utilizes a framework of vertical members (uprights), horizontal members (whales), and cross braces to support the sides of the excavation to

prevent a cave-in. Metal (aluminum) Hydraulic, mechanical or timber shorings are common examples.

- All shoring shall be installed from the top down and removed from the bottom up.
- When bracing or shoring of trenches is required, such bracing and shoring shall be carried along with the excavation.
- Cross braces or trench jacks shall be placed in true horizontal position, be spaced vertically, and be secured to prevent sliding, falling, or kickouts.
- Shoring Timbers, or whales, should not be used as supports for platforms to carry concrete mixtures or other heavy equipment. If it is necessary for a mixer to be over a trench, vertical supporting members should be cut in-between the wales, and the load transmitted to the ground through additional vertical members from the bottom wale.
- Backfilling and removal of trench supports shall progress together from the bottom of the trench. Jacks or braces shall be released slowly, and, in unstable soil, employees shall clear the trench before pulling out the jacks or braces with ropes.



- **Timber Shoring** - Minimum requirements for trench bracing and shoring shall be in accordance with Appendix B to this rule.

- The vertical planks in the bracing system shall extend at least to the top of the trench face
- The members of the shoring system that are to be selected using the tables are the cross braces, the uprights, and the wales where wales are required. The Competent Person shall select the size and spacing of members using the appropriate table. The selection is based on the depth and width of the trench where the members are to be installed. In most instances, the selection is also based on the horizontal spacing of the cross braces. Where a choice is available, the horizontal spacing of the cross braces must be chosen before the size of any member can be determined.
- Braces and diagonal shores in a wood shoring system shall not be subjected to compressive stress in excess of values given by the following formula:

$$S = 1300 - \frac{20L}{D} \qquad \text{Maximum Ratio: } \frac{L}{D} = 50$$

Where: L = Length, unsupported, in inches.

D = Least side of the timber in inches.

S = Allowable stress in pounds per square inch of cross section.

- **Hydraulic (Aluminum) Shoring provides** a critical safety advantage over timber shoring because workers do not have to enter the trench to install them. They are also light enough to be installed by one worker; they are gauge-regulated to ensure even distribution of pressure along the trench line; and they can be adapted easily to various trench depths and widths.

- The top cylinder of hydraulic shoring shall be no more than 18 inches below the top of the excavation.
- The bottom of the cylinder shall be no higher than 4 feet from the bottom of the excavation. (2 feet of trench wall may be exposed beneath the bottom of the rail or plywood sheeting, if used.)
- 3 vertical shores, evenly spaced must be used to form a system.



- Wales are installed no more than 2 feet from the top, no more than 4 feet from the bottom, and no more than 4 feet apart, vertically.
- Hydraulic shores must be installed with sheeting in accordance with Appendix C.

❑ **Shielding (Trench Boxes)** – Unlike sloping and shoring, shielding does not prevent cave-in. Shields are designed to withstand the soil forces caused by a cave-in and protect the employees inside the structure. Most shields consist of two flat parallel metal walls that are held apart by metal cross braces.

- Shielding design and construction is not covered by OSHA Standards. Shields must be certified in design by a registered professional engineer and must have either a registration plate on the shield or registration papers from the manufacturer on file at the worksite. *Any repairs or modifications must be approved by the manufacturer.*



- The excavated area between the outside of the trench box and the face of the trench should be as small as possible. The space between the trench box and the excavation side must be backfilled to prevent lateral movement of the box. Shields may not be subjected to loads exceeding those, which the system was designed to withstand.
- Trench boxes are generally used in open areas, but they also may be used in combination with sloping and benching.
- Shields must not have any lateral movement when installed.
- The shield must extend at least 18 inches above the point where proper sloping begins (the height of the shield must be greater than the depth of the excavation).
- Shields may ride 2 feet above the bottom of an excavation, provided they are calculated to support the full depth of the excavation and there is no caving under or behind the shield.
- Employees will be protected from cave-ins when entering and exiting the shield (i.e., ladder within the shield or a properly sloped ramp at the end).
- Employees are not allowed in the shield during installation, removal, or during any vertical movement.
- The open end of the shield must be protected from the exposed excavation wall. The wall must be sloped, shored, or shielded. Engineer designed end plates can be mounted on the ends of the shield to prevent cave-ins.

Hazardous Atmospheres and Confined Spaces

- ❑ Employees shall not be permitted to work in hazardous and/or toxic atmospheres. Such atmospheres include those with:
 - Less than 19.5% oxygen;
 - A combustible gas concentration greater than 20% of the lower flammable limit; and
 - Concentrations of hazardous substances that exceed those specified in the Threshold Limit Values for airborne contaminants established by the American Conference of Governmental Industrial Hygienists (ACGIH).
- ❑ All operations involving such atmospheres must be conducted in accordance with OSHA requirements for occupational health and environmental controls for personal protective equipment and for lifesaving equipment. Engineering controls (i.e., ventilation) and respiratory equipment may be required.

- ❑ When **internal combustion engines** are used in or near trenches, precautions should be taken against exhaust gases entering the trenches. Where necessary, ducts should be attached to the exhaust to conduct the gases away from the trench.
- ❑ **Testing for Atmospheric Contaminants** – If there is any possibility that the trench or excavation could contain a hazardous atmosphere (i.e., trenching in the vicinity of gasoline storage tanks, underground pipelines or sewer lines, a landfill area), atmospheric testing must be conducted, by a “Competent Person” prior to entry.
 - Testing should be conducted not only before employees enter the trench, but regularly to ensure that the trench remains safe. The frequency of testing should be increased if equipment is operating in the trench.
 - Testing frequency should also be increased if welding, cutting, or burning is done in the trench.
 - Employees required to wear respiratory protection, must be trained, fit-tested, and enrolled in Mark Schaffer Excavating & Trucking, Inc.’s respiratory protection program.
 - Some trenches qualify as confined spaces. When this occurs, compliance with Mark Schaffer Excavating & Trucking, Inc.’s Confined Space program is required.

Standing Water and Water Accumulation

- ❑ Methods for controlling standing water and water accumulation must be provided and should consist of the following, if employees must work in the excavation.
 - Use of special support or shield systems approved by a registered professional engineer.
 - Water removal equipment, such as well pointing, used and monitored by a “Competent Person”.
 - Safety harnesses and lifelines, used in accordance with Mark Schaffer Excavating & Trucking, Inc.’s Fall Protection program.
 - Employees removed from the trench during rainstorms.
 - Trenches carefully inspected by a “Competent Person” after each rain and before employees are permitted to re-enter the trench.
- ❑ **Working below the water line** – In these conditions, in order to guard against an unstable excavation bottom, sheeting may have to be driven below the bottom of such an excavation to add to the soil stability.
- ❑ **Diversion Dikes and ditches** or other suitable means will be used to prevent surface water from entering an excavation and to provide adequate drainage of the area adjacent to the excavation. Water causes soil erosion and softening and should not be allowed to accumulate in a trench or excavation.

Superimposed Loads and Vibrations

- ❑ Superimposed loads in the vicinity of a trench or excavation will increase the pressure on excavation walls. Heavy equipment and materials such as pipes or timbers will be kept as far back from the excavation as possible.
- ❑ When heavy loads must be located near an excavation, the walls must be braced, sheet-piled, or shored to safely support the extra weight. In some cases, it may be necessary to lessen the pressure of these loads.

- ❑ Buildings, curbs trees, utility poles and other structures adjoining the excavation area also can place more stress on a trench side than it can safely accommodate. In these instances, Mark Schaffer Excavating & Trucking, Inc. requires that shoring, bracing, or underpinning be provided as necessary not only to protect workers, but also to prevent the dislocation of the soil beneath the structures in the vicinity.
- ❑ **Spoil** – Temporary Spoil, the excavated material, can exert great pressure on the excavation walls.
 - Temporary spoil shall be placed no closer than 2 feet from the surface edge of the excavation, measured from the nearest base of the spoil to the cut. This distance should not be measured from the crown of the spoil deposit. This distance requirement ensures that loose rock or soil from the temporary spoil pile will not fall on employees in the trench.
 - Spoil should be placed so that it channels rainwater and other run-off water away from the excavation. Spoil should be placed so that it cannot accidentally run, slide, or fall back into the excavation.
 - **Permanent Spoil** should be placed at a much greater distance from the excavation. ***This distance will be determined by the “Competent Person”.***
- ❑ **Vibrations** or sudden shock from passing vehicles or railways, blasting, equipment such as trucks or pile drivers, and some tools can create enough vibration to endanger a shoring system. If these conditions exist near an excavation site, stronger support is vital.

Surface Crossing of Trenches

- ❑ Surface crossing of trenches should not be made unless absolutely necessary. However, if necessary, they are only permitted under the following conditions:
 - **Vehicle crossings** must be designed by and installed under the supervision of a Registered Professional Engineer.
- ❑ **Walkways or bridges** must:
 - Have a minimum clear width of 20 inches.
 - Be fitted with standard guardrails (as outlined in Mark Schaffer Excavating & Trucking, Inc.’s Fall Protection Plan).
 - Extend a minimum of 24 inches past the surface edge of the trench.
- ❑ **“Jump-Overs”** of trenches are strictly prohibited on any Mark Schaffer Excavating & Trucking, Inc. worksite.

Inspections

- ❑ **Daily Inspection** of excavations, the adjacent areas and protective systems shall be made by the “Competent Person” for evidence of a situation that could result in a cave-in, indications of failure of protective systems, hazardous atmospheres or other hazardous conditions.
- ❑ **The “Competent Person”** shall conduct inspections:
 - Daily and before the start of each shift.
 - As dictated by the work being done in the trench.
 - After every rainstorm.
 - After other events that could increase hazards, such as snowstorm, windstorm, thaw, earthquake, dramatic change in weather, etc.
 - When fissures, tension cracks, sloughing, undercutting, water seepage, bulging at the bottom, or other similar conditions occur.

- When there is a change in the size, location, or placement of the spoil pile.
- When there is any indication of change or movement in adjacent structures.
- ❑ **Whenever a possible hazardous condition** is detected, the “Competent Person” will instruct exposed employees to immediately leave the excavation or trench until an adequate means of protection is provided.
- ❑ A **“Daily Excavation Inspection Form”** shall be completed for excavations 4 feet or greater in depth.
 - All documented inspections will be kept on file in the worksite safety files and forwarded to the Safety Director or Vice President weekly.

Competent Person(s)

- ❑ The OSHA Standards require that the **“Competent Person”** must be capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and have authorization to take prompt corrective measures to eliminate them and if necessary, to stop the work.
- ❑ A “Competent Person” is required to:
 - Have a complete understanding of the applicable safety standards and any other data provided (29 CFR 1926 Subpart P).
 - Assure the proper locations of underground installations or utilities, and that the proper utility companies have been contacted.
 - Conduct soil classification tests and reclassify soil after any condition changes.
 - Determine adequate protective systems (sloping, shoring, and shielding systems) for employee protection.
 - Conduct all air monitoring for potential hazardous atmospheres and have the ability to detect and deal with other hazards associated with confined spaces.
 - Conduct daily and periodic inspections of excavations and trenches.
 - Approve design of structural ramps, if used.
 - Have the authority to take prompt corrective measures to eliminate existing and predictable hazards and to stop work when required.
- ❑ Each site covered in this procedure will have a Competent Person who will evaluate conditions and remain at the site as long as employees are working in the trench or excavation
- ❑ The Competent Person will evaluate the work site prior to excavation and determine what utilities will be affected. Utility companies will be notified at least 48 hours prior to starting work unless emergency conditions exist.
- ❑ The Competent Person will choose either sloping or shielding/shoring as the protective system.
- ❑ The Competent Person will inspect and document the condition of the trench or excavation and protective system prior to each workshift, throughout each workshift, and after a rainstorm or other hazard-increasing event.
- ❑ If a hazard is detected, the Competent Person will not permit employees to enter or will immediately remove employees from the trench or excavation until proper protective measures have been taken.
- ❑ The Competent Person will ensure mobile equipment working near the edge of a trench or excavation has a positive warning system such as stop logs or hand signals.
- ❑ The Competent Person will ensure that testing with a multigas meter is conducted whenever the possibility of atmospheric hazards in the trench or excavation exists.
- ❑ The Competent Person will ensure that information on the site evaluation and protective system selected is available on-site.

Competent Person Job Reminder Checklist

| | | |
|---|------------------------------|------------------------------|
| Date | Name of Competent Person | Name of RPE (If Applicable): |
| Project I.D. No./Name | Physical Location of Project | |
| Pre-Inspect Jobsite | | |
| What is the best protection method? (i.e., sloping, shoring, shielding) | | |
| How likely are utilities? | | |
| What additional equipment is necessary? | | |
| Is water removal needed? | | |
| Will air monitoring be required? | | |
| Ladders? | | |
| Soil Testing? | | |
| Stop logs? | | |
| Employee and Equipment Access | | |
| Employee ramp designed by Competent Person. | | |
| Equipment ramp designed by person qualified in structural design. | | |
| Exit means located within 25' of employees and securely attached. | | |
| Determine Soil Conditions | | |
| All soil is to be classified as type "C" and proper protection used based on "C". | | |
| Record results on testing record. | | |
| Inspect excavation for changing soil conditions. | | |
| Protection Systems | | |
| Appropriate protection system selected. | | |
| Installed according to manual or tabulated data. | | |
| Inspect equipment at start of shift | | |
| Remove employee(s) working outside protected area(s). | | |
| Monitor Environment Conditions | | |
| Remove employees from trench where water is accumulating. | | |
| Monitor use of water removal equipment. | | |
| Monitor air quality levels if hazardous atmospheres are suspected. | | |
| Required to Consult w/Registered Professional Engineer (RPE) When: | | |
| Trenches are over 20' deep. | | |
| Specifically designed shoring or bracing is required. | | |
| Excavation or trench endangers nearby structure. | | |
| Standard protection measures cannot be used. | | |
| May Consult With RPE When: | | |
| Unusual or changing soil conditions exist or are anticipated. | | |
| Soil is unusually good and shoring reduction is required. | | |
| Soil is unusually poor and may require going to a more protective system. | | |
| Notes: | | |

Soil Analysis Checklist

| | | | | | |
|---|-------------------------|--|--|-------------------------------------|-------------------|
| Date | | Name of Competent Person | | Weather Conditions | |
| Project I.D. No./Name | | Physical Location of Project | | | |
| Where was sample taken from? | | | Excavation length, depth & width | L: | D: W: |
| Visual Test | | | | | |
| Particle Type | Fine Grained (Cohesive) | | Granular (Sand/Silt or Gravel) | | Other (Describe) |
| Notes: | | | | | |
| Water Conditions | Wet | Dry | Seeping Water | Surface Water Present | Submerged |
| Notes: | | | | | |
| Yes | No | N/A | Description | | |
| | | | Layered Soils Dipping excavation? If yes, describe: | | |
| | | | Excavation exposed to vibrations? If yes, describe: | | |
| | | | Previously disturbed soils? | | |
| | | | Crack like openings or sprawlings observed? | | |
| | | | Underground Utilities? If yes, what type? | | |
| | | | Layered Soils? (Note: The least stable layer controls the soil type) | | |
| Manual Test | | | | | |
| Plasticity | Cohesive | Non-Cohesive | Dry Strength | Cohesive (broken w/difficulty) | Granular |
| Wet Shake | | Water comes to surface (granular material) | | Surface remains dry (clay material) | |
| Thumb Test (Used to estimate unconfined compression strength of cohesive soil) | | | | | |
| Test Performed | Yes | No | N/A, Explain: | | |
| Soil indented by thumb with very great effort? | | | | | Type A |
| Soil indent by thumb with some effort? | | | | | Type B |
| Soil easily penetrated several inches by thumb with little or no effort. NOTE: If soil is submerged, seeping water, subjected to surface water, runoff, exposed to wetting. | | | | | Type C |
| Penetrometer or Shearvane Test (Used to estimate unconfined compressive strength of cohesive soils.) | | | | | |
| Test Performed | Yes | No | Device Used/Serial Number: | | |
| Soil with unconfined compressive strength of 1.5 tsf or greater. | | | | | Type A |
| Soil with unconfined compressive strength of greater than 0.5 tsf and less than 1.5 tsf. | | | | | Type B |
| Soil with unconfined compressive strength of 0.5 tsf or less. NOTE: If the soil is submerged, seeping water, subjected to surface water, runoff, exposed to wetting. | | | | | Type C |
| Soil Classification | | | | | |
| Stable Rock | Type A | | Type B | | Type C |
| Selection of Protective System (Refer to Appendix F of 29 CFR 1926) | | | | | |
| Sloping (Appendix B) | Timber Shoring | | Trench Shield | | Hydraulic Shoring |
| Specify Angle: | (Appendix C) | | Max. depth in this soil: | | (Appendix D) |
| Additional Notes or Comments: | | | | | |

**Keep one copy of each Soil Analysis Checklist on site for project duration.
Forward the original to the main office**

**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 | 4 | 2 Inch Diameter | 2 Inch Diameter Note (2) | 3 Inch Diameter |
| Over 10 Up To 15 | 8 | | | | |
| 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): Appendix D, Item (g) (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).

