BCN 4735
Construction Safety
Instructor
Dr. Jimmie W. Hinze

Project Specific
Safety Program

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(Group 10)

April 2003
Table of Contents

REVISION STATUS ........................................... 1

INTRODUCTION ................................................ 3
  MISSION STATEMENT ........................................ 4
  PURPOSE ......................................................... 5
  IMPLEMENTATION ........................................... 5
  SCOPE ............................................................ 5
  DEFINITIONS .................................................. 6
  ABBREVIATIONS AND ACRONYMS ....................... 7

RESPONSIBILITIES ............................................ 8
  COMPANY MANAGEMENT ..................................... 9
  SAFETY COORDINATOR .................................... 9
  SUPERINTENDENT .......................................... 10
  FOREMEN ...................................................... 10
  EMPLOYEES .................................................. 10
  SUBCONTRACTOR ............................................ 11

SAFETY MANAGEMENT ....................................... 12
  HAZARD ANALYSIS AND COMMUNICATION .................. 13
  PRE-PROJECT AND PRE-TASK ANALYSIS ....................... 14
  SAFETY COMMITTEE .......................................... 15
  SAFETY MEETINGS ........................................... 17
  WORK SITE INSPECTIONS .................................... 18
  JOB SITE INSPECTION CHECKLIST .............................. 18
  ORIENTATION AND TRAINING ................................. 21
  DRUG AND ALCOHOL FREE WORKPLACE POLICY .............. 23
  WORKER & FAMILY PARTICIPATION ............................ 24
  SUB CONTRACTOR COMPLIANCE ................................. 25
  ACCIDENT REPORTING & INVESTIGATION ...................... 31
  EMERGENCY PLANS .......................................... 35
  RECOGNITIONS AND AWARDS ................................. 36
  FEEDBACK AND EVALUATION ................................. 37
  MODIFICATIONS IN PROGRAM ................................ 37
## REVISION STATUS

<table>
<thead>
<tr>
<th>Contact</th>
<th>Implementation Date</th>
<th>Revision Number</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>G10 Constructions Safety Coordinator</td>
<td>April 2003</td>
<td>1.0</td>
<td>Original Program Issued</td>
</tr>
</tbody>
</table>
G10 Construction Company is committed to maintain a safe and healthful working environment. We pledge our best efforts to work together as management, safety committee and all employees in carrying out the actions needed to achieve this goal. We regularly communicate our goal to all employees and insist that they actively participate in working toward achieving it. We strive to have all managers and supervisors commit to fully supporting and participating in this Safety Program and adhere to and are fully accountable for compliance with all safety and health policies and standards. We will continue to provide the financial resources necessary to fully implement our programs and support this goal.

Safety comes first at G10.
Always
We think it, Plan for it, and Make it happen

(Group10 & www.emerick.com/subpage_safety/safety_program.htm)
INTRODUCTION
Mission Statement

In our efforts to create a safe working environment for all the people on our project site, we make the following Safety Statement:

“At G10 Constructions, our employees are our most vital resource and their safety is our prime objective. We will do everything in our power to provide all training and physical facilities required to maintain the highest level of safety and health. We all share the responsibility for maintaining a zero accident work environment.”

Vishal Shah                      Arash Parham                      Mawutor Agudu
(C. E. O.)                       (President)                       (Vice - President)
Purpose

This Safety Program is developed for G10 project staff and subcontractors to assure the safety of employees and the public who may be in proximity of operations performed by G10 Constructions employees and subcontractors.

Implementation

This program is effective from the first day of the project activities. Management and employees of G10 constructions are committed to follow the instructions and procedures described in this program.

Any violation from safe practices will invoke immediate and decisive action on the part of any G10 group Supervisor to correct the hazard. In the event that an "Imminent or Serious" violation is recognized by a G10 Supervisor, all work in the immediate area will be stopped. This shall include all work activity by any and all trades working in the surrounding area until the violation and hazard has been eliminated and the individuals involved advised. Should a previously advised individual again create the same or similar "Imminent or Serious" violation, G10 Construction supervision will again stop all work activity in the surrounding area until the violation and hazard has been eliminated. This infraction will be considered a "Willful" violation - the individual will be removed from the project site.

Scope

This safety program covers everyone on G-10 Constructions’ project site such as all workers, supervisors, delivery people, owners, subcontractors, owners' employees, inspectors, architects, engineers, and visitors.
Definitions
(tis.eh.doe.gov//techstds/standard/std1149/std11492002.pdf)

Construction superintendent is the individual designated by the G10 constructions Inc. as responsible for the performance of all aspects of the work described in the project documents including implementation of the project safety and health program. He has full authority to act for the G10 Constructions Inc.

Pre task Analysis is the process by which hazards are identified for all anticipated phases of work. The pre task analysis shall identify all hazards associated with each phase of work, and the work processes to be employed to eliminate or reduce those hazards. As the project develops, new or unanticipated hazards encountered with each project phase or change in specific operations within that phase are addressed and added to the pre task analysis. By the completion of the project, it has evolved into a specific and detailed job hazard analysis of the entire project.

Imminent Danger: any condition or practice that could reasonably be expected to cause death or serious physical harm (permanent or prolonged impairment of the body or temporary disablement requiring hospitalization) to employee or the public unless immediate actions are taken.

Pre-Construction Meeting: the meeting should be scheduled by the G-10 Construction’s safety coordinator with the subcontractor, project manager, and the project superintendent.

Project Manager: The management individual directly involved and accountable for overall project control and the application of specific control measures to ensure successful completion of project objectives.

Competent Person: individual who by virtue of formal training and experience can recognize existing and predictable safety hazards and has the authority to take prompt corrective action. For those activities where OSHA specifically calls out for a competent person; i.e., scaffolding and excavations, the project competent person may act in that capacity provided the OSHA training requirements for that activity are met.

Project Phase is a separately definable portion of a project involving a type of work presenting hazards not experienced in previous project operations or an operation performed by a different subcontractor.

Safety Coordinator: A designated individual who is assigned duties as the principal advisor to G10 Constructions top management, project manager and project superintendent and a consulting resource for project personnel on safety and environmental matters based on demonstrated knowledge, skills and experience in these fields.
Abbreviations and Acronyms


*G10C*: G10 Constructions Inc.

*ECP*: Energy Control Procedure

*LOTO*: Lockout/Tagout

*MSDS*: Material Safety Data Sheet.

*OSHA*: Occupational Safety and Health Administration.

*PPE*: Personal Protective Equipments
RESPONSIBILITIES
Company Management
(www.toolboxtopics.com)

- Has overall responsibility for the company’s safety program and regularly reaffirms support for loss control activities
- Insures that all employees are informed of top management’s commitment to safety and the abidance of all federal, state, and local regulations.
- Establish company safety rules and programs, and provides supervision with the backing, training and funds to implement these rules and programs.

Safety Coordinator
(www.cdc.gov/od/ohs/manual)

The Safety Coordinator is responsible for:

- Reviewing purchase requisitions to ensure appropriate safety requirements are identified.
- Assisting the job superintendent with the review of the pre task safety analysis.
- Participating as a team member in the evaluation of the subcontractor.
- Ensuring that no work activity begins until pre task safety analysis has been prepared, reviewed, accepted, and signed off by the superintendent and each subcontractor.
- Ensuring that a pre task safety analysis is developed and accepted by superintendent before the Notice to Proceed is issued.
- Provide a construction safety orientation, including the principles and core functions of the Safety Program to subcontractor employees and provide proof of attendance.
- Interpret OSHA requirements for construction work.
- Conduct oversight inspections and provide assistance for assigned projects.
- Complete evaluation of the subcontractor
**Superintendent**  
*(Group 10)*

The Superintendent is responsible for:

- Ensure that construction activities are completed in accordance with the safety plan and the hazard analysis.
- Developing pre task safety analysis.
- Ensuring the subcontractor performs according to the requirements in the contract, including elements of the contract that address Safety Program.
- Providing and documenting a site/job specific orientation subcontractor.

**Foremen**  
*(www.toolboxtopics.com)*

Foremen are responsible for:

- Safety of their employees and oversee the compliance with the safety program and applicable state, federal, and local regulations.
- Arrange for prompt medical attention in case of an injury and provides a thorough written investigative report with recommendations to prevent a reoccurrence.

**Employees**  
*(Group 10)*

Employees are responsible for:

- Practicing safely in accordance to this program.
- Reporting unsafe practices to supervisory personnel.
- Attending mandatory safety meetings and orientations.
Subcontractor

(www.cdc.gov/od/ohs/manual)

A firm or individual subcontracted is responsible for meeting all subcontractual agreements and for providing a safe and healthy workplace for its employees.

The subcontractor will:

- Provide for frequent and regular safety inspections of the worksites, materials, and equipment by competent employees.
- Notify the job superintendent accidents in a timely manner.
- Notify the job superintendent of non-formal OSHA complaint notifications and/or OSHA inspection of the jobsite.
SAFETY MANAGEMENT
Hazard Analysis and Communication


Before the beginning of each major phase of work, an activity hazard analysis should be prepared by the superintendent. The analysis should address the sequence of work, the hazards of each activity performed in that phase, and the control measures, procedures, and safeguards necessary to eliminate the hazards or reduce the risk to an acceptable level.

The safety coordinator must review all products and procedures used by project staff. A recommendation for need of substitution or personal protective equipment (PPE) will be made by the safety coordinator. The workers must be supplied by the necessary PPE.

*Material Safety Data Sheets (MSDS)*

An MSDS library for materials used or stored at the job site must be maintained. All G-10 Constructions employees may also obtain a copy of a Material Safety Data Sheet by requesting to the job superintendent. The MSDS will consist of a fully completed OSHA form 174 or equivalent.

MSDS must be fully completed and received at the job site either prior to, or at the time of receipt of the first shipment of any potentially hazardous material purchased from a vendor. It is necessary to discontinue procurements from vendors failing to provide approved MSDS in a timely manner.

*LABELS*

All hazardous materials throughout Project site must be properly labeled. Labels should list at least the chemical identity, appropriate hazard warnings, and the name and address of the manufacturer, importer or other responsible party. Transfer containers must be labeled with this information. Immediate use containers (i.e., small containers into which materials are drained for use on that shift by the employee drawing the material) do not require labeling. Supervisors must check on a biweekly basis to ensure that all containers in the area are labeled and that the labels are complete.

*TRAINING*

Each employee working with or potentially exposed to hazardous materials would receive initial training on the safe use of these chemicals by safety coordinator of G-10 construction.
Pre-project and Pre-task Analysis
(www.cdc.gov/od/ohs/manual)

The safety coordinator and Superintendent shall meet with supervisors and representatives of the subcontractors prior to the start of construction to review safety requirements and discussing implementation of all health and safety provisions pertinent to the work. The subcontractor should be prepared to discuss, in detail the measures to be taken to control the hazards associated with the major phases of the work under contract and to comply with contractual obligation. The meeting is devoted to discussing the manner in which the project is to be administered the health and safety program and to delegate responsibilities for implementing the project and to solve any query by involving parties.
Safety Committee
(www.toolboxtalks.com)

Safety Committee Organization

A safety committee will be established as a management tool to recommend improvements to the workplace safety program and to identify corrective measures needed to eliminate or control recognized safety and health hazards. The safety committee members are:

1- Project Superintendent,
2- G10 Constructions Safety Coordinator or his representative,
3- Three representatives of employees with a supervisory position,
4- Two workers selected each month by their peers,
5- Two representatives of subcontractors performing jobs related to safety committee discussion topic.

Members of the safety committee meet on a weekly basis.

Responsibilities

The safety committee will be responsible for assisting management in communicating procedures for evaluating the effectiveness of control measures used to protect employees from safety and health hazards in the workplace.

The safety committee will be responsible for assisting management in reviewing and updating workplace safety rules based on accident investigation findings, any inspection findings, and employee reports of unsafe conditions or work practices; and accepting and addressing anonymous complaints and suggestions from employees.

The safety committee will be responsible for assisting management in updating the workplace safety program by evaluating employee injury and accident records, identifying trends and patterns, and formulating corrective measures to prevent recurrence.

The safety committee will be responsible for assisting management in evaluating employee accident and illness prevention programs, and promoting safety and health awareness and co-worker participation through continuous improvements to the workplace safety program.

Safety committee members will participate in safety training and be responsible for assisting management in monitoring workplace safety education and training to ensure that it is in place, that it is effective, and that it is documented.

The G10 management will provide written responses to safety committee written recommendations.
SAFETY COMMITTEE MINUTES

Date of Committee Meeting: ____________  Time: ____________Minutes
Prepared By: ________________  Location:

Members in Attendance
Name  Name  Name
__________  __________  __________

Previous Action Items:

Review of Accidents Since Previous Meeting:

Recommendations for Prevention:

Recommendations from Anonymous Employees:

Suggestions From Employees:

Recommended Updates To Safety Program:

Recommendations from Accident Investigation Reports:

Safety Training Recommendations:

Comments:
Safety meetings
(www.toolboxtalks.com)

Job Site Safety Meetings

The Superintendent will conduct an on-the-job safety meeting (Toolbox Talks) each Monday. The meeting should last no longer than fifteen minutes. Topics for the meetings should be timely and may include: accidents/injuries/near misses and what needs to be done to prevent accidents from reoccurring; review of safety rules not being followed; proper use and care of personal protective equipment; input from employees on how job safety can be improved; new products/methods being used; safer methods to utilize on the job; and other appropriate topics. The Superintendent will record the meeting as to topics discussed, date and attendance by obtaining employee signatures. The original should be sent to the main office with a copy retained with the job documents. All employees are expected to attend and participate in the weekly job safety meetings. Areas that concern safety on the job should be brought forward during these meetings.

