E&CS Construction EH&S Policies and Procedures

Produced by
Technical Publications
Southern Company

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The text in red in the E&CS Construction EH&S Procedures manual has been quoted from regulatory requirements such as those issued by the U.S. Occupational Safety and Health Administration (OSHA), U.S. Environmental Protection Agency (EPA), and the U.S. Department of Transportation (DOT).

SOUTHERN COMPANY

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Policies

SH-1A

Construction EH&S Policy

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE

This policy provides the foundation for the management of environmental, health, and safety requirements on Engineering and Construction Services (E&CS) fossil/hydro construction projects.

2.0 POLICY

The safety and health of Southern Company's employees, customers, agents, and the public, as well as the protection of our natural environment, are Southern Company's highest priorities. Environment, health, and safety are recognized as a core value of our company. Therefore, Southern Company's commitment is:

- To meet or surpass all environmental laws, regulations, and permit requirements, and to verify this commitment through environmental auditing.
- To provide a safe and healthy workplace for every employee based on employee involvement, ownership, teamwork, education, and leadership.
- To provide employees with a safe and healthy workplace that meets both regulatory requirements and company standards.
- To ensure all employees are provided the time, resources, and training necessary to perform their jobs safely and in compliance with environmental requirements.
- To pursue opportunities to enhance the quality of the environment and employee safety and health in the workplace.
- To value the safety and health of each other, customers, agents, and the public by conducting business in a manner designed to preserve their well-being.

Southern Company will not compromise its moral, ethical, and legal responsibilities to conduct its business in a manner that protects the environment and to provide a safe and healthy workplace free from danger, injury, and illness.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-1B

EH&S Responsibilities

	Rev. 0	**Rev. 1**
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Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides a description of the general administration of environmental, health, and safety (EH&S) and specific EH&S responsibilities of Engineering and Construction Services (E&CS) Construction Services personnel.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- SH-1N, Planning and Hazard Analysis.

3.0 RESPONSIBILITIES

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

1. All levels of management are responsible for the implementation of EH&S policies and procedures to eliminate injuries, illnesses, and environmental incidents.

2. Every employee has an individual responsibility for his or her personal safety and for the safety of other workers as well. Each employee should be knowledgeable of the safety rules applicable to his or her work. Employees must accept personal responsibility for cooperating and complying with all EH&S policies and procedures.

3. E&CS Safety and Health - Construction is responsible for facilitating management's implementation of EH&S policies and procedures and to lead the continuous improvement of EH&S programs, practices, and techniques.

4.2 Responsibilities

4.2.1 E&CS Safety and Health - Construction

- Provide guidance, direction, and assistance to E&CS management and EH&S professionals.
- Lead the development and facilitate the implementation of EH&S management system improvements.
- Lead the development and delivery of EH&S training programs.
- Assess project compliance with company and regulatory requirements.
- Lead the professional development of EH&S professionals.
- Leverage Best Practices and lessons learned.
- Track and report EH&S metrics.
- Develop and manage an appropriate EH&S budget.

4.2.2 Manager–E&CS Safety and Health – Construction Management

- Ensure EH&S policies and procedures are adequate and enforced, with the realization that the ultimate success of an EH&S process depends upon the full support and cooperation of every employee..
- Enssure that effective training and educational programs are provided.
- Establish annual safety improvement plans, including specific safety performance objectives and metrics.
- Track safety performance and initiate safety recovery plans when safety performance expectations are not being met.
- Set the example regarding personal safety behavior.

4.2.3 E&CS senior management

- Assure that sufficient funds are budgeted to provide appropriate EH&S resources, training, equipment, supplies, assessments, and compliance with company and regulatory requirements.

- Visibly support the EH&S objectives through active involvement in safety activities and programs.
- Implement safety accountability systems.
- Set the example regarding personal safety behavior.

4.2.4 Project manager

The overall responsibility for project EH&S performance rests with the project manager. The project manager's role in meeting this responsibility includes:

- Ensure the development of an EH&S Policies and Procedure Manual implementation plan for each new major project. At a minimum, this plan shall address manual compliance issues applicable to the site E&CS organization and personnel. The plan will include, but not be limited to, the following topics:
  - Incident notification.
  - Emergency procedures.
  - Safety training.
  - Safety assessments.
  - Metrics reporting.
  - Contractor EH&S.
  - Regulatory agency inspections.
  - Incident investigations.
  - Planning and hazard analysis.
  - Fall protection.
  - Steel erection.
  - Rigging and lift plans.
  - Scaffold safety.
  - Clearance procedure.
  - Confined-space entry.
  - Personal protective equipment.

- Noise exposure.
- Hazard communication.
- Bloodborne pathogens.
- Electrical safety.
- Fire protection.
- Environmental protection.
- Office safety.

- Ensure that systems are in place on their projects to ensure compliance with company and regulatory EH&S requirements.
- Ensure that appropriate EH&S issues are addressed in all contracts and purchase orders.
- Be an active and visible leader and advocate of the corporate and project EH&S program and initiatives.
- Conduct regular jobsite EH&S assessments for the benefit of Southern Company Generation (Generation) personnel and to monitor contractor compliance with contract provisions. Initiate corrective actions for noncompliance.

4.2.5 Project Engineering Management

- Ensure that engineering and procurement of engineered equipment meet the applicable environmental, health, and safety standards, such as equipment guards, noise levels, and platform guardrails.
- Ensure that design and installation procedures facilitate the safety of construction, maintenance, and operations employees.
- Ensure the engineering product identifies safety-related issues, that is, load limits or restrictions, and attachment points.
- Ensure that materials specified are evaluated from an EH&S perspective and, if appropriate, ensure that less hazardous materials are specified.

4.2.6 Site manager

- Establish an effective EH&S management process based on E&CS EH&S policies and procedures.

- Provide the commitment, example, direction, motivation, and accountability to assure an effective accident prevention process.
- Plan and implement all work in compliance with company and regulatory requirements.
- Ensure that all staff personnel take an active role in promoting and enforcing EH&S policies, procedures, and contractual requirements.
- Ensure that site personnel understand their EH&S responsibilities and applicable site specific procedures prior to beginning work.
- Ensure timely and accurate incident reporting.
- Assume responsibility for compliance by site E&CS personnel with company and regulatory EH&S requirements.
- Enforce all applicable construction EH&S policies and procedures.
- Establish a site EH&S committee and support its activities.
- Review all incident investigation reports for accuracy and completeness, and ensure that followup action is taken.
- Establish appropriate EH&S training sessions in cooperation with project EH&S resources.
- Personally conduct at least a weekly EH&S assessment of the project for the benefit of Generation personnel and to monitor contractor compliance with contract provisions. Initiate corrective actions for noncompliance.
- Require a weekly project EH&S assessment, involving discipline leads, discipline coordinators, and/or subcontract coordinators. This assessment is for the benefit of Generation personnel and to monitor contractor compliance with contract provisions.
- Set an example of safe work habits, and comply with EH&S requirements.
- Provide the necessary resources and training to meet company EH&S goals and regulatory requirements.
- Ensure all contractors submit proper insurance certificates prior to beginning work.
- Require site contractors to comply with the EH&S specifications contained in their contract.

- Participate in appropriate investigations of injuries/illnesses, near hits, and environmental incidents and communicate the lessons learned throughout E&CS.

- Develop and implement an annual site safety improvement plan based on an analysis of previous safety performance and upcoming workload and activity.

  - Monitor the implementation of the job planning and hazard analyses requirements contained in procedure SH-1N, Planning and Hazard Analysis.

- Ensure a budget is developed for the site EH&S function and activities.

4.2.7 Environmental, health, and safety (EH&S) professional

- Support project and site/facility management in fulfilling their EH&S responsibilities

- Coordinate the project EH&S effort with all site employers.

- Maintain current knowledge of federal, state, and local EH&S regulations and E&CS requirements.

- Maintain current knowledge of state-of-the-art EH&S practices.

- Administer project EH&S policies and procedures with a focus on potentially hazardous operations and emphasizing proactive solutions.

- Communicate to project management and EH&S management the progress of the construction EH&S program and results.

- Lead the development and facilitate the implementation of programs for the accomplishment of short-range and long-range project EH&S objectives.

- Conduct frequent EH&S assessments of worksite activity for the benefit of Generation personnel and to monitor contractor compliance with contract provisions. Initiate corrective actions for noncompliance.

- Attend and provide EH&S input into weekly supervisor's safety meetings.

- Administer the project's E&CS construction EH&S training programs.

- Administer the project's environmental programs, including waste management, air issues, storm-water issues, and spill prevention, control, and countermeasure (SPCC) requirements.

- As appropriate, assist in the investigation of incidents, such as injuries/illnesses, fire, property damage, and other related incidents, and issue reports as required.

- Support project management in the review and evaluation of contractor and subcontractor qualifications and EH&S programs.
- Maintain the E&CS EH&S recordkeeping system and assume responsible for its accuracy.
- Provide appropriate information to the E&CS Construction – Safety and Health manager for the classification of all occupational injuries and illnesses occurring on the project.
- Assist management during investigations by outside agencies.
- Evaluate the need for personal protective equipment, fire protection equipment, and other related equipment, and specify the equipment to meet the needs of E&CS personnel.
- Coordinate the project's hazard communication program including a review of the material safety data sheet (MSDS) for chemicals and hazardous material. The product MSDS shall be reviewed prior to ordering the material to determine acceptability of the product.
- Maintain cumulative, historical MSDS files for chemicals used on projects.
- Display and maintain safety materials on site bulletin boards.
- Recommend staff EH&S training needs to the site manager.
- Analyze project incident and injury data and trends, and make improvement recommendations to management.
- Assist site management in ensuring contractors comply with the environmental, safety, and health provisions of the contract.
- Provide input to the site's construction EH&S budget.
- Administer the safety nonconformance report process, which serves as the mechanism to formally notify contractors of noncompliance with contract provisions and to request corrective action.

4.2.8 Discipline lead

- Know, implement, and enforce the E&CS construction EH&S policies, procedures, and contractual requirements.
- Assist in training direct-report E&CS personnel, and ensure these E&CS personnel have required EH&S training.
- Set an example by working safely, presenting a positive safety attitude, and requiring site personnel to work safely.

- Observe contractor's weekly safety meetings, assist in resolving EH&S questions, and monitor the effectiveness of the safety meetings.

- Perform daily EH&S assessments of work areas for the benefit of Generation personnel and to monitor contractor compliance with contract provisions. Initiate corrective action for noncompliance.

- Participate in appropriate injury/illness and incident investigations. and review reports to ensure investigations are complete and that corrective actions are in place.