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

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 | 4 | 2 Inch Diameter | 2 Inch Diameter Note (2) | 3 Inch Diameter |
| Over 10 Up To 15 | 6.5 | | | | |
| 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): Appendix D, Item (g) (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).

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

Waler Systems For Soil Type B

| 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) | | |
| | | | Up to 8 | | Over 8 Up to 12 | | Over 12 Up To 15 | | | | |
| | | | Horiz. Spac. | Cyldr. Diam. | Horiz. Spac. | Cyldr. Diam. | Horiz. Spac. | Cyldr. Diam. | Solid Sheet | 2 ft. | 3 ft. |
| Over 5 Up To 10 | 4 | 3.5 | 8.0 | 2 in. | 8.0 | 2 in. (Note 2) | 8.0 | 3 in. | | | 3x12 |
| | | 7 | 9.0 | 2 in. | 9.0 | 2 in. (Note 2) | 9.0 | 3 in. | | | |
| | | 14 | 12.0 | 3 in. | 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) | 6.0 | 3 in. | | 3x12 | |
| | | 7 | 8.0 | 3 in. | 8.0 | 3 in. | 8.0 | 3 in. | | | |
| | | 14 | 10.0 | 3 in. | 10.0 | 3 in. | 10.0 | 3 in. | | | |
| Over 15 Up To 20 | 4 | 3.5 | 5.5 | 2 in. | 5.5 | 2 in. (Note 2) | 5.5 | 3 in. | 3x12 | | |
| | | 7 | 6.0 | 3 in. | 6.0 | 3 in. | 6.0 | 3 in. | | | |
| | | 14 | 9.0 | 3 in. | 9.0 | 3 in. | 9.0 | 3 in. | | | |
| Over 20 | Note (1) | | | | | | | | | | |

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

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

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

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

Waler Systems For Soil Type C

| 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) | | |
| | | | Up to 8 | | Over 8 Up to 12 | | Over 12 Up To 15 | | | | |
| | | | Horiz. Spac. | Cylidr. Diam. | Horiz. Spac. | Cylidr. Diam. | Horiz. Spac. | Cylidr. Diam. | Solid Sheet | 2 ft. | 3 ft. |
| Over 5 Up To 10 | 4 | 3.5 | 6.0 | 2 in. | 6.0 | 2 in. (Note 2) | 6.0 | 3 in. | 3x12 | | |
| | | 7 | 6.5 | 2 in. | 6.5 | 2 in. (Note 2) | 6.5 | 3 in. | | | |
| | | 14 | 10.0 | 3 in. | 10.0 | 3 in. | 10.0 | 3 in. | | | |
| Over 10 Up To 15 | 4 | 3.5 | 4.0 | 2 in. | 4.0 | 2 in. (Note 2) | 4.0 | 3 in. | 3x12 | | |
| | | 7 | 5.5 | 3 in. | 5.5 | 3 in. | 5.5 | 3 in. | | | |
| | | 14 | 8.0 | 3 in. | 8.0 | 3 in. | 8.0 | 3 in. | | | |
| Over 15 Up To 20 | 4 | 3.5 | 3.5 | 2 in. | 3.5 | 2 in. (Note 2) | 3.5 | 3 in. | 3x2 | | |
| | | 7 | 5.0 | 3 in. | 5.0 | 3 in. | 5.0 | 3 in. | | | |
| | | 14 | 6.0 | 3 in. | 6.0 | 3 in. | 6.0 | 3 in. | | | |
| Over 20 | Note (1) | | | | | | | | | | |

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

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

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

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

Minimum Requirements*
Soil Type A $P_2 = 25 \times H + 72$ psf (2 ft. Surcharge)

| Depth Of Trench (feet) | Size (actual) and Spacing of Mmbrs ** | | | | | | | | | | | | | |
|------------------------|---------------------------------------|------------------------|---------|---------|----------|----------|---------------|------------|---------------|----------|--------|--------|---------------|-----|
| | Cross Braces | | | | | | | Wales | | Uprights | | | | |
| | Horiz. | Width of Trench (feet) | | | | | Vertical | Size (in.) | Vertical | Max. | Allow. | Horiz. | Spacing (ft.) | |
| | Spacing (ft) | Up to 4 | Up to 6 | Up to 9 | Up to 12 | Up to 15 | Spacing (ft.) | | Spacing (ft.) | Close | 4 | 5 | 6 | 8 |
| 5 To 10 | Up to 6 | 4x4 | 4x4 | 4x6 | 6x6 | 6x6 | 4 | Not Req'd | --- | | | | 2x6 | |
| | Up to 8 | 4x4 | 4x4 | 4x6 | 6x6 | 6x6 | 4 | Not Req'd | --- | | | | | 2x8 |
| | Up to 10 | 4x6 | 4x6 | 4x6 | 6x6 | 6x6 | 4 | 8x8 | 4 | | | 2x6 | | |
| | Up to 12 | 4x6 | 4x6 | 6x6 | 6x6 | 6x6 | 4 | 8x8 | 4 | | | | 2x6 | |
| 10 To 15 | Up to 6 | 4x4 | 4x4 | 4x6 | 6x6 | 6x6 | 4 | Not Req'd | --- | | | | 3x8 | |
| | Up to 8 | 4x6 | 4x6 | 6x6 | 6x6 | 6x6 | 4 | 8x8 | 4 | | 2x6 | | | |
| | Up to 10 | 6x6 | 6x6 | 6x6 | 6x8 | 6x8 | 4 | 8x10 | 4 | | | 2x6 | | |
| | Up to 12 | 6x6 | 6x6 | 6x6 | 6x8 | 6x8 | 4 | 10x10 | 4 | | | | 3x8 | |
| 15 To 20 | Up to 6 | 6x6 | 6x6 | 6x6 | 6x8 | 6x8 | 4 | 6x8 | 4 | 3x6 | | | | |
| | Up to 8 | 6x6 | 6x6 | 6x6 | 6x8 | 6x8 | 4 | 8x8 | 4 | 3x6 | | | | |
| | Up to 10 | 8x8 | 8x8 | 8x8 | 8x8 | 8x10 | 4 | 8x10 | 4 | 3x6 | | | | |
| | Up to 12 | 8x8 | 8x8 | 8x8 | 8x8 | 8x10 | 4 | 10x10 | 4 | 3x6 | | | | |
| Over 20 | See Note 1 | | | | | | | | | | | | | |

* Mixed oak or equivalent with a bending strength not less than 850 psi.

** Manufactured members of equivalent strength may be substituted for wood.

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

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

Minimum Requirements*
Soil Type B $P_2 = 45 \times H + 72$ psf (2 ft. Surcharge)

| Depth Of Trench (feet) | Size (actual) and Spacing of Mmbrs ** | | | | | | | | | | | | | |
|---------------------------------|---------------------------------------|------------|------------|------------|-------------|-------------|------------------------------|---------------|------------------------------|----------------------------------|-----|-----|--|--|
| | Cross Braces | | | | | | | Wales | | Uprights | | | | |
| | Horiz. Width of Trench (feet) | | | | | | Vertical Spacing (ft.) | Size (in.) | Vertical Spacing (ft.) | Max. Allow. Horiz. Spacing (ft.) | | | | |
| | Spacing (ft) | Up to 4 | Up to 6 | Up to 9 | Up to 12 | Up to 15 | | | | Close | 2 | 3 | | |
| 5 To 10 | Up to 6 | 4x6 | 4x6 | 6x6 | 6x6 | 6x6 | 5 | 6x8 | 5 | | | 2x6 | | |
| | Up to 8 | 6x6 | 6x6 | 6x6 | 6x8 | 6x8 | 5 | 8x10 | 5 | | | 2x6 | | |
| | Up to 10 | 6x6 | 6x6 | 6x6 | 6x8 | 6x8 | 5 | 10x10 | 5 | | | 2x6 | | |
| | See Note 1 | | | | | | | | | | | | | |
| 10 To 15 | Up to 6 | 6x6 | 6x6 | 6x6 | 6x8 | 6x8 | 5 | 8x8 | 5 | | 2x6 | | | |
| | Up to 8 | 6x8 | 6x8 | 6x8 | 8x8 | 8x8 | 5 | 10x10 | 5 | | 2x6 | | | |
| | Up to 10 | 8x8 | 8x8 | 8x8 | 8x8 | 8x10 | 5 | 10x12 | 5 | | 2x6 | | | |
| | See Note 1 | | | | | | | | | | | | | |
| 15 To 20 | Up to 6 | 6x8 | 6x8 | 6x8 | 8x8 | 8x8 | 5 | 8x10 | 5 | 3x6 | | | | |
| | Up to 8 | 8x8 | 8x8 | 8x8 | 8x8 | 8x10 | 5 | 10x12 | 5 | 3x6 | | | | |
| | Up to 10 | 8x10 | 8x10 | 8x10 | 8x10 | 10x10 | 5 | 12x12 | 5 | 3x6 | | | | |
| | See Note 1 | | | | | | | | | | | | | |
| Over 20 | See Note 1 | | | | | | | | | | | | | |

* Mixed oak or equivalent with a bending strength not less than 850 psi.

** Manufactured members of equivalent strength may be substituted for wood.

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

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

Minimum Requirements*
Soil Type C $P_2 = 80 \times H + 72$ psf (2 ft. Surcharge)

| Depth Of Trench (feet) | Size (actual) and Spacing of Mmbrs ** | | | | | | | | | | | | | |
|------------------------|---------------------------------------|------------------------|---------|---------|----------|----------|------------------------|------------|------------------------|----------------------------------|--|--|--|--|
| | Cross Braces | | | | | | | Wales | | Uprights | | | | |
| | Horiz. Spacing (ft) | Width of Trench (feet) | | | | | Vertical Spacing (ft.) | Size (in.) | Vertical Spacing (ft.) | Max. Allow. Horiz. Spacing (ft.) | | | | |
| | | Up to 4 | Up to 6 | Up to 9 | Up to 12 | Up to 15 | | | | Close | | | | |
| 5 To 10 | Up to 6 | 6x8 | 6x8 | 6x8 | 8x8 | 8x8 | 5 | 8x10 | 5 | 2x6 | | | | |
| | Up to 8 | 8x8 | 8x8 | 8x8 | 8x8 | 8x10 | 5 | 10x12 | 5 | 2x6 | | | | |
| | Up to 10 | 8x10 | 8x10 | 8x10 | 8x10 | 10x10 | 5 | 12x12 | 5 | 2x6 | | | | |
| | See Note 1 | | | | | | | | | | | | | |
| 10 To 15 | Up to 6 | 8x8 | 8x8 | 8x8 | 8x8 | 8x10 | 5 | 10x12 | 5 | 2x6 | | | | |
| | Up to 8 | 8x10 | 8x10 | 8x10 | 8x10 | 10x10 | 5 | 12x12 | 5 | 2x6 | | | | |
| | See Note 1 | | | | | | | | | | | | | |
| | See Note 1 | | | | | | | | | | | | | |
| 15 To 20 | Up to 6 | 8x10 | 8x10 | 8x10 | 8x10 | 10x10 | 5 | 12x12 | 5 | 3x6 | | | | |
| | See Note 1 | | | | | | | | | | | | | |
| | See Note 1 | | | | | | | | | | | | | |
| | See Note 1 | | | | | | | | | | | | | |
| Over 20 | See Note 1 | | | | | | | | | | | | | |

* Mixed oak or equivalent with a bending strength not less than 850 psi.

** Manufactured members of equivalent strength may be substituted for wood.

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

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

Minimum Requirements*
Soil Type A $P_2 = 25 \times H + 72$ psf (2 ft. Surcharge)

| Depth Of Trench (feet) | Size (S4S) and Spacing of Mmbrs ** | | | | | | | | | | | | | |
|------------------------|------------------------------------|------------------------|---------|---------|----------|----------|---------------|-----------|---------------|----------------------------------|------|-----|------|-----|
| | Cross Braces | | | | | | | Wales | | Uprights | | | | |
| | Horiz. | Width of Trench (feet) | | | | | Vertical | Size | Vertical | Max. Allow. Horiz. Spacing (ft.) | | | | |
| | Spacing (ft) | Up to 4 | Up to 6 | Up to 9 | Up to 12 | Up to 15 | Spacing (ft.) | (in.) | Spacing (ft.) | Close | 4 | 5 | 6 | 8 |
| 5 To 10 | Up to 6 | 4x4 | 4x4 | 4x4 | 4x4 | 4x6 | 4 | Not Req'd | Not Req'd | | | | 4x6 | |
| | Up to 8 | 4x4 | 4x4 | 4x4 | 4x6 | 4x6 | 4 | Not Req'd | Not Req'd | | | | | 4x8 |
| | Up to 10 | 4x6 | 4x6 | 4x6 | 6x6 | 6x6 | 4 | 8x8 | 4 | | | 4x6 | | |
| | Up to 12 | 4x6 | 4x6 | 4x6 | 6x6 | 6x6 | 4 | 8x8 | 4 | | | | 4x6 | |
| 10 To 15 | Up to 6 | 4x4 | 4x4 | 4x4 | 6x6 | 6x6 | 4 | Not Req'd | Not Req'd | | | | 4x10 | |
| | Up to 8 | 4x6 | 4x6 | 4x6 | 6x6 | 6x6 | 4 | 6x8 | 4 | | 4x6 | | | |
| | Up to 10 | 6x6 | 6x6 | 6x6 | 6x6 | 6x6 | 4 | 8x8 | 4 | | | 4x8 | | |
| | Up to 12 | 6x6 | 6x6 | 6x6 | 6x6 | 6x6 | 4 | 8x10 | 4 | | | | 4x10 | |
| 15 To 20 | Up to 6 | 6x6 | 6x6 | 6x6 | 6x6 | 6x6 | 4 | 6x8 | 4 | 3x6 | | | | |
| | Up to 8 | 6x6 | 6x6 | 6x6 | 6x6 | 6x6 | 4 | 8x8 | 4 | 3x6 | 4x12 | | | |
| | Up to 10 | 6x6 | 6x6 | 6x6 | 6x6 | 6x8 | 4 | 8x10 | 4 | 3x6 | | | | |
| | Up to 12 | 6x6 | 6x6 | 6x6 | 6x8 | 6x8 | 4 | 8x12 | 4 | 3x6 | 4x12 | | | |
| Over 20 | See Note 1 | | | | | | | | | | | | | |

* Douglas Fir or equivalent with a bending strength not less than 1500 psi.