Supervisory Safety Meetings

G10 top management will plan and arrange for meetings to be held once on the first Wednesday of each month. Top management and the superintendent will attend and participate in this meeting to review jobsite accidents, near misses, required training, unsafe conditions/acts noted on safety inspections, etc.
Work Site Inspections
(www.toolboxtalks.com)

The site superintendent will complete an inspection from a safety standpoint at the start of each new job and on Monday morning of on-going jobs. Areas to check would include, but should not be limited to, proper tools on the job site to do the job safely, any unusual hazards, such as stumbling hazards or fall exposure, any overhead objects that could fall, any special personal protective equipment needed or special procedures due to job location, areas-operations known to have contributed to employee accidents in the past, and other items that may be peculiar to the job or location. The results of each internal inspection will be recorded on the Job Site Inspection Checklist.

Job Site Inspection Checklist
(www.oshasafety.com/oshasamples.htm)

Job superintendent must use Job Site Inspection Checklist during the inspections. Checklist of each inspection must be kept in project safety records.
Job Site Inspection Checklist

Inspected By: ________________________________ Date: _______

Mark N/A as appropriate)

1. WORK SITE INFORMATION:

   a. Posting OSHA and other work site warning posters ______
   b. Are Safety Meetings conducted periodically? ______
      When was the last Meeting? ______
   c. First aid equipment properly stocked and accessible? ______
   d. Are work site injury records being kept? ______
   e. Are emergency telephone numbers conspicuously posted? ______
   f. Is the EMERGENCY INFORMATION form posted? ______

Describe Violation - Location - Remedy Taken

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

2. HOUSEKEEPING AND SANITATION:

   a. Are emergency lights fully operational? ______
   b. General neatness of working areas ______
   c. Regular disposal of waste and trash ______
   d. Passageways and walkways clear ______
   e. Waste containers provided and used ______
   f. Sanitary facilities adequate and clean ______
   g. Adequate supply of water ______
   h. Adequate lighting ______
   i. Trash receptacle for drinking cups ______
j. Are handrails and stair treads in good repair?  
k. Is smoking restricted to certain locations?  
l. Are electrical cords and plugs in good condition?  
m. Are electric circuit breakers free of obstructions?

Describe Violation - Location - Remedy Taken

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
Orientation and Training

(www.toolboxtalk.com)

Workplace safety and health orientation begins on the first day of initial employment or job transfer. When a new employee is hired, indoctrination training of the employee will be done by the Superintendent to cover such areas as: company safety rules and procedures, personal protective equipment that is required on the job, what the company expects from the employee, and G10 Safety Program to outline any exposures and how to protect against an exposure potential. The same type of training will be completed at any time that new materials used in the operations offer any new exposure potential.

New Employees

When new employee training is completed, the Superintendent will give the employee a copy of the employee handout on General Safety rules then complete the Safety Program Training Certificate, and send to the office to be retained.

Each employee has access to a copy of this safety manual, through his or her supervisor, for review and future reference, and will be given a personal copy of the safety rules, policies, and procedures pertaining to his or her job. Supervisors will answer employees’ questions to ensure knowledge and understanding of safety rules, policies, and job-specific procedures described in this workplace safety program manual.

All employees will be instructed by their supervisors that compliance with the safety rules described in the workplace safety manual is required.

Job-Specific Training

- Supervisors will initially train employees on how to perform assigned job tasks safely.
- Supervisors will carefully review with each employee the specific safety rules, policies, and procedures that are applicable and that are described in the workplace safety manual.
- Supervisors will give employees verbal instructions and specific directions on how to do the work safely.
- Supervisors will observe employees performing the work. If necessary, the supervisor will provide a demonstration using safe work practices, or remedial instruction to correct training deficiencies before an employee is permitted to do the work without supervision.
- All employees will receive safe operating instructions on seldom-used or new equipment before using the equipment.
- Supervisors will review safe work practices with employees before permitting the performance of new, non-routine, or specialized procedures.
Periodic Retraining of Employees

All employees will be retrained periodically on safety rules, policies and procedures, and when changes are made to the safety program.

Individual employees will be retrained after the occurrence of a work-related injury caused by an unsafe act or work practice, and when a supervisor observes employees displaying unsafe acts, practices, or behaviors.
Drug and Alcohol Free Workplace Policy


All employees must be tested for substance abuse before employment. Subcontractors have to provide documentations to show their employees are free from substance abuse. Random tests will be performed on a monthly basis. Superintendent is responsible to choose employees to be tested.

All employees must not report for duty under the influence of any drug, alcoholic beverage, intoxicant or narcotic or other substance (including legally prescribed drugs and medicines) which will in any way adversely affect their working ability, alertness, coordination, response, or adversely affect the safety of others on the job.

Any person who refuses to submit to a search, screening or testing as described in this policy, or who is found using, possessing or distributing any of the substances, or who is found under the influence of any such substances, is subject to disciplinary action.

All employees requiring a physician's care for an occupational injury are to be tested. Employees subject to testing include all who were in a position to have caused the accident.
Worker & Family Participation

(Group 10 - Stanford Linear Accelerator Center Construction Safety Program August 4, 1997)

Workers should report any equipment or condition considered to be unsafe, as well as what they consider to be unsafe work practices. This type of information should be reported to the supervisors or to the person in charge of the job.

All workers, regardless of their background and experience, must participate in awareness programs.

Awareness Program

1. Informing Workers of Hazards

Workers must be informed of the hazards in the workplace (as identified in the Pre-Work Hazards Analysis) or any other hazards, through meetings, training, or other methods. In addition, the job superintendent is to periodically inspect the job site to identify construction hazards, and communicate these hazards back to workers.

2. Informing Workers of Protective Measures

The superintendent is required to communicate the protective measures that are identified in the Pre-Work Hazard Analysis and any other necessary protective measures to their workers through meetings, training or other methods.

Every six months, the families of the workers with acceptable safety records will join the project managing team in a celebration.
Sub Contractor Compliance

(Stanford Linear Accelerator Center Construction Safety Program August 4, 1997)
(Safety Requirements for Contracts and Subcontracts, Environmental Health and Safety Services, Occupational Safety Division Virginia Tech, http://www.ehss.vt.edu)

The subcontractor bears sole responsibility for the safety of his or her employees. The subcontractor is expected to take all steps necessary to establish, administer, and enforce safety rules that meet the regulatory requirements of the Occupational Safety and Health Administration (OSHA). These regulations include, but are not limited to:

- Title 29 of the Code of Federal Regulations (CFR) Parts 1910, Occupational Safety and Health Administration (OSHA) Standards for General Industry,

All subcontractors with construction work more than 2000$ are responsible for describing and implementing the safety program in keeping with the G10C Safety Program for subcontractor activities and sub-subcontractor activities.

The G10C safety coordinator oversees the construction project to determine that the responsible subcontractor is implementing the requirements of the Pre-Work Hazard Analysis and the Safety and Health Plan.

Pre-Work Hazard Analysis

Prior to starting fieldwork, subcontractors shall complete a Pre-Work Hazard Analysis, as described below:

1.1. Fill out a Pre-Work Hazard Analysis Form (see page 27).
1.2. Submit copies of the completed Pre-Work Hazard Analysis Form to the G10C superintendent. The G10C superintendent shall forward copies of the completed Pre-Work Hazard Analysis Form to the G10C safety coordinator, who shall review the form. The methods that will be used to mitigate the hazards encountered shall be described on this form. If additional details are required beyond what will fit on the form provided, additional documents shall be attached and referenced. The information provided must be job specific, and customized to the work at hand. The person(s) performing Pre-Work Hazard Analysis must be “competent persons,” using the definition of “competent person” as defined in applicable OSHA regulations.
Safety and Health Plan

A written Subcontractor Safety and Health Plan (SSHP) shall be established, implemented and maintained by subcontractors performing work covered in this procedure. This plan is to be submitted to the G10C superintendent, and forwarded to the safety coordinator before work begins. The Safety and Health Plan is not required to be job specific and it may outline the overall safety and health methodologies to be used for more than one job.

Compliance with this document does not relieve subcontractors of any responsibility regarding personnel safety. Subcontractors shall be responsible for any additional safety and health requirements that may apply including contractual requirements, and all applicable federal, state and local laws, regulations, and standards.
Pre-Work Hazards Analysis Form

Subcontractor ___________________________          Date _________________________
Prepared By _________________________
Subcontractor Employee Responsible for Safety Inspections_________________________
Subcontractor Employee Responsible for Safety Program___________________________
Job Description

_______________________________________________________________
Job Number _______________________

Instructions- Subcontractors shall fill out this form for all construction work over $2,000. Check all applicable subparts of the OSHA Construction Standard 29CFR1926 (the subpart is in parenthesis) that apply to the hazards encountered in the work, and check the “Other Hazards” box if there are hazards present that are not covered by the standard. In the space provided, detail the steps that will be taken to mitigate the hazard, and to meet the requirements of the applicable section of OSHA. Reference and attach additional sheets if necessary.

CHECK IF NOT APPLICABLE

General Safety and Health Provisions (always applies) (C) □

______________________________________________________________________________________

______________________________________________________________________________________

______________________________________________________________________________________

Occupational Health and Environmental Controls (D) □

______________________________________________________________________________________

______________________________________________________________________________________

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Personal Protective and Life Saving Equipment (E) □

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Fire Protection and Prevention (F) □

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Signs, Signals, and Barricades (G) □

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<table>
<thead>
<tr>
<th>Topic</th>
<th>Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials Handling, Storage, Use, and Disposal (H)</td>
<td></td>
</tr>
<tr>
<td>Tools, Hand and Power (I)</td>
<td></td>
</tr>
<tr>
<td>Welding and Cutting (J)</td>
<td></td>
</tr>
<tr>
<td>Electrical (K)</td>
<td></td>
</tr>
<tr>
<td>Scaffolding (L)</td>
<td></td>
</tr>
<tr>
<td>Fall Protection (M)</td>
<td></td>
</tr>
<tr>
<td>Cranes, Derricks, Hoists, Elevators, Conveyors (N)</td>
<td></td>
</tr>
<tr>
<td>Motor Vehicles, Mechanized Equipment, and Marine Operations (O)</td>
<td></td>
</tr>
</tbody>
</table>
Excavations (P) □

Concrete and Masonry Construction (Q) □

Steel Erection (R) □

Demolition (T) □

Blasting and Use of Explosives (U) □

Power Transmission and Distribution (V) □

Rollover Protective Structures Overhead Protection (W) □

Stairways and Ladders (X) □

Toxic and Hazardous Substances (Z)
Other Hazards

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Accident Reporting & Investigation
(http://www.toolboxtopics.com)

An employee should report any accident or injury, regardless of how minor, to his/her supervisor.

All inquiries concerning an incident/accident/injury/property damage should be referred to the Superintendent. The employee should make no comments, provide no details, or express any opinion as to the cause of the incident, who was at fault, responsibility for, or any intent of the company regarding the incident.

The Superintendent will investigate any personal injury accident, property damage claim or vehicle accident associated with the job and will complete an Accident Investigation Report. The purpose of this investigation is to assist in preventing this type of mishap in the future. The employee will cooperate fully with the Superintendent in this investigation. The safety coordinator is responsible for seeing that the accident investigation reports are being filled out completely, and that the recommendations are being addressed. Superintendents will investigate all accidents, injuries, and occupational diseases using the following investigation procedures:

- Implement temporary control measures to prevent any further injuries to employees.
- Review the equipment, operations, and processes to gain an understanding of the accident situation.
- Identify and interview each witness and any other person who might provide clues to the accident's causes.
- Investigate causal conditions and unsafe acts; make conclusions based on existing facts.
- Complete the accident investigation report.
- Provide recommendations for corrective actions.
- Indicate the need for additional or remedial safety training.

Accident investigation reports must be submitted to the safety coordinator within 24 hours of the accident. The completed Accident Investigation Reports will be reviewed during the monthly Supervisory Safety Meetings.
ACCIDENT INVESTIGATION REPORT

REPORT #

G10 Constructions Inc.
3727 SW 20th Ave.
Gainesville, Florida 32607

1. Name of injured: __________________________ S.S. #: __________________________

2. Sex [ ] M [ ] F Age: ______ Date of accident: ______

3. Time of accident: _____ a.m. _____ p.m. Day of accident: ______

4. Employee's job title:

5. Length of experience on job: (years) (months)

6. Address of location where the accident occurred:

7. Nature of injury, Injury type, and Part of the body affected:

8. Describe the accident and how it occurred:_____________________________________

9. Cause of the accident:

10. Was personal protective equipment required? [ ] yes [ ] no Was it provided? [ ] yes [ ] no
    Was it being used? [ ] yes [ ] no If "no", explain.

    Was it being used as trained by superintendent or designated trainer? [ ] yes [ ] no If "no", explain.