- Monitor the implementation of job planning and safety analyses requirements contained in procedure 1.N.

4.2.9 Discipline coordinator

- Know, implement, and enforce the E&CS construction EH&S policies, procedures, and contractual requirements.

- Ensure that injuries/illnesses, fires, incidents, near-hits, etc., occurring in his or her area of responsibility are promptly reported and appropriately investigated.

- Monitor the implementation of job planning and safety analyses requirements contained in procedure 1.N.

- Participate in appropriate investigations of incidents and injuries/illnesses.

- Assess work areas daily to ensure that work practices and conditions meet company and regulatory EH&S requirements. This inspection is for the benefit of Generation personnel and to monitor contractor compliance with contract provisions. Initiate corrective action for noncompliance.

- Set an example of proper work habits and a positive safety attitude, and follow EH&S rules.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-1C

Incident Notification

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the method and responsibilities for the timely notification to Engineering and Construction Services (E&CS) management of significant Environmental, Health, and Safety (EH&S) related events occurring on E&CS projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- SH-5B, Travel Safety.
- Incident Notification Form.

3.0 RESPONSIBILITY

3.1 Construction Site Management

E&CS construction site management is responsible for implementing a communication process that keeps E&CS line manager and E&CS Safety and Health – Construction informed of significant EH&S events occurring on fossil/hydro construction projects. Acceptable means of communication include e-mail, telephone, and radio.

4.0 PROCEDURE

4.1 Notification Criteria

1. The following events occurring during normal work hours involving Southern Company Generation or contractor personnel shall be communicated to each management level up to and including the E&CS management level listed within the same day as site management becomes aware of the event.

If a/an … occurs,	**Within the same day as the event being known by site management, notify each management level up to and including …**
Fatality	Executive vice president–E&CS
Lost time injury	Executive vice president–E&CS
Incident impacting or potentially impacting plant operations or personnel, such as: • Crane incidents. • Fires. • Disruption of electrical service.	Executive vice president–E&CS
Regulatory inspection	Executive vice president–E&CS
Any OSHA recordable injury	Executive vice president–E&CS

2. The following events occurring after normal work hours (night shift, weekends, and holidays) require the responsible direct report to immediately notify the executive vice president–E&CS. Also notify the risk management department of the appropriate operating company.

   - Fatality (Generation or contractor).
   - Life-threatening injury (Generation or contractor).

- E&CS-caused plant outage.
- Any event having significant political or community impact.

3. Any event resulting in property damage greater than $10,000 that involves Generation or contractor property shall be communicated to each E&CS management level up to and including the executive vice president–E&CS within a week of the event being known by site management.

4.2 Vehicle Accidents

Incidents involving vehicle accidents shall be reported in accordance with Generation requirements detailed in procedure SH-5B, Travel Safety. Additionally, if reportable injuries or property damage occurs, the notification requirements in 4.1, Notification Criteria and/or SH-5B, Travel Safety, depending if vehicular and/or personal injury occur, shall also be followed.

4.3 Incident Notification Form

In general, most of the events listed in 4.1, Notification Criteria should be communicated to E&CS line management and the construction safety and health manager via the Incident Notification Form. However, management shall use discretion in determining when more expedient and certain communications are needed; that is, phone calls regarding afterhours events or a fatality. The Incident Notification Form should be filled out as complete as possible and e-mailed to appropriate line management. A short explanation of the incident should be included in the message to enable addressees who cannot immediately open attachments to get basic information.

5.0 KEY CONTACT

For questions about the content of implementation of this procedure, contact the manager–E&CS Health and Safety – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-1D

Best Practices/Lessons Learned Communication

	Rev. 0	**Rev. 1**
Date	06/30/2009	
Revised By	Bob Fitzgerald	
Reviewed By	Construction Safety Leadership Team	
Approved By	Will Taylor	

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the method and responsibilities for the creation and distribution of Engineering and Construction Services (E&CS) Environmental, Health, and Safety (EH&S) Best Practices and Lessons Learned bulletins.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- E&CS Procedure PM-03, Lessons Learned.
- E&CS Procedure SH-1C, Incident Notification.
- SH-1C Incident Notification Form.
- E&CS APEX SharePoint site.

3.0 RESPONSIBILITY

3.1 Manager–E&CS Safety and Health – Construction

The manager–E&CS Safety and Health – Construction shall perform the following:

- Determine the appropriateness of the bulletin subject based on incident reports and Best Practices requests.

- Provide E&CS personnel access to bulletins that detail the significance of EH&S-related events.

4.0 PROCEDURE

4.1 Determine Appropriateness of Bulletin Subject

The manager–E&CS Safety and Health – Construction shall determine the subjects of the EH&S Best Practices and Lessons Learned bulletins. The Lessons Learned bulletins may be created in response to an SH-1C Incident Notification Form and/or Best Practices Requests. (See attachment A – EH&S Bulletin Work Instructions.)

4.2 Access to Bulletin

The manager–E&CS Safety and Health – Construction shall ensure E&CS personnel and all others under their supervision (contractors, subcontractors, and so forth) have access to EH&S bulletins on APEX that detail significant EH&S-related events.

5.0 KEY CONTACT

For questions about the content of implementation of this procedure, contact the manager–E&CS Health and Safety – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

Attachment A – EH&S Bulletin Work Instructions.

Attachment B – Lessons Learned/Best Practices Bulletin Workflow.

Attachment C – Best Practice Bulletin Request Form.

Attachment D – Sample Best Practices EH&S Bulletin.

Attachment E – Sample Lessons Learned EH&S Bulletin.

Attachment A – EH&S Bulletin Work Instructions

Southern Company Generation
Engineering and Construction Services
Environmental, Health, and Safety
Work Instructions - Creating EH&S Bulletins

These work instructions establish the process for creating Engineering and Construction Services (E&CS) Environmental, Health, and Safety (EH&S) bulletins, as described in procedure SH-1D, Best Practices/Lessons Learned Communication. The bulletins are intended to share best practices and lessons learned across the system to help prevent incidents. These work instructions support requirements listed in E&CS procedure SH-1D, Best Practices/Lessons Learned Communication.

RESPONSIBILITIES

Manager–E&CS Safety and Health – Construction

The manager–E&CS Safety and Health – Construction will approve the draft of the EH&S bulletin.

Construction Site Safety Professional

The construction site safety professional will perform the following:

- Assist management on conducting incident analysis.
- Submit Best Practices bulletin requests.
- Approve the bulletin draft.
- Communicate the bulletin with contractors.

Technical Publications

Technical Publications personnel will perform the following:

- Write a draft of the EH&S bulletin.
- Route the draft to the construction site manager.
- Resolve any comments.
- Route the draft bulletin for approval to the manager–Safety and Health - Construction.
- Route the approved bulletin to the designated distribution list, named E&CS EH&S Incident Distribution.
- Post the approved bulletin on APEX; link from the S&H Web site.

Contractors

Contractors working on E&CS construction project sites will share the approved EH&S bulletin with their craftpersons.

PROCESS

1. Perform an Incident Analysis

The construction site safety professional performs an incident analysis preferably within 1 week of the incident or submits a Best Practices bulletin request.

2. Provide Information

The construction site safety professional will provide Technical Publications with the specific information to be included in the Best Practices or Lessons Learned bulletin (for example, what happened, contributing causes, corrective actions, and photos).

3. Draft Bulletin

Technical Publications personnel will draft the bulletin using the appropriate bulletin template within 1 week of the bulletin request.

4. Route to Construction Site Safety Professional

Technical Publications will route the draft of the bulletin to the construction site safety professional for his or her approval.

5. Route Comments to Technical Publications

The construction site safety professional will route any comments to Technical Publications to be resolved.

6. Resolve Comments

Technical Publications will resolve any comments from the construction site safety professional.

7. Route to Manager–E&CS Safety and Health – Construction

After the construction site safety professional has approved the bulletin draft and all comments have been resolved, Technical Publications will route the draft to the manager–E&CS Safety and Health – Construction for approval.

8. Route to Distribution List

Technical Publications will route the approved bulletin to the E&CS EHS Incident Distribution List in Microsoft Outlook. The distribution list contains the e-mail addresses for the following people:

- Site safety professionals.
- Site managers.
- Regional construction managers.
- Project managers.
- Director, Safety and Health, Southern Company Generation.
- Regional safety managers.
- Vice president–Environmental Projects and Construction – East.
- Vice president–Environmental Projects and Construction – West.
- Vice president–New Generation Projects & Construction.
- Vice president–Nuclear Construction.
- E&CS executive vice president.

9. Post Bulletin to APEX

Technical Publications will link the approved EH&S bulletin from APEX to the E&CS Safety and Health – Construction Incident Report Web page at http://powergeneration.southernco.com/depts/engineering/safety-health-constr/bulletins.html.

Attachment B – Lessons Learned/Best Practices Bulletin Workflow

Incident Report Workflow

KEY

TP = Technical Publications
CSSM = Construction Site Safety Manager
MSHC = Manager, Safety & Health – Construction
CSM = Construction Site Manager

Attachment C – Best Practices Bulletin Request Form

This bulletin is used to share good examples among Southern Company Generation E&CS projects. Bulletins will be submitted to the E&CS site manager for review and approval prior to publishing.

If available, attach photos to demonstrate the best practice.

Project name: _____

Project contact: _____

Brief description of incident and results:

Distribution:

Attachment D – EH&S Best Practice Sample

EH&S BEST PRACTICES
Scaffolding has many uses

Unused scaffolding can still be of service on a construction site. Consider using scaffolding as safety plus barricades in highly congested work areas. These barricades are equipped with safety access gates and prove to be an excellent protection for workers and equipment. Highly visible and easy to install, scaffolding makes a stable safety device in high winds or other conditions.

E&CS Safety and Health – Construction
February 2009

Attachment E – EH&S Lessons Learned Sample

EH&S LESSONS LEARNED
Lacerations can be serious

An employee working alone out of a manlift attempted to remove rusty nuts from conduit straps. He took off his gloves to try to remove the bolts with his bare hands, but was unsuccessful in his attempt. He proceeded trying to remove the bolts by using a Port-a-Band saw to cut the rusted nuts off the conduit strap. While using the saw, he inadvertently cut through the nut while attempting to catch the uni-strut with his left hand. The saw dropped downward and struck the top of his left hand.

The employee received approximately 21 stitches.

Contributing factors:

- Employee failed to review and sign a job safety briefing (JSB).
- Improper tool selection.
- Improper use of hand tool.
- Improper body position.
- Did not have a partner when it was appropriate.
- Failed to communicate with supervisors and inform them of an obstruction to the task at hand.
- Failed to wear appropriate personal protective equipment (PPE), such as gloves.