** Manufactured members of equivalent strength may be substituted for wood.

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

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

Minimum Requirements*
Soil Type B $P_2 = 45 \times H + 72$ psf (2 ft. Surcharge)

| Depth Of Trench (feet) | Size (S4S) and Spacing of Mmbrs ** | | | | | | | | | | | | | |
|------------------------|------------------------------------|------------------------|---------|---------|----------|----------|---------------|-------|---------------|----------------------------------|------|-------------|-----|------|
| | Cross Braces | | | | | | | Wales | | Uprights | | | | |
| | Horiz. | Width of Trench (feet) | | | | | Vertical | Size | Vertical | Max. Allow. Horiz. Spacing (ft.) | | | | |
| | Spacing (ft) | Up to 4 | Up to 6 | Up to 9 | Up to 12 | Up to 15 | Spacing (ft.) | (in.) | Spacing (ft.) | Close | 2 | 3 | 4 | 5 |
| 5 To 10 | Up to 6 | 4x6 | 4x6 | 4x6 | 6x6 | 6x6 | 5 | 6x8 | 5 | | | 3x12 4x8 | | 4x12 |
| | Up to 8 | 4x6 | 4x6 | 6x6 | 6x6 | 6x6 | 5 | 8x8 | 5 | | 3x8 | | 4x8 | |
| | Up to 10 | 4x6 | 4x6 | 6x6 | 6x6 | 6x8 | 5 | 8x10 | 5 | | | 4x8 | | |
| | See Note 1 | | | | | | | | | | | | | |
| 10 To 15 | Up to 6 | 6x6 | 6x6 | 6x6 | 6x8 | 6x8 | 5 | 8x8 | 5 | 3x6 | 4x10 | | | |
| | Up to 8 | 6x8 | 6x8 | 6x8 | 8x8 | 8x8 | 5 | 10x10 | 5 | 3x6 | 4x10 | | | |
| | Up to 10 | 6x8 | 6x8 | 8x8 | 8x8 | 8x8 | 5 | 10x12 | 5 | 3x6 | 4x10 | | | |
| | See Note 1 | | | | | | | | | | | | | |
| 15 To 20 | Up to 6 | 6x8 | 6x8 | 6x8 | 6x8 | 8x8 | 5 | 8x10 | 5 | 4x6 | | | | |
| | Up to 8 | 6x8 | 6x8 | 6x8 | 8x8 | 8x8 | 5 | 10x12 | 5 | 4x6 | | | | |
| | Up to 10 | 8x8 | 8x8 | 8x8 | 8x8 | 8x8 | 5 | 12x12 | 5 | 4x6 | | | | |
| | See Note 1 | | | | | | | | | | | | | |
| Over 20 | See Note 1 | | | | | | | | | | | | | |

* Douglas Fir or equivalent with a bending strength not less than 1500 psi.

** Manufactured members of equivalent strength may be substituted for wood.

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

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

Minimum Requirements*
Soil Type C $P_2 = 80 \times H + 72$ psf (2 ft. Surcharge)

| Depth Of Trench (feet) | Size (S4S) and Spacing of Mmbrs ** | | | | | | | | | | | | | |
|------------------------|------------------------------------|------------------------|---------|---------|----------|----------|------------------------|------------|------------------------|----------------------------------|--|--|--|--|
| | Cross Braces | | | | | | | Wales | | Uprights | | | | |
| | Horiz. Spacing (ft) | Width of Trench (feet) | | | | | Vertical Spacing (ft.) | Size (in.) | Vertical Spacing (ft.) | Max. Allow. Horiz. Spacing (ft.) | | | | |
| | | Up to 4 | Up to 6 | Up to 9 | Up to 12 | Up to 15 | | | | Close | | | | |
| 5 To 10 | Up to 6 | 6x6 | 6x6 | 6x6 | 6x6 | 8x8 | 5 | 8x8 | 5 | 3x6 | | | | |
| | Up to 8 | 6x6 | 6x6 | 6x6 | 8x8 | 8x8 | 5 | 10x10 | 5 | 3x6 | | | | |
| | Up to 10 | 6x6 | 6x6 | 8x8 | 8x8 | 8x8 | 5 | 10x12 | 5 | 3x6 | | | | |
| | See Note 1 | | | | | | | | | | | | | |
| 10 To 15 | Up to 6 | 6x8 | 6x8 | 6x8 | 8x8 | 8x8 | 5 | 10x10 | 5 | 4x6 | | | | |
| | Up to 8 | 8x8 | 8x8 | 8x8 | 8x8 | 8x8 | 5 | 12x12 | 5 | 4x6 | | | | |
| | See Note 1 | | | | | | | | | | | | | |
| | See Note 1 | | | | | | | | | | | | | |
| 15 To 20 | Up to 6 | 8x8 | 8x8 | 8x8 | 8x10 | 8x10 | 5 | 10x12 | 5 | 4x6 | | | | |
| | See Note 1 | | | | | | | | | | | | | |
| | See Note 1 | | | | | | | | | | | | | |
| | See Note 1 | | | | | | | | | | | | | |
| Over 20 | See Note 1 | | | | | | | | | | | | | |

* Douglas Fir or equivalent with a bending strength not less than 1500 psi.

** Manufactured members of equivalent strength may be substituted for wood.

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

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

Daily Excavation Safety Checklist

| | | | | | | |
|---|----------------------------------|--|---|----|--|--|
| NOTE: Trenches over 4 feet in depth are considered excavations. Any items marked NO on this form MUST be remediated prior to any employees entering the excavation. | | | | | | |
| Date | Name of Competent Person | Weather Conditions Approx. Temp. Approx. Wind Dir. | | | | |
| Project I.D. No./Name | Physical Location of Project | | | | | |
| Soil Classification | Excavation length, depth & width | L: | D: | W: | | |
| Protective System Used | | | | | | |
| Activities in Excavation | | | | | | |
| Excavation > 4 feet deep? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes , fill out a Confined Space Permit Prior to Any person entering the excavation. | | | | | | |
| Yes | No | N/A | Description | | | |
| | | | Employees protected from cave-ins & loose rock/soil that could roll into the excavation. | | | |
| | | | Spoils, materials & equipment set back at least 2 feet from the edge of the excavation. | | | |
| | | | Engineering designs for sheeting and/or manufacturer's data on trench box capabilities of site. | | | |
| | | | Adequate signs posted and barricades provided | | | |
| | | | Training (toolbox meeting) conducted w/employees prior to entering excavation. | | | |
| Utilities | | | | | | |
| | | | Utility company contacted and given 24 hours notice and/or utilities already located & marked. | | | |
| | | | Overhead lines located, noted and reviewed with operator. | | | |
| | | | Utility locations reviewed with the operator, & precautions taken to ensure contact does not occur. | | | |
| | | | Utilities crossing the excavation supported, and protected from falling materials. | | | |
| | | | Underground installations protected, supported or removed when excavation is open. | | | |
| Wet Conditions | | | | | | |
| | | | Precautions taken to protect employees from water accumulation (continuous dewatering). | | | |
| | | | Surface water or runoff diverted/controlled to prevent accumulation in the excavation. | | | |
| | | | Inspection made after every rainstorm or other hazard increasing occurrence. | | | |
| Hazardous Atmospheres | | | | | | |
| | | | Air in the excavation tested for oxygen deficiency, combustibles, and other contaminants. | | | |
| | | | Ventilation used in atmospheres that are oxygen rich/deficient &/or contains hazardous substances. | | | |
| | | | Ventilation provided to keep LEL below 10% | | | |
| | | | Emergency equipment available where hazardous atmospheres could or do exist. | | | |
| | | | Safety Harness and lifeline used. | | | |
| | | | Supplied air necessary (if yes, contact President). | | | |
| Entry & Exit | | | | | | |
| | | | Exit (i.e., ladder, sloped wall) no further than 25 feet from ANY employee. | | | |
| | | | Ladders secured and extend 3 feet above the edge of the trench. | | | |
| | | | Wood ramps constructed of uniform material thickness, cleated together @ bottom. | | | |
| | | | Employees protected from cave-ins when entering or exiting the excavation. | | | |

Trenching and Excavating



More than 100 workers die each year in excavation cave-ins and for every 1 fatality an estimated 50 workers are injured or permanently disabled. By careful planning and follow-through combined with on-the-job awareness, you can help prevent the next tragic accident.

Let's review a few general requirements:

1. Before you dig, contact utility companies within established or customary local response times and advise of proposed work. (OUPS)
2. While the excavation is open, underground installations shall be protected, supported or removed.
3. Don't work underneath loads handled by lifting or digging equipment.
4. Test the atmosphere of the trench excavation where oxygen deficiency or hazardous atmosphere could reasonably be expected to exist.

Water in excavations or trenches can cause wall cave-ins. Never work in areas where water may accumulate unless:

1. The site is protected.
2. Surface water is diverted with dikes and ditches.
3. Water is drained by well points or pumps.

There are several other safety precautions which are important for everyone's protection.

1. Clear the worksite of any vegetation, large rocks, or any other obstructions that may create a hazard.
2. Keep dirt and debris away from the edge of the excavation, and be sure that the spoil pile is at least two feet from the edge.
3. Never allow anyone to be in an excavation unless absolutely necessary.
4. When in the excavation, never walk under walkways in use or place any part of your body under a hoisted load.
5. All excavations 4 feet or more in depth require ladders, steps, or ramps as a means of exit. These exits should be within 25 feet of the workers. When ladders are used, they should extend 3 feet above the surface and be secured.
6. Employees should never ride the bucket to the bottom of the excavation. Ladders should be used at all times.
7. Have emergency equipment available and know how to use it.

As work progresses, the excavation must be inspected daily and periodically, especially when there is any change in weather or environment that could affect the soil and when work is interrupted for lunch or shift breaks.

Safety is the responsibility of each worker involved in the project, not just the supervisor. Stay alert at all times and never assume someone else will look out for your safety. Here are some things each of you can do while on the jobsite:

1. Keep all trash and debris away from the site.
2. Keep tools and shoring materials not in immediate use out of the excavation and away from the edge.
3. Keep walkways and emergency exits clear of obstructions.
4. Make sure that barricades remain properly placed to protect workers and the general public

And above all, don't risk your life—or anyone else's. The results can be devastating.

Personal Protective Equipment (PPE)



The use of Personal Protective Equipment (PPE) to eliminate injuries is an important component of Mark Schaffer Excavating & Trucking, Inc.'s safety program. This program and policy has been established to aid Mark Schaffer Excavating & Trucking, Inc. in two basic objectives regarding the use of Personal Protective Equipment:

- ❑ *To protect the wearer from safety and health hazards; and*
- ❑ *To prevent injury to the wearer from incorrect use and/or malfunction of the PPE.*

In order to ensure the safety of all individuals on a worksite, Mark Schaffer Excavating & Trucking, Inc. expressly forbids any employee, subcontractor, or vendor from furnishing and using their own Personal Protective Equipment until it has been examined and approved by the President, Site Supervisory Personnel, or otherwise designated Competent Person. All equipment furnished by outside employees, subcontractors or vendors must meet the full scope and applicability of this policy and procedure.

Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

Defective or damaged personal protective equipment shall not be used.

Controlling Hazards

PPE devices alone should not be relied on to provide protection against hazards, but should be used in conjunction with engineering controls, work practice and administrative controls.

| | |
|--|---|
| Engineering Controls | Workplace hazards may be corrected using engineering controls which may be thought of as replacing or redesigning machinery, equipment, and tools, and/or substituting materials. Engineering controls are the "first line of defense" against injury/illness, because they have the potential to completely eliminate a hazard, and do not rely on human behavior to be effective. For instance, rather than require employees to wear respiratory protection which must be monitored, inspected, trained, managed, it's much more effective to install a ventilation system that does not require any of those management activities. |
| Work Practice & Administrative Controls | Work Practice and administrative controls involves changing or redesigning work procedures, rescheduling breaks, changing the number of workers doing a job, etc., to reduce the frequency and duration of exposure to the hazards of tasks. Using administrative controls is not as effective as engineering controls because, in most cases, they only reduce exposure - they do not eliminate the hazard. And even more importantly, administrative controls rely on human behavior (which is a negative factor) |

| | |
|--|--|
| | <p>which must be managed.</p> <p>If the person conducting the hazard assessment discovers that hazards requiring PPE are present, or likely to be present, then management must:</p> <ul style="list-style-type: none"> ▪ Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazard identified in the hazard assessment; ▪ Communicate selection decisions to each affected employee; and ▪ Select PPE that properly fits each affected employee. |
|--|--|

Six Step Assessment Process

Each worksite/existing structure will be assessed to determine if hazards are present which necessitate the use of PPE. Mark Schaffer Excavating & Trucking, Inc. will verify that the assessment has been completed through a written, signed, and dated certification (***Job Hazard Assessment Form***). If it is determined that such hazards are present, where applicable, Mark Schaffer Excavating & Trucking, Inc. will select personal protective equipment for the affected employees and communicate the selection decisions to all affected employees, regardless of status.

It is important to consider certain general guidelines to assess foot, head, eye and face, and hand hazard situations that exist in an operation or process, and to match the protective devices to the particular hazard.

Step One: Conduct a Survey

The most effective strategy for surveying the work area is to use a team of individuals conduct the assessment. The worksite supervisor, Competent Person and/or experienced employee should conduct a walk-through survey of the areas in question. The purpose of the survey is to identify sources of hazards to workers and co-workers. Consideration should be given to the basic hazard categories:

- Impact
- Penetration
- Compression (Roll-Over)
- Chemical
- Temperature Extremes
- Hazardous Atmospheres
- Noise

Step Two: Determine sources of hazards

During the walk-through survey determine if any of the following ***basic hazard sources*** exist:

- Sources of motion; i.e., machinery or processes where any movement of tools, machine elements or particles could exist, or movement of personnel that could result in collision with stationary objects;
- Sources of high temperatures that could result in burns, eye injury or ignition of protective equipment, etc.;

- Chemicals that could contact skin and eyes;
- Sources of hazardous atmospheres;
- Sources of light radiation, i.e., welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc.;
- Sources of falling objects or potential for dropping objects;
- Sources of sharp objects which might pierce the feet or cut the hands;
- Sources of rolling or pinching objects which could crush the feet;
- Layout of workplace and location of co-workers; and
- Electrical hazards.

Step Three: Organize the data:

Following the walk-through survey, it is necessary to organize the data and information for use in the assessment of hazards. The objective is to prepare for an analysis of the hazards in the environment to enable proper selection of protective equipment. In addition, injury/accident data should be reviewed to help identify problem areas.

Step Four: Analyze the data

Having gathered and organized data on a worksite/jobsite, an estimate of the potential for injuries should be made. Each of the *basic hazards categories* should be reviewed to determine the:

- Nature of the hazard;
- Degree of risk;
- Seriousness or severity of potential injury;
- Possibility of exposure to several hazards simultaneously.

Next the *probability*, or likelihood that an accident will occur needs to be determined. This can be accomplished by analyzing a set of conditions or factors associated with a hazard. They are:

- The number of employees exposed;
- The frequency of exposure;
- The duration of exposure;
- The proximity of employees to the point of danger;
- The adequacy of training;
- The adequacy of supervision;
- The adequacy of workstation design; and

Step Five: Select the Personal Protective Equipment

After completing the hazard assessment it's time to select the right PPE for the job: To do this most effectively, it's important to:

- Become familiar with the potential hazards and the type of protective equipment that is available, and what it can do, i.e., splash protection, impact protection, etc.;
- Compare the hazards associated with the environment; i.e., impact velocities, masses, projectile shape, radiation intensities, with the capabilities of the available protective equipment;
- Involve employees in the selection process;
- Select the protective equipment which ensures a level of protection *greater* than the minimum required to protect employees from the hazards; and

- Fit the user with the protective device and give instructions on care and use of the PPE. It is very important that end users be made aware of all warning labels for and limitations of their PPE.

Fitting the device

PPE that fits poorly will not properly protect employees. And, if the PPE is not comfortable, the employee is not likely to wear it long. Protective devices are generally available in a variety of styles and sizes, and care should be taken to make sure that the employee gets the right size for him or her.

Devices with adjustable features

It's important to realize that when it comes to PPE, *"one size DOES NOT fit all!"* Adjustments should be made on an individual basis for a comfortable fit that will keep the protective device in the proper position. Where manufacturer's instructions are available, they should be followed carefully.

Step Six: Reassess for Hazards

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

PPE Training Requirements

Each employee who may need to wear PPE must be properly trained and retrained when:

- The workplace changes making the earlier training obsolete
- The type of PPE changes
- The employee demonstrates lack of use, improper use, or insufficient skill or understanding

All Training shall include, at minimum:

- When PPE is necessary
- What PPE is necessary
- How to properly don, doff, adjust & wear PPE
- The limitation of PPE
- The proper care, maintenance, use and disposal of PPE
- Retraining of the employees when needed (as listed above)

All training shall be fully documented. Documentation shall include:

- Employee name
- Date(s) of training
- And training subject

PPE Selection Guidelines

- After completion of the hazard assessment, the general procedure for selection of personal protective equipment is to:
 - Become familiar with the potential hazards and the type of protective equipment that is available, and what it can do;
 - Compare the hazards associated with the environment;

- Select the protective equipment which ensures a level of protection greater than the minimum required to protect employees from the hazards; and
 - Fit the user with the protective device and give instructions on care and use of the PPE.
- Table 1 is a checklist for PPE selection in various hazardous situations. The checklist is intended for use as a quick reference and should be used in conjunction with the applicable sections of this policy and procedure. There may be operating conditions in which the use of a listed item from the table is impractical or would increase the hazard. In these instances, use appropriate PPE and procedures to safeguard employee safety and health.