11. Witness (es):

12. Safety training provided to the injured? [ ] yes [ ] no If "no", explain.

13. Interim corrective actions taken to prevent recurrence:

14. Permanent corrective action recommended to prevent recurrence:

15. Date of report
    Prepared by:
    Superintendent (Signature) Date: ______

16. Status and follow-up action taken by safety coordinator:

    Safety Coordinator (Signature) Date: ______
INSTRUCTIONS FOR COMPLETING THE ACCIDENT INVESTIGATION REPORT

An accident investigation is not designed to find fault or place blame but is an analysis of the accident to determine causes that can be controlled or eliminated.

(Items 1-6) Identification: This section is self-explanatory.

(Item 7) Nature of Injury: Describe the injury, e.g., strain, sprain, cut, burn, fracture.

- Injury Type: First aid-injury resulted in minor injury/treated on premises; Medical - injury treated off premises by physician; Lost time-injured missed more than one day of work; No Injury - no injury, near-miss type of incident.

- Part of the Body: Part of the body directly affected, e.g., foot, arm, hand, head.

(Item 8) Describe the accident: Describe the accident, including exactly what happened, and where and how it happened. Describe the equipment or materials involved.

(Item 9) Cause of the accident: Describe all conditions or acts which contributed to the accident, i.e.,

- Unsafe conditions - spills, grease on the floor, poor housekeeping or other physical conditions.

- Unsafe acts - unsafe work practices such as failure to warn, failure to use required personal protective equipment.

(Item 10) Personal protective equipment: Self-explanatory

(Item 11) Witness(es): List name(s), address(es), and phone number(s).

(Item 12) Safety training provided: Was any safety training provided to the injured related to the work activity being performed?

(Item 13) Interim corrective action: Measures taken by superintendent to prevent recurrence of incident, i.e., barricading accident area, posting warning signs, shutting down operations.

(Item 14): Self-explanatory

(Item 15): Self-explanatory

(Item 16) Follow-up: Once the investigation is complete, the safety coordinator shall review and follow-up the investigation to ensure that corrective actions recommended by the safety committee and approved by the employer are taken, and control measures have been implemented.
Recordkeeping Procedures

The safety coordinator will control and maintain all employee accident and injury records. Records are maintained for a minimum of ten (10) years and include:

- Accident Investigation Reports;
- Workers' Compensation Notice of Injury Reports; and
- Log & Summary of Occupational Injuries and Illnesses OSHA Form 300
Emergency Plans

*(Group 10)*

Superintendent must prepare plans to encounter emergency situations on the project site. G10 Constructions Safety Coordinator must approve emergency plans. Emergency situations covered by these plans include but not limited to: Fire Emergency, Floods, Hurricanes, Toxic gas releases, Explosions, and Workplace violence resulting in bodily harm and trauma.
Recognitions and Awards

(=Group 10 - www.agc.org/safety_info/guide_content14.asp=)

Workers and foremen with distinguished safety performance are eligible to receive safety awards.

Safety committee is responsible to determine the eligible employees. The following guidelines will determine the eligibility:

1. The employee must work the minimum hours without a reportable injury (defined as one which requires off-site medical attention.)

2. If the employee suffers a reportable injury, the eligibility hours start again at zero.

3. Employees returning to work after a layoff of less than six months start with their pre-layoff hours. Employees off for six months or more start at zero.

4. When an employee has reached a prescribed level of hours without injury, an award will be made.

5. Once an employee has reached 2,000 hours, the hours are zeroed out and the accumulation starts over.

Award levels are:

<table>
<thead>
<tr>
<th>Number of Injury Free Hours</th>
<th>Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>$20 US Saving Bonds</td>
</tr>
<tr>
<td>1000</td>
<td>$60 US Saving Bonds</td>
</tr>
<tr>
<td>2000</td>
<td>$200 US Saving Bonds</td>
</tr>
</tbody>
</table>
Feedback and Evaluation
(Group 10)

The safety committee is responsible for reviewing and evaluating the program implementation and progress.

Modifications in Program
(Group 10)

The safety committee recommends modifications in the safety program to the G10 Constructions Safety Coordinator. These recommendations would be discussed in the Supervisory Safety Meetings. Should the Supervisory Safety Meeting approve any recommendation, the safety program would be modified.
IMPORTANT NOTE

The provisions of this chapter are minimum requirements of safe work practices; therefore any activity at the project site must comply with the requirements of this chapter.
Personal Protective Equipments (PPE)

Signs of required PPE shall be well displayed on site. Personnel, management and all site visitors shall properly wear appropriate PPE at all times on site.

HEAD PROTECTION
(www.workcover.com)

Potential head hazards on site include: impact from falling objects, electric shocks, splashes, spills and drips.

Hardhats Must Be:
- Worn at all times on site. Remember, it is our symbol!
- Worn with wide brim to protect from UV rays
- Worn when hard hat signs are displayed
- Do not drill holes in or paint your hard hat.
- Do not wear hard hats that are dented or cracked.

Should be replaced when damaged and must be kept in clean condition. Be aware that substances such as petrol, cleaning agents, paint and adhesives can damage safety helmets.

HEARING PROTECTION

Losing your hearing is a gradual process, and is less noticeable than other types of workplace injuries. It is, however, a permanent handicap for those who are affected.

Exposure Levels
Noise levels are measured in decibels (dB). OSHA has rules about how long you may be exposed to a noise level, before you must wear hearing protection:

<table>
<thead>
<tr>
<th>Allowed to be unprotected</th>
<th>At this noise level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 8 hours</td>
<td>90 decibels</td>
</tr>
<tr>
<td>Up to 4 hours</td>
<td>95 decibels</td>
</tr>
<tr>
<td>Up to 1 hour</td>
<td>105 decibels</td>
</tr>
</tbody>
</table>

When the noise is 95 decibels, OSHA says you may work with no hearing protection for only 4 hours. Even so, this noise level is not safe; 1 in 5 people exposed regularly to 90 decibels (as OSHA allows) will lose some hearing. Short, very loud (impact) noises can do the most harm.

If you have to raise your voice for someone 3 feet away to hear you, the site may be too noisy and you need hearing protection. Most construction noise comes from equipment. These decibel levels have been measured:
<table>
<thead>
<tr>
<th>Equipment</th>
<th>decibels</th>
<th>Equipment</th>
<th>decibels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumatic Chip Hammer</td>
<td>103-113</td>
<td>Earth Tamper</td>
<td>90-96</td>
</tr>
<tr>
<td>Jackhammer</td>
<td>102-111</td>
<td>Crane</td>
<td>90-96</td>
</tr>
<tr>
<td>Concrete Joint Cutter</td>
<td>99-102</td>
<td>Hammer</td>
<td>87-95</td>
</tr>
<tr>
<td>Skilsaw</td>
<td>88-102</td>
<td>Gradeall</td>
<td>87-94</td>
</tr>
<tr>
<td>Stud welder</td>
<td>101</td>
<td>Front-end loader</td>
<td>86-94</td>
</tr>
<tr>
<td>Bulldozer</td>
<td>93-96</td>
<td>Backhoe</td>
<td>84-93</td>
</tr>
</tbody>
</table>

Many workers don’t want to use hearing protection. They are afraid they won’t hear warning signals, like backup alarms. But remember before you are aware, neither will you hear warning signals at all. Some new protectors can let in voices and block other noises.

- Hearing protection must be worn when exposed to noise, hammer drills, explosive power tools, breakers, high speed cutting machines and other equipments with a high noise level.
- Hearing protection, muffls, earplugs etc. must be adequate to reduce noise exposure. Must be worn properly, else they are ineffective.
- Hearing protection must be maintained in a clean and hygienic condition
- Don’t share hearing protection, to avoid infections.
- Take regular breaks from noisy tasks.
- Report any hearing problems, ringing in the ears etc as soon as possible.
- Hearing protection must be worn where hearing protective equipment signs are displayed.

**EYE AND FACE PROTECTION**

(www.workcover.com)

- **Must** be worn where there is a possibility of eye injury, flying particles, dust, lasers, chemicals, high-pressure water etc.
- **Must** be worn where eye protection signs are displayed.
- **Must** be worn to protect against UV radiation.
- **Must** be maintained and cleaned regularly.
- **Must** be worn while operating grinders, drill presses, saws, or other similar machines.
- Wear the face shield over your goggles or safety glasses during open furnace, hot dipping, metal plating, or gas cutting operations.
- Wear the chemical goggles when using, applying, or handling chemical liquids or powders from containers labeled "Caustic" or "Corrosive".
- Do not continue to work if your safety glasses become fogged. Stop work and clean the glasses until the lenses are clear and defogged.
- Wear a welding helmet or welding goggles during welding operations.
- Scratched or damaged eye protection must be replaced.
- Where there is a possibility of eye protection falling off, a head strap or lanyard must be worn.

**RESPIRATORY PROTECTION**
(www.workcover.com)

- **Must** be worn where there are toxic dust, gases, vapors, welding fumes etc.
- Respirator cartridges and canisters must be checked for life limit.
- Breathing apparatus must be worn where there is a shortage of oxygen or atmospheric contaminants.
- Damaged respirators, dust masks or 1/2-face mask respirators must be replaced as soon as possible.
- **Do not** share respirators, dust masks etc, to avoid infections and disease.
- **Must** be worn where respirator signs are displayed.
- **Do not** perform operations requiring respirators, unless you have been approved, fitted and trained for the use of respirators in the company's respiratory protection program.
- Inspect respirators for cracked or worn parts before and after each use and after cleaning.
- **Do not** work in an area that requires the use of respiratory equipment if you fail to obtain a tight seal between the respirator and your face.
- **Do not** wear a respirator if facial hair prevents a tight seal between the respirator and your face.
- Clean and sanitize respiratory equipment according to the manufactures recommendations after each use.
- Store respiratory equipment in a clean and sanitary location.

**FOOT PROTECTION**
(www.workcover.com)

- Foot protection **must** be worn where there is a possibility of foot or toe injuries.
- **Must** be worn where signs are displayed and there is a possibility of foot injuries.
- **Must** be worn in accordance with any Material Safety Data Sheet.
- Safety footwear **must** be kept in good repair.
- Worn or damaged footwear **must** be replaced.
- **Must** be appropriate footwear for the hazard, e.g. wet conditions, falling objects, cuts etc.
- **Don't** allow footwear soles to become covered in mud, grease etc.

**SAFETY HARNESS**
(www.workcover.com)

- **Must** be worn when working in confined spaces.
- **Must** be worn when working at heights or depths in excess of 6 feet.
- **Must** be checked before use for deterioration or damage.
- Any damaged or worn harness **must** be replaced or repaired by the manufacturer.
- **Must** be worn when working from elevated work platforms.
- Cleaning, maintenance and storage **must** be in accordance with the manufacturer’s recommendations.
- **Must** be worn when working from elevated work platforms.
- **Must** be worn when Personal Protective Equipment signs are displayed.

**HAND PROTECTION**
(www.workcover.com)

- Gloves **must** be worn to protect against abrasions, hot/cold surfaces, electric shock, infections, disease, contamination and vibration.
- **Must** be worn when handling hazardous substances in accordance with the Material Safety Data Sheets.
- Wear dielectric gloves when working on energized electric circuits.
- Damaged or worn gloves **must** be replaced as soon as possible.
- Rings **must not** be worn, so as to reduce electrocution and finger injury.
- **Don't** wear gloves when operating equipment where gloves may be caught.
- Hand protection **must** be worn where signs are displayed.

**HIGH VISIBILITY VESTS**
(www.workcover.com)

- Must be worn by all signal persons.
- Must be maintained in a good and clean condition.
- Damaged or faded vests must be replaced as soon as possible.
- Retro-reflective vests must be worn during hours of darkness or at times of poor visibility.
- Vests must be worn over clothing and not hidden by coats, jumpers etc.
- Wear vests that are comfortable, the correct size and fit for unrestricted movement.
Signs, Signals and Barricades
(www.osha-slc.gov/doc/outreachtraining/htmlfiles/subpartg.html)

**Danger signs**

Danger signs shall be used only where an immediate hazard exists. Danger signs shall have red as the predominating color for the upper panel; black outline on the borders; and a white lower panel for additional sign wording.

**Caution signs**

Caution signs shall be used only to warn against potential hazards or to caution against unsafe practices. Caution signs shall have yellow as the predominating color; black upper panel and borders; yellow lettering of "caution" on the black panel; and the lower yellow panel for additional sign wording. Black lettering shall be used for additional wording. Standard color of the background shall be yellow; and the panel, black with yellow letters. Any letters used against the yellow background shall be black.

**Exit signs**

Exit signs, when required, shall be lettered in legible red letters, not less than 6 inches high, on a white field and the principal stroke of the letters shall be at least three-fourths inch in width.

**Safety Instruction Signs**

Safety instruction signs, when used, shall be white with green upper panel with white letters to convey the principal message. Any additional wording on the sign shall be black letters on the white background.

**Directional Signs**

Directional signs, other than automotive traffic signs specified in the paragraph below, shall be white with a black panel and a white directional symbol. Any additional wording on the sign shall be black letters on the white background.

**Traffic Signs**

Construction areas shall be posted with legible traffic signs at points of hazard.
**Accident Prevention Tags**

Accident prevention tags shall be used as a temporary means of warning employees of an existing hazard, such as defective tools, equipment, etc. They shall not be used in place of, or as a substitute for, accident prevention signs.