Preventing reoccurrence:

- Perform a JSB before every task.
- Use proper tools, and use them properly.
- Appropriately position body.
- Work with a partner when appropriate.
- Communicate circumstances to supervisors.
- Wear suitable PPE, such as gloves.

The employee suffered a severe laceration to his hand when the Port-a-Band saw dropped downward.

E&CS Safety and Health – Construction
February 2009

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-1E

EH&S Training

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure defines the requirements for the education and training of Engineering and Construction Services (E&CS) personnel in the recognition of hazards and the methods used to control and/or eliminate those hazards.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

None.

3.0 RESPONSIBILITY

3.1 Construction Site Management

E&CS construction site management is responsible for the following:

- Providing the training resources necessary to equip employees with the environmental health and safety (EH&S) knowledge and skills required for them to accomplish their jobs in compliance with company requirements.
- Assigning tasks only to employees who have successfully completed the EH&S training required for the task.

4.0 PROCEDURE

4.1 Training Requirements

Conduct training in accordance with E&CS and applicable regulatory and operating company requirements.

All formal training delivery will include a written test to verify understanding of the information presented. Employment decisions are not to be made based on test results.

Each construction project management team shall prepare and implement an EH&S training plan based on its specific needs. Review and update the plan on an annual basis.

Training shall be documented according to Southern Company Generation training documentation requirements.

All meetings involving five or more people will begin with a safety topic discussion. EH&S information to facilitate the safety topic discussion is located on the E&CS Safety and Health – Construction Web site (http://powergeneration.southernco.com/depts/engineering/safety-health-constr/default.html).

All construction project E&CS personnel shall complete the OSHA 10-Hour Construction Outreach training program every 3 years. In addition, all E&CS personnel either assigned to or who visit projects shall complete annual required compliance training levels 1, 2, and 3.

4.2 Education and Training

Employee EH&S education and training shall be accomplished through, but not be limited to, the following:

- EH&S orientation for all employees new to the company or new to the location.
- Formal classroom training.
- Supervisory EH&S orientation for all new supervisors.
- Weekly gang-box meetings.
- Job planning and safety analysis.
- Participation in EH&S assessment teams.
- Mentoring.
- On-the-job training.
- Simulator or mockup training aids.
- Third-party training.
- Near hits and lessons learned.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Health and Safety – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Consulting Services

Environmental, Health, and Safety Procedures

SH-1F

EH&S Assessments

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Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure establishes requirements and responsibilities for performing Environmental Health and Safety (EH&S) assessments on Engineering and Construction Services (E&CS) projects to identify improvement opportunities.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

None.

3.0 RESPONSIBILITY

3.1 E&CS Construction Site Management

E&CS construction site management shall be responsible for the implementation of this procedure.

3.2 Self-Assessment Team

The self-assessment team shall be responsible for:

- Conducting a compliance assessment with an emphasis on those work activities that could have a negative impact on the safety of Generation employees, operating company employees, or the general public.
- Documenting and discussing the assessments in site management team meetings.
- Assigning responsibility for corrective actions.
- Communicating a summary of findings to the Generation site workforce.

3.3 Noncompliant Party Management

Noncompliant party management shall be responsible for ensuring follow-up and correction of findings.

3.4 EH&S Group

The EH&S group is responsible for analyzing findings for trends and recommending EH&S process improvements.

3.5 Contractors

Contractors shall be responsible for conducting weekly field EH&S inspections of all contractor and their subcontractor work areas and generating a written report of the inspection findings.

3.6 E&CS Safety and Health – Construction

E&CS Safety and Health – Construction shall be responsible for coordinating the EH&S Assessment Protocol for Construction Projects

4.0 PROCEDURE

4.1 E&CS Site/Facility Assessments

The management at each site/facility shall establish a formal self-assessment process whereby all work areas are assessed for compliance with applicable EH&S requirements (regulatory, company, site/facility, contractor compliance with contract specifications, and so forth). This assessment is to ensure Southern Company Generation regulatory compliance and to benefit Generation employees.

The frequency of this assessment process will be at least:

- Quarterly for office facilities and other fixed locations.
- Weekly for construction activities.

The assessment shall be conducted by a team of site management representatives with an emphasis on those work activities that could have a negative impact on the safety of Generation employees, operating company employees, or the general public.

Assessment findings shall be documented and discussed in site management team meetings. Responsibility for corrective actions shall be assigned. A summary of findings shall be communicated to the Generation site workforce. Those findings

that involve contractor work activities that have a negative impact on others shall be transmitted via contract guidelines for appropriate action by the contractor.

Appropriate management from the noncompliant parties is responsible to ensure follow-up and correction of findings.

The EH&S group is responsible for analyzing findings for trends and recommending EH&S process improvements.

4.2 Contractor EH&S Assessments

Contractors shall conduct weekly field EH&S inspections of all contractor and their subcontractor work areas. The contractor shall generate a written report of the inspection findings. The report, including the resolutions of the findings, shall be submitted to the company on a weekly basis. The contractor shall also inspect his or her work areas on a continuous basis and correct all noncompliance conditions and actions.

The contractor's home office shall have a corporate safety representative conduct quarterly safety audits of that contractor's work activities at each E&CS project and include a written report of the findings with any proposed recommendations he or she will implement forwarded to the E&CS construction site manager.

Each contractor’s safety assessment process will include a safety observation program that involves observing, documenting, tracking, and trending the safe and unsafe behavior of field employees. The contractor will communicate the results of the observations biweekly to the workforce and implement appropriate intervention actions to address deficiencies. The documentation, tracking, trending, communications, and interventions will be shared with the company upon request.

4.3 E&CS Construction EH&S Assessment Program

E&CS Safety and Health – Construction shall coordinate the EH&S Assessment Protocol for Construction Projects (see attachment A, EH&S Assessment Protocol for Construction Projects).

4.4 Southern Company Compliance Audits

E&CS construction projects will be included in the Generation Compliance Audit program.

5.0 KEY CONTACT

For information about the content and implementation of this procedure, contact the manager–E&CS Health and Safety – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENT

Attachment A, EH&S Assessment Protocol For Construction Projects.

Attachment A – EH&S Assessment Protocol for Construction Projects

Purpose

The assessment program will assist project and site management in identifying areas for improvement. The program will provide site management with recommendations for improvements based on corporate standards and industry best practices. The assessment will quantify the degree of the project's compliance with regulatory and company requirements.

Scope

The assessment program applies to all major E&CS construction projects. Each project should be assessed on an annual basis.

Responsibilities

E&CS Safety and Health - Construction: Lead the EH&S assessment process. Coordinate with construction management to determine projects to be assessed and assessment schedule.

Construction management: Provide personnel to participate as assessment team members.

Site management: Provide management and supervision personnel to participate in the assessment process. Review assessment results and recommendations and develop an action plan regarding findings and recommendations.

Audit Format

The assessment will consist of an evaluation of the project's compliance with company and regulatory requirements. Each item will have a weighting number. When the numbers are added together, the project will receive a rating grade indicating the project's success in meeting requirements. The assessment criteria will be available on the E&CS Safety and Health – Construction Web site (http://powergeneration.southernco.com/depts/engineering/safety-health-constr/default.html).

Assessment Team

The assessment team will be led by members of E&CS Safety and Health – Construction. The team will consist of three to four team members composed of safety professionals with additional personnel representing management, and construction staff personnel from other E&CS projects.

Process

1. Projects shall be selected for assessment by the E&CS Safety and Health – Construction and construction management. The selection shall be based on the project's size, type of project, EH&S record, and longevity.

2. The responsible regional construction manager, project manager and site manager shall be notified by E&CS Safety and Health – Construction of the pending assessment. The regional construction manager shall review the project's status with the EH&S assessment schedule to confirm the assessment timing.

3. Upon arriving at the project, the assessment team and the site team shall have an opening meeting to discuss the assessment, the assessment parameters and schedule, the written report, distribution of the written report, and the site's action plan for the closing of the findings.

4. The assessment team shall divide up the assessment as needed and complete the administrative and field sections of the assessment.

5. The assessment team shall develop the first draft of the assessment report.

6. The assessment team and the site management team shall meet for a closing meeting to discuss the draft of the written report and the site's corrective action plan. The final written report shall be completed and distributed by E&CS Safety and Health – Construction within 3 weeks of the assessment's conclusion.

7. The project shall correct assessment findings by the agreed-on dates. Written explanations of the corrective actions and schedules shall be sent to E&CS Safety and Health – Construction and the appropriate construction manager. Periodic status updates may be requested by construction management.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-1G

EH&S Metrics Reporting

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Reviewed By	Bruce Walker	Bruce Walker
Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure establishes the requirements for the monthly tracking and reporting of Environmental, Health, and Safety (EH&S) metrics for Engineering and Construction Services (E&CS).

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- E&CS Monthly Health and Safety Report.
- Injury Log.

3.0 RESPONSIBILITY

3.1 Construction Projects and Civil Field Services

Each construction project and Civil Field Services shall be responsible for submitting a monthly report to E&CS Safety and Health – Construction.

3.2 E&CS Safety and Health – Construction

E&CS Safety and Health – Construction shall be responsible for summarizing the data and issue a monthly report by the 10th of the following month.

4.0 PROCEDURE

4.1 Monthly Reports Requirements

1. Each construction project and Civil Field Services shall submit a monthly report to E&CS Safety and Health – Construction. Monthly reports are due by the 5th of the following month.

2. E&CS Safety and Health – Construction will summarize the data and issue a monthly report by the 10th of the following month.

3. All data for the categories on the E&CS Monthly Health and Safety Report shall be provided by each project and group. Work-hour and injury data are to include data for all site personnel working on the project on a permanent or temporary basis.

4. If notification of an injury is late or the classification of an injury is changed, the change shall be reflected in the cumulative totals on the next monthly report.

5. All incidence rates shall be rounded to the nearest hundredth.

6. E&CS management may require additional safety metrics to be reported. This report shall be coordinated through E&CS Safety and Health – Construction.

4.2 Contractor Reporting

1. E&CS contractors shall immediately report to E&CS the following events arising out of or in connection with the performance of the contractor and his or her subcontractor's work on the project:

   - All OSHA-recordable injuries.
   - Property damage greater than $10,000.
   - Any damage to existing operating plant facilities or equipment.
   - Fires.
   - Crane incidents.
   - Personnel falls.
   - Chemical/hazardous substances spills.

- Any incident or injury involving the general public.