TABLE 1

| Hazard | Recommended PPE |
|---------------------------------------|---|
| Heavy Impact or Falling Object | Head: Hard Hat |
| | Knees, Legs, & Ankles: Fiber Metal Leggings |
| | Feet & Toes: Steel Box Toe Shoes or Toe Guards |
| Moderate Impact | Head: Hard Hat |
| | Feet & Toes: Steel Box Toe Shoes |
| Small Flying Particles | Head: Abrasive Blasting Hood |
| | Eyes: Goggles, Spectacles w/Side Shields |
| | Face: Plastic Face Shields |
| | Fingers, Hands & Arms: Leather Gloves or Mittens, Sleeves |
| | Trunk: Leather/Canvas Fiber Aprons, Coats, or Jackets |
| | Knees, Legs, & Ankles: Leather, Fiber Metal, or Flame-Resistant Duck Pants, Knee Guards, Leggings, or Spats |
| Dusts | Eyes: Goggles, Spectacles w/Side Shields, Plastic Eye Shields |
| | Face: Plastic Face Shields |
| | Respiratory: Approved Dust, Airline, or Abrasive Blasting Respirator |
| Hazard | Recommended PPE |
| Sparks and Metal Spatter | Head: Cotton or Wool Cap (Flame Retardant Treated) |
| | Eyes: Goggles, Spectacles w/Side Shields, Plastic Eye Shields |
| | Face: Plastic Face Shields |
| | Fingers, Hands, & Arms: Leather Flame Resistant Duck or Aluminum Fabric Gloves or Mittens, Sleeves |
| | Trunk: Leather Aprons, Coats, or Jackets |
| | Knees, Legs, & Ankles: Leather Fiber Metal, Flame-Resistant Duck Pants, Knee Guards, Shin Guards, Leggings, or Spats |
| | Eyes: Goggles, Spectacles w/Side Shields, Plastic Eye Shields |

| | |
|---|---|
| | Face: Wire Screen Shield |
| | Fingers, Hands, & Arms: Leather Flame Resistant Duck or Aluminum Fabric Gloves or Mittens, Sleeves |
| | Trunk: Leather Aprons, Coats, or Jackets |
| | Knees, Legs, & Ankles: Leather Fiber Metal, Flame-Resistant Duck Pants, Knee Guards, Shin Guards, Leggings, or Spats |
| | Feet & Toes: Leather Shoes, Foundry Shoes |
| Mists, Vapors, Gases, Fumes, and Smoke | Eyes: Goggles |
| | Face: Plastic Face Shields for Mists |
| | Respiratory/Immediately Dangerous to Life: Self-Contained Apparatus |
| | Respiratory/Not Immediately Dangerous to Life: Air Line Respirator, Hose Mask Without Blower, Chemical Cartridge Respirator w/Filter for Specific Contaminant |
| | Fingers, Hands, & Arms: Rubber, Natural Rubber, Plastic Synthetic Fiber, Coated Glass Fiber, or Other Chemical-Resistant Gloves or Mittens, Sleeves, Protective Creams |
| | Trunk: Rubber, Plastic, or other Chemical-Resistant Material |
| | Knees, Legs, and Ankles: Rubber, Plastic, or Other Chemical Resistant Material |
| | Feet & Toes: Conductive Shoes (for explosive gases, vapors or other materials). |
| | Fingers, Hands, & Arms: Leather Gloves, Mittens, Hand Pads, or Finger cots; Leather, or Flame Resistant Duck Sleeves |

| | |
|---|--|
| | Trunk: Leather Aprons, Coats, or Jackets |
| | Knees, Legs, & Ankles: Leather, or Flame Resistant Duck Pants, Knee Guards, Shin Guards, Leggings, or Spats |
| | Feet & Toes: Wood Soles |
| Heat | Head: Cotton or Wool Cap |
| | Fingers, Hands, & Arms: Leather Aluminized Fabrics, Glass Fiber Insulated Gloves, Mittens, or Hand Pads; Flame-Resistant Duck or Reflective Fabric (for radiant heat) Sleeves |
| | Knees, Legs, & Ankles: Flame-Resistant Duck, Aluminized Fabrics for Radiant Heat |
| | Feet & Toes: Leather or Wood Soles, Thermal Insulated Shoes |
| | Whole Body: Aluminized Garments for Radiant Heat, Vortex Tube w/Air Cooled Suits |
| Slips & Falls | Feet & Toes: Nonskid shoes, Wood Soles, Slip-Resistant Soles & Heels (cord & cork) |
| Hazard | Recommended PPE |
| Moisture & Water | Head: Plastic: Rubber Hat |
| | Fingers, Hands, & Arms: Rubber, Oiled Fabrics, Plastic, Coated Glass Fiber Gloves, Mittens or Finger Cots, Rubber Oiled Fabrics, or Plastic Sleeves |
| | Trunk: Rubber or Plastic Material |
| | Knees, Legs, & Ankles: Rubber or Plastic Material |
| | Feet & Toes: Nonskid Shoes, Leather or Wood Soles, Rubber or Neoprene Overshoes |
| | Whole Body: Garments of Rubber, Plastic, or Other Impervious Material |
| Cuts & Abrasions | Head: Hard Hat |
| | Fingers, Hands, & Arms: Leather, Metal Mesh, or Cotton Canvas Gloves, Mittens, Hand Pads, or Finger Cots, Leather Sleeves |
| | Trunk: Leather or Canvas Fiber Aprons, Coats, or Jackets |
| | Knees, Legs, & Ankles: Leather or Fiber Metal Pants, Knee Guards, Shin Guards, Leggings, or Spats |
| | Feet & Toes: Steel Box Toe Shoes, Wood Soles |
| Dermatitis | Head: Plastic-Rubber Hat, Cotton or Wool Cap |
| | Face: Plastic Face Shield, Protective Barrier Creams |
| | Fingers, Hands, & Arms: Rubber, Synthetic Rubber Plastic or Cotton Gloves, Protective Barrier Creams |
| | Trunk: Rubber or Plastic Material |
| | Knees, Legs, & Ankles: Rubber or Plastic Material |
| | Feet & Toes: Rubber Boots, Wood Soles, Shower Sandals (paper or wood). |
| Electricity & Electric Shock | Head: Plastic-Rubber or Plastic Hat (Class B) |
| | Fingers, Hands & Arms: Rubber Gloves & Sleeves Resistant to 10,000 Volts for 3 Minutes |
| | Trunk: Rubber Material |
| | Knees, Legs, & Ankles: Fiber Material or Flame-Resistant Duck Pants, Knee Guards, Shin Guards, Leggings, or Spats |
| | Feet & Toes: Steel Box Shoes |

| TABLE 1 (cont.) | |
|------------------------------------|--|
| Explosives | Head: Cap (flame retardant) |
| | Fingers, Hands, & Arms: Gloves |
| | Trunk: Powder Uniform |
| | Feet & Toes: Conductive Shoes |
| Machinery | Head: Cap (long hair), Cotton or Wool Caps |
| | Fingers, Hands & Arms: Flame-Resistant Duck Sleeves |
| | Trunk: Rubber, Plastic, or Canvas Fiber Aprons, Coats, or Jackets |
| | Knees, Legs, & Ankles: Fiber Material or Flame-Resistant Duck Pants, Knee Guards, Shin Guards, Leggings, or Spats |
| | Feet & Toes: Steel Box Shoes |
| Reflected Light & Glare | Eyes: Goggles, Spectacles w/Side Shields with Filter Lenses |
| Welding | Head: Leather Skull Cap |
| | Eyes: Goggles-Welders' Eyecup, Helmets, or Hand Shields with Filter Lenses |
| | Face: Helmets or Hand Shields w/Filter Lenses, Face Shield |
| | Hands: Flame Proof Gauntlet Gloves |
| Laser Radiation | Eyes: Protective Eyewear |
| Noise | Ears: Plug or Insert, Cup or Muff Ear Protectors, Helmet |

Head Protection

- ❑ Employees working in areas where there is possible danger of head injury from impact, from falling or flying objects, or when working with High-voltage equipment. The hard hat should be easily adjustable so employees will wear the hat properly.
- ❑ Hard Hats approved for use by Mark Schaffer Excavating & Trucking, Inc. are either Class A or Class B, and are clearly marked with the American National Safety Institute label (ANSI Z89.1) next to the manufacturer's name.
 - Class A hard hats provide protection against impact and falling or flying objects.
 - Class B hard hats protect the head against high voltage electricity.
- ❑ All hard hats will be disposed of whenever the helmet has received impact or shows signs of deterioration.
- ❑ It is mandatory that hard hats be worn in all construction areas, including roads, shops, and outlying work areas where there is a potential exposure to falling or flying material.

Eye & Face Protection

Flying particles, cuts, chemicals, injurious light, heat rays, and blows to the face and eyes cause eye injuries. To prevent such injuries Mark Schaffer Excavating & Trucking, Inc. offers many types of eye and face protection devices.

- ❑ Employees will be issued, and will, use appropriate eye or face protection when exposed to eye or face hazards. From flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation. Protectors must meet the following minimum requirements.

- Provide adequate protection against particular hazards for which they are designed;
 - Be reasonably comfortable when worn under the designated conditions;
 - Fit snugly without interfering with the movements or vision of the wearer;
 - Be durable;
 - Be capable of being disinfected;
 - Be easily cleanable;
 - Be kept clean and in good repair.
- The sign to the right, or one with the same wording, will be posted in all areas where eye protection is mandatory. Employees who work in these areas will wear the eye protection issued to them. Visitors to the area shall also be provided with suitable eye protection.
- Employees whose vision requires the use of corrective lenses and who are required to wear protective eyewear shall wear one of the following types of goggles or eye glasses:
- Eye glasses whose protective lenses provide optical correction;
 - Goggles that can be worn over corrective eye glasses without disturbing the adjustment of the eye glasses; and
 - Goggles that incorporate corrective lenses mounted behind the protective lenses.
- **Table 2** (see following page) is a guide for selecting the devices that will provide adequate eye protection for various operations. **Table 3** lists the lens shades recommended for protecting the eye against flare and welding. If eye protection is needed for situations not listed in either table, consult Site Supervisory Personnel and/or the “Qualified” or “Competent Person”.



Table 2**Eye-protection equipment for various operations and material exposures.**

| Hazard | Recommended Eye-protection |
|--|--|
| Chemicals | <ul style="list-style-type: none"> ▪ Face Shield ▪ Ventilated Clear-Plastic Goggles |
| Chipping | <ul style="list-style-type: none"> ▪ Face Shield ▪ Ventilated Clear-Plastic Goggles ▪ Safety Glasses with Plastic Side Shields |
| Compressed Air Use | <ul style="list-style-type: none"> ▪ Ventilated Clear-Plastic Goggles ▪ Personal Safety Glasses ▪ Safety Glasses with Plastic Side Shields |
| Dust | <ul style="list-style-type: none"> ▪ Ventilated Clear-Plastic Goggles |
| Electrical Work | <ul style="list-style-type: none"> ▪ Safety Glasses with Plastic Frames and Side Shields ▪ Face Shield |
| Forging | <ul style="list-style-type: none"> ▪ Face Shield ▪ Safety Glasses ▪ Safety Glasses with Plastic Side Shields ▪ Ventilated Clear-Plastic Goggles |
| Furnace Operations | <ul style="list-style-type: none"> ▪ Calobar Clip-ons ▪ Welding Goggles: See Table 3 for recommended shades. ▪ Welding Goggles Plate Holder: See Table 3 for recommended shades. ▪ Welding Helmet: See Table 3 for recommended shades. |
| Grinding, Buffing, Polishing | <ul style="list-style-type: none"> ▪ Face Shield ▪ Safety Glasses with Plastic Side Shields ▪ Ventilated Clear-Plastic Goggles |
| Lasers | <ul style="list-style-type: none"> ▪ Special Laser Glasses |
| Machine & Hand-Tool Operations | <ul style="list-style-type: none"> ▪ Face Shield ▪ Safety Glasses ▪ Safety Glasses with Plastic Side Shields ▪ Ventilated Clear-Plastic Goggles |
| Molten Material Handling | <ul style="list-style-type: none"> ▪ Face Shield |
| Welding, Cutting, Burning (Acetylene) | <ul style="list-style-type: none"> ▪ Welding Goggles: See Table 3 for recommended shades. ▪ Welding Goggles Plate Holder: See Table 3 for recommended shades. ▪ Welding Helmet: See Table 3 for recommended shades. |
| Welding (Spot & Butt) | <ul style="list-style-type: none"> ▪ Face Shield ▪ Safety Glasses ▪ Safety Glasses with Plastic Side Shields ▪ Ventilated Clear-Plastic Goggles |

Table 3**Recommended lens shades for welding operations**

| Operation | Lens Shade Number |
|--|---|
| Oxyacetylene Torch Cutting & Welding: <ul style="list-style-type: none"> ▪ Soldering ▪ Brazing ▪ Cutting <ul style="list-style-type: none"> - Light less than 1 in. - Medium, 1 to 6 in. - Heavy, greater than 6 in. | Medium Calobar 3or 4 3 or 4 4 or 5 5 or 6 |
| Welding <ul style="list-style-type: none"> ▪ Light, less than 1/8 in. ▪ Medium, 1/8 to 1/2 in. ▪ Heavy, greater than 1/2 in. | 4 or 5 5 or 6 6 or 8 |
| Arc Welding – in gas-shielded arcs (helium or argon), use shades 11 through 14. <ul style="list-style-type: none"> ▪ Metal or Helium Arc <ul style="list-style-type: none"> - 1/6 to 3/32 in. – diameter rod - 3/32 to 1/8 in. – diameter rod - 1/8 to 5/32 in. – diameter rod | 10 10 11 |
| Metal Arc <ul style="list-style-type: none"> ▪ 3/16 to 7/32 in. – diameter rod ▪ 1/4 in. – diameter rod ▪ 5/16 to 3/8 in. – diameter rod | 12 13 14 |
| Atomic Arc | 14 |
| Carbon Arc | 14 |

- ❑ **Approvals** – Design, construction, testing, and use of eye and face protection will be in accordance with ANSI Z87.1-1989. Lenses and frames shall be marked with the manufacturer’s symbol to indicate compliance with ANSI Z87.1-1989.
 - The use of approved lenses in unapproved frames is not acceptable.
 - Tinted lenses in safety glasses, including photo-gray lenses, are permissible only when prescribed for corrective purposes or specifically approved by the “Qualified Person/Competent Person”.
- ❑ **Side Shields** should be used on safety glasses worn in buildings or areas designated as eye-hazard areas. Side shields should also be used on safety glasses worn in eye-hazard operations, unless it has been specifically determined for a particular operation that it is not possible for injurious objects or energies to enter the wearer’s eyes from the side or that the reduced peripheral vision would pose a greater hazard to the employee.
 - Side shields shall not be easily detachable from the frames: slip-on types of sideshields are not permitted for use on any “Company” construction worksite.
 - Snap-on side shields are permissible only if they are clearly marked with the ANSI symbol and fit tightly, with no gapping or sliding movement, onto the glasses frames.
- ❑ It is essential that the lenses of eye protectors be kept clean. Continuous vision through dirty lenses can cause eye strain – often an excuse for not wearing the eye protection.

Hand & Arm Protection

- ❑ Mark Schaffer Excavating & Trucking, Inc. requires all employees to use appropriate hand and arm protection when employees' hands and arms are exposed to hazards such as:
 - Skin absorption of harmful substances;
 - Severe cuts or lacerations;
 - Severe abrasions;
 - Punctures;
 - Chemical Burns;
 - Thermal Burns & Harmful Temperature Extremes
- ❑ The required hand and arm protective wear will be based upon the hazard of the risk. **Table 4** presents details on the types of hand and arm protective wear used by Mark Schaffer Excavating & Trucking, Inc. *(For further details on electrical protection gloves and sleeves, reference The "Company's" Electrical Safety Program).*
- ❑ **Reusable gloves and arm sleeves** shall be inspected regularly for damage, replaced when necessary, and stored in a protected location away from chemical exposure when not in use.
- ❑ **Heat-Resistant gloves and arm sleeves** - Asbestos gloves and arm sleeves are not permitted for use on any "Company" worksite. In cases of extreme heat exposure, Mark Schaffer Excavating & Trucking, Inc. will supply a silica-based glove and arm sleeve that will provide heat protection to 1100°C.