**Flagmen**

When operations are such that signs, signals, and barricades do not provide the necessary protection on or adjacent to a highway or street, flagmen or other appropriate traffic controls shall be provided. Hand signaling by flagmen shall be by use of red flags at least 18 inches square or sign paddles, and in periods of darkness, red lights. Flagmen shall be provided with and shall wear a red or orange warning garment while flagging. Warning garments worn at night shall be of reflective material.

**Barricades and Temporary fencing**

Standard barricades would be set up along the boundaries of the project.
Housekeeping and General Cleanliness


At G10 Constructions, Good Housekeeping Is Everyone’s Responsibility. Clean as you go!

- All work areas must be clear of tripping hazards, remove all tools, pallets, etc. when not in use.
- Remove all nails from timber and stack in appropriate areas.
- Break off hardened nails with correct tools, not by hitting with a hammer.
- Clean up spills, oils, chemicals etc as soon as possible. Warning signs or barricades must be displayed if necessary.
- Use absorbent material to clean up, in accordance with Material Safety Data Sheets.
- Return tools to their storage places after using them.
- Do not use gasoline for cleaning purposes.
- Use caution signs or cones to barricade slippery areas such as freshly mopped floors.
- Walkways must be free of obstruction and sharp objects.
- People or equipment must be prevented from falling into openings, trenches and from scaffolding, etc.
- Scrap and waste material must be removed as soon as possible from work areas.
- There must be adequate lighting for night work or when there is poor light.
- There must be clear access to emergency equipment, fire extinguishers, fire hoses, emergency exits, switchboards, and amenities.
- Warning lights must clearly identify worksite access and egress.
- A minimum clear egress width of 28 inches, or the equivalent clear width of the exit door for the space, must be maintained at all times.
- Materials must not be stacked within 18 inches of fire sprinkler heads or halon system discharge nozzles.
- All stored materials must be stacked in stable piles. Materials such as pipe that could roll must be chocked or braced to prevent rolling.
- Keep emergency exits clear and closed at all times.
Fire Protection and Emergency Evacuation

(www.ehss.vt.edu)

- Pre-planning for fire emergencies is critical to protecting workers during construction and demolition work.
- The pre-planning must assure that fire-fighting equipment is available without delay, and designed to effectively meet all fire hazards as they occur.
- Fire fighting equipment must be conspicuously located and readily accessible at all times, must be periodically inspected, and be maintained in operating condition.
- The installation of automatic sprinkler protection must closely follow the construction and be placed in service, as soon as applicable laws permit, following completion of each story.
- A fire extinguisher, rated not less than 2A, must be provided for each 3,000 square feet of the protected building area, or major fraction thereof. Travel distance from any point of the protected area to the nearest fire extinguisher must not exceed 100 feet.
- All employees in the construction area must be informed of the location of these extinguishers and trained to use them properly. This training is to be done prior to site work.
- One or more fire extinguishers, rated not less than 2A, must be provided on each floor. In multistory buildings, at least one fire extinguisher must be located adjacent to the stairway(s).
- The project supervisor is responsible for establishing an alarm system at the worksite so that employees and the local fire department can be alerted if an emergency occurs.
- All employees in the project area must know how to activate the alarm system and the actions to take in the event of a building emergency.

Responding to a Fire Emergency

If a fire emergency occurs, all persons at job sites have a responsibility to take immediate and appropriate action to take care of themselves. For those places that do not have a fire alarm, you may notify other occupants by shouting “fire” as you are exit the building or site. Do not jeopardize your own safety to do this. The Emergency Response Plan will be activated and all personnel must evacuate the site.

There is no employer expectation for employees to attempt to extinguish a fire or otherwise stay in their workplace for any reason upon being notified of a fire emergency. Specific employee may be required, however, to maintain critical equipment or services or to arrange for the orderly shutdown of hazardous processes; such a requirement should be written into the employee’s job description.
IF THERE’S A FIRE

SOUND THE ALARM

If you discover or suspect a fire, sound the fire alarm.

If there is no alarm, notify other occupants shouting “Fire” as you leave.

LEAVE THE SITE

Try to rescue others ONLY if you can do so safely. Move away from the hazardous area at least 50 feet away, out of the way of the fire department. Don’t go back into the hazardous area until the fire department says it is safe to do so.

CALL THE FIRE/POLICE DEPARTMENT – 911

Dial 911 or use an “emergency” phone. Give as much information as possible to the 911 operator.
First Aid
(www.toolboxtalks.com)

Emergency Phone Numbers

<table>
<thead>
<tr>
<th>Service</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Coordinator</td>
<td>352-273-0000</td>
</tr>
<tr>
<td>First Aid</td>
<td>352-273-9999</td>
</tr>
<tr>
<td>Ambulance</td>
<td>911</td>
</tr>
<tr>
<td>Medical Clinic</td>
<td>911</td>
</tr>
<tr>
<td>Clinic Address</td>
<td>Shands at UF</td>
</tr>
<tr>
<td></td>
<td>1600 SW Archer Road - Gainesville</td>
</tr>
<tr>
<td>Poison Control</td>
<td>352-395-0333</td>
</tr>
<tr>
<td>Fire Department</td>
<td>911</td>
</tr>
<tr>
<td>Police</td>
<td>911</td>
</tr>
</tbody>
</table>

Minor First Aid Treatment
First aid kits are kept in the front office and in the employee lounge. If you sustain an injury or are involved in an accident requiring minor first aid treatment:

- Inform your supervisor.
- Administer first aid treatment to the injury or wound.
- If a first aid kit is used, indicate usage on the accident investigation report.
- Access to a first aid kit is not intended to be a substitute for medical attention.
- Provide details for the completion of the accident investigation report.

Non-Emergency Medical Treatment
For non-emergency work-related injuries requiring professional medical assistance, management must first authorize treatment. If you sustain an injury requiring treatment other than first aid:

- Inform your supervisor.
- Proceed to the posted medical facility. Your supervisor will assist with transportation, if necessary.
- Provide details for the completion of the accident investigation report.

Emergency Medical Treatment
If you sustain a severe injury requiring emergency treatment:

- Call for help and seek assistance from a co-worker.
- Use the emergency telephone numbers and instructions posted next to the telephone in your work area to request assistance and transportation to the local hospital emergency room.
- Provide details for the completion of the accident investigation report.
First Aid Training

Each employee will receive training and instructions from his or her supervisor on our first aid procedures.

FIRST AID INSTRUCTIONS
(www.toolboxtalks.com)

In all cases requiring emergency medical treatment, immediately call, or have a co-worker call, to request emergency medical assistance.

Wounds:

Minor: Cuts, lacerations, abrasions, or punctures
  - Wash the wound using soap and water; rinse it well.
  - Cover the wound using clean dressing.

Major: Large, deep and bleeding
  - Stop the bleeding by pressing directly on the wound, using a bandage or cloth.
  - Keep pressure on the wound until medical help arrives.

Broken Bones:

- Do not move the victim unless it is absolutely necessary.
- If the victim must be moved, "splint" the injured area. Use a board, cardboard, or rolled newspaper as a splint.

Burns:

Thermal (Heat):
  - Rinse the burned area, without scrubbing it, and immerse it in cold water; do not use ice water.
  - Blot dry the area and cover it using sterile gauze or a clean cloth.

Chemical:
  - Flush the exposed area with cool water immediately for 15 to 20 minutes.

Eye Injury:

Small particles:
- Do not rub your eyes.
- Use the corner of a soft clean cloth to draw particles out, or hold the eyelids open and flush the eyes continuously with clean water.

Large or stuck particles:
- If a particle is stuck in the eye, do not attempt to remove it.
- Cover both eyes with bandage.

Chemical:
- Immediately flush the eyes and under the eyelids, with water, for 30 minutes.

**Neck And Spine Injury:**

- If the victim appears to have injured his or her neck or spine, or is unable to move his or her arm or leg, do not attempt to move the victim unless it is absolutely necessary.

**Heat Exhaustion:**

- Loosen the victim's tight clothing.
- Give the victim "sips" of cool water.
- Make the victim lie down in a cooler place with the feet raised.
Back Injury Avoidance
(www.webworldinc.com/wes-con/back.htm)

While lifting:

- Don't bend over an object you are lifting. Bend your knees, squatting in front of the object to reach it.
- Lift the object slowly and carefully, using your leg and arm muscles to lift, not pulling with your back.
- Keep your head up and look straight ahead while making the lift.
- While lifting, keep the object as close to your body as possible.
- Keep abdominal muscles tight while making the lift.
- Use the same techniques when you put the object down.
- If the object is too big or too heavy to lift using these techniques, use mechanical assistance or get someone else to help.

When reaching for objects:

- Do not reach for an object unless you're sure you're strong enough to lift it.
- Use a step ladder to reach objects above shoulder height.
- Avoid awkward stretches while reaching. These stress your back and could cause you to lose your balance.
- Don't depend on structures to support you (e.g., a shelf support, a storage rack, etc.). These could easily give way if you pull or tug on them.

If you do use a back belt, be aware that you may experience a false sense of security by wearing the belt. You may be tempted to lift loads you wouldn't otherwise lift. Remember, it's your back doing the work not the belt! Always be alert for situations that could cause a back injury. Be kind to your back. Don't take unnecessary chances.
Fall Protection

(www.ehss.vt.edu)

Personnel who perform work on surfaces with an unprotected side or edge which is 4 feet or more above a lower level, or 6 feet or more on scaffolds, must be protected from falling by the use of guardrails, safety nets, personal fall arrest systems, or other approved means. The following requirements apply:

All workers that are exposed to potential fall hazards must be trained in the proper use of fall protection equipment before using any fall protection products. Workers must be able to identify potential fall hazards, determine which equipment to use in specific work situations, and demonstrate proper anchoring procedures.

Supervisors that coordinate work in areas where employees may be exposed to potential fall hazards must be trained and have the ability to determine the best means to protect employees from the hazard. Methods of protection include the installation of guardrails, use of restraint and positioning systems, warning line systems, or controlled access zones, and development of a fall protection plan.

Fall protection must be provided in any areas where fall hazards exist including, but not limited to:

- **Hoist areas** - Employees in a hoist area must be protected from falling 4 feet or more to lower levels by guardrail systems or personal fall arrest systems. If guardrail systems, [or chain, gate, or guardrail] are removed to facilitate the hoisting, and an employee must lean through the access opening or out over the edge of the access opening, that employee must be protected from fall hazards by a personal fall arrest system.

- **Holes** - Employees must be protected from falling through holes (including skylights) more than 4 feet above lower levels by personal fall arrest systems, covers, or guardrail systems erected around such holes.

- **Formwork and reinforcing steel** - Each employee on the face of formwork or reinforcing steel must be protected from falling 4 feet or more to lower levels by personal fall arrest systems, safety net systems, or positioning device systems.

- **Wells/Excavations** - Each employee at the edge of a well, pit, shaft, and similar excavation 4 feet or more in depth must be protected from falling by guardrail systems, fences, barricades, or covers.

- **Roofs** - Employees working on flat roofs or sloped roofs with unprotected sides or edges 4 or more feet above lower levels must be protected using guardrail systems, safety nets,
warning line systems, safety monitoring system, restraint system, or personal fall arrest systems.

*Ladders* - Personnel working from fixed or movable ladders may need to utilize a personal fall arrest system. See the section on Ladders for more information.

*Scaffolds* - Personnel erecting scaffolding must be protected from fall hazards when feasible. Personnel working from scaffolds must be protected from fall hazards by using guardrail systems or personal fall arrest systems. See the section on Scaffolding for more information.

**Other Considerations**

Restraint devices must be used when working from bucket trucks, cherry pickers, manlifts and similar devices where an equipment malfunction could cause an employee to fall.

When an employee is exposed to falling objects, they must wear a hardhat. In addition, one or more of the following must be implemented to minimize the risk of falling objects:

- Toeboards, screens, or guardrail systems must be erected to prevent objects from falling from higher levels; or,
- Erect a canopy structure and keep potential fall objects away from the edge of the higher level so that those objects would not go over the edge if they were accidentally displaced; or,
- Barricade the area into which objects could fall, prohibit employees from entering the barricaded area, and keep objects that may fall far enough away from the edge of a higher level so that those objects would not go over the edge if they were accidentally displaced.

Personal fall arrest systems must attach to an approved anchor point. A qualified person must make the determination of whether an anchor point is acceptable.

Fall protective devices, including full body harnesses, lanyards, connecting devices and related equipment must be approved for the use.
Ladders

(Environmental Health and Safety Services, Occupational Safety Division, Virginia Tech, http://www.ehss.vt.edu)

Ladders are indispensable tools. We take them for granted in our day-to-day work, but they're not always easy to use and can cause serious injuries unless used properly.

Assure that employees are trained and can inspect, select and use ladders properly. Assure that ladders are inspected before use. Portable and fixed ladders with structural defects such as broken or missing rungs, cleats or steps, broken or split rails, or corroded components must be withdrawn from service by immediately tagging "DO NOT USE" or marking in a manner that identifies them as defective. Damaged fixed ladders should be blocked (such as with plywood attachments that spans several rungs). Repairs must restore the ladder to its original design criteria.