2. For all of the events requiring reporting to E&CS, the contractor shall, within 2 working days, submit to E&CS a written report documenting the facts of the event, including root causes and actions taken or planned to prevent recurrence.

3. The contractor shall submit to E&CS the state Worker's Compensation First Report of Injury for each occupational injury or illness requiring offsite medical treatment.

4. Each month the contractor shall submit by the 5th of the following month a written safety report documenting the contractor and his or her subcontractor's monthly safety statistics, including work-hours, number of recordable injuries and the number of lost-time cases for the month, year-to-date, and project-to-date.

5. The contractor shall maintain a comprehensive (to include any injury or report only cases), up-to-date injury log. This log shall, at a minimum, include the information on the sample Injury Log (form 1.G.1). A copy of this log will be provided by the contractor to E&CS upon request.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-1H

Contract Safety and Health Management

	Rev. 0	**Rev. 1**
Date	9/2/2003	3/11/2009
Reviewed By	Bruce Walker	Bruce Walker
Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the policy and processes for influencing contractor Environmental, Health, and Safety (EH&S) performance on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- E&CS Construction EH&S Policies and Procedures Manual.
- Generation Playbook, chapter 12, Contract Guidance Manual.
- Contractor Safety Qualification Questionnaire.
- Contractor Safety, Health and Environmental Orientation Checklist.
- Safety Nonconformance Report (SNCR).
- Contractor Performance Evaluation.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 General

- Contractors are required to meet their responsibility for ensuring the safety and health of their personnel, agents, and subcontractors.
- Contractors shall establish and enforce standards, practices, and processes sufficient to provide an injury-free work environment.
- Contractors shall know and comply with all applicable E&CS, site-specific, and regulatory EH&S requirements.
- The contractor is responsible for the safety and health of all personnel working for him or her, including all subcontractor personnel, and for all other persons calling on, visiting, or doing business with the contractor.
- The contractor is responsible for ensuring all required general and specialized EH&S training is conducted for personnel under its management.
- All provisions of this procedure apply to all tiers of independent contractors providing services to E&CS.
- Supply Chain Management (SCM) will assist E&CS in the implementation of the Southern Company Generation Contract Safety and Health Management Process as described in the Generation Playbook, chapter 12, Contract Guidance Manual.

- Implementation of the following five-step Generation contract management safety process will help ensure independent contractors meet their EH&S responsibilities:

  – **Contractor Qualifications** – Contracts will be awarded only to contractors with a demonstrated commitment to safety and health. The attached Contractor Safety Qualification Questionnaire will be used to obtain objective and subjective safety information from contractors. Acceptable thresholds for the objective selection criteria are contained in the Southern Company Generation Contract Guidance Manual, section IV, Safety and Health. The use of contractors not meeting the objective selection criteria requires the approval of the general manager–Construction Services.

  – **Contract Preparation and Award** – Safety and health requirements and expectations applicable to the contracted work shall be established and communicated during the contracting process. These requirements shall be appropriately included in all executed agreements between E&CS and the contractor. See attachment A, Environmental, Health and Safety Specifications, for a boilerplate set of EH&S specifications for E&CS contracts. The EH&S specifications require that the contractor's EH&S site program meet or exceed the requirements contained in the E&CS Construction EH&S Policies and Procedures Manual.

  – **Orientation** – Prior to the start of work, E&CS project personnel will review contractual safety information and requirements with the designated contractor site manager and will perform orientation training, as necessary. The Contractor Safety, Health and Environmental Orientation Checklist shall be used to facilitate a thorough review. The contractor's site manager must sign the form to acknowledge receipt and understanding of this information and to commit that this information will be effectively communicated to the contractor's personnel and subcontractors' personnel.

  – **Contract Compliance and Monitoring** – E&CS will monitor compliance with the contract safety and health terms and conditions. Noncompliance with contract safety and health requirements will be documented and reported to company and contractor management using a safety nonconformance report process. For E&CS employees working in or near contractor work areas, E&CS will monitor the work environment to ensure the safety of E&CS personnel, and any unsafe condition will be reported to contractor management for correction. Failure to promptly correct reported conditions can lead to stoppage of work and termination of the contract.

  – **Postcontract Evaluation** – E&CS will perform an evaluation of the contractor's safety performance upon completion of the work using SCM's online Contractor Performance Evaluation form. This evaluation will be communicated to E&CS management and the contractor's representative when appropriate. The results and conclusions of this evaluation will be used in consideration of awarding future work.

4.1.2 Specific

Each contractor shall submit a written project-specific EH&S program to the E&CS project manager for review and acceptance. This program must address all EH&S issues associated with the contractor's scope of work, including specific EH&S requirements contained in the contract terms and conditions. The program shall be implemented by the contractor and shall apply to contractor personnel, agents, onsite vendors, visitors, and subcontractors.

Attachment A, Environmental, Health and Safety Specifications, shall be incorporated into all contracts involving domestic field labor and shall apply to all tiers of contractors. The responsible project manager shall add site-specific EH&S requirements to the specifications document to address specific EH&S issues specific to the scope of work or applicable operating company requirements.

Proof of contractor's workers' compensation and general liability insurance shall be secured prior to contractor mobilization on the project.

5.0 KEY CONTACT

For questions regarding the content or implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

Attachment A, Environmental, Health and Safety Specifications.

Attachment B, Southern Company Generation Contract Guidance Manual, Section IV, Safety and Health.

Attachment C, Generation Projects Contractor Safety Documentation Requirements.

Attachment A – Environmental, Health and Safety Specifications
(extracted from E&CS contract EH&S specifications)

9.0 ENVIRONMENTAL, HEALTH AND SAFETY SPECIFICATIONS

9.1 General

9.1.1 The Contractor shall perform work in a safe manner, and comply at all times with all federal, state, county, and municipal laws and regulations which in any manner affect the Contract and its performance.

9.1.2 Such laws and regulations include, but are not limited to, all laws and regulations with respect to inspection of the work, inspection of construction equipment, and licensing members of crews with respect to observance of all applicable occupational safety and health standards promulgated pursuant to the federal "Occupational Safety and Health Act of 1970".

9.1.3 The Contractor shall have, and exercise full legal responsibility for compliance to safety requirements and regulations by itself, its agents, its employees, and subcontractors with respect to its portion of the work on the project.

9.1.4 By making references to particular laws and regulations above and to these specifications set out below, the Purchaser does not intend to restrict or limit in any way the laws and regulations which apply to the Contractor's performance under the Contract. The Contractor shall be solely responsible for providing for the safety and health of its agents, employees, and subcontractors.

9.1.5 The Contractor expressly binds itself to indemnify and save harmless any person or entity of Persons Indemnified against all claims, demands, suits, or actions of every kind and nature presented or brought for any claim or liability arising from or based upon the violation of any such law, regulation, on the part of the Contractor, or its subcontractor or agents, servants, or employees of the Contractor of its requirements or measures as may be prescribed by the State Board of Health, or any other lawful constituted health or authorities having jurisdiction over the project.

9.1.6 In the event the specifications set forth below address the same issues as set forth in the applicable standards, rules, and regulations referred to above, then the most stringent requirements shall apply.

9.1.7 Observation, monitoring, or notification of Contractor of noncompliance on the part of the Contractor, its agents, employees, or subcontractors of any of the specifications set forth herein or of any of the terms or provisions of the rules and regulations, laws, or ordinances referenced above shall not

constitute an assumption on the part of Purchaser to perform any of the obligations of Contractor hereunder.

9.1.8 The Purchaser reserves the right, but not the duty, to point out such items of noncompliance to Contractor. In the event the Contractor fails or refuses to take proper corrective action in a manner acceptable to the Purchaser, the Purchaser has the right to stop work until such time as Contractor is in compliance, or the Purchaser may terminate the Contract.

9.1.9 No lost time due to any such work stoppage shall constitute a claim for extension of Contract Time or cost or damages by the Contractor.

9.1.10 The safety of all persons employed by Contractor and its subcontractors on Purchaser's premises, or any other person who enters upon Purchaser's premises for reasons related to this Contract, shall be the sole responsibility of Contractor. Contractor shall take all reasonable measures and precautions at all times to prevent injuries to or the death of any of its employees, its subcontractors or any other person who enters upon the Purchaser's premises.

9.1.11 It is understood that if the employees of the Purchaser shall perform any acts for the purpose of discharging the responsibility undertaken by the Contractor under these specifications or under the safety requirements and regulations referenced above, whether requested to perform such acts by the Contractor or not, such employees of the Purchaser while performing such acts shall be considered the agents and servants of the Contractor subject to the exclusive control of the Contractor.

9.2 Contractor EH&S Program – Before starting work, Contractor shall submit its written project specific EH&S Program for the Purchaser's review and concurrence. The Contractor's Program shall be implemented by the Contractor and shall apply to Contractor's employees, agents and subcontractors.

9.3 EH&S Training – EH&S training shall be conducted as described in 29 CFR 1926.21. In addition, EH&S training shall be delivered to appropriate employees in accordance with the specific training requirements contained in 29 CFR 1926 and applicable sections of 29 CFR 1910. The Contractor shall provide EH&S training for its employees at its own expense, and such training shall be documented and records provided to the Company upon request. EH&S training shall include, but not be limited to:

9.3.1 New Employee Orientation – Training in the EH&S program, policies, procedures and rules in place for the project. This training shall take place prior to work activity on the project.

9.3.2 Weekly EH&S "toolbox talks" on an appropriate subject, for all employees.

9.3.3 Hazardous materials training.

9.3.4 Special EH&S training for those affected; such training shall include, but not be limited to, confined space entry, respiratory protection, personal protective equipment, fire watch, trenching/excavation, fall protection, lockout/tagout, scaffolding, ladders, ammonia awareness, emergency plans, etc.

9.3.5 Hazard recognition and avoidance.

9.4 EH&S Inspections – Contractor shall comply with the provisions of 29 CFR 1926.20. Additionally, the Contractor's site manager shall conduct a weekly field EH&S inspection of all Contractor and their subcontractor's work areas. The Contractor shall generate a written report of the inspection findings. The report, including the resolutions of the findings, shall be submitted to the Purchaser on a weekly basis. The Contractor shall also inspect its work areas on a continuous basis and correct all noncompliance conditions and actions. The Purchaser will perform EH&S inspections of work areas for the benefit of Purchaser's employees.

9.4.1 Each contractor's safety assessment process will include a safety observation program which involves observing, documenting, tracking and trending the safe and unsafe behavior of field employees. The contractor will biweekly communicate the results of the observations to the workforce and implement appropriate intervention actions to address deficiencies. The documentation, tracking, trending, communications and interventions will be shared with the Company upon request.