Table 4

Hand and Arm Protective Wear

| Type/Hazard | Protection Provided |
|--|--|
| Cut-Resistant | This type of glove is used where protection against cuts is required. Plastic dots can be adhered to the metal mesh to facilitate gripping. Another type of cut-resistant glove combines stainless steel with cut-resistant fiber wrapped with nylon fibers for enhanced flexibility and surface softness. These materials resist knives, glass, sheet metal, sharp edges, and other cutting surfaces. They are cut-resistant but not cut-proof or puncture proof. These materials must not be subjected to high speed knives or serrated blades |
| High & Low Temperatures | Gloves, mittens, and arm and sleeve protectors are available in a wide variety of materials. Leather is a common welder's glove material. Heavy duty terry cloth gloves can provide heat protection of up to 350 degrees F. For extreme high and low temperature protection, specially processed silica fiber cloth (non-asbestos) can withstand temperatures of from -100 degrees F to 1100 degrees F. Do not use asbestos gloves. |
| Splinters, Cuts, Abrasions, & General Use | Light weight pigskin, goatskin, or calfskin leather gloves enable dexterity and grip while offering some resistance to cuts and abrasions. Other materials, which offer similar protection, include laminated nitrile coating on stretch fabric, vinyl, rubber coated, or impregnated fabrics. |
| Electrical Protection | Rubber devices that protect against electrical shock must meet the ANSI J6 series standards. Rubber insulating gloves must meet ANSI J6.6. These gloves are available to meet different voltage exposures. Light weight low voltage gloves are for use on voltages of under 1000V. Gloves for use on high voltage are of thicker material for the dielectric strength. As the voltage rating increases, so does the glove weight. Leather glove protectors are available to protect rubber gloves against punctures and abrasion. Employees |

| | |
|--|---|
| | who use this type of equipment must be qualified [see the “Company’s” Electrical Safety Plan or reference 29 CFR 1910.331 (a)]. Rubber gloves must be visually inspected and an “air” test must be performed before they are used. |
| Repetitive Motion And Vibration | Protective gear is available to minimize repetitive hand and wrist motions. One glove has openings for the fingers but offers palm protection. These anti-vibration gloves may be worn under regular work gloves. |
| Chemicals | Glove materials used to protect against chemicals include natural rubber, neoprene, polyvinyl chloride, polyvinyl alcohol, and nitrile. Table 5 shows recommended glove materials for use with various chemical hazards. Many operational variables may affect the performance of chemical protection gloves, including chemical combinations and concentrations, temperature, and exposure time. |

Table 5

Recommended glove materials for use with various chemical hazards.

| Chemical Hazards | Butyl | Neo- prene ^a | Nitrile ^b | Polyvinyl Chloride | Polyvinyl Alcohol | Latex | Poly- ethylene | Viton |
|-----------------------------------|-------|----------------------------|----------------------|-----------------------|----------------------|-------|-------------------|-------|
| Acids, dilute | + | + | + | + | - | + | - | + |
| Alcohol | + | + | + | + | - | + | + | + |
| Alkali (bases), dilute | + | + | + | + | - | + | - | + |
| Aromatics | - | - | - | - | + | - | - | + |
| Chlorinated Hydrocarbons | + | - | + | - | + | - | - | + |
| Epoxy Resins | + | + | + | + | - | - | - | + |
| Esters | + | - | - | - | - | - | - | - |
| Hydrocarbons | + | + | + | - | + | - | - | + |
| Ketones (acetone, MEK, etc.) | + | - | - | - | - | - | - | - |
| Lacquer thinner | + | + | + | - | + | - | - | + |
| Oils, Grease | + | + | + | + | + | - | - | + |
| Petroleum Distillates, Mineral | + | + | + | - | + | - | - | + |
| PCB's | - | - | - | - | - | - | - | + |

^a Platex gloves, which are made of neoprene and latex, can be classified with neoprene.

^b Also called Bune-N.

+ Recommended

- Not Recommended

Research on glove materials shows that:

- (1) Each glove material temporarily resists solvent breakthrough, but eventually some permeation will result.
- (2) The same glove material from different suppliers may vary in its permeation characteristics.
- (3) A glove that swells indicates excessive permeation has occurred.
- (4) Disposable gloves will be discarded after each use.

Ear Protection

Exposure to high noise levels will cause hearing loss or impairment. It can create physical and psychological stress. There is no cure for noise-induced hearing loss, so the prevention of excessive noise exposure is the only way to avoid hearing damage. Specifically designed protection is required, depending on the type of noise encountered.

- ❑ No employee shall be permitted to work in an area where the sound level exceeds 85 decibels (A scale) unless hearing protection that reduces the exposure to a level below 85 decibels (85 dbA) is worn.
- ❑ Warning signs shall be posted in any location where the sound level exceeds 85 dbA.



- ❑ All types of heavy equipment (dozers, loaders, graders, mixers, etc.) require hearing protection unless specifically instructed otherwise.
- ❑ Most earplugs are disposable, to be used one time and then thrown away. The non-disposable type should be cleaned after each use for proper protection.
- ❑ Earmuffs need to make a perfect seal around the ear to be effective. Glasses, long sideburns, long hair, and facial movements, such as chewing can reduce protection. Special equipment is available for use with glasses or beards.
- ❑ For extremely noisy situations, earplugs should be worn in addition to earmuffs. When used together earplugs and earmuffs change the nature of sounds;

Foot & Leg Protection

- ❑ Employees will wear protective footwear when working in areas where there is a danger of foot injuries from heavy falling objects, rolling objects, objects piercing the soles, and where employees' feet are exposed to electrical hazards.
- ❑ All protective footwear must comply with ANSI Z41-1991.
- ❑ Aluminum alloy, fiberglass, or galvanized steel footguards can be worn over usual workshoes, although they present the possibility of catching on something and tripping workers.
- ❑ Heat-resistant soles protect against hot surfaces like those found when roofing, paving and working with hot metal.
- ❑ Storm rubbers, which slip over the safety shoe, provide a non-skid tread for fall protection on slippery walking surfaces. Storm rubbers also provide Mark Schaffer Excavating & Trucking, Inc. lend protection for inside or outside work where water, oil, or chemicals could damage the safety shoe outer shell.
- ❑ Over-the-sock or over-the-safety shoe boots are available. Boot outer shell materials include PVC, rubber, butyl, and neoprene. Temperature, abrasion, and chemical exposures in the workplace must be considered in the selection of the material (see Table 5).

- ❑ Protective spats and leggings offer protection against high heat, flame, molten metal splashes, hot sparks, and chainsaw cuts. Material construction includes leather, flame retardant duck, aluminized rayon, and other aluminized fabrics.
 - Quick release legging Velcro closures should be used when any emergency would require the legging to be quickly removed.

Torso Protection

- ❑ Many hazards threaten the torso. Protective garments such as vests, jackets, aprons, coveralls, and full body suits may be necessary to protect employees who handle hot and/or hazardous materials.
 - When a need for such a garment is identified, it shall be furnished by Mark Schaffer Excavating & Trucking, Inc.
- ❑ **Selection.** The type of garment that will provide the best protection for a job will depend on the nature of the job and the physical and chemical hazards associated with the job.
 - Wool and specially treated cotton are two natural fibers, which are fire-resistant and comfortable since they adapt well to changing workplace temperature.
 - Duck, a closely-woven cotton fabric, is good for light duty protective clothing. It can protect against cuts and bruises on jobs where employees handle heavy, sharp, or rough material.
 - Heat-reflecting clothing such as leather is often used to guard against dry heat and flame.
 - Rubber and rubberized fabrics, neoprene, and plastics give protection against some acids and chemicals.
- ❑ Disposable suits of paper-like material are particularly important for protection from dusty materials or materials that can splash. If the substance is extremely toxic, a completely enclosed suit will be necessary. The clothing must be inspected to assure proper fit and function for continued protection.

Respiratory Protection

- ❑ The workplace can present hazards to the lungs. Some of the most common hazards are:
 - The lack of oxygen; and
 - The presence of harmful dust, fogs, smokes, mists, fumes, gases, vapors, or sprays.
- ❑ Respirators prevent the entry of harmful substances into the lungs during breathing. Some respirators also provide a separate supply of breathable air so work can be performed where there is inadequate oxygen, or where greater protection is needed.
- ❑ The prevention of atmospheric contamination at the worksite should be accomplished as far as feasible by engineering control measures:
 - Enclosing or confining the contaminant producing operation;
 - Exhausting the contaminant; or
 - Substituting with less toxic materials.
- ❑ When effective engineering controls are not feasible, while those controls are being installed, or during clean up operations, appropriate respirators will be used.
 - The respirator user will be instructed that respirators have their limitations and are not substitutes for effective engineering controls.

- Where respirators are necessary for health protection, specific procedures are necessary to overcome any potential deficiencies and to assure the effectiveness of the equipment.

Traffic Safety Vests

- Every “Company” employee shall wear an approved reflective fluorescent safety vest or, equivalent, under the following conditions:
 - When working within a road allowance or on a public way;
 - When working on a project where the wearing of a traffic safety vest is required under the Occupational Health & Safety Act and the Regulations for Construction Projects. This includes the directing of traffic;
 - In any other location or situation where the Employee may be endangered by vehicular traffic or where being visible is important to his/her safety.
- For the purposes of this policy, approved equivalents to a traffic safety vest are T-shirts, jackets, overalls and other approved apparel, which is safety (“blaze”) orange or neon yellow in color with reflective tapes on the front and back. Approved means that the clothing has been reviewed and approved for use by Site Supervisory Personnel or “Competent Person”.

PPE & Heat Stress

- Wearing PPE puts a worker at considerable risk of developing heat stress. This can result in health effect ranging from transient heat fatigue to serious illness or death. Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, workload and the individual characteristics of the worker.
- Individuals vary in their susceptibility to heat stress. Factors that may predispose someone to heat stress include:
 - Lack of physical fitness
 - Lack of acclimatization
 - Age
 - Dehydration
 - Obesity
 - Alcohol & Drug use
 - Infection
 - Sunburn
 - Diarrhea
 - Chronic Disease
- Reduced work tolerance and increased risk of excessive heat stress is directly influenced by the amount and type of PPE worn. PPE adds weight and bulk, severely reduces the body’s access to normal heat exchange mechanisms (i.e., evaporation, convection, and radiation), and increases energy expenditure.
- When selecting PPE, each item’s benefit will be carefully evaluated in relation to its potential for increasing the risk of heat stress. Once PPE is selected, the safe duration of work/rest periods will be determined based on the:
 - Anticipated work rate;
 - Ambient temperature and other environmental factors;
 - Type of protective ensemble;

- Individual worker characteristics and fitness – physical fitness is a major factor influencing a person’s ability to perform work under heat stress. The better fit someone is, the more work he/she can safely perform.
- At a given level of work, a fit person, relative to an unfit person, will have:
 - Less physiological strain;
 - A lower heart rate;
 - A lower body temperature, which indicated less retained body heat (a rise in internal temperature precipitates heat injury);
 - A more efficient sweating mechanism;
 - Slightly lower oxygen consumption;
 - Slightly lower carbon dioxide production.
- The degree to which a worker’s body has physiologically adjusted or acclimated to working under hot conditions affects his or her ability to do work. Acclimatized individuals generally have lower heart rates and body temperatures than unacclimatized individuals, and sweat sooner and more profusely. This enables them to maintain lower skin and body temperatures at a given level of environmental heat and workloads than unacclimatized workers.

| | | | | | | |
|--|--|---|---|---------------------------------|---|--|
| I am reviewing (check the appropriate box): | | Workstation/ Worksite | Specify Location: | | | |
| | | Single Employee's Job Description | Name of Employee: | | | |
| | | | Working Title of Position: | | | |
| | | | Other Description: | | | |
| | | Job Description For A Class of Employees | Working Title of Position: | | | |
| | | Other Description: | | | | |
| Name of Person Completing Form: | | | Title of Person Completing Form: | | Date: | |
| Eye Hazards | Eye Hazards – Tasks that can cause eye injury include: working with chemicals or acids; chipping, sanding, or grinding; welding; furnace operations; and, metal and wood working. | | | | | |
| | <i>Check the appropriate box for each hazard:</i> | | | <i>Description of Hazard(s)</i> | <i>Based upon the hazard assessment, the following PPE is required:</i> | |
| | Chemical Exposure | ___ Yes | ___ No | | | |
| | High Heat/Cold | ___ Yes | ___ No | | | |
| | Dust/Flying Debris | ___ Yes | ___ No | | | |
| | Impact | ___ Yes | ___ No | | | |
| | Light Radiation | ___ Yes | ___ No | | | |
| | | ___ Yes | ___ No | | | |
| Head Hazards | Head Hazards – Tasks that can cause head injury include: working below other workers who are using tools or materials that could fall; working on energized electrical equipment or utilities; and, working in trenches or confined spaces. | | | | | |
| | <i>Check the appropriate box for each hazard:</i> | | | <i>Description of Hazard(s)</i> | <i>Based upon the hazard assessment, the following PPE is required:</i> | |
| | Impact | ___ Yes | ___ No | | | |
| | Electrical Shock | ___ Yes | ___ No | | | |
| | | ___ Yes | ___ No | | | |
| Noise Hazards | Noise Hazards – Personnel may be exposed to noise hazards when machining, grinding, sanding, using pneumatic equipment, generators, motors, jackhammers, or similar equipment. ADDITIONAL TRAINING/MONITORING IS REQUIRED! | | | | | |
| | <i>Check the appropriate box for each hazard:</i> | | | <i>Description of Hazard(s)</i> | <i>Based upon the hazard assessment, the following PPE is required:</i> | |
| | Noise Hazard | ___ Yes | ___ No | | | |
| | | ___ Yes | ___ No | | | |

| | | | | |
|---------------------|---|----------------|---------------------------------|---|
| Foot Hazards | Foot Hazards – Tasks that can cause foot injury include: exposure to chemicals or acids; welding or cutting; foundry operations; materials handling; renovation or construction; electrical work; and spray finishing or other work with flammable or explosive materials. | | | |
| | <i>Check the appropriate box for each hazard:</i> | | <i>Description of Hazard(s)</i> | <i>Based upon the hazard assessment, the following PPE is required:</i> |
| | Chemical Exposure | ___ Yes ___ No | | |
| | High Heat/Cold | ___ Yes ___ No | | |
| | Impact/Compression | ___ Yes ___ No | | |
| | Slips/Trips | ___ Yes ___ No | | |
| | Puncture | ___ Yes ___ No | | |
| | Slippery/Wet Surfaces | ___ Yes ___ No | | |
| | Electrical | ___ Yes ___ No | | |
| | Explosive/Flammable Atmosphere. | ___ Yes ___ No | | |
| | ___ Yes ___ No | | | |
| | ___ Yes ___ No | | | |

| | | | | |
|---------------------|---|----------------|---------------------------------|---|
| Hand Hazards | Hand Hazards – Hand injury can be caused by: work with chemicals or acids; exposure to cut or abrasion hazards (i.e., during demolition, renovation, or woodworking); and work with very hot or cold objects or materials. BLOODBORNE PATHOGENS – ADDITIONAL TRAINING/MONITORING IS REQUIRED! | | | |
| | <i>Check the appropriate box for each hazard:</i> | | <i>Description of Hazard(s)</i> | <i>Based upon the hazard assessment, the following PPE is required:</i> |
| | Chemical Exposure | ___ Yes ___ No | | |
| | High Heat or Cold | ___ Yes ___ No | | |
| | Cuts/Abrasion | ___ Yes ___ No | | |
| | Puncture | ___ Yes ___ No | | |
| | Electric Shock | ___ Yes ___ No | | |
| | Bloodborne Pathogens | ___ Yes ___ No | | |
| | | ___ Yes ___ No | | |
| | | ___ Yes ___ No | | |
| | ___ Yes ___ No | | | |

| | | | | |
|----------------------------|--|--|------------------------------|---|
| Body/Torso Hazards | Body/Torso Hazards – Injury of the body or torso occur during: exposure to chemicals, acids, or other hazardous materials; abrasive blasting, welding, cutting, brazing; chipping, sanding, or grinding, use of chainsaws or similar equipment; foundry operations; and, work around electrical arcs | | | |
| | <i>Check the appropriate box for each hazard:</i> | | <i>Description of hazard</i> | <i>Based upon the hazard assessment, the following PPE is required:</i> |
| | Chemical Exposure | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | Extreme Heat/Cold | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | Abrasion | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | Impact | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | Electrical Arc | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | |
| Respiratory Hazards | Respiratory Hazards – Personnel may be exposed to respiratory hazards that require the use of respirators: when using certain chemicals outside of chemical fume hood; when applying paints or chemicals in confined spaces; when welding, cutting, or brazing on certain metals; and, when disturbing asbestos, lead, silica, or other particulate hazards. ADDITIONAL TRAINING/MONITORING IS REQUIRED! | | | |
| | <i>Check the appropriate box for each hazard:</i> | | <i>Description of Hazard</i> | <i>Based upon the hazard assessment, the following PPE is required:</i> |
| | Chemical Exposure | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | Confined Space Work | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | Particulate Exposure | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | Welding/Related Hazard | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| Fall Hazards | Fall Hazards – Personnel may be exposed to fall hazards when performing work on a surface with an unprotected side or edge that is; 4 feet (general industry), 6 feet (construction), or 10 feet (scaffold work) above a lower level – always consult the appropriate CFR – Fall protection may also be required when using vehicle manlifts, elevated platforms, tree trimming, performing work on poles, roofs, or fixed ladders. ADDITIONAL TRAINING/MONITORING IS REQUIRED! | | | |
| | <i>Check the appropriate box for each hazard:</i> | | <i>Description of Hazard</i> | <i>Based upon the hazard assessment, the following PPE is required:</i> |
| | Fall Hazard | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| Notes: | | | | |