Portable Ladder Use

Match tasks to the appropriate ladder.
Protect the base of the ladder if vehicles, pedestrians, or an unlocked, unguarded door could strike it.
Face the ladder at all times, and maintain three points of contact.
Raise and lower heavy, awkward loads or tools using a hand line or hoist-don't attempt to carry them up the ladder.
Portable ladders must be placed on a substantial base and have clear access at top and bottom. Do not use wood planks, stones or other unstable materials to level the base of a ladder.
Place the base of extension ladders one foot out for every four foot of height to the wall or top support.
Portable ladders used for access to an upper landing surface must extend a minimum of 3 feet above the landing surface, or where not practical, be provided with grab rails and be secured against movement while in use.
Ladders must have nonconductive side rails if they are used where the worker or the ladder could contact energized electrical conductors or equipment. Conductive ladders must be marked "WARNING - Do Not Use Around Energized Electrical Equipment."
Keep the load on the ladder below its rated capacity.
Don't paint ladders-this will conceal defects.
Don't reach out over the side rails, lean, or turn excessively on a ladder. Reposition the ladder if you can't reach the work.
Don't stand or sit on the top two steps of a stepladder.
Don't use a non-self-supporting ladder without first opening it up and securing the metal spreader or locking device.
Store ladders in well ventilated areas away from moisture or excessive heat. Store straight or extension ladders in flat racks or wall brackets, making sure they don't sag. Store stepladders vertically in a closed position, and secure them so they won't tip over.
Read and follow the manufacturer's instructions.
Job-made ladders must be constructed for their intended use. Cleats must be uniformly spaced not less than 10 inches apart, nor more than 14 inches apart, along the handrails.
Ladders must not be used on slippery surfaces unless secured or provided with slip-resistant feet to prevent accidental movement. Slip-resistant feet must not be used as a substitute for the care in placing, lashing, or holding a ladder upon a slippery surface.
Fall protection may be required on fixed ladders and some portable ladders. See the section on Fall Protection.
Scaffolding

(Prior to Erection-All Scaffold Assemblies)

Jobsite should be inspected to determine ground conditions or strength of supporting structure, and for proximity of electric power lines, overhead obstructions, and wind conditions, the need for overhead protection or weather protection coverings. These conditions must be evaluated and adequately provided for.

Frame spacing and mudsill size can only be determined after the total loads to be imposed on the scaffold and the strength of the supporting soil or structure are calculated and considered. A qualified person must do this analysis. Load carrying information on components are available from the manufacturer.

All equipment must be inspected to see that it is in good condition and is serviceable. Damaged or deteriorated equipment should not be used.

Wood plank should be inspected to see that it is graded for scaffold use, is sound and in good condition, straight grained, free from saw cuts, splits and holes. (Not all species and grades of lumber can be used as scaffold plank. Wood planks used for scaffolding must be specifically graded for scaffold use by an approved grading agency).

The scaffold assembly must be designed to comply with local, State and Federal safety requirements.

Erection of Fixed Scaffold

Scaffold must be erected, moved, or disassembled only under the supervision of qualified person or safety coordinator. Hard hats must be worn by all persons erecting, moving, dismantling or using scaffolding.

Mudsills must be adequate size to distribute the loads on the scaffolding to the soil or supporting structure. Special care is needed when scaffolding is to be erected on fill or other soft ground or on frozen ground. Sills should be level and in full contact with the supporting surface.

Base plates or screw jacks with base plates must be in firm contact with both the sills and the legs of the scaffolding. Compensate for uneven ground with screw jacks with base plates. Unstable objects such as blocks, loose bricks, etc. should not be used.

Plumb and level scaffold until connections can be made with ease. Do not force members to fit. Be sure scaffold stays level and plumb as erection progresses.
Ties, guys, bracing and/or outriggers may be needed to assure a safe stable scaffold assembly. The height of the scaffold in relation to the minimum base width, wind loads, the use of brackets or cantilevered platforms and imposed scaffold loads determines the need for stability bracing.

Ties should be installed as the erection progresses and not removed until the scaffold is dismantled to that height.

Side brackets, cantilevered platforms, pulleys or hoist arms and wind conditions introduce overturning and uplift forces that must be considered and compensated for. These assemblies may require additional bracing, tying or guy ing.

Circular scaffolds erected completely around or within a structure may be restrained from tipping by the use of "stand off" bracing members.

Each leg of a freestanding tower must be guyed at the intervals outlined above or otherwise restrained to prevent tipping or overturning.

Work platforms must be fully planked either with scaffold graded solid sawn or laminated plank, in good sound condition, or with fabricated platforms in good condition.

No more than one person should stand on an individual plank at one time.

Planks and/or platforms should be secured to scaffolding when necessary to prevent uplift of displacement because of high winds or other job conditions.

Guardrails must be used on all open sides and ends of scaffold platforms. Both top and mid rails are required. Local codes specify the minimum heights where guardrails are required, however, use at lower heights if falls can cause injury.

Toe boards are required whenever people are required to work or pass under or around the scaffold platform.

Access must be provided to all work platforms. If it is not available from the structure, access ladders, frames with built-in ladders, or stairways must be provided. When frames with built-in ladders are used, cleated plank or fabricated plank must be used at platform levels to minimize or eliminate platform overhang. Access ladders must extend at least three (3) feet above platforms.

Side and end brackets are designed to support people only. Materials should never be placed on cantilevered platforms unless the assembly has been designed to support material loads by a qualified person. (These types of platforms cause overturning and uplift forces which must be compensated for. All frames should be fastened together to prevent uplift an overturning moment compensated for with counterweights or adequate ties).
Putlogs must never be used for the storage of materials. They are designed for personnel use only. Special care should be taken when putlogs are used.

Putlogs should overhang the support points by at least 6 inches. Use putlogs hangers with bolts fastened to support putlogs on frames.

Putlog spans of greater than 12 feet require knee bracing and lateral support.

Putlogs used as side or end brackets need special bracing.

Bridging between towers should not be done with plank or stages unless the assembly is designed by a qualified person and overturning moments have been compensated for.

Scaffold should not be used as material hoist towers or for mounting derricks unless a qualified person designs the assembly.

Check the erected assembly before use. A qualified person should thoroughly inspect the completed assembly to see that it complies with all safety codes, that nuts and bolts are tightened, that it is level and plumb, that work platforms are fully planked, that guardrails are in place and safe access is provided.
Lifelines, Lanyards, and safety Harnesses


- Lifelines, safety belts, and lanyards shall be used only for employee safeguarding. Any lifeline, safety belt, or lanyard actually subjected to in-service loading, as distinguished from static load testing, shall be immediately removed from service and shall not be used again for employee safeguarding.
- Lifelines shall be secured above the point of operation to an anchorage or structural member capable of supporting a minimum dead weight of 5,400 pounds.
- Lifelines used in areas where the lifeline may be subjected to cutting or abrasion, shall be a minimum of 7/8-inch wire core manila rope. For all other lifeline applications, a minimum of 3/4-inch manila or equivalent, with a minimum breaking strength of 5,400 pounds, shall be used.
- Safety belt lanyard shall be a minimum of 1/2-inch nylon, or equivalent, with a maximum length to provide for a fall of no greater than 6 feet. The rope shall have a nominal breaking strength of 5,400 pounds.
- All safety belt and lanyard hardware shall be drop forged or pressed steel, cadmium plated in accordance with type 1, Class B plating specified in Federal Specification QQ-P-416. Surface shall be smooth and free of sharp edges.
- All safety belt and lanyard hardware, except rivets, shall be capable of withstanding a tensile loading of 4,000 pounds without cracking, breaking, or taking a permanent deformation.
Cranes and Hoists
(www.camd.lsu.edu/msds/TrainingTest/crane/slide2.htm)

General Instructions:

- Do not lift people and never ride the hoisting load.
- Do not lift load over people. No one shall be under the hoisting load.
- Make sure the sling is well balanced. Avoid tip loading, and loading on hook latch.
- Never lift the load over the rated capacity.
- Do not operate with kinked, twisted or damaged chain.
- Avoid side pull or end pull, and quick reversal operations.
- Never leave the suspended load unattended.
- Make sure you take up slack slowly.
- Except where electrical distribution and transmission lines have been dc-energized and visibly grounded, or where insulating barriers not a part of or an attachment to the equipment or machinery have been erected to prevent physical contact with the lines, no part of a crane or its load shall be positioned or operated so it can come within 10 feet of a line rated to 50kV or below; 10 feet + 4 inches for each 1 kV over 50kV for lines rated over 50kV, or twice the length of the line insulator, but never less than 10 feet.

Inspection and Maintenance

- Inspection and lubrication must be done twice yearly.
- Daily before operating:
  - Check battery
  - Check all controls
  - Visually inspect
  - Wire rope for kinks or damage
  - Sheaves, drums for damage
  - Upper and lower limit switches.

Crane Safety After Use

- Spot crane in the approved location.
- Lower the load to the ground.
- Disconnect the load and slings
- Raise all the hooks to upper limit switch.
- Place all controls to off position.
- Visually check for dangerous conditions
- Never leave a load unattended.
Excavations

(www.ehss.vt.edu)

Each employee in an excavation shall be protected from cave-ins by using either an adequate sloping and benching system or an adequate support or protective system.

Exceptions to this are limited to:

a. Excavations made in stable rock; or
b. Excavations less than five feet in depth where examination of the ground by a Competent Person provides no indication of a potential cave-in.

Protective systems shall be capable of resisting all loads that could be reasonably expected to be applied to the system.

The slope and configuration of sloping and benching systems shall be selected and constructed by the Competent Person in accordance with the Title 29 of the Code of Federal Regulations (CFR) Part 1926, OSHA Standards for the Construction Industry, Subpart P.

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

The design of support systems, shield systems, and other protective systems shall be selected and constructed by the Competent Person in accordance with the requirements of Title 29 of the Code of Federal Regulations (CFR) Part 1926, OSHA Standards for the Construction Industry, Subpart P.
Concrete and Masonry

(www.ehss.vt.edu)

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

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

No employee may be permitted to work under concrete buckets while buckets are being elevated or lowered into position.

Elevated concrete buckets must, to the extent possible, be routed so that no employees, or the fewest number of employees, are exposed to the hazards associated with falling concrete buckets.

Formwork must be designed, fabricated, erected, supported, braced and maintained so that it will be capable of supporting, without failure, all vertical and lateral loads that may reasonably be anticipated to be applied to the formwork.

Forms and shores (except those used for slabs on grade and slip forms) must not be removed until the supervisor determines that the concrete has gained sufficient strength to support its weight and superimposed loads.

A limited access zone must be established whenever a masonry wall is being constructed. The limited access zone must comply with the following:

- The limited access zone must be established prior to the start of construction of the wall.
- The limited access zone must be equal to the height of the wall to be constructed plus four (4) feet, and must run the entire length of the wall.
- The limited access zone must be established on the side of the wall that is not scaffolded.
- Only those employees that are actively engaged in constructing the wall may enter the limited access zone. No other employees may be permitted to enter the zone.
- The limited access zone must remain in place until the wall is adequately supported to prevent overturning and to prevent collapse.
• All masonry walls over eight (8) feet in height must be adequately braced to prevent overturning and to prevent collapse unless the wall is adequately supported so that it will not overturn or collapse. The bracing must remain in place until permanent supporting elements of the structure are in place. Where the height of a wall is over eight (8) feet, the limited access zone must remain in place until permanent supporting elements of the structure are in place.
Steel Structures Erection

(www.usbr.gov/safety/RSHS/sec26.pdf)

**Solid-Web Structural Members:** In placing solid-web structural members, do not release the hoisting line until the member is secured with at least two bolts or the equivalent at each connection. Draw the bolts up wrench tight.

**Open-Web Joists:** Place open-web steel joists on structural steel framework only after such framework is permanently bolted, riveted, or welded.

**Open-Web Joists:** Place open-web steel joists on structural steel framework only after such framework is permanently bolted, riveted, or welded.

**Long-Span Joists:** Where long-span joists or trusses 40 feet or longer are used, provide lateral stability by installing a center row of bolted bridging before slacking the hoisting line.

**Securing Structural Members:** Securely bolt or fasten into position each structural steel member before releasing the load line. When setting steel trusses, temporarily cross brace them until permanent bracing is installed.

**Taglines:** Use a tagline or guide rope on all hoisted loads that expose employees to the swing of the load.

**Temporary Support:** Before lifting falls are unhitched, either draw the anchor bolts down tightly when columns are being set on base plates or shims, or guy and support them to prevent collapse.

**Connectors:** Whenever possible, "connectors" must straddle the beam instead of walking along the top flange.
Confined Space

(www.ehss.vt.edu)

A confined space is a space that is large enough for an employee to enter and perform work, that has limited or restricted means for entry or exit, and that is not intended for continuous employee occupancy. Confined spaces include, but are not limited to sewers, silos, tanks, boilers, tunnels and manholes.

A permit-required confined space (PRCS) means a confined space that has one or more of the following characteristics:

- Contains, or has the potential to contain, a hazardous atmosphere. The most common atmospheric hazards are oxygen deficiency, combustible gases or vapors, and toxic gases or vapors,
- Contains a material that has the potential for engulfing an entrant,
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or by a floor which slopes downward and tapers to a smaller cross-section, or
- Contains any other recognized serious safety or health hazard (such as electricity or unguarded moving parts of machinery).