9.5 Personal Protective Equipment and Clothing – Contractor's employees shall wear all applicable personal protective equipment as required in 29 CFR 1926. This shall include, but not be limited to:

9.5.1 Safety glasses that meet ANSI Z-87.1 requirements must be worn in all areas of the project. Administrative areas are exempt, unless construction or maintenance work is being performed. Safety glasses must have rigid side shields. Slip-on, flexible plastic side shields are not allowed. Visitor spectacles, conforming to ANSI Z-87.1, worn over prescription glasses are acceptable. A full-face shield over approved safety glasses is required for all grinding, abrasive cutting operations or any other operation which generates high-speed particles.

9.5.2 Hard hats that meet ANSI Z-89.1 Class B requirements must be worn in all areas of the project except administrative areas. Hard hat must be worn for welding operations. Cowboy style hard hats are prohibited.

9.5.3 Hard soled, heavy leather safety toed boots or shoes meeting ANSI Z41-1991 must be worn in all areas of the project, except administrative areas. Metatarsal guards shall be worn by employees operating hand vibratory

tampers, jackhammers, and similar operations with a potential for serious foot injuries.

9.5.4 Hearing protection shall be worn when noise levels exceed 90 dBA.

9.5.5 Leather or cut resistant gloves are required when handling sheet metal, rough or unfinished lumber, metal bands, and other materials likely to cause hand injuries.

9.5.6 Cut resistant gloves must be worn when handling or using sharp instruments, tools, or equipment, which could cause lacerations if hand contact would occur (i.e. knives, razors, handsaws, etc.).

9.5.7 Shirts must have at least a 4-inch sleeve. Trousers covering the legs and ankles shall be worn at all times. Perforated or mesh shirts or trousers are prohibited.

9.5.8 Cotton or FR clothing shall be worn by any employee working on or near exposed, energized electrical parts.

9.6 Fall Prevention

9.6.1 Contractor shall comply with provisions of 29 CFR 1926.500; 1926.501; 1926.502; 1926.503. Additionally, 100% fall protection shall be utilized whenever employees are exposed to a potential fall hazard of 6 feet or greater. 100 % fall protection may be accomplished through the use of a guardrail system (per 1926.502(b)), approved safety net system, covers or personal fall arrest systems.

9.6.2 Before starting any elevated work, Contractor shall submit to the Purchaser a project specific, written fall prevention plan. Elevated work includes, but is not limited to: scaffold erection, steel erection, work in pipe bridges, roof work, Q-decking or grating installation and removal, formwork and reinforcing steel and any other work with potential for a 6 feet or greater fall, except work performed from ladders. The plan must include:

9.6.2.1 A list of elevated work tasks.

9.6.2.2 The proposed method(s) of fall protection for each task. If a personal fall arrest system is to be used, identify anchor points.

9.6.2.3 Rescue provisions.

9.6.2.4 Means of access and egress to elevated work locations.

9.6.2.5 Name(s) and qualifications of Contractor’s competent person(s).

9.6.2.6 Description of the Fall Protection Training Program.

9.6.3 Full-body harnesses shall be equipped with dual shock absorbing lanyards. The use of employee owned fall arrest equipment is strictly prohibited.

9.6.4 Snap hooks that have a throat opening greater than 25/32" cannot be used on SCG Construction Projects. Snap hooks with throat opening greater than 25/32" can be used on fixed structural elements such as rebar only if they have self locking carabineer load gates rated to 5000lbs. Snap hooks with throat openings greater than 25/32" and gates rated less than 5000lbs. cannot be used without exceptions. Fall arrest equipment must be designed to meet ANSI A10.14 Requirements for Safety Belts, Harnesses, Lanyards & Lifelines for Construction and Demolition: and ANSI Z359.1 Safety Requirements for Personal Fall Arrest Systems and Components.

9.7 Mobile Equipment and Vehicles – Mobile equipment and vehicles shall be operated, maintained and stored in accordance with the requirements of 29 CFR 1926 and manufacturer's recommendations. Additionally:

9.7.1 Each employee must have a valid state driver's license to operate any mobile equipment or vehicle on the project.

9.7.2 Daily pre-use inspections shall be performed on each vehicle and item of mobile equipment. The inspection shall be documented and available for review.

9.7.3 Each vehicle and item of mobile equipment arriving on site for use on the project shall be inspected before use. Operator training is required for all mobile equipment and shall be documented and available for review.

9.7.4 Seat belts, when provided by the manufacturer, shall be used by vehicle and mobile equipment operators and any other occupants. Passengers are not allowed on mobile equipment (dozers, backhoes, cranes, fork trucks, graders, etc) unless a space was specifically designed by the manufacturer and seat belts provided.

9.7.5 All mobile equipment and any vehicle with an obstructed view to the rear shall have an operable back-up alarm.

9.7.6 All telescopic boom material handlers (forktrucks) shall have low mounted booms that afford 360 degree visibility from the operator's cab when the boom is in a travel position or when picking/setting a load at or near ground level. The equipment shall be designed so that a person cannot enter the area between the front and rear tires.

9.8 <u>Cranes</u>

9.8.1 Contractor shall comply with all provisions of 29 CFR 1926.550 and applicable ANSI/ASME standards.

9.8.2 An anti-two block device is required on all cranes.

9.8.3 All annual crane inspections shall be performed by a Third-Party Crane Inspector that meets OSHA/ASME qualification requirements. The Contractor shall provide a copy of the results of the current OSHA required annual crane inspection.

9.8.4 The Contractor shall submit details of its proposed work platform and rigging method for the Purchaser's review and concurrence before conducting any work from a platform suspended from a crane. Included in the details must be a clear justification for using a crane-suspended work platform rather than another method. Contractor shall comply with all provisions of 29 CFR 1926.550(g).

9.8.5 The Contractor shall develop a rigging plan for all critical lifts and submit the plan, approved by the Contractor's Site Manager, to the Company no later than 15 calendar days before the lift is conducted. A lift is considered critical when any of the following conditions exist:

9.8.5.1 Lift involving more than one crane to handle a common load

9.8.5.2 Any lift greater than 25 tons

9.8.5.3 Any lift where the load is 80 percent of the crane capacity.

9.8.6 The rigging plan shall include at least the following information:

9.8.6.1 Manufacture, model, and capacity of the crane(s)
9.8.6.2 Capacity charts of the crane(s)
9.8.6.3 Working radius of the crane(s)
9.8.6.4 Boom length and angle of the crane(s)
9.8.6.5 Weight of the load, including rigging, load block, headache ball, cable, etc
9.8.6.6 How the weight of the lift was determined
9.8.6.7 Size and capacity of all rigging hardware (slings, shackles, etc)
9.8.6.8 Plot plan showing crane location with pick, swing, and set points
9.8.6.9 Plan approval signatures (Contractor site manager shall approve the written plan).

9.8.7 All crane operators shall have current NCCCO certification for the class of crane they will operate. Prior to the operation of any crane, Contractor shall submit to the Purchaser methods used to assure the crane operator is qualified in accordance with the applicable ANSI/ASME standards and is qualified to operate the specific crane to be operated in compliance

with manufacture's specifications and limitations, and with any applicable regulation.

9.8.8 All loads being landed or received by personnel shall be controlled by the use of tag lines. Keep hands off suspended loads.

9.8.9 All cranes shall receive a documented daily inspection and a more detailed monthly inspection (periodic) by a qualified individual. Inspection records shall be maintained and available for review.

9.8.10 Hand Signals – Hand signals to crane operators shall be in accordance with the applicable ANSI standard for the type of crane in use. Employees giving and receiving hand signals shall be trained and qualified in Hand Signals.

9.8.11 All rigging shall be performed by qualified personnel under the direction of a Competent Person.

9.9 Scaffolds

9.9.1 The Contractor shall erect, use, maintain, and dismantle scaffolds in accordance with 29 CFR 1926 Subpart L.

9.9.2 All scaffolds shall be constructed as physically complete as possible. This includes handrails and midrails on all sides at all elevations used as a work location, complete work decks, toe boards on all sides and ladder access.

9.9.3 Scaffolds and scaffold components shall be inspected for visible defects by a competent person before each work shift. This inspection shall be documented on the scaffold tag.

9.9.4 Contractor shall utilize a scaffold tag system meeting the following criteria:

9.9.4.1 A green scaffold tag designates a complete scaffold.

9.9.4.2 A yellow scaffold tag designates a scaffold that is not complete, but may be used with special precautions. e.g. 100% tie off. Yellow tags shall identify the scaffold deficiency and applicable precautions/requirements.

9.9.4.3 A red tag designates a scaffold is in the process of being erected, changed, dismantled or otherwise unfit for occupancy and shall not be used under any circumstances.

9.9.4.4 A competent person shall affix the appropriate tag to each scaffold access ladder. All tags shall identify the responsible Contractor and shall be dated and signed by the erecting supervisor and competent person.

9.10 Ladders

9.10.1 Contractor shall comply with the provisions of 29 CFR 1926.1053.

9.10.2 Contractor shall denote ownership of ladders by identifying each ladder with Contractor's name.

9.10.3 Stepladders shall not exceed 12 feet in height.

9.10.4 Contractor shall implement a pre-use and a formal quarterly ladder inspection program.

9.10.5 Straight and extension ladders shall be secured to prevent displacement.

9.10.6 Employees shall not carry tools or materials while ascending or descending ladders.

9.10.7 All manufactured ladders shall be extra-heavy-duty Type 1A.

9.10.8 Metal ladders are prohibited.

9.11 Electrical

9.11.1 Contractor shall comply with all aspects of 29 CFR 1926 Subpart K.

9.11.2 Contractor shall provide ground fault circuit interrupter (GFCI) protection for all cord sets, receptacles, and electrical tools and equipment connected by cord and plug which are used or available for use by employees. Contractor shall inspect each GFCI device monthly. Inspection shall be documented and records provided to the Purchaser upon request.

9.11.3 Contractor shall not perform any "hot" work above 50 volts. "Hot" work is defined as any work that involves intentional contact using hands or tools (except for approved test equipment) with exposed energized circuits.

9.11.4 Contractor shall not connect electrical conductors to the permanent power source until all field installation work associated with the equipment, device or apparatus is complete.

9.11.5 Contractor shall not energize any permanent electrical equipment, device or apparatus without prior approval of the Purchaser.

9.12 Excavation and Trenching

9.12.1 Contractor shall comply with all aspects of 29 CFR 1926.650; 1926.651; and 1926.652 with applicable appendices.

9.12.2 Contractor shall provide the Purchaser the name of the Competent Person who will perform documented inspections of excavations and trenches prior to employee entries.