Tasks With Potential Exposure to Hazardous Materials or Physical Agents

| | | | |
|---|---|---|--|
| Project Identification (i.e., name, contract number, etc.): | | Physical Address/Location: | |
| Date of Analysis: | Name of Person Performing Analysis: | Title of Person Performing Analysis: | |
| Tasks | Name of Material Or Physical Agent | Location of Material Or Physical Agent | |
| | | | |
| Analysis Reviewed By: | Signature: | Date Analysis Reviewed: | |
| Analysis Approved By: | Signature: | Date Analysis Approved: | |

Job Inventory of Hazardous Chemicals

| | | | |
|---|--|--------------------------------------|--|
| Project Identification (i.e., name, contract number, etc.): | | Physical Address/Location: | |
| Date of Analysis: | Name of Person Performing Analysis: | Title of Person Performing Analysis: | |
| Name of Chemicals | Route of Entry And Physical State | Controls | |
| | | | |
| Analysis Reviewed By: | Signature: | Date Analysis Reviewed: | |
| Analysis Approved By: | Signature: | Date Analysis Approved: | |



**Safety is an integral part of every job
and not a separate entity.**

Job Topics To Consider

The Importance of Hazard & Job Safety Analysis

What is a Job Hazard Analysis?

A job hazard analysis (JHA) is a procedure which helps integrate accepted safety and health principles and practices into a particular operation. In a JHA, each basic step of the job is examined by a person capable of identifying the potential hazards and can determine the safest way to do the job. Other terms used to describe this procedure are job safety analysis (JSA) and job hazard breakdown.

What are the benefits of doing a Job Hazard Analysis?

Initial benefits from developing a JHA will become clear in the preparation stage. The analysis process may identify previously undetected hazards and increase the job knowledge of those participating. Safety and health awareness is raised, communication between workers and supervisors is improved, and acceptance of safe work procedures is promoted.

How do I determine which job(s) to do a Job Hazard Analysis on?

Ideally all jobs should be subjected to a JHA. But in reality this is just not always possible. It is usually necessary to identify which jobs are a priority and need to be analyzed immediately. Even if analysis of all jobs is planned, this step ensures that the most critical jobs are examined first.

Factors to be considered in assigning a priority for analysis include:

- Accident frequency and severity: jobs where accidents occur frequently or where they occur infrequently but result in disabling injuries.
- Potential for severe injuries or illnesses: the consequences of an accident, hazardous condition, or exposure to harmful substance are potentially severe.
- Newly established jobs: due to lack of experience in these jobs, hazards may not be evident or anticipated.

How Do I Identify Potential Hazards?

Once the basic steps have been recorded, potential hazards must be identified at each step. Based on observations of the job, knowledge of accident and injury causes, and personal experience, list the things that could go wrong at each step. The following questions can help you identify potential hazards:

1. Can any body part get caught in or between objects?
2. Do tools, machines, or equipment present any hazards?
3. Can the worker make harmful contact with objects?
4. Can the worker slip, trip, or fall?
5. Is the worker exposed to extreme heat or cold? Do weather conditions affect safety?
6. Is excessive noise or vibration a problem?
7. Is there a danger from falling objects?
8. Can contact be made with hot, toxic, or caustic substances?
9. Are there dusts, fumes, mists, or vapors in the air?

When analyzing a job, break it down into areas and ask yourself the important question for each topic:

- **Working With Chemicals:** Is the material toxic? What PPE is required (check the MSDS).
- **Respiratory Protection:** What type of respirator? Correct cartridge? Have employees been fit tested for this type of respirator?
- **Hazardous Waste:** Are approved containers available? Are the containers properly labeled? Emergency contact posted for accidental releases and/or spills?
- **Confined Spaces:** Permit posted? Respiratory protection needed? Air monitor recently calibrated? Emergency retrieval devices needed?
- **Grinding/Chipping:** All combustibles, flammables removed? PPE?
- **Work in elevated areas:** Safety harness required? Ladder secured? Safety net needed?
- **Working below grade level:** Barricade tape? Information tags? PPE? Shoring?
- **Hot Work:** Permit required? Fire Watch required? Fire extinguisher available? Flash shields needed?

When possible, eliminate the hazard.

- Choose a different process or modify an existing one.
- Substitute with less hazardous substance.
- Improve environment (ventilation)
- Modify or change equipment or tools

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HEAD PROTECTION

Anatomy of a Hard Hat

Each year there are thousands of head injuries in the construction industry. Injuries range from concussions to death. Head injuries are caused by falling, flying, swinging or dangling objects, by bumping your head against a fixed object and by electrical shocks and burns. Hard hats are specifically designed to resist penetration and absorb the shock of a blow.

- ▶ Approved Hard Hats are made of materials, such as thermoplastics or fiberglass, that are water-resistant and slow-burning.
- ▶ Inside the hat are straps that pass over your head and connect to an adjustable headband. These straps hold the shell of the hat away from your head. There should be an inch and a quarter between you and the shell.
- ▶ The outer shell and the unique inner suspension system of a hard hat protect you from injury by absorbing and distributing impact over a wide area of your head.
- ▶ Hard Hats are made in two types:
 - ▶ **Type 1** - helmets with full brim, not less than 1¼ inches wide; and
 - ▶ **Type 2** - brimless helmets with a peak extending forward from the crown.
- ▶ Chin and nape straps keep the hat from being bumped or blown off.

Types of Hard Hats

- ☒ **Class A** - Hats & Caps are intended for protection against impact hazards. They are typically used in mining, building construction, shipbuilding, tunneling, lumbering, and manufacturing.
- ☒ **Class B** - Utility Service Hats & Caps are for protection of the wearer's head from impact and penetration from falling or flying objects and from high-voltage shock and burn. They are used extensively by electrical workers.
- ☒ **Class C** - offers lightweight protection against impact and penetration hazards when there's no danger from electrical hazards.



Tips To Remember

- ▶ Be sure to select the proper type of hard hat for your job.
- ▶ Make sure your hard hat is marked with the American National Standards Institute label (ANSI Z89.1) next to the manufacturer's name, and a Class A or B marking.
- ▶ Never use the space between the suspension straps and the hard hat as a storage area.
- ▶ Avoid wearing headgear under your hard hat, except for cold-weather liners specially designed for it.
- ▶ Never borrow a hard hat or loan yours.
- ▶ Adjust your hard-hat straps to fit you snugly. Your hard hat should not tilt or slide around.
- ▶ Check your hard hat daily for signs of damage such as dents, cracks or penetration.
- ▶ Never use your hard hat if you find any signs of damage.
- ▶ Replace any worn or frayed webbing.
- ▶ Never drill holes in your hard hat for ventilation or any other reason.
- ▶ Avoid dropping your hard hat.
- ▶ Get a replacement hard hat if it's ever dropped or hit.
- ▶ Never store your hard hat in your car window or other hot place: sunlight and heat reduce the hat's protective ability.
- ▶ Follow the manufacturer's instructions for cleaning and periodic inspection of your hard hat.
- ▶ Never paint your hard hat; certain paints and thinners can damage and weaken it.



Hand & Skin Protection



There are a range of hazards to the hands or arms that may need protection. These can give rise to cuts or abrasions, burns from hot or cold chemicals, skin irritation or dermatitis or damage from contact with corrosive or toxic materials. The rate of uptake of toxic solvent through a small area of wetted skin is often much greater than uptake through the lungs when breathing the vapor at the exposure limit.

What are some other points to remember about skin and hand protection?

Since there are many hazards, hand protection can be provided in a variety of ways: finger guards, cots and thimbles, hand pads, mitts, and gloves.

- ▶ Choose hand protection that adequately protects from the hazard(s) of a specific job and adequately meets the specific tasks involved in the job (such as flexibility or dexterity).
- ▶ Follow the manufacturer's instructions for care, decontamination, and maintenance of gloves.
- ▶ Be aware that some materials may cause reactions in some workers such as allergies to latex. Offer alternatives where possible.
- ▶ Ensure the gloves fit properly.
- ▶ Ensure all exposed skin is covered by gloves. Gloves should be long enough so that there is no gap between the glove and sleeve.
- ▶ Do not wear gloves with metal parts near electrical equipment.
- ▶ Do not use worn or torn gloves.
- ▶ Clean gloves as instructed by the supplier.
- ▶ Wearers should be trained to check gloves for cuts or pinhole leaks every time they use them, and to replace them if damaged.
- ▶ Manufacturer's instructions on cleaning should be followed
- ▶ If the activity involves handling abrasive, sharp or pointed objects, gloves or gauntlets of suitable material (chain-mail, leather or Kevlon) should be worn, but not when working with or near moving equipment or machinery, as entanglement could be a serious hazard.
- ▶ So called "anti-vibration" gloves are not very effective in reducing vibration from pneumatic drills or chain saws, but since such tools are often used outdoors, gloves are important in keeping the hands warm which reduces the likelihood of "vibration white finger" developing.
- ▶ Chemical protective gloves are available in a wide range of materials, which offer varying degrees of protection against different types of chemicals. Gloves for work with harmful liquids should be selected on the basis of the "breakthrough time." Information on breakthrough times for the chemical can be obtained through the manufacturer's MSDS.
 - Gloves with a breakthrough time of less than 12 minutes should be avoided. Preferably the breakthrough time should be 2 hours or more. Nitrile or acrylo-nitrile gloves offer the best range of chemical resistance, but even those offer poor resistance to some chemicals (i.e., phenol) so selection based on the MSDS is important.

Foot Protection

Your feet are particularly vulnerable to injury on the job. Mechanical hazards, falling objects, compression from rolling objects and punctures are the top causes of foot injury. Other foot hazards include: slipping, exposure to chemicals, extreme cold and heat, electrical shock and wetness. When choosing protective footwear, be sure to follow these guidelines:

- ▶ Be sure your safety shoes are approved by the American Nat'l Standards Institute (ANSI) and meet standard Z41-1991. The rating should be stamped inside your shoe or boot.
- ▶ Wear the right size shoe. Tight shoes result in cold feet and pinched toes. Loose shoes can make you stumble or turn an ankle.
- ▶ Choose shoes you can wear comfortably for hours.
- ▶ Wear appropriate footwear for the job.
- ▶ Keep your shoes clean and dry.
- ▶ Inspect your shoes regularly for cuts, cracks and embedded metal.
- ▶ Replace your shoes when they get worn out.
- ▶ Be on the lookout for hazardous conditions and equipment.



Mechanical Hazards

Standard safety shoes and boots come in a variety of types, styles, materials and weights. They're comfortable and many look like street shoes. They have steel, reinforced plastic or hard rubber toes. Typically they'll have steel toe caps to guard against injuries from falling objects and compression, and instep protection of aluminum, steel, fiber or plastic to protect the top of your foot. Steel insoles or reinforced metal soles protect from punctures.

Aluminum alloy, fiberglass, or galvanized steel footguards can be worn over usual workshoes, although they present the possibility of catching on something and tripping workers. Heat-resistant soled shoes protect against hot surfaces like those found in the roofing, paving, and hot metal industries.

Leggings protect the lower leg and feet from molten metal or welding sparks. Safety snaps permit their rapid removal.



Electrical Hazards

Conductive shoes permit the static electricity that builds up in your body to drain off harmlessly into the ground. For high-voltage hazards, use conductive shoes: insulated shoes with a connector from calf to heel to pass electricity to the floor or ground. Wear safety shoes with leather, cork or other conductive soles and no exposed metal. For protection against live electrical current, shoes must have rubber soles. Electrical hazard shoes must be kept dry.

Concrete Work

For concrete work, special protective shoe coverings are necessary. You must use overshoes that won't be pulled off by the concrete. Overshoes with buckles will keep the shoes from falling off. Always wear overshoes or boots that are higher than the depth of the concrete to prevent cement from seeping into the shoes and causing cement infection.

Wetness

To protect against slipping on wet or oily surfaces, wear shoes with wooden soles or cleated, nonslip rubber or neoprene soles. Hip boots, also called waders, are ideal for working in water over a foot deep.

Chemical Hazards

Many chemicals and solvents can burn or eat away ordinary shoe materials. For protection from these hazards, wear rubber, neoprene or plastic footwear depending on the type of chemical you're exposed to. Rubber or plastic safety boots can protect your feet against oil, water, acids, corrosives & other industrial strength chemicals. They're available with steel toes and are puncture-resistant insoles & metatarsal guards.

Extreme Heat or Cold

In extreme cold, wear shoes with moisture-proof insulation and insulated socks. Wool socks provide greater warmth than cotton in cold weather. Icy surfaces may require strap-on cleats. Wooden-soled shoes or slip-on sandals protect against heat; surfaces too hot for wood soles require aluminized heat-protective shoes or boots. When working around molten metal and sparks, use foundry boots with elastic gores for quick removal in case hot metal or sparks get inside.

Foot Protection
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Housekeeping & Sanitation



Mark Schaffer Excavating & Trucking, Inc. work-sites can present many hazards to employees when they are performing construction-related activities. Housekeeping is not just cleanliness. It includes keeping work areas neat and orderly; maintaining halls and floors free of slip and trip hazards; and removing of waste materials (i.e., paper, cardboard) and other fire hazards from work areas. It also requires paying attention to important details such as the layout of the whole workplace, aisle marking, the adequacy of storage facilities, and maintenance. Good housekeeping is the basic part of accident and fire prevention.

Effective housekeeping is an ongoing operation. It is not a hit-and-miss cleanup done occasionally. Periodic “panic” cleanups are costly and ineffective in reducing accidents.

This safety policy and procedure is established in accordance with Occupational Safety and Health Standards for Construction Industry (29 CFR 1926.25). This policy and procedure shall apply to any and all employees, subcontractors and/or vendors at any and all Mark Schaffer Excavating & Trucking, Inc. work-site locations.

Mark Schaffer Excavating & Trucking, Inc. requires conformance with the safety standards set here in. A site-specific program may be utilized, providing it meets or exceeds the requirements set forth in this manual.

Policy

It is the policy of Mark Schaffer Excavating & Trucking, Inc. to provide a place of employment that is free from recognized hazards that cause, or are likely to cause, death or serious physical harm to employees or the public. Project waste, trash and scrap will be taken into consideration before work begins on each project. Therefore, all employees on Mark Schaffer Excavating & Trucking, Inc. worksites will practice good housekeeping to further reduce hazards to employees.

It is the responsibility of each manager/unit head, supervisor, and employee to ensure implementation of Mark Schaffer Excavating & Trucking, Inc.’s safety policy and procedure on Housekeeping. It is also the responsibility of each Mark Schaffer Excavating & Trucking, Inc. employee to report immediately and unsafe act or condition to his or her supervisor. Specific responsibilities are further addressed in this policy and procedure.

Definitions

Debris – Unusable or unwanted construction waste material.

Form Lumber – Lumber that is used to contain liquid concrete into defined shapes until the concrete hardens.

Hazardous Waste – Waste that is either toxic to humans or to the environment.

Training

Employees will be trained to work safely on construction sites by following good housekeeping practices. Employees will be trained in:

- The importance of housekeeping; and
- The benefits of housekeeping

Employees will be trained at time of initial employment or assignment.