During any confined space entry, all safety rules and procedures will be followed.

Metal ladders will not be used when working around electrical equipment.

There will be no smoking in a confined space.

Any use of chemicals, welding, soldering, or cutting must be pre-approved by the Supervisor.

Adequate lighting will be provided.

Personal protective equipment, including respirators, will be provided to workers as necessary for safe entry.

All PPE must be approved by the Superintendent.

Electrical equipment used in the confined space will be appropriate for the hazard and meet the requirements of the National Electric Code if a hazardous atmosphere is present. Any condition making it unsafe to remove an entrance cover will be eliminated before the cover is removed. When the cover has been removed, the opening(s) shall be promptly guarded to prevent accidental fall into the opening and prevent objects from falling into the opening. Appropriate vehicle and pedestrian barriers will be used to protect workers.
Lockout-Tagout


Training

Authorized Employees

Employees who perform the following types of work must be trained:

- Servicing or maintenance of machines or equipment where the unexpected start-up, activation or release of stored energy could cause injury.
- Operations where an employee is required to remove or bypass a guard or other safety device.
- Operations where an employee is required to place any part of his or her body into an area of the machine where work is actually performed upon the material being processed, or where a similar danger zone exists during the machine operating cycle.
- Work on equipment where an energy source itself poses a hazard to the employee (e.g., electrical systems) that must be controlled for the work to be performed safely.
- Entry into confined spaces, such as vats or tanks, where the supply lines for chemicals, gases or other materials into the space must be blocked and locked out to prevent the introduction of these materials into the space while employees are performing work.

If an employee's duties include performing work covered by this program, they must be trained as an authorized employee. The training for authorized employees involves both classroom and on-the-job training.

Training must be performed before the employee is assigned duties involving work that will require lockout/tagout (LOTO). An employee undergoing on-the-job training who has demonstrated the ability to perform duties safely at his or her level of training, and who is under the direct supervision of an authorized person, is considered to be an authorized person for the purpose of those duties.

Retraining will be performed whenever inspections conducted by the employee’s supervisor indicate that an employee has not retained the necessary knowledge or skills to effectively use established lockout/tagout procedures. Retraining will also be performed whenever there is a change in job assignments, when new machines, equipment or processes are introduced that present a new hazard, or when the energy control procedures change.

When an employee is to work on new or unfamiliar systems or equipment, the employee’s supervisor must provide additional training on the hazards involved and the energy control procedures that are to be followed.

Affected Employees
Employees who work in an area where LOTO procedures are being used (e.g., an affected employee) must be:

- Told about the purpose of the lockout/tagout devices,
- Cautioned that they may not remove or bypass a lockout/tagout device, and
- Prohibited from attempting to start a machine or device that has been locked and/or tagged out.

It is the responsibility of each authorized employee to convey this information to employees in the work area who may be affected by the lockout/tagout.

**Selection And Use Of Work Practices**

Employees are expected to use approved work practices to prevent injuries that could result from the unexpected start-up of equipment or the release of stored energy. The work practices used must be consistent with the nature and extent of the hazard. Parts of machinery or processes that have not been deenergized using approved procedures must be treated as energized regardless of whether the parts are, in fact, deenergized.

Locks, tags, chains, gang locks, valve protectors, self-locking fasteners and other hardware must be provided as needed for isolating, securing, blanking or blinding machines, equipment or processes from energy sources.

**Lockout Devices**

Lockout is the safest way to assure that employees are protected from injury. Lockout devices must be used if the machine or system is capable of being locked out. Only authorized employees may use or apply lockout devices, and these devices may only be removed by the individual who installed them except under emergency conditions.

Lockout devices must be:

- Key operated,
- Issued to the individual employee, and must indicate the name of the employee applying the device. Employees may only use their own lock. Locks are not to be taken home. Employees may be charged for locks that are lost.
- Durable enough to withstand the environment in which they will be used.
- Used with Tags to provide a visible warning and to supply additional information as necessary.

Whenever major replacement, repair, renovation or modification of equipment is performed, the equipment must be retrofitted with an energy isolation devices that will accept a lockout device if applicable. Whenever new machines or equipment are installed, they must incorporate energy isolation devices that will accept a lockout device if applicable.

**Tagout Devices**

Tagout devices may be used without a lock only when it is not possible to lock out the system or equipment. If a tag cannot be attached to the energy isolating device, it must be located as close as safely possible to the device, in a position that will be immediately seen.
by anyone attempting to operate the device. Tags are warning devices only, however, and do
not provide the physical protection provided by a lock.

When a tag is used without a lock, the tag must be supplemented by at least one
additional safety measure. This safety measure must provide a level of safety equivalent to
that obtained by the use of a lock. Additional safety measures include, for example, removal
of an electrical breaker, blocking of a controlling switch, or opening of an extra
disconnecting device.

Tagout devices:

- Must be durable enough to withstand the environment in which they
  will be used.
- Must be securely attached to the energy-isolating device. Tags and the
  attachment device must be substantial enough to prevent accidental
  removal. Attachment devices must be non-reusable, attachable by
  hand, self-locking, and require a minimum unlocking strength of
  greater than 50 pounds.
- Must show the name of the employee applying the device, and the date
  and time that work began.
- Must warn about hazardous conditions that may result if the machine
  or equipment is energized and must include a legend such as: Do Not
  Start; Do Not Operate; Do Not Close; Do Not Energize; or, Do Not
  Open.
- May only be used by authorized personnel.
- Must not be removed without permission from the person who applied
  the tag, and it is never to be bypassed, ignored, or otherwise defeated.
- Must be legible and understandable by all authorized and affected
  employees.

**Lockout/Tagout Procedures**

Safe procedures for deenergizing circuits and equipment must be determined for every
piece of machinery or equipment unless all of the following apply:

- There is no potential for stored energy or reaccumulation of stored
  energy after shutdown;
- There is a single energy source that can be easily identified and
  isolated;
- The isolation and LOTO of that energy source will completely de-
  energize and deactivate the machine or equipment;
- The machine or equipment is isolated from that energy source and
  locked out during service or maintenance;
- A single LOTO device will achieve a locked-out condition;
- The LOTO device is under the exclusive control of the authorized
  employee performing the work;
• The service or maintenance does not create hazards for other employees; and,
• There have been no documented accidents involving the unexpected activation or reenergization of the machine or equipment during service or maintenance.

If the energy control procedure (ECP) has not already been developed, or is not detailed in the manufacturer's literature, it must be determined by the authorized employee or their authorized supervisor and documented in writing. The forms provided in the Appendix (or a comparable form) may be used to document this procedure.

The ECP must identify:

• The equipment or system(s), including the physical location of the equipment/system(s) if applicable. Generic ECP’s (see below) must identify the manufacturer(s) and model(s) for which the generic ECP may be used.
• The specific types and magnitude of energy to be controlled, and the techniques to be used to control hazardous energy. All switches, valves, and other devices that may inadvertently release energy must be identified to be certain that all sources of hazardous energy will be controlled.
• The specific steps for shutting down, isolating, blocking and securing the machine, equipment or system to control hazardous energy.
• The specific procedure for the placement, removal and transfer of LOTO devices.
• The specific requirements for testing the equipment or system to assure that all energy sources have been completely controlled.

A generic ECP may be developed for similar machines and/or equipment if the procedure adequately addresses the unexpected energization hazards related to each machine.

ECP’s are to be maintained in a permanent file. When employees are to perform work on equipment covered by this program, they must either determine and document the ECP’s at the time of work, or be provided the ECP when the work is authorized.

**Application Of Locks And Tags**

The following steps are taken during LOTO:

• The ECP is reviewed to determine the hazards present, and how these hazards must be controlled. If an ECP has not been developed, and a generic ECP cannot be used, the energy control procedures must be determined and documented in writing by an authorized person.
• Affected employees in the immediate area are notified that the system will be locked and/or tagged out, and the reason for this procedure.
• The machine, equipment or system is shutdown by disconnecting the energy sources (e.g., depressing the “stop” button, opening toggle switches, closing the valve, and so forth).
• All energy isolating devices needed to control all sources of energy are turned off, including all main and secondary energy sources. Electrical switches will not be pulled while under load, nor will fuses be removed in place of disconnecting.
• All switches or other energy isolating devices are LOTO in the “off” or “safe” position by authorized employees.
• All potentially stored energy that could harm an individual (such as springs, elevated machine platforms or members, rotating flywheels, hydraulic systems, and pressurized air, gas, steam or water lines) are relieved, disconnected, restrained, blocked or otherwise made safe. If it is possible for the stored energy to reaccumulate to a hazardous level, isolation shall be verified and continued until the work is completed or the hazard no longer exists.
• The authorized employee verifies that the system has been isolated and de-energized. This is accomplished by pressing all start buttons, verifying that the main disconnect switch or circuit breaker cannot be turned on, and so forth.
• Work is performed. Do not bypass LOTO devices until all work is complete.

**Release From Lockout/Tagout**

The following steps are to be taken when the work is completed and LOTO devices are to be removed:

• Inspect the work area to be sure that all nonessential items such as tools have been removed, that machine components are fully assembled, and that all guards are in place.
• Inspect to ensure that all employees are safely positioned or have been removed from any danger zone. Notify all affected employees that the LOTO devices are being removed, and that the equipment is being reactivated.
• Each person removes his or her LOTO device(s).

If someone is absent from the workplace, his or her lock(s)/tag(s) may be removed provided that:

• The supervisor ensures the person is not present at the workplace;
• The supervisor ensures that the person is informed at the first opportunity that his or her lock and tag have been removed before he or she resumes work at that workplace; and,
• The supervisor makes a visual determination to ensure that all employees are clear of the circuits and equipment prior to LOTO removal.

Temporary Release From Lockout/Tagout

The following procedure is to be followed if a LOTO is temporarily removed from the energy-isolating device to test or reposition the machine.

• Clear the machine or equipment of tools and materials;
• Ensure that all employees are clear of the equipment or machine;
• The LOTO device is removed by the employee who applied it;
• Energize and proceed with testing or positioning; and,
• De-energize all systems and reapply the energy control devices.

Group Lockout/Tagout Procedures

The procedure that is followed for group LOTO must provide a level of protection equal to that provided by use of a personal LOTO. Group LOTO must comply with all portions of this program including the following additional requirements:

• An authorized employee must be assigned primary responsibility for LOTO control over the group of workers. This primary authorized employee must be able to determine the exposure status of individual members of the group with regard to LOTO of the machine or equipment.
• The primary authorized employee implements and coordinates the LOTO of hazardous energy sources in accordance with the specific ECP, and verifies that these steps have in fact isolated the machine or equipment from all hazardous energy sources. This must be accomplished before other authorized employees participating in the group LOTO affix their personal LOTO device to the group LOTO box and before they perform service/maintenance activities.
• Each authorized employee affixes his or her personal LOTO device to the group lockout device and removes these devices when work has been completed. A single lock may be used to lockout the device if the key is placed in a group lockout box that allows the use of multiple locks to secure it.
• Each authorized employee participating in the group LOTO has the right to personally verify the effectiveness of the LOTO. An employee who opts to verify the LOTO must perform this verification after affixing his or her personal LOTO device(s) and before performing service/maintenance work.
Shift or Personnel Changes

When repair or maintenance work extends beyond one shift, employees entering the work area must affix their locks in place before departing employees remove their locks. Verification of the LOTO must be performed on each shift before any authorized employee(s) begins work.
Appendix: General Forms

### GENERAL LOTO CHECKLIST
This checklist addresses all potential types of energy sources in a generic manner, and is intended to help you evaluate and develop an energy control procedures (ECP) **when one does not already exist**. If you are unsure of the hazard, or uncomfortable determining how to control the energy source(s), talk with your supervisor. DOCUMENT THE STEPS THAT YOU HAVE TAKEN ON THE BLANK ECP FORM.

<table>
<thead>
<tr>
<th>Manufacturer/Model of Equipment or System:</th>
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The general procedures for the various types of energy sources are as follows:

If available, review the manufacturers literature and/or wiring and mechanical schematics to assure that all energy sources have been identified, otherwise, inspect the equipment/machine to identify all energy sources. During this inspection do NOT perform work near exposed energized circuits unless you are a person qualified to work on electrical systems, and do NOT put any part of your body in any area where moving parts may cause injury. If you are unsure of the hazard, STOP WORK and contact your supervisor for guidance.

### ELECTRICAL CONTROLS
- Isolate the machine or piece of equipment by using an electrical plug lock or by locking and tagging the disconnect switches. A special adaptor may be needed to LO/TO circuit breakers. On the ECP form, document where the LOTO are applied.
- Bleed any stored electrical energy to a “zero energy state”. If this type of hazard is present, document on the ECP form.
- Ensure that all power sources are LOTO by using a tester to check that all circuits are deenergized

### PNEUMATIC CONTROL
- Release the pressure to reach a “zero energy state”.
- On the ECP form, document where the LOTO are applied. LOTO the energy source(s).

### HYDRAULIC CONTROL
- Release the pressure to reach a “zero energy state”.
- On the ECP form, document where the LOTO are applied. LOTO the energy source(s).