9.12.3 Contractor will provide the Purchaser with the methodology used to determine soil classification.

9.12.4 Contractor shall determine the need and perform any atmospheric testing required prior to entry of employees.

9.12.5 Contractor shall maintain and make all documents relative to soil classification, protective system selection, inspections, and required training available for the Purchaser to review upon request.

9.13 Confined Space Entry

9.13.1 Contractor shall comply with 29 CFR 1926.21(b)(6). In addition, when conditions are known to exist that apply to the work in dangerous or potentially dangerous areas the Contractor shall fully comply with 29 CFR 1910.146, “Permit-required Confined Spaces”.

9.14 Housekeeping

9.14.1 Contractor shall maintain a clean work area. Contractor shall clean up and remove all scrap, trash, debris and waste materials that accumulate from its operations on an on-going basis. If the Contractor’s work area is not maintained properly, the Purchaser reserves the right to clean up the Contractor’s work area, by others, at the Contractor’s expense.

9.15 Occupational Health/Industrial Hygiene Program

9.15.1 Hazard Communication – Contractor shall comply with all aspects of 29 CFR 1910.1200 and all applicable state and local hazard communication requirements. Basic requirements include, but are not limited to:

a. Developing and implementing a written site specific Hazard Communication Program. Contractor shall submit a copy of their site program to the Purchaser.
b. Training its employees in all aspects of handling and working with hazardous materials.
c. The development and maintenance of a list of hazardous materials used by the Contractor.
d. Obtaining and maintaining Material Safety Data Sheets (MSDS) for all hazardous materials on site.
e. Labeling the containers of hazardous materials.

9.15.2 Respiratory Protection -- Contractor shall comply with all aspects of 29 CFR 1910.134 including the development of a written site specific Respiratory Protection Program. Contractor shall submit a copy of their site program to the Purchaser. Contractor employee's medical approval, respirator training and fit test records shall be available upon request.

9.15.3 Bloodborne Pathogens -- Contractor shall comply with 29 CFR 1910.1030. Contractor shall provide the Purchaser with its required site specific Exposure Control Plan.

9.15.4 Inorganic Arsenic -- Contractor shall comply with all aspects of 29 CFR 1910.1018 and the Purchaser's arsenic work requirements.

9.15.5 Lead -- Contractor shall comply with all aspects of 29 CFR 1910.1025 and 1926.62, and the Purchaser's lead work requirements.

9.15.6 Asbestos -- Contractor shall comply with all aspects of 29 CFR 1910.1001 and 1926.1101, and the Purchaser's asbestos work requirements.

9.15.7 Contractor shall submit a list of hazardous materials and a Material Safety Data Sheet for each hazardous material to the Purchaser for approval prior to bringing the hazardous material on site.

9.15.8 The Contractor shall develop and submit a plan to the Purchaser that details both the personal and environmental monitoring that they will perform for any special hazardous operations such as spray painting, sandblasting, and large chemical applications.

9.15.8 The Contractor shall make available to the Purchaser the results of atmospheric monitoring conducted on Purchaser's premises.

9.16 Reporting Occupational Injuries, Illnesses and Incidents

9.16.1 Contractor shall immediately report to the Purchaser all injuries, illnesses, and incidents resulting in property damage greater than $10,000, fires, crane incidents, personnel falls and all environmental spills arising out of or in connection with the performance of the Contractor and their subcontractor's work.

9.16.2 For all events reported, except first aid cases, Contractor shall submit within two working days a written report documenting the facts of the event (name and SS# of injured, date and time of injury, names of witnesses and their SS#, accident description, nature and extent of injury, name of treating physician) including root causes and action(s) taken or planned to prevent recurrence.

9.16.3 For all occupational injuries and illnesses requiring off-site medical treatment, the Contractor shall submit to the Purchaser the state workers' compensation First Report of Injury.

9.16.4 Each month the Contractor shall submit to the Purchaser a report documenting the Contractor and their subcontractor's safety statistics, including work hours, number of recordable injuries and illnesses and the number of lost workday cases for the month, year-to-date, and project-to-date.

9.16.5 All Contractors shall post and keep current their OSHA 300 Log for site work at their on-site office while the contractor is employed by the Purchaser. A copy of this OSHA 300 Log will be provided to the Purchaser upon request.

9.17 Fire Protection

9.17.1 Contractor shall comply with 29 CFR 1926.150 through 29 CFR 1926.155.

9.17.2 Contractor shall comply with applicable Purchaser Hot Work Permit systems.

9.17.3 All oxy-fuel burning and welding units shall be equipped with flashback arrestors installed between the regulator and the hose, and between the hose and the torch.

9.17.4 Arrestors shall be inspected and maintained per the manufacture's recommendations.

9.17.5 The Contractor shall train all users of oxy-fuel burning and welding equipment in safe operating practices. Training shall be documented and available for review.

9.17.6 The Contractor shall provide adequate numbers of trained Firewatches and fire extinguishers in locations to support and protect the scope of work. Firewatches may perform collateral duties that do not interfere with the fire prevention efforts.

9.18 Hazardous Waste Control and Disposal

9.18.1 Contractor shall not cause or permit to be released in connection with the work to be performed, any hazardous wastes or toxic substances and/or any other waste, pollution, noxious gases or substances, or any other substances in violation of applicable laws, rules, and regulations.

9.18.2 Contractor is responsible for spill cleanup in accordance with applicable regulations.

9.18.3 Contractor shall properly package any hazardous waste or toxic substances which may be generated through the execution of its work for disposal by the Purchaser.

9.18.4 Contractor shall store any hazardous waste generated only in designated, approved storage areas prior to shipment from site.

9.19 Barricades

9.19.1 Contractor shall furnish, erect, maintain and dismantle barricades required for their work activity.

9.19.2 Warning Barricades (tape and stand) shall be used to alert employees to potential hazards. Each barricade shall be identified regarding the date it was erected, the potential hazard, and the person responsible for the barricaded area. Warning barricades shall be about 42 inches high and shall be removed when no longer needed.

a. Yellow-black barricade tape shall be used to indicate caution or warning. An employee may enter the barricaded area only after reviewing the identified potential hazard and taking the necessary precautions. Examples include: excavations (six feet back from the edge), counterweight swing area, overhead work boundaries.
b. Yellow-magenta barricade tape shall be used to restrict access to a work area where radioactive material is present or where industrial radiography is being conducted.
c. Red barricade tape shall be used to indicate immediate danger. No one may enter a red barricaded area unless the supervisor responsible for the barricaded area specifically authorizes them. Examples include: overhead rigging operations, pneumatic test areas, attended floor openings (six feet back from the edge).

9.19.3 Protective (rigid) Barricades shall consist of a guardrail system meeting the requirements of 29 CFR 1926.502(b). Protective barricades are required for, but not limited to: unattended floor and roof openings, unprotected floor edges or platforms, and ladderway floor openings.

9.20 Hole Covers in Floors and Decks

9.20.1 Contractor shall comply with 29 CFR 1926.502 (i).

9.20.2 Wooden hole covers shall, at a minimum, be constructed of three-quarter-inch plywood provided one dimension of the opening is less than 18 inches; otherwise, 2-inch lumber or doubled ¾ inch plywood is required.

9.20.3 Material or equipment shall not be stored on any hole cover.

9.20.4 Contractor shall identify hole covers with warning labels as prescribed in 29 CFR 1926.502(i)(4).

9.21 Purchaser Location Specific EH&S Requirements – Contractor will be provided with any applicable Purchaser specific EH&S requirements which must be adhered to during Contractor's work activity.

9.22 Miscellaneous Requirements

9.22.1 Tool Inspection – All Contractor tools shall be stored, used, and maintained in accordance with 29CFR 1926 Subpart I. Additionally, all Contractor tools and equipment shall be subject to inspection by the Purchaser at any time while on the project site. The Purchaser retains the right to prohibit or restrict the use of tools and equipment determined to be in unsafe working condition. The use of homemade tools is prohibited unless approved by Purchaser management. The modification of tools and equipment is prohibited without the express written consent of the manufacturer or by the design of a Registered Professional Engineer. The Contractor shall make provisions to remove defective tools and equipment from service immediately by such means as "Do Not Operate" tags or similar methods determined to be effective.

9.22.2 Impalement hazards – Reinforcing steel and similar objects projecting above horizontal surfaces shall be capped or otherwise protected to prevent the possibility of impaling personnel. Non-reinforced plastic caps are not approved protection for falls greater than six feet. Use covers of wood or other approved devices.

9.22.3 Environmental, Health and Safety (EH&S) Professional – Contractor shall provide qualified individual(s) to serve as their EH&S resource for the project in accordance with the following criteria, at a minimum:

a. If the Contractor's projected workforce, including subcontractors, is a total of 25 employees or less, Contractor shall designate an appropriately trained and experienced supervisor to assume the duties of the EH&S resource.
b. If the Contractor's projected workforce, including subcontractors, is a total of 25 to 50 employees, an EH&S Professional, whose primary function is EH&S, shall be assigned to the jobsite.
c. If the Contractor's projected workforce, including subcontractors, is a total greater than 50 employees, an EH&S Professional whose sole function is EH&S shall be assigned to the jobsite. If the workforce becomes 150 employees, a second EH&S Professional whose sole function is EH&S shall be assigned to the jobsite. A 200 plus employee workforce may require additional EH&S resources. The number of EH&S Professionals will be mutually agreed to by the Contractor and Purchaser at the 200 plus level.

d. The EH&S resource/Professional shall be assigned to the jobsite upon Contractor mobilization, not when the reference workforce size is attained.
e. Contractor shall submit the qualifications of the EH&S resource/Professional to the Purchaser for approval prior to assigning the individual to the jobsite.

9.22.4 Use of Explosives – In the event the use of explosives is require under the Contract, all blasting operations shall be conducted in strict accordance with 29 CFR 1926 Subpart U and any other applicable ordinance or regulation. Only experienced and licensed blasters shall perform blasting. The Contractor shall acquire all licenses and/or permits applicable to the use of explosives. A whistle or siren shall be provided by the Contractor, and shall be sounded immediately before blasting. It shall be the Contractor's responsibility to assure all persons are fully aware of the meaning of the signal and that all personnel and vehicles are cleared from the area where they might be injured or damage might occur as a result of the blasting. No blasting shall be performed without the written consent of the Purchaser's Construction Manager.

9.22.5 The Contractor shall notify the Purchaser immediately of any complaint, contact, or intent to inspect the site by any regulatory agency such as, but not limited to, OSHA, EPA, Public Health, and local law enforcement. Upon request the Contractor shall provide the Purchaser such information as the nature of allegations or complaints, any citations or penalties, and agreed upon resolutions or abatements.