Dust & Dirt Removal

On some work sites, enclosures and exhaust ventilation systems may fail to collect dust, dirt, and chips adequately. Vacuum cleaners are suitable for removing light dust and dirt. Industrial models have special fittings for cleaning walls, ceilings, ledges, machinery, and other hard-to-reach places where dust and dirt may accumulate.

Dampening floors or using sweeping compounds before sweeping reduces the amount of airborne dust. The dust and grime that collect in places like shelves, piping, conduits, light fixtures, reflectors, windows, cupboards and lockers may require manual cleaning.

Special purpose vacuums with HEPA (high efficiency particulate air) filters will be used for the clean up and removal of hazardous substances (i.e., particles of asbestos, lead or fiberglass).

Compressed air will not be used for removing dust, dirt or chips from equipment, work surfaces or clothing.

Construction Scrap & Debris

Scrap material and debris generated during construction usually consist of:

- Non-combustible scrap material and debris; and
- Combustible scrap material and debris.

Non-combustible scrap material and debris that consist of form and scrap lumber with protruding nails, and all other debris, must be kept cleared from work areas, passageways, and stairs, and from around buildings or other structures.

Nails are to be removed from used lumber before stacking. Combustible scrap and debris must be removed at regular intervals during the course of construction without increasing the hazard exposure to employees who remove such debris.

Construction Waste Disposal

The regular collection, grading and sorting of scrap contribute to good housekeeping practices. It also makes it possible to separate materials that can be recycled from those going to waste disposal facilities. If recycling is a possibility, an additional container for recyclable materials may be

provided. Project wastes, trash, and/or scrap materials will be taken into consideration before work begins.

All construction waste must first be collected into containers before disposal. The categories of construction waste generated at a construction site include:

- General waste and trash (non-toxic, non-hazardous); and
- Hazardous waste.

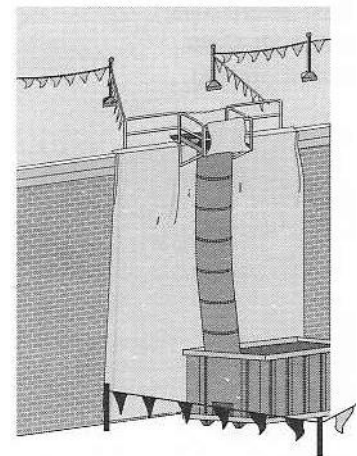
Separate containers must be provided for the collection and separation of waste, trash, and other refuse. These containers will be placed near where the waste is produced to aid in the proper separation and collection of generated scrap. All scrap containers will be clearly labeled (i.e., glass, plastic, scrap metal, etc.).

Additional separate containers must be provided with lids for hazardous wastes to prevent sparks or other ignition sources from coming into contact with hazardous waste. Hazardous wastes can include used oil, used oil filters, oily rags and flammable wastes as well as caustics, acids, harmful dusts, etc.

Absorbent that is used to collect incidental used oil spills and oil rags can be disposed of in waste collection dumpsters. Used oil filters must be drained of oil before they can be disposed into separate waste containers.

Disposal from Elevated Surfaces

Anytime materials need to be dropped 20 feet or more on the outside of a building, they must be sent down an enclosed chute. An enclosed chute is defined as a slide, closed in on all sides, through which materials are removed from a roof or other elevated area. If materials are being dropped on the inside of a building through a hole in the floor without a chute, the area below should be completely barricaded. The barricades have to be at least 42 inches high and 6 feet back from the protected edges of the opening above. All scraps, waste, and trash have to be removed from the immediate work area on a regular basis. However, the waste that accumulates on the lower level should not be removed until the end of the work shift. Removing waste throughout the work shift would require workers on different levels to communicate with one another, possibly creating dangerous situations to do so.



All noncombustible materials and large debris, such as that from roof system tear-offs, can be disposed of in an on-site dumpster. When placing a dumpster at a work site, the following precautions should be considered:

- Place dumpster away from doors and windows to prevent any discarded material from falling or blowing into buildings and causing damage or injury.
- If possible, place the dumpster on a solid flat surface so it does not cause damage to the building grounds or sink into soft ground, which could render it difficult to move or empty.
- Erect barricades around the dumpster to prevent people from wandering into an area where debris might be falling from the roof, especially if the roof is less than 20 feet high and a chute is not required.

Storage

Organization of stored materials is essential for overcoming material storage problems. Reducing the amount of handling of materials will also reduce the risk of strain and sprain injuries, especially if manual materials' handling is required. The location of the stockpiles should not interfere with work but they should be readily available when required. Stored materials should allow a minimum of 3 feet of clear space under sprinkler heads.

Stacking cartons and drums on a firm foundation and cross tying them, where necessary, reduces the chance of their movement. Stored materials should not obstruct aisles, stairs, exits, fire equipment, emergency eyewash fountains, emergency showers, or first aid stations. All storage areas should be clearly marked.

Flammable, combustible, toxic and other hazardous materials are to be stored in approved containers in designated areas that are appropriate for the different hazards that they pose. Storage of materials should meet all requirements specified in the fire codes and the regulations of environmental and occupational health and safety agencies in the jurisdiction.

Spill Control

The best way to control spills is to stop them before they happen. Regularly cleaning and maintaining machines and equipment is one way. Another is to use drip pans and guards where possible spills might occur. When spills do occur, it is important to clean them up immediately. Absorbent materials are useful for wiping up greasy, oily or other liquid spills. Used absorbents must be disposed of properly and safely.

Water

Potable water is water that meets the quality standards prescribed in the U.S. Public Health Service Drinking Water Standards, or water that is approved for drinking purposes by the state or local authority having jurisdiction.

Although OSHA does not indicate how much drinking water is required at a work site, OSHA does mandate that an adequate supply of drinking water always be available to employees.

- It must be in a container that is tightly closed and has a tap; water cannot be “dipped”.
- The container has to be clearly marked and not used for any other purpose.
- A standard container with single-use cups, as well as a trash receptacle for used cups, must be provided.

Non-Potable water is not meant for drinking but for industrial or firefighting purposes. There cannot be any cross-connections between systems providing potable and non-potable water. Non-potable water must be clearly labeled to indicate that the water is not safe for drinking, washing, or cooking.

- Caution signs can be used to mark water as nonpotable. According to Subpart G of 29 CFR 1926, the upper panel must be black with yellow “CAUTION” lettering; the lower panel is to be yellow with any wording added in black. The colors



must conform with ANSI 53.1-1967.

Toilets & Washing Facilities

Unless access or transportation to nearby toilet facilities is readily available, toilets must be supplied for employee use. Under temporary field conditions, one toilet must be provided for 20 or fewer employees. For every additional 40 employees, one toilet and one urinal must be provided. If a job site does not have a sanitary sewer, the standard requires that one of the following should be provided unless prohibited by local codes:

- Privies (where their use will not contaminate ground or surface water);
- Chemical toilets (most commonly used at construction sites);
- Recirculating toilets;
- Combustion toilets.

Sanitary washing facilities are to be provided in any situation in which employees are working with harmful contaminants. The facilities need to be adequate for employees to remove such substances and near the work site.

Change Rooms

Whenever employees are required by OSHA regulations or another government agency's established regulations to change from their street clothes and don protective clothing, change rooms must be provided. The change rooms must have storage facilities for street clothes and separate facilities for protective clothing.

Specific Responsibilities

Management:

- Ensuring that containers, sanitary facilities, sufficient water, and other supplies to maintain effective housekeeping, are purchased and readily available at construction sites.
- Obtaining and coordinating the required training for all effected employees.
- Ensuring compliance with this safety policy and procedure through Mark Schaffer Excavating & Trucking, Inc.'s auditing process.

Supervisors:

- Ensuring that employees are instructed on good housekeeping practices when performing their job duties.
- Ensuring that combustible scrap and debris is being removed and properly disposed of, at regular intervals during the course of construction.

Employees:

- Following good housekeeping practices in the performance of their job duties.
- Reporting any hazardous conditions to their immediate supervisor.

Lockout/Tagout (LOTO)



The term “Company” as used in these policies and procedures includes all employees (regardless of status), sub-contractors, and vendors of Mark Schaffer Excavating & Trucking, Inc. work sites for which Mark Schaffer Excavating & Trucking, Inc. has responsibility are included.

Definitions

Affected Employee – An employee whose job duties require operation or use of a machine or piece of equipment in a location in which servicing or maintenance is being performed under Lockout/Tagout Procedures.

Authorized Employee – An employee who has completed the required training, and lockouts or tagouts a machine or piece of equipment in order to perform servicing or maintenance on that machine or piece of equipment. An affected employee becomes the authorized employee when that employee’s duties require him or her to perform the service or maintenance covered under this policy.

Capable of Being Locked Out – An energy isolating device capable of being locked out if it has a hasp or other means of attachment through which a lock can be affixed to the equipment or machine.

Energy Isolating Device – A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and additionally by which no pole can be operated independently; a line valve; a blind; or any similar device used to block or isolate energy. **Push buttons, selector switches, and other control circuit-type devices are not energy isolating devices.**

Energy Source – Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy source.

Hasp – Multiple lockout or tagout device.

Lockout – The placement of a lockout device on an energy isolating device, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout Device – A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in a safe position to prevent the energizing of a machine or piece of equipment.

Servicing and/or Maintenance – Workplace activities such as construction, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubricating, cleaning, or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to unexpected energization or startup of the equipment or release of hazardous energy.

Setting Up – Any work performed to prepare a machine or equipment to perform its normal production operation.

Tagout – The placement of a tagout device or an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout Device – A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Program Administration

| | |
|--|--|
| <p style="text-align: center;">Safety Manger</p> | <ul style="list-style-type: none"> ▪ Is responsible for the control of this program and ensuring that all training meets the requirements of this program. The Safety Manager will review and update the written Hazardous Energy Control Plan at least annually and whenever necessary to include new or modified tasks, procedures, equipment and tags. ▪ Designing and implementing the Lockout/Tagout Training course. ▪ Questions on application of this program are to be directed to the Field Supervisor. NOTE: For clarification purposes, all questions and/or requests must be submitted in writing; phone calls must be followed by written requests. ▪ Documentation of training. ▪ Procuring, generating and/or maintaining equipment-specific written procedures where and when required. ▪ Assigning and documenting employee LOTO authorization, including: <ul style="list-style-type: none"> - Designating specific equipment or categories or equipment to be controlled; - Verifying that the employee is qualified to perform the necessary Energy-Control procedures. ▪ Will provide a verbal response to questions within one working day and a written response within 3 working days. The written response will be provided to every contractor and Sub-contractor's Safety Representative so that all parties are kept up to date; the contractor and subcontractor's Safety Representative will be the main method of getting information distributed. |
| <p style="text-align: center;">Supervisory Personnel</p> | <ul style="list-style-type: none"> ▪ Ensuring that LOTO supplies and equipment are available and consistent with Mark Schaffer Excavating & Trucking, Inc.'s standards, as outlined in this safety policy. ▪ Maintaining, administering, and suggesting revisions (of the Hazardous Energy Control Program to the President) as needed. ▪ Determining the appropriate levels of training required for each employee. ▪ Prohibiting employees from working on equipment requiring LOTO until they are trained in and authorized to perform LOTO. ▪ Removing LOTO devices in case of emergency and controlling emergency keys for all LOTO devices. ▪ Ensuring that necessary, approved hardware is available. |
| <p style="text-align: center;">All Employees (Regardless of Status)</p> | <ul style="list-style-type: none"> ▪ Becoming acquainted with all potential hazards in the area in which they work. ▪ Only performing tasks for which they are qualified and authorized. ▪ Requesting additional training to avoid working beyond their level of qualification or comfort. ▪ Following applicable OSHA standards. ▪ Learn and follow the appropriate standards, procedures, and hazard control methods. ▪ Never undertaking a potentially hazardous operation without consulting with the appropriate Work Site Supervisor. ▪ Notifying his/her immediate Supervisor of any condition or behavior that poses a potential hazard. ▪ Wearing and using appropriate ANSI approved PPE (as approved by Mark Schaffer Excavating & Trucking, Inc.). |
| <p style="text-align: center;">Contractors And Subcontractors</p> | <p>All Contractors and Subcontractors working at any and all work sites operated by Mark Schaffer Excavating & Trucking, Inc. are required to comply with the procedures and work practices outlined in this Hazardous Energy Control Plan. The Safety Manager is responsible for ensuring that said individuals/organizations, operating under supervision of Mark Schaffer Excavating & Trucking, Inc.'s Supervisory Personnel, are informed of and adhere to Mark Schaffer Excavating & Trucking, Inc.'s Hazardous Energy Control Program.</p> |

Training

All Mark Schaffer Excavating & Trucking, Inc. employees, who may be near to, or affected by, equipment on which LOTO is performed will receive **LOTO awareness training** (affected employees). This training will include, but not be limited to:

- How to recognize LOTO;
- Why LOTO is implemented;
- The importance of leaving LOTO devices in place;
- Tampering with LOTO devices is considered by Mark Schaffer Excavating & Trucking, Inc. to be a “Serious Safety Violation”;
- Attempting to restart equipment to which LOTO is applied is considered by Mark Schaffer Excavating & Trucking, Inc. to be a “Serious Safety Violation”;
- General definitions (i.e., Affected Employee, Authorized Employee, etc...) as outlined in this plan.
- Only “Authorized Employees,” as outlined and defined in this plan, may perform LOTO.

Training for Authorized Employees will be provided to ensure that, the purpose and procedures of the Hazard Control Plan are understood, and that the knowledge and skill required for the safe application, usage, and removal of lockout/tagout devices are conveyed to all employees. The training will include, but not be limited to the following:

- Type and magnitude of the energy available at the work site;
- Install and remove individually assigned lock(s) and danger tag(s) on the isolation device(s) for their safety in accordance with this program;
- Methods and means necessary for energy isolation;
- Safe Condition Checks;
- Procedures for transfer of Lockout/Tagout (shift work & personnel changes);
- Procedures for emergency/temporary lifting of tags and/or LOTO devices;
- Use of Tagout only;
- Working on energized equipment;
- Stored energy and potential accumulation awareness;
- Authorized LOTO equipment, its assignment and recordkeeping requirements;
- Equipment-Specific Written Procedures (if applicable);
- Applicable OSHA Standards

Once satisfied that both the training and authorization requirements have been met, the Safety Manager may authorize an employee to perform LOTO. This authorization stipulates the specific equipment or types of equipment on which the “**Authorized Employee**” may perform LOTO.

Retraining may be required for an employee to maintain their “Authorization” status. Retraining and reauthorization may be required when:

- An Authorized Employee’s job changes or he or she is reassigned;
- New equipment is to be used;
- New energy-control procedures are to be implemented;
- A Field Supervisor or Work Site Supervisor has reason to believe that an employee has inadequate knowledge of LOTO procedures or policy;
- A periodic inspection shows a deficiency in the Authorized Employee’s ability to implement LOTO policy correctly

Training for outside personnel – Outside personnel will be trained as a Mark Schaffer Excavating & Trucking, Inc. “Authorized Employee” or will be provided with a Mark Schaffer Excavating & Trucking, Inc. Authorized Employee escort to assist in the correct placement of the outside service personnel’s Lockout/Tagout devices.

Training on the limitations of tags - Tagout systems are not completely foolproof. Instructions should include, at a minimum, the following examples of tag limitations:

- Tags are essentially warning devices affixed to energy isolating devices and do not provide the physical restraint on those device that is provided by a lock.
- When a tag is attached to an energy isolating means, it is not to be removed without authorization and it is never to be bypassed, ignored, or otherwise defeated.
- In order to be effective, tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area.
- Tags and their means of attachment must be made of materials that will withstand the environmental conditions encountered in the workplace.
- Tags may evoke a false sense of security and their meaning needs to be understood as parts of the overall energy control program.
- Tags must be securely attached to energy isolating devices to that they cannot be inadvertently or accidentally detached during use.

All training and/or retraining must be documented. The documentation shall include employee’s name and dates of training.