### FLUIDS AND GASES
- Evaluate all hoses and valves connecting to the system or equipment. Determine what type of fluid or gas may be present and, if necessary, obtain and review the Material Safety Data Sheet (MSDS) for the material. Take precautions as needed to protect you from exposure to any hazardous material that may be contained in the system.
- Close all valves on supply lines, and as necessary, bleed or drain the contents.
- If working on a pressurized system where valve leaks may repressurize the line, insert a blank or blind in the line.
- Use lockout valves, chains, and locks and tags at the isolating source. On the ECP form, document where the LOTO are applied, and document all related hazards.

### MECHANICAL CONTROL
Release or block all stored mechanical energy. Be cautious of springs, tension, elevated mechanical arms or platforms that could lower, and other sources of energy that are not always obvious. If needed, restrain the system by inserting blocks.

On the ECP form, document where the LOTO are applied. LOTO the energy source(s).

Recheck all areas for potential sources of energy.

### GENERAL LOTO PROCEDURES

- Review the energy control (ECP) procedure with your supervisor if the procedure, the system, or the equipment is new or unfamiliar.
- Review the type and magnitude of the energy and the required controls.
- Inform all affected employees, and all other employees working in or entering the work area, that LOTO is to be performed. Instruct these employees that they must not attempt to start equipment that has been locked/tagged out, and that locks/tags must not be bypassed or removed.
- Shutdown the equipment/process/system by following the ECP.
- Locate the necessary energy isolating device(s) for the equipment/process/system and operate them to isolate them from the energy sources. Affix LOTO devices.
- Relieve all stored or residual energy and take appropriate measures to ensure the energy will not reaccumulate. Affix lockout/tagout devices as necessary.
- Verify that all sources of energy have been isolated and stored energy relieved after ensuring that employees are not exposed and before beginning work. Activate equipment or system controls to ensure that the equipment or system will not operate, and then deactivate the controls.
- Perform the servicing or maintenance.
- Replace all guards and safety devices. Remove all tools and equipment from the work site. Assure that all personnel are clear of the equipment.
- Notify all affected personnel that the system will be reactivated.
- Lockout/tagout devices are removed by the authorized employee(s) who installed the devices.

### LOCKOUT/TAGOUT DEVICE REMOVAL BY SUPERVISOR

If it becomes necessary to remove a LOTO of an employee who is unavailable on site, the removal of this device must be done using the following procedure.

- The supervisor must ensure that the employee who applied the lock or tag is not available at the workplace; and
- The supervisor must make all reasonable efforts to contact the authorized employee to inform him or her that his/her lockout and/or tagout device has been removed; and,
- The supervisor ensures that the employee is made aware that his or her lock or tag was removed before he or she resumes work at that worksite.

### GROUP LOCKOUT/TAGOUT

When a lockout/tagout job involves numerous lockout/tagout devices and many employees, the group lockout/tagout procedure included in this program should be used.

### CONTRACTORS

All contractors must comply with *G10C Safety Program.*
# GROUP LOCKOUT/TAGOUT

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<th>Project:</th>
<th>Location:</th>
<th>Date:</th>
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**Equipment/Machine/Process:**

**ECP That is Being Followed:**

**Job Description:**

**Date Work to Begin:** | **Date Work to End:** | **Primary Authorized Employee:**

<table>
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<tr>
<th>Crew/Craft Involved</th>
<th>Contact Name</th>
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**Person Responsible for Coordinating if More Than One Crew:**

**Employees Working under Group Lockout/Tagout (Use Attached Sheet):**

**Location of Group Lockout Box:**

**Special Instructions:**

**Comments:**

**Work Completion Date:** | **Authorized Employee Signature:** | **Date/Time:**

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75
# LOCKOUT/TAGOUT SAFETY PROGRAM

**EMPLOYEES INVOLVED IN THE GROUP LOCKOUT/TAGOUT**

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<th>Project:</th>
<th>Location:</th>
<th>Date:</th>
</tr>
</thead>
</table>

**Equipment/Machine/Process:**

**Job Description:**

<table>
<thead>
<tr>
<th>Date Work to Begin:</th>
<th>Date Work to End:</th>
<th>Authorized Employee (Primary Responsibility):</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Employee Name</th>
<th>Social Sec. No.</th>
<th>Crew</th>
<th>Work Started Date/Time</th>
<th>Work Ended Date/Time</th>
</tr>
</thead>
</table>

**Work Ready to Begin (Authorized Employee):**

**Date:**

**Work Complete (Authorized Employee):**

**Date:**
Extension Cords

(Environmental Health and Safety Services, Occupational Safety Division, Virginia Tech, http://www.ehss.vt.edu)

The improper use of electrical extension cords is strictly prohibited. Do not use extension cords in place of the permanent wiring in the building or for extended periods of time. If you need electrical power and there is no outlet available, have additional outlets installed or use a power strip with breaker protection. Each power strip must be plugged directly into a wall outlet. Heavy duty, single appliance extension cords may be used for temporary use only, and must be plugged directly into an outlet.

Electrical Equipments Safety

(Environmental Health and Safety Services, Occupational Safety Division, Virginia Tech, http://www.ehss.vt.edu)

Safe work practices must be followed to prevent electric shock or other injuries resulting from either direct or indirect contact with electrically energized equipment or circuits. The safety related work practices that are used must be consistent with the nature, extent, and voltage of the electrical hazard.

De-energized Parts - Before employees may be exposed to or work on or near live parts or circuits, these must be de-energized. The live parts or circuits do not need to be de-energized if the supervisor can demonstrate that de-energizing introduces additional or increased hazards or is unfeasible due to equipment design or other limitations. Live parts that operate at less than 50 volts to ground need not be de-energized if there will be no increased exposure to electrical burns or to explosion due to electric arcs.

Energized Parts - If the exposed live parts are not de-energized, other safety related work practices must be used to protect employees who may be exposed to the electrical hazards. Such work practices must protect employees against contact with energized circuit parts directly with any part of their body or through some other conductive object. The work practices that are used must be suitable for the conditions under which the work is to be performed and for the voltage level of the exposed electric conductors or circuit parts.
Hand and Power Tools
(www.ehss.vt.edu)

Supervisors are to ensure that employees are trained to select the right tools for each job.

Establish daily tool inspection procedures and provide good repair facilities to ensure that tools will be maintained in a safe condition.

Establish a procedure for control of tools such as a checkout system at tool cribs.

Provide proper storage facilities in the tool room and on the job.

Each supervisor is to make a complete check of his/her operations to determine the need for special tools that will do the work more safely than ordinary tools.

The tool room attendant or craft supervisor should be qualified by training and experience to pass judgment on the condition of tools for further use. Dull or damaged tools must not be returned to stock.

Proper maintenance and repair of tools requires adequate facilities, work benches, vises, a forge or furnace for hardening and tempering, tempering baths, safety goggles, repair tools, grinders, and good lighting. Employees specially trained in the care of tools should be in charge of these facilities, otherwise tools should be sent out for repairs.

Carrying Tools

The employee is to never carry tools that in any way might interfere with his/her using both hands freely on a ladder or while climbing on a structure. A strong bag, bucket, or similar container is to be used to hoist tools from the ground to the job. Tools are to be returned in the same manner, not brought down by hand, carried in pockets or dropped to the ground.

Mislaid and loose tools cause a substantial portion of hand tool injuries. Tools must not be left where employees are moving or walking.

Chisels, screwdrivers, and pointed tools must never be carried in a worker's pocket. They are to be carried in a tool box or cart, in a carrying belt (sharp or pointed end down) like those used by electricians and steel workers, in a pocket tool pouch, or in the hand with points and cutting edges pointing away from the body.

Employees carrying tools on their shoulders should pay close attention to clearances when turning around and should handle the tools so that they will not strike other employees.
Specific Tool Requirements

Metal Cutting Tools

Chisels
Cold chisels should be selected based upon the materials to be cut, the size and shape of the tool, and the depth of the cut to be made.

- The chisel should be made heavy enough so that it will not buckle or spring when struck.
- A chisel no larger than the job should be selected so that the blade is used rather than the point or corner. Also, a hammer heavy enough to do the job should be used.
- Employees must wear safety goggles when using a chisel and should set up a shield or screen to prevent injury to other workers from flying chips. If a shield does not provide positive protection to all exposed employees, then glasses with side protection should be worn by all employees in the area.

Tap and Die Work
Tap and die work requires certain precautions. The work should be firmly mounted in the vise. Only a T-handle wrench or adjustable tap wrench should be used. When threads are being cut with a hand die, hands and arms should be kept clear of the sharp threads coming through the die, and metal cuttings should be cleared away with a brush.

Hack Saws
Hack saws should be adjusted in the frame to prevent buckling and breaking, but should not be tight enough to break off the pins that support the blade. Install blade with teeth pointing forward. Pressure should be applied on the forward stroke, not on the back stroke. If the blade is twisted or too much pressure is applied, the blade may break and cause injury to the hands or arms of the user.

Files
Selection of the right kind of file for the job will prevent injuries and lengthen the life of the file.

- Files should never be cleaned by being struck against a vise or other metal object, because the extremely hard and brittle steel of the file chips easily. A file-cleaning card or brush should be used. For the same reason, a file is not to be hammered or used as a pry. Such abuse frequently results in the file's chipping or breaking causing injury to the user.
- A file should not be made into a center punch, chisel, or any other type of tool because the hardened steel may fracture in use.
• A file is never to be used without a smooth, crack-free handle; if the file should bind, the tang may puncture the palm of the hand, the wrist, or other part of the body. Under some conditions, a clamp-on raised offset handle may be useful to give extra clearance for the hands.
• Files are not to be used on lathe stock turning at high speed (faster than three turns per file stroke) because the end of the file may strike the chuck, dog, or face plate and throw the file (or metal chip) back at the operator hard enough to inflict serious injury.

**Tin Snips**

Tin snips should be heavy enough to cut the material so easily that the worker needs only one hand on the snips and can use the other to hold the material. The material is to be well supported before the last cut is made so that cut edges do not press against the hands. Jaws of snips are to be kept tight and well lubricated.

Employees must wear safety goggles when trimming corners or slivers of metal because small particles often fly with considerable force. They must always wear gloves.

**Cutters**

Cutters used on wire, reinforcing rods, or bolts should have ample capacity for the stock; otherwise, the jaws may be sprung or spread. Also, a chip may fly from the cutting edge and injure the user.

• Cutters require frequent lubrication. To keep cutting edges from becoming nicked or chipped, cutters are not to be used as nail pullers or pry bars.
• Cutter jaws should have the hardness specified by the manufacturer for the particular kind of material to be cut. Cutting edges are to be set to have a clearance of 0.003 inch when closed.

**Wood-Cutting Tools**

Edge tools are to be used so that if a slip should occur the direction of force will be away from the body. For efficient and safe work, edged tools are to be kept sharp and ground to the proper angle. A dull tool does a poor job and may stick or bind.

**Wood Chisels**

Inexperienced employees must be instructed in the proper method of holding and using chisels. Handles are to be free of splinters.

• The wood handle of a chisel struck by a mallet is to be protected by a metal or leather cap to prevent it from splitting.
• The work to be cut must be free of nails to avoid damage to the blade or cause a chip to fly into the user's face or eye.

**Saws**
Saws should be carefully selected for the work they are to do. For crosscut work on green wood, a coarse saw (4 to 5 points per inch) is to be used. A fine saw is better for smooth, accurate cutting in dry wood. Saws are to be kept sharp and well set to prevent binding.

**Axes**

Make sure that there is a clear circle in which to swing the axe before starting to chop. Remove all vines, brush, and shrubbery—especially overhead vines—that may catch or deflect the axe.

Axe blades must be protected with a sheath or metal guard wherever possible. When the blade cannot be guarded, it is safer to carry the axe at one's side. The blade on a single-edged axe must be pointed down.

**Hatchets**

Hatchets must not be used for striking hard metal surfaces, since the tempered head may injure the user or others by rebounding or by creating flying chips. When using a hatchet in a crowded area, employees must take special care to prevent injury to themselves and other workers. Using a hatchet to drive nails is prohibited.

**Torsion Tools**

Socket wrenches are safer to use than adjustable or open-end wrenches.

**Open-End or Box Wrenches**

Open-end or box wrenches must be inspected to make sure that they fit properly and are never to be used if jaws are sprung or cracked. When defective they must be taken out of service until repaired.

**Socket Wrenches**

Socket wrenches give great flexibility in hard-to-reach places. The use of special types must be encouraged where there is danger of injury.

**Adjustable Wrenches**

Adjustable wrenches are used for many purposes. They are not intended, however, to take the place of standard open-end, box or socket wrenches. They are used mainly for nuts and bolts that do not fit a standard wrench. Pressure is always applied to the fixed jaw.

**Pipe Wrenches**

Pipe wrenches, both straight and chain tong, must have sharp jaws and be kept clean to prevent slipping.

The adjusting nut of the wrench is to be inspected frequently. If it is cracked, the wrench must be taken out of service. A cracked nut may break under strain, causing complete failure of the wrench and possible injury to the user.
A piece of pipe "cheater" slipped over the handle must not be used to give added leverage because this can strain a pipe wrench to the breaking point. The handle of every wrench is designed to be long enough for the maximum allowable safe pressure. A pipe wrench should never be used on nuts or bolts, the corners of which will break the teeth of the wrench, making it unsafe to use on pipe and fittings. Also, a pipe wrench, when used on nuts and bolts, damages their heads. Pipe wrench must not be used on valves, struck with a hammer, nor used as a hammer.