9.22.6 Contractor shall at all times assure that an English speaking Representative of Contractor is provided for non-English speaking Contractor employees and its subcontractors ("Contractor Workers"). The Representative must have the ability to communicate with and translate the foreign language of all non-English speaking Contractor Workers to assure that the ability to communicate vital information is readily available. If the non-English speaking Contractor Workers are divided into work groups, it shall remain the responsibility of the Contractor that an English speaking Representative of Contractor is provided so as to assure that the ability to communicate vital information is still readily available to all non-English speaking Contract Workers.

9.22.7 Contractor represents and warrants that it has communicated and translated to its non-English speaking Contractor Workers including all information and training required by applicable laws and regulations and all other safety and health requirements, in addition to all job related duties of the contract. These requirements include but are not limited to OSHA, the Contractor's Safety Program, the contract documents including contract safety requirements, any relevant manufacturer's information such as Material Safety Data Sheets, and the specific project safety plan for the work to be performed for Purchaser, in addition to any

relevant hazards and special site conditions that Purchaser has notified Contractor may be encountered by Contractor and or its Contractor Workers.

9.23 Contractor's environmental, health and safety program shall meet or exceed the requirements of this document and the attached copy of the "Southern Company Generation and Energy Marketing Environmental, Health and Safety Policies and Procedures" manual. Contractor shall submit his own manual for review and approval of Purchaser prior to the commencement of work.

Attachment B, Southern Company Generation Contract Guidance Manual, Section IV, Contract Safety

Chapter IV – Contract Safety

Safety is a Southern Company core value. We will provide a safe work environment for our employees and we expect our contractors to share this commitment for their employees. Safety is equally as important as the quality, cost and scheduling of the work being performed. The Company will choose contractors who share our commitment to safety and will retain contractors who consistently perform in compliance with our expectations.

The purpose of this Chapter is to define a Contract Safety Management Process ("Process") that provides for a consistent method of selecting, monitoring, and evaluating contractors with regard to safety issues.

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target ZERO
Every day, every job, safely.

A. Contract Safety Management Process

The Company has developed the following five-step Process to ensure a safe work environment for construction, maintenance, and other contracts where the safety of our employees, the public or our facilities may be at risk.

1. **Contractor Qualification** – The Company will endeavor to identify and evaluate potential contractors with a demonstrated commitment to safety.
2. **Contract Preparation and Award** – The Company will establish and communicate during the contracting process expectations of contractor performance regarding public safety, the safety of any Company employee working in proximity of contracted work, and compliance with all laws and regulations associated with contractor employee safety. Site specific requirements may also be included in executed agreements.
3. **Orientation** – Prior to the start of work with any new contractor, the Company will review contractual safety information with contractor management.
4. **Monitoring Contract Compliance** – Contract non-compliances with the contractual safety and health provisions will be discussed with contractor management.
5. **Performance Evaluation** – The Company may elect to perform a formal written evaluation of the contractor's safety performance upon completion of the work. The results of this evaluation will be utilized in consideration of awarding future work.

Independent Contractors

In order to appropriately apply the five-step process, it is important to remember that there are different types of contractor relationships. The type of contractual relationship the Company has with the contractor is important from a safety perspective.

The majority of contractors used by the Company are independent contractors, and the Process described in this *Chapter IV* applies to an independent contractor relationship. For other types of contractors, the Process may be different. If the Company has a contract relationship other than that of independent contractor, contact the responsible LSO for details regarding the proper Process that should be observed. Any questions about the type of contractor relationship involved at a Company work site should be referred to the responsible contract administrator.

Company employees do not direct the method and manner in which independent contractor employees perform, nor do Company employees perform certain safety inspections, but independent contractors are required to supervise and direct their employees and representatives and to follow all OSHA and all other applicable regulations, as well as their own safety policies or other safety requirements. Independent contractors will be required to meet their responsibility for assuring the safety of their employees. Independent contractors are additionally responsible for ensuring that all of their subcontractors working on Company work sites comply with the aforesaid requirements.

B. Contractor Qualifications

SOUTHERN COMPANY

1. The Company will identify and evaluate potential contractors with a demonstrated commitment to safety.

The objective of this section is to award contracts only to contractors who have demonstrated that they can work "safely". As stated earlier, ***safety is a core value*** and we will look for contractors who have demonstrated the **capability** and **willingness** to meet our expectations.

Criteria

As part of the contractor selection process, the contractor's demonstrated ability to perform work in a safe manner will be evaluated. The minimum evaluation criteria will include: (1),

Criteria	Acceptable Thresholds
Previous work evaluations	Satisfactory safety evaluations
Experience Modification Rates ("EMR") (3 years)	An EMR of 1.0 or less
OSHA citation history (5 years)	Zero willful citations (final)

(1) This safety evaluation is not required for contracts $10,000 and less; contracts with governmental entities; contractors with four or less employees; or low risk services in which the User and LSO agree that the review is not warranted.

With the approval of the responsible officer, additional safety information can be requested and evaluated for high risk/high dollar projects, including, but not limited to:

- OSHA Recordable Incidence Rates,
- Written Contractor Safety Program,
- Written Safety Procedures

Criteria Exceptions

A contractor may be considered for work without meeting all of the defined evaluation criteria only with the approval of management (as defined by the Company).

C. Contract Preparation and Award

SOUTHERN COMPANY

2. *The Company will establish and communicate during the contracting process clear expectations of contractor performance regarding public safety, the safety of any Company employee working in proximity of contracted work, and compliance with all laws and regulations associated with contractor employee safety and health.*

Standard contract terms and conditions will be used to reflect safety and health requirements that will be incorporated into the contract. In general, all contractors and their subcontractors will be required to comply with the following safety and health standards while performing work for the Company:

1. Federal, state, and local regulations (OSHA, DOT, NESC, etc.) pertaining to the work or service the contractor is providing.
2. Any environmental or sanitation standard or requirement as may be described by any lawfully constituted authority.
3. Any additional Safety and Health requirements included in the contract.

Site Hazards

The Contractor shall be notified during Bid and Award meetings of relevant hazards and special site conditions known to the Company that may be encountered by the Contractor. Company representatives will respond to contractor inquires concerning these hazards.

Contractors with Non-English Speaking Employees

Contractor shall ensure that an English speaking representative of the contractor is provided for non-English speaking contractor employees and its subcontractors. The representative must have the ability to communicate with and translate the foreign language of all non-English speaking employees and subcontractors to assure that the ability to communicate vital information is readily available. If the non-English speaking employees and subcontractors are divided into work groups, the contractor shall provide an English speaking representative to assure the ability to communicate vital information is still readily available to all non-English speaking employees and subcontractors.

The contractor is responsible to communicate and translate to its non-English speaking employees and subcontractors all information and training required by applicable laws and regulations and all other safety and health requirements. These requirements include, but are not limited to, OSHA, the contractor's safety program, the contractual safety requirements, Material Safety Data Sheet information, the specific project safety plan, and any relevant hazards and special site conditions communicated to the contractor.

D. Orientation

SOUTHERN COMPANY

3. Prior to the start of work with any contractor, the Company will review contractual safety information with contractor management and these discussions will be documented.

The contractor is responsible for controlling the manner and methods of its operations and is directly responsible for the safety of its employees and equipment. The contractor's local supervision has the responsibility for carrying out safety and health obligations required by the contract and for management of the contractor's safety program.

Orientation and Pre-Work Meetings

The overall objective of contractor orientation is to provide site-specific information and to ensure that the contractor's representatives recognize their obligation to safety.

In pre-work meetings, Company representative(s) should verify that the local contractor representative(s) understand they are contractually responsible for the safety of their work – including the safety of the public, their employees and Company employees working in areas adjacent to the contractor's work area. The topics covered in the pre-work meetings should be documented by Company personnel and the contractor's representative should be asked to acknowledge, by signature, that these topics were discussed and understood.

The contractor shall ensure that all training required by applicable laws and regulations and the contract documents is carried out before personnel start work and continues throughout all phases of the work. In some situations (for example, OSHA's Process Safety Management Standard), the contractor may need to utilize testing to confirm knowledge transfer.

Company representatives will respond to contractor inquiries concerning site hazards. Known hazards are generally identified and communicated during the Contract Development Process.

Tools and Equipment

In general, the use of Company tools and equipment by contractor personnel is discouraged, and this should be clearly communicated to the contractor during orientation. However, for occasions when there are no practical alternatives, any such use shall be documented in accordance with the following criteria:

- The tool or equipment used.
- Name of the contractor personnel checking out the tool or equipment.
- Verification that the contract employee, along with a Company representative, has inspected the tool or equipment and verified same is in proper working condition.
- Verification that the contract employee has been properly trained in its use.
- Upon return of the tool or equipment, verification by both the contractor and Company personnel that the tool or equipment is in the same or better condition as when it was issued to the contract worker.

Additional Southern Company Generation Requirements

Based upon the complexity of construction and maintenance projects, Southern Company Generation has developed a required Orientation Checklist and additional topics that should be reviewed during orientation. These items are included in the following link: Additional Southern Generation Orientation Issues

Chapter IV – Issue Date: January 2007; Revised September 2007 IV-5

E. Monitoring Contract Compliance

SOUTHERN COMPANY

4. Contract non-compliances with the contractual safety and health provisions will be documented and discussed with contractor management.

The Company retains the right, but not the obligation, to evaluate the contractor's performance regarding contractual safety requirements at any and all times during the term of the contract and directly after the termination of the contract. Compliance with all provisions of the contract, including those relating to safety and health, is mandatory. While the Company does not dictate the general work methods and/or the general manner of the performance of the work, any Company representative has the authority to bring contract non-compliance to the attention of the contractor's personnel. Such monitoring does not jeopardize the independent contractor relationship.

The degree and frequency of monitoring will be based upon several factors -- the complexity of and risks associated with the work, the exposure of our employees to the contractor's work, the contractor's ongoing performance, etc. For high risk projects, a monitoring plan should be developed that defines the areas that will be evaluated; individuals responsible for monitoring; documentation of monitoring results; and corrective action and follow-up.

Contract Safety Exceptions

If a Company employee observes a contract worker that poses an *imminent danger* to themselves, our employees, the public, or our facilities, the Company employee should immediately inform the contract worker to cease the work and not to resume the work until the situation is corrected. The Company employee halting the work should immediately notify responsible Company management, and Company management will contact appropriate contractor supervision to request corrective action.