Authorized Worker Lockout/Tagout (LOTO) General Procedure

- ❑ **Procedure Updating.** Periodic inspections of the energy control procedure are conducted and documented at least annually to ensure that procedures and requirements are being followed.
- ❑ **Notify equipment users of work.** Before beginning work on any equipment or system, always notify equipment users and employees in the area that could be affected by the shutdown and the reason(s) for the shutdown. Whenever possible work should be scheduled and coordinated with other employees to minimize programmatic interruptions.
- ❑ **Verify that it is safe to shut equipment down and confirm the appropriate shutdown procedures for the equipment with the Affected Employee(s).** The Authorized Employee must turn off or shut down the equipment using established methods for that equipment. Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.
- ❑ **Use written procedure, if applicable.** The Authorized Employee must determine if an Equipment-Specific Written Procedure is applicable to the task (the Superintendent will present the Authorized Employee with any applicable material at the assignment of the task.) The Authorized Employee will turn off or shut down the machine or equipment using the procedures established for the machine or equipment. An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage. If the Authorized Employee feels that the current Equipment Specific Written Procedure is inadequate or needs to be updated and/or changed, he/she should contact the Superintendent. The Superintendent will then discuss and investigate the issues raised by the Authorized Employee.

The Superintendent will then, if applicable, re-issue the Equipment-Specific Written Procedure with approved changes and/or additions.

- ❑ **Identify all Internal and External Energy Sources.** Many pieces of equipment have more than one energy source that must be controlled. Written Lockout/Tagout procedures are required for all equipment/systems that have more than one energy source. All external energy sources such as electrical, mechanical, hydraulic, pneumatic, chemical, thermal, etc. must be addressed. In addition, stored energy sources such as charged capacitors, batteries, wound springs, etc. must be identified. Equipment with energy sources with the potential for reaccumulation of energy requires continuous verification of isolation. Schematic diagrams and operator's manuals should be available and referenced for assistance in identifying input power requirements and internal energy sources. The specific LOTO procedure shall be referenced by the Authorized Employee.
- ❑ **Physically disconnect and isolate the energy source(s). Once all energy sources have been identified, the next steps are:**
 - Physically disconnect and/or shut off the source(s) with appropriate energy-isolating-devices;
 - Secure them in the off/disconnect position (*It may be necessary to leave bleed valves open to prevent the reaccumulation of stored energy. The written LOTO procedure must specify how this is accomplished.*)
 - The Authorized Employee then affix's his/her LOTO lock to this device.
 - Before applying a lockout device, be sure that the energy source(s) have been disconnected. The Authorized Employee must physically attempt to operate the energy-isolating device and attempt to restart the equipment using the normal equipment controls (i.e., start buttons, or computer software controls).
 - **Test the equipment for zero-energy state.** The Authorized Employee must test potential energy sources using appropriate instruments or testers. Any instrument used to test for voltage, pressure, or temperature must be checked for proper operation both before and after use. If the Authorized Person is not qualified to test the energy being isolated, he or she must ensure that the energy is tested by a Qualified Person. The qualified tester, if other than the Authorized Employee, must be identified in the "Remarks" section on the tag.
 - **Lockout the Energy-Isolating Device.** Each energy source must be locked out to prevent others from inadvertently reconnecting or re-energizing the equipment. Lockout devices must always be applied at the input power source and not at the control circuit. Remember that many pieces of equipment have more than one switch or switching method in which they can be turned on, thereby making control circuits poor places to apply lockout devices. Users with multiple locks shall record the details of each application (date, lock number, location, etc.) in their User Log.
 - **Tagout the Energy-Isolating Device.** A "Danger Do Not Operate" tag shall be installed at the energy-isolating device(s). The tag will be marked with the name and phone number of the person performing the Lockout/Tagout, the date, and other relevant information, and applied with a lock or plastic locking tie.
NOTE: If the placement of the tag would compromise safety by obscuring indicator lights or controls, the tag may be located as close as is safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.
 - **Perform final and periodic verifications.** Always perform a final verification before proceeding with work that is to be performed. Verification shall include:
 - Check that all electrical systems show no voltage present (and are grounded if applicable.)

- Steam, fluid and pneumatic systems are depressurized and vented (or drained if applicable), and all isolation devices are properly positioned, inoperable and appropriately tagged. If the work will be performed for an extended time period, periodic verifications must be performed to ensure the integrity of the lockouts that have been applied.
- ❑ **Removal of a Lockout/Tagout Device** - Lockout/Tagout devices shall only be removed by, or under the direction of, the individual who applied the device and whose name appears on the tag. Before LOTO devices are removed and energy is restored to the equipment, the authorized employee must follow the procedures below:
 - Verify that it is safe to re-energize; The last Authorized Employee to remove his/her LOTO must verify that the work for which the LOTO was applied has been completed and that it is safe to re-energize equipment.
 - Clear all tools and personnel; the authorized employee must check the work area to ensure that all tools and personnel are at a safe distance from the equipment.
 - Remove all isolating device(s); the authorized employee must remove any device(s) applied.
 - Replace safety guards; the authorized employee must check the equipment to ensure that any removed guards are reinstalled.
 - The lock and tag may now be removed, the energy-isolating device reset, and the machinery returned to service.
 - If safety is compromised by following the above prescribed sequence, the authorized employee may modify the sequence; however, all steps must be performed, regardless of the sequence.

Authorized Worker Tagout Only Procedure

Some devices cannot physically be locked out, or must remain energized (to some extent) for adjustments. For these situations, Mark Schaffer Excavating & Trucking, Inc. has established the following procedures when operating LOTO without the benefit of locking devices (reliance on a tagout system). Any energy-isolating device capable of being locked must be **locked without exception**. To conduct a tagout only procedure, follow the steps outlined below:

- ❑ Prior to beginning a “Tagout Only” a Safe Work Permit must be completed and submitted to the Safety Manager.
 - The Safety Manager will review and authorize and/or reject the permit. The Safety Manager is responsible for designating the “Authorized Employee” for each Safe Work Permit issued.
 - The “Tagout Only” is under the exclusive control of the Authorized Employee performing the servicing or maintenance described in each Safe Work Permit.
- ❑ **A “Safety Watch” employee(s) will be assigned to each Safe Work Permit and/or “Tagout Only” procedure.** This person(s) will be designated and assigned by the Safety Manager to assist the “Authorized Employee” in performing installation, maintenance, setting up or adjusting equipment that is not to be locked out (as described in the Safe Work Permit). This person shall be posted at an unlocked energy-isolating device to ensure that the device is not operated for the duration of the operation, except as directly communicated to the “Safety Watch” employee by the designated Authorized Employee. The “Safety Watch” shall have no other duties, nor shall he/she

leave his/her station for any reason, except when formally relieved from duty, by the Authorized Employee or Safety Manager, or for personal safety.

- ❑ **Removal of a “Tagout Only” Tag** – “Tagout Only” tags shall only be removed by, or under the direction of, the individual who applied the tag and whose name appears on the tag. Before “Tagout Only” tags are removed, the Authorized Employee must follow the procedures outlined below:
 - Verify that it is safe to close the “Safe Work Permit” and re-energize; the last authorized employee to remove his/her “Tagout Only” tag must verify that the work for which the Safe Work Permit was issued and the “Tagout Only” tag applied, has been completed and that it is safe to re-energize the equipment.
 - Clear all tools and personnel; The Authorized Employee must check the work area to ensure that all tools and personnel are at a safe distance from the equipment.
 - Remove all barricades and barriers.
 - Replace safety guards; The Authorized Employee must check the equipment to ensure that any removed guards are reinstalled.
 - The “Tag” may now be removed, the energy-isolating device reset, and the machinery returned to service.
 - If safety is compromised by following the above prescribed sequence, the authorized employee may modify the sequence; however, all steps outlined in this policy and procedure must be performed.
 - The Authorized Employee must return the completed Safe Work Permit to the Safety Manager.

Working On or Near Exposed Energized Circuits

In the rare situation when energized equipment (or working in near proximity to energized equipment) cannot be de-energized, the following work practices must be used to provide protection:

- ❑ **Caution: Unqualified Employees are prohibited from working on or near exposed energized circuits.**
- ❑ Obtain permission from Management to work on or near energized electrical circuits.
- ❑ Lockout and Tagout all circuits possible.
- ❑ Treat all circuits as energized.
- ❑ Remove all conductive clothing and jewelry (rings, watches, wrist/neck chains, metal buttons, metal writing instruments, etc.).
- ❑ Use proper Personal Protective Equipment, shields, and/or barriers to provide effective electrical insulation from energized circuits. This may include electrically rated insulated gloves, aprons, rubber soled shoes, insulated shields, insulated tools, etc.
- ❑ Provide adequate lighting. Do not enter areas with exposed energized parts unless illumination (lighting) is provided so that the Employee may work safely. Do not reach blindly around obstructions of view or lighting into areas where exposed energized parts are located.
- ❑ Employees entering a Confined Space with exposed energized parts, must use protective barriers, shields, or equipment or insulated materials rated at or above the present voltage to avoid contact.
- ❑ Doors or other hinged panels shall be constructed and secured to prevent them from swinging into an Employee and causing contact with exposed energized parts.
- ❑ Housekeeping in areas of exposed energized parts may not be completed in areas with close contact unless adequate safeguards (insulation equipment or barriers) are present. Conductive

cleaning material (Steel Wool, Silicon Carbide, etc.) or liquids may not be used unless procedures (Lockout and Tagout, etc.) are in place and followed.

- ❑ Station a safety observer outside work area. The sole function of this person is to quickly de-energize all sources of power or pull worker free from electrical work area with a non-conductive safety rope if contact is made with an energized electrical circuit.
- ❑ A person qualified in CPR must be readily available to the scene.

Procedure Involving More Than One Person

In the preceding steps, if more than one individual is required to lockout or tagout equipment, each shall place his or her own personal lockout device or tagout device on the energy isolating device(s). When an energy isolating device cannot accept multiple locks or tags, a multiple lockout or tagout device (hasp) may be used.

If lockout is used, a single lock may be used to lockout the machine or equipment with the key being placed in a lockout box or cabinet that allows the use of multiple locks to secure it. Each employee will then use his or her own lock to secure the box or cabinet. As each person no longer needs to maintain his or her lockout protection that person will remove his or her lock from the box or cabinet.

Please note that in all lockout procedures involving more than one person, all locks shall be keyed differently.

When servicing and/or maintenance is performed by a crew, craft, department or other group, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device.

Emergency Removal Of A LOTO Device

- ❑ When the Authorized Employee who applied a LOTO device is not available to remove it, that device may be removed by the Safety Manager or another approved Authorized Employee (to be designated by the Safety Manager). This is considered to be an emergency procedure only to be undertaken in extreme circumstances. When removing an Authorized Employee's LOTO device the following steps must be followed:
 - The Safety Manager must verify that the Authorized Employee is not at the site and make every reasonable effort to contact the Authorized Employee. This may include a telephone call to the employee's home or other location.
 - If the employee is contacted, the Safety Manager must inform the employee that his or her LOTO devices are being removed. The Safety Manager will also complete, and issue, a "Notification of Lock Removal" form to any and all concerned parties.
 - The Safety Manager must verify that it is safe to remove the LOTO devices.
 - The Safety Manager may then use the emergency key to remove the LOTO devices, or the lock may be cut off if the key is not available.
 - The Safety Manager must ensure that the Authorized Employee is presented with the removed lock upon his/her returning to work and is informed of the reasons for the emergency removal.
 - The emergency procedure must be duly recorded in the site's Lockout/Tagout records and signed by both the Safety Manager and the Authorized Employee.

Shift Changes/Personnel Changes

- ❑ To ensure the continuity of LOTO protection during shift or personnel changes, if work is to be continued by an oncoming shift, an orderly transfer of LOTO devices between Authorized Employees from the off going and oncoming shifts must be performed. The Authorized Employees from both shifts must both be present at the lockout device. The off going Authorized Employee must remove his or her lock and tag, and the oncoming Authorized Employee must inform the authorized oncoming employee of potential hazards.
- ❑ If the orderly transfer of LOTO devices is not possible because of a gap in shifts, the following procedures must be implemented to provide continuity of LOTO protection.
 - The Authorized Employee who is going off shift replaces his/her LOTO lock with an **Administrative Lock**, which is controlled by the affected group.
 - The oncoming employee(s) replace the Administrative Lock with their individual LOTO locks.
- ❑ If the above procedure cannot be followed, the Safety Manager must oversee the transfer of LOTO by Controlled Logbook Consent.
 - If the Authorized Employees from both shifts cannot be present simultaneously at the lockout device because there is a gap between their shifts, the Authorized Employee of the off going shift may acknowledge, by written logbook entry, prior consent to remove his or her LOTO devices during the oncoming shift. The work site supervisor of the Authorized Employee must make a corresponding logbook entry.
 - The logbook entries must include the authorized employee's and work site supervisor's signatures, the equipment identification, maintenance procedure being performed, and all other pertinent safety information regarding the equipment and/or procedure.
 - The work site supervisor of the oncoming shift must read and understand the logbook entries and is authorized to remove the LOTO device of the Authorized Employee from the off going shift.
 - The Authorized Employee of the oncoming shift must apply his or her LOTO device.
 - Both the oncoming Authorized Employee and his or her work site supervisor must make logbook entries acknowledging the performance of this special procedure.
 - All subsequent LOTO actions must conform to the standard LOTO policy and procedures outlined in this plan.
 - Before resuming work, the Authorized Employee who gave prior consent for removal of his or her LOTO devices must be personally informed by the work site supervisor that the Authorized Employee's devices have been removed. This Authorized Employee and work site supervisor must make confirming logbook entries, and the work site supervisor must then return the LOTO devices to the employee.

LOTO User Log

| | | | | | |
|---|-----------------------|---------------------------------|---------------------|-----------------|--|
| Authorized Employee: | | | Location/Work Site: | | |
| Inventory of Locks Used | | | | | |
| (Identification Number) each locking device utilized by this Authorized Employee on this Location/Work Site must be individually listed on this form. | | | | | |
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| Date Applied | Lock/Device I.D. # | Machine/Equipment Applied to | Purpose/Comment | Date Removed | |
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| Additional Information/Comments: | | | | | |

LOTO Program Lock/Device Assignment Record

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|---|---------------------|-----------------------|----------------|------------------|
| Job Foreman/Competent Person: | Location/Work Site: | | | |
| Description of work to be performed: | | | | |
| <p style="text-align: center;">Locks Assigned</p> <p>(Identification Number) each locking device issued to any Authorized Employee on this Location/Work Site for the described project must be individually listed on this form. Likewise the date of return of the lock/device must also be listed.</p> <p>Any locks/devices not returned must be immediately verified as to their status (i.e., destroyed, removed and not reported, etc.) before re-energization may take place.</p> | | | | |
| Lock/Device I.D. # | Employee Name | Employee Phone No. | Date Issued | Date Returned |
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| Additional Information/Comments: | | | | |

LOTO Program Exception Log

| Job Foreman/Competent Person: | | | Location/Work Site: | | | |
|---|----------|------|---------------------|------|-----------------------------------|----------------------------|
| <p style="text-align: center; margin: 0;">Locks/Devices Removed By or Entered Because of:</p> <ul style="list-style-type: none"> ▪ Non-Routine Removal ▪ Emergency Removal ▪ Device Is In Clear Violation of Existing Policy and Procedure <p>Tag-Out only operations need also be entered onto this log for the information of all “Affected Employees”. Under “Condition Reported” please list:</p> <ul style="list-style-type: none"> ▪ Tagout Only | | | | | | |
| Reported By | Reported | | Corrected | | Condition Reported (See Above) | Initials Job Foreman |
| | Date | Time | Date | Time | | |
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| Additional Information/Comments: | | | | | | |

(Permits are site/activity specific. Blanket permits shall not be issued.)

Safety Resources Co. of Ohio, Inc.
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General Safe Work Permit

(Permits are site/activity specific. Blanket permits shall not be issued.)

Permit Issuer (Mark Schaffer Excavating & Trucking, Inc. Safety Manager and Authorized Staff):

1. Issue Safe Work Permits in accordance with the requirements of this program.
2. Coordinate the hazard assessment process with the necessary subject matter experts to establish controls necessary to maintain an acceptable level of risk.
3. Periodically inspect the work area(s) and activities covered by the Safe Work Permit to determine if the controls specified in the permit are being properly maintained.
4. Stop work if it is determined that the controls established in the Safe Work Permit are not properly implemented or appear ineffective. Work shall not proceed until appropriate controls are established to maintain an acceptable level of risk.
5. Revise the Safe Work Permit as needed to incorporate changes in the scope of work, permit duration, hazards and/or established controls.

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in

Case No(s). 13-0990-EL-BGN, 15-1921-EL-BGA

Summary: Correspondence Regarding Complaint Resolution Plan and Safety Compliance Plan electronically filed by Mr. Michael J. Settineri on behalf of Crossroads Wind Power, LLC