**Pliers**

Side-cutting pliers sometimes cause injuries when short ends of wires are cut. A guard over the cutting edge and the use of safety glasses will help prevent eye injuries. The handles of electricians' pliers are to be insulated. In addition, employees must wear the proper electrical rated gloves if they are to work on energized lines. Pliers must not be used as a substitute for a wrench.

**Special Cutters**

Special cutters include those for cutting banding wire and strap. Claw hammers and pry bars must not be used to snap metal banding material.

**Pipe Tongs**

Employees must neither stand nor jump on the tongs nor place extensions on the handles to obtain more leverage. They should use larger tongs.

**Screwdrivers**

The practice of using screwdrivers for punches, wedges, pinch bars, or pries is not allowed. Cross-slot (Phillips-head) screwdrivers are safer than the square bit type, because they have less prone to slip. The tip must be kept clean and sharp to permit a good grip on the head of the screw. The part to be worked upon must never be held in the hands; it should be laid on a bench or flat surface or held in a vise. No screwdriver used for electrical work must have the blade or rivet extending through the handle. Both blade and handle must be insulated except at the tip.

**Portable Powered Tools**

The power cord must always be disconnected before accessories on a portable tool are changed, and guards must be replaced or put in correct adjustment before the tool is used again.

A tool must not be left in an overhead place where there is a possibility that the cord, if pulled, will cause the tool to fall. The cord and the tool may be suspended by counterweighted rope or string that keeps the cord out of the operator's way and also counterbalances some of the weight of the tool and the cord. Power extension cords on the
floor create a stumbling or tripping hazard. They must be suspended in such a way that they will not be struck by other objects or by material being handled or moved.

Do not hang power cords over nails, bolts, or sharp edges. Cords must be kept away from oil, hot surfaces, chemicals and water.

When using explosive cartridge equipment for driving anchors into concrete, or when using air-driven hammers or jacks, ear plugs, safety glasses and/or face shields must be used. Employees must be trained and certified before using explosive cartridge equipment.

**Guarding**

When power operated tools are designed to accommodate guards, they must be equipped with such guards when in use.

Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly-wheels, chains, or other reciprocating, rotating or moving parts of equipment must be guarded to prevent accidental contact.

**Double insulated tools.** Protection from electric shock, while using portable power tools, has been described as depending upon third wire protective grounding. "Double insulated" tools, however, are available which provide more reliable shock protection without third wire grounding. Tools in this category are permanently marked by the words "double insulation" or "double insulated."

- Though double insulated or all-insulated tools do not require separate ground connections, the third wire or ground wire is to be used wherever it is supplied or indicated to be part of the tool electrical connection.

Failure of insulation is harder to detect than worn or broken external wiring, and affirms the need for to perform frequent inspections and thorough maintenance. Care in handling the tool and frequent cleaning will help prevent the wear and tear that cause defects.

Double insulated tools must not be operated on wet surfaces.

All electric power tools must be effectively grounded unless they are double insulated or cordless types.

Electric cords must be inspected periodically and kept in good condition. Heavy-duty plugs that clamp to the cord should be used to prevent strain on the current-carrying parts, if the cord is accidentally pulled.

Drill bits must be carefully chosen for the work to be done. The bit should be no longer than necessary to do the work.

Where the operator must guide the drill with the hand, the drill is to be equipped with a sleeve that fits over the drill bit. Oversized bits must not be ground down to fit small electric drills; instead, an adapter should be used that will fit the large bit and provide extra power through a speed reduction gear; however this is an indication of improper drill size. When drills are used, the pieces of work are to be clamped or anchored to prevent movement.

Electric saws are usually well guarded by the manufacturer, but employees must be trained to use the guard as intended. The guard should be checked frequently to be sure that it operates freely and encloses the teeth completely when it is not cutting, and the unused portion of the blade when it is cutting.
Circular saws must not be jammed or crowded into the work. Never stop or start the saw while in contact with the material being cut.

**Pneumatic Power Tools**

The operating trigger on portable hand-operated utilization equipment must be so located as to minimize the possibility of its accidental operation and must be arranged to close the air inlet valve automatically when the pressure of the operator's hand is removed.

Pneumatic power tools must be secured to the hose or whip by some positive means to prevent the tools from becoming accidentally disconnected.

Safety clips or retainers must be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

All pneumatically driven nail guns, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 p.s.i. pressure at the tool must have a safety device on the muzzle to prevent the tool from ejecting fasteners, unless the muzzle is in contact with the work surface.

Compressed air must not be used for cleaning purposes except with an air blow gun limited to 30 p.s.i. static pressure at the outlet nozzle, and then only with effective chip guard and personal protective equipment.

The manufacturer's safe operating pressure for hoses, pipes, valves, filters, and other fitting must not be exceeded.

The use of hoses for hoisting or lowering tools must not be permitted.

All hoses exceeding 1/2-inch inside diameter must have a safety device at the source of supply or branch line to reduce pressure in case of hose failure.

Airless spray guns of the type which atomize paints and fluids at high pressures (1,000 pounds or more per square inch) must be equipped with automatic or visible manual safety devices which will prevent pulling of the trigger to prevent release of the paint or fluid until the safety device is manually released.

**Fuel Powered Tools**

All fuel-powered tools must be stopped while being refueled, serviced, or maintained, and fuel must be transported, handled, and stored in approved safety cans.
Leakage or spillage of flammable or combustible liquids must be disposed of promptly and safely.

When fuel powered tools are used in enclosed or confined spaces, atmospheric testing must be performed continually and employees must use required personal protective equipment.

**Hydraulic Powered Tools**

The fluid used in hydraulic powered tools must be fire-resistant and must retain its operating characteristics at the most extreme temperatures to which it will be exposed.

The manufacturer's safe operating pressures for hoses, valves, pipes, filters, and other fittings must not be exceeded.
Welding, Cutting and Brazing
www.osha.gov/doc/outreachtraining/htmlfiles/welding.html)

Welding, cutting and brazing operations present a series of hazardous situations with potential exposure to burns, eye damage, electrical shock, crushed toes and fingers, and the inhalation of vapors and fumes. To prevent these, G-10 construction’s employees must use the following work practices.

- Provide ventilation in shops or rooms where work is to be performed but avoid strong drafts directed at the welding work.

- Do not place work to be welded or heated on a concrete floor. Concrete, when heated, may splatter and fly exposing the welder to possible burns and also throwing hot particles a considerable distance.

- Provide appropriate protection for welders and helpers when working on elevated surfaces. Welding areas shall be kept neat, clean, and free from tripping hazards.

- Provide approved personal protective equipment for welders who must enter confined spaces, manholes or other space restricted areas. Also, provide a means to ensure their quick removal in case of an emergency.

- Do not perform cutting and welding operations when the sprinkler system is inoperable; in explosive atmospheres or where explosive atmospheres may develop; or, within 50 feet of storage of large quantities of exposed, readily ignitable materials.

- Before lighting the torch for the first time each day, allow enough of each gas to flow through its respective hose to purge any flammable gas mixture. Purge hoses in open spaces and away from ignition sources. Light the torch with a friction lighter or stationary pilot flame keeping a safe distance between he torch and the welder's hands. Point the torch away from persons or combustible materials when lighting. Do not attempt to light a torch from hot metal.

- When working in a confined space, the fuel gas and oxygen supply shall be located outside the confined space. The torch and hose should be removed from confined spaces when not in use.

- Fuel gas and oxygen torch valves shall be closed and the fuel gas and oxygen supply to the torch shall be shut off during lunch or break periods, when not in use for extended periods, and when unattended.
- Welding torch hoses must be protected from damage by contact with hot metal, open flames, corrosive agents or sharp edges. Pressure on hoses will be released at the end of each workday. Hoses must be visually inspected for damage at the beginning of each shift. Hose showing leaks, cuts, burns, worn spots or other evidence of deterioration must be repaired or replaced prior to use. Replacement hoses or fittings must be approved for use with acetylene equipment.

- Shielding shall be provided to protect personnel from heat, sparks, slag, light, and radiation.

- A fire watch will be maintained for at least 30 minutes after completion of cutting or welding operations to detect and extinguish possible smoldering fires.

**Care with Equipment**

- Lighting - should be adequate for safe use of equipment and for reading labels.

- Power circuit earth - every power circuit must be earthed to prevent accidental shock by stray current. DON'T operate welding machine without an earth on the power supply.

- Welding cables - must not be operated at currents in excess of their rated capacity. The cables should be inspected frequently. Any joints should be made with proper connectors.

- Mountings and supports - ensure cylinders are properly mounted, in an upright position; use proper supports for other equipment.

- Cylinders regulators - should be correctly used.

- Cylinder threads - should be clean and undamaged. Cylinder threads should always be oil and grease free especially for oxygen use.

- Storage - oxygen and gas should be stored separately. Always chain store cylinders. Acetylene cylinders may explode unless stored upright.

- Leaks - ensure no gas is escaping from any part of equipment.

- Blowpipes - should always be kept clean.

- Fire extinguisher - always ensure the correct type of extinguisher is on hand before welding or cutting.
Wherever possible work should be performed on a dry insulated floor. Wooden platforms, rubber mats or dry areas provide extra protection, especially in confined spaces.

Electrodes or welding wire should never be touched with bare hands when in the holder or welding gun. Holders or welding guns should never be held under the armpits. Hot work increases risk as sweating reduces skin resistance.
Asbestos

*(Toolbox Talk, www.ehss.vt.edu)*

All personnel that perform work with asbestos materials must attend an asbestos awareness training class.

Safety coordinator is responsible to organize asbestos awareness training class.

Employees performing asbestos-related work must use approved work practices, and all asbestos work may be reviewed and monitored by job superintendent.

All employees working with asbestos material must use proper respiratory protection equipments and clothing.
Motor Vehicles

(www.ehss.vt.edu)

All vehicles in use must be checked at the beginning of each shift to assure that all parts, equipment, and accessories that affect safe operation are in proper operating condition and free from defects. All defects must be corrected before the vehicle is placed in service.

No employee may use any motor vehicle, earthmoving, or compacting equipment having an obstructed view to the rear unless:

- The vehicle has a back-up horn or alarm distinguishable from the surrounding noise level, or
- The vehicle is backed up only when an observer signals that it is safe to do so.

Heavy machinery, equipment, or parts thereof which are suspended or held aloft must be substantially blocked to prevent falling or shifting before employees are permitted to work under or between them.

Seatbelts, if provided with the equipment, must be worn at all times the vehicle is in operation.
Machine Safeguarding

(www.ehss.vt.edu)

A wide variety of mechanical motions and actions may present hazards to the worker. These can include the movement of rotating members, reciprocating arms, moving belts, meshing gears, cutting teeth, and any part that may impact or shear. These different types of hazardous mechanical motions and actions are basic to nearly all machines, and recognizing them is the first step toward protecting workers from the dangers they present.

Mechanical hazards and dangerous moving parts in the following three areas are required to be safeguarded:

- **The Point of Operation** - is that point where work is performed on the material, such as cutting, shaping, boring, or forming of stock.
- **Power Transmission Apparatus** - are all components of the mechanical system that transmit energy to the part of the machine performing the work. These components include flywheels, pulleys, belts, connecting rods, couplings, cams, spindles, chains, cranks, and gears.
- **Other Moving Parts and Robotic Systems** - include all parts of the machine which move while the device is in operation. These can be reciprocating, rotating, and transverse moving parts, as well as feed mechanisms and auxiliary parts of the machine.

Even the most elaborate safeguarding system cannot offer effective protection unless the worker knows how to use it and why. Specific and detailed training is therefore a crucial part of any effort to provide safeguarding against machine-related hazards. Employee training should include instructions or hands-on training in the following:

- Description and identification of the hazard associated with the machine.
- The safeguards themselves, how they provide protection, and the hazard for which they are intended to guard.
- How and under what circumstances safeguards can be removed, and by whom.
- Employees may need training on Lockout/Tagout procedures also.
Explosives and Blasting

*(Toolbox Talk, OSHA 1926 Subpart U)*

**General Instructions**

- Only authorized and qualified persons are permitted to handle and use explosives.
- Smoking, firearms, matches, open flame lamps, and other fires, flame or heat producing devices and sparks are prohibited in or near explosive magazines or while explosives are being handled, transported or used.
- All explosives must be accounted for at all times. Explosives not being used shall be kept in a locked magazine, unavailable to persons not authorized to handle them. The superintendent shall maintain an inventory and use record of all explosives. Police department must be notified of any loss, theft, or unauthorized entry into a magazine.
- No explosives or blasting agents shall be abandoned.
- Blasting operations shall be conducted between sunup and sundown.
- The prominent display of adequate signs, warning against the use of mobile radio transmitters, on all roads within 1,000 feet of blasting operations.
Wireless Phones

(Group 10)

Wireless phones may cause distraction. Any distraction source in the job site is a potential hazard. Therefore, use of wireless phones is limited to employees who have the written permission of the job superintendent. The superintendent is responsible to determine the trades or employees who are vulnerable by use of wireless phones during the working hours.