If a Company employee observes an action believed to be a violation of a safety or regulatory rule which does not pose imminent danger, the Company employee observing the violation should notify appropriate Company management. Company management will determine whether the situation reported warrants communication to the contractor and a request for corrective action.

All observations involving the failure to comply with contract safety requirements should be documented and provided to the contractor's representative, with a request for corrective action. The Contract Administrator or Safety Personnel should meet with the Contractor as needed to review the status of outstanding issues and overall contractor safety performance. The contractor's failure to satisfactorily implement corrective action could result in termination of the contract.

E. Monitoring Contract Compliance

SOUTHERN COMPANY

Hazardous Materials

The contractor must comply with contract provisions and applicable laws and regulations concerning potentially hazardous materials. Examples include, but are not limited to:

- All materials must be supported by Material Safety Data Sheets.
- All materials must be stored in containers approved for storage of that product and all containers must be in good condition.
- All containers must be clearly labeled in compliance with all regulations.
- All containers shall be stored in a manner to provide adequate security of the chemicals.

Housekeeping on Company Work Sites

It will be the responsibility of the contractor to maintain good housekeeping at all Company work sites. Good housekeeping is one of the first requirements of sound accident prevention programs. Material yards and other contractor areas will be kept orderly and free from clutter. Walk paths will be kept free from obstructions; and material and equipment will be kept in a manner such that they do not create danger for Company personnel, contractor personnel, or the public.

Incident Reporting

All incidences involving non-compliance occurring at Company work sites require a full investigation performed by the contractor. The contractor will immediately notify the Company of all serious incidents occurring while the contractor is engaged in work activities for the Company. Examples of serious incidents include the following:

- Contractor caused outages to any operating company affiliate's electrical system
- Contractor caused damage to public or private property
- Any incident that results in contractor employee receiving medical attention
- Any incident that results in injuries to any person

A Company representative may be assigned to participate in any investigation, as determined by Company management. The results of the investigation and any corrective actions taken by the contractor must be made available to the Company. The Company reserves the right to require additional corrective measures.

Contractor personnel directly involved in some incidents will be required to be drug tested by the contractor and the test results made available to the responsible Company management. Examples of these instances include:

- Significant damage to Company facilities or work sites*
- Significant damage to public or private property*
- Vehicle accidents where one of vehicles has to be towed away from the scene
- Vehicle accidents where a citation was issued to the contractor employee
- Any incident involving personal injuries that require medical attention.

* Whether or not the damage is significant will be determined by the Company.

E. Monitoring Contract Compliance

Contractors shall make available to the Company all information obtained during any investigation within a reasonable time after the incident. At a minimum, the incident report will contain the following information:

- Name of any injured person
- Date/time of injury or incident
- Names of any witnesses
- Accident description
- Cause of accident
- Action taken to prevent re-occurrence
- Nature/extent of all injuries or damage

Contractors shall immediately notify the designated Company personnel of any potentially serious hazards to personnel on the job site.

Safety Performance

The Company will periodically provide safety performance information for the contractor's on-site work activity associated with the contract.

F. Performance Evaluation

SOUTHERN COMPANY

5. The Company may elect to perform a formal written evaluation of the contractor's safety performance. The results and conclusions of this evaluation will be utilized in consideration of awarding future work.

The performance evaluation may be used to decide whether a continued business relationship will be maintained with the contractor. This evaluation may consider not only the number of accidents and incidents that the contractor has experienced while performing the work, but also the severity of the accidents and incidents. Equally important in the evaluation is the general attitude toward safety that the contractor has exhibited and its willingness to correct any unsafe actions or work practices. An example of a performance evaluation, including safety criteria, is presented in **Attachment No. III-10.**

Attachment C, Generation Projects Contractor Safety Documentation Requirements

	DOCUMENT	REFERENCE	DISPOSITION	NOTES
PRECONSTRUCTION/PRETASK SUBMITTALS				
1S	EH&S project-specific safety program	Specification	Submit	
Programs and plans for specific types of work and best included in site-specific program when appropriate				
2S	Project-specific fall protection plan	Specification/Proc. 2.A.8/2.A.9	Submit	
3S	Controlled-access zone work plan	Proc. SH-2A8	Submit	
4S	Bloodborne pathogens program	Specification	Submit	
5S	Hazard communication program	Specification/Proc. SH-2D2	Submit	
6S	Commercial diving site-specific manual	Proc. SH-2A26	Submit	Must also be available at dive site.
7S	Hazardous materials employee exposure and environmental monitoring plan	Specification	Submit	
8S	Respiratory protection program	Specification/Proc. SH-2B9	Submit	
9S	Site-specific program for lead	Proc. SH-2D4	Submit	
10S	Site-specific program for arsenic	Proc. SH-2D5	Submit	
11S	Site-specific program for silica	Proc. SH-2D6	Submit	
12S	Asbestos exposure control program	Proc. SH-2D7	Submit	
13S	Radiation safety program	Proc. SH-2D9	Submit	
14S	Structural steel erection site-specific safety plan	Proc. SH-2A9	Submit	
15S	Site-specific program for blasting operations	Proc. SH-2A19	Submit	
16S	Request for deviation from procedure	Proc. SH-1K	Submit	Approved by contractor corp. safety prior to submittal.
17A	Fire prevention program	Proc. SH-3	Available	
18A	Site-specific barricade procedure	Proc. SH-2A5	Available	
19A	Plan for working over or near water	Proc. SH-2A25	Available	
20A	Written procedure for caissons, tunnels, and cofferdams	Proc. SH-2A18	Available	

NOTES

(1) This document is not intended to include all documents required by applicable regulations.
(2) Mandatory inspections required by procedures that do not require a document to be generated are not included in this document.
(3) Items that are repeated in multiple categories are marked by an asterisk (*). Repeat entries are included for ease of understanding requirements.

DOCUMENT		REFERENCE	DISPOSITION	NOTES
Task-specific items				
21A	PPE assessments (for entire job)	Proc. SH-2B1	Available	
22S	Nonroutine task hazard analysis for when the possibility of chemical exposure exists	Proc. SH-2D2	Submit	
23S	Plan for using personnel suspended baskets	Specification	Submit	Must include justification for use and be approved.
24S	Critical lift plan	Specification	Submit	Submit 15 days prior to lift.
25S	Crane operator qualifications	Specification	Submit	
26S	MSDS for approval	Specification/Proc. SH-2D2	Submit	Submit for approval prior to ordering material.
27S	Written notification of steel erection competent person and qualified rigger	Proc. SH-2A9	Submit	
28A	Chemical-specific training for chemicals present in the workplace	Proc. SH-2D2	Available	
29A	Soil classification and protective systems selection, inspections, and training all documents	Specification/ Proc. SH-2A17	Available	
30A	Evaluation of alternate lifting methods (before using personnel lifting basket)	Proc. SH-2A11	Available	
31A	Rigging and lifting plan (before using personnel lifting basket)	Proc. SH-2A11	Available	
32A	Authorization for use of suspended personnel platform (before using personnel lifting basket)	Proc. SH-2A11	Available	
Permits/tags				
33A	Written consent of the company's construction manager for explosive use	Spec. 21.d	Available	
34A	Welding, cutting, and heating permit	Proc. SH-2A21	Available	When required by site manager.
35A	Scaffold preuse shift inspection tag	Specification		Place on scaffold.
36A	Defective tool or equipment tags	Proc. SH-2A	Available	Repair or remove from service.
37A	Mobile equipment/boom truck overhead line permit form	Proc. SH-2C2	Available in equipment cabinet	
38A	Fire extinguisher inspection tags	Proc. SH-3	Place on unit	
TRAINING				

	DOCUMENT	REFERENCE	DISPOSITION	NOTES
39S	Lead	Proc. SH-2D4	Submit	
40S	Arsenic	Proc. SH-2D5	Submit	
41S	Silica	Proc. SH-2D6	Submit	
42A	EHS project-specific safety program	Specification	Submit	
43A	New employee orientation	Specification	Available	
44A	Weekly toolbox talks	Specification	Available	
45A	Hazardous material training	Specification	Available	
46A	Hazard recognition and avoidance	Specification	Available	
47A	Task-specific - confined space entry, energy clearance, respiratory, trenching, fire watch, scaffold, ladders, ammonia, emergency plans, etc.	Specification	Available	
48A	Operator training/all mobile equipment	Specification	Available	
49A	Respiratory protection	Specification	Available	
50A	Oxy fuel burning and welding training	Specification	Available	
51A	Demolition job briefing	Proc. SH-2A28	Available	
52A	Steel erection safety procedure	Proc. SH-2A9	Available	
53A	Scaffold requirements	Proc. SH-2A7	Available	
54A	Excavation and trenching	Spec. 11.D	Available	
55A	Bloodborne pathogens awareness	Proc. SH-2D3	Available	
56A	Bloodborne pathogens extensive for responders	Proc. SH-2D3	Available	
57A	Electrical hazards of welding machines for welders	Proc. SH-2E6	Available	
58A	Fire brigade	Proc. SH-3	Available	
59A	Power tool safety	Proc. SH-2A14	Available	
60A	Grinders, bench , pedestal, and portable	Proc. SH-2A15	Available	
61A	Blasting operations	Proc. SH-2A19	Available	
62A	PPE	Proc. SH-2B1	Available	
63A	Aerial lifts and bucket trucks	Proc. SH-2C9	Available	
64A	Forklift operation	Proc. SH-2C11	Available	
	INSPECTIONS **Walk-down inspections**			
65S	Contractor site-manager weekly safety walk down and report of findings	Specification/Proc. SH-1F	Submit	Includes problems resolutions.
66S	Quarterly safety assessment by corporate representative	Proc. SH-1F	Submit	
	Equipment inspections			
67S	Annual crane inspections per OSHA	Spec. 7.b	Submit	Prior to using crane.

DOCUMENT		REFERENCE	DISPOSITION	NOTES
68A	Daily preuse on all vehicles and mobile equipment	Specification	Available	Trucks, gators, cranes, carts, forklifts. Designed checklists.
69A	Daily crane inspections	Specification	Available	
70A	Monthly inspections cranes	Specification	Available	
71A	Crane hook annual NDE	Proc. SH-2C3	Available	
72A	Monthly sling and choker	Proc. SH-2A12	Available	
Scaffolds				
35A	Preuse per shift inspection	Specification	Tag required	See Permits / Tags section.
Tools				
73A	GFCI monthly inspection	Specification	Available	
74A	Ladders quarterly inspection documented	Proc. SH-2A6	Available	
	See section for tags/permits			
Other				
75A	Excavation and trenching	Specification	Available	
Medical				
76A	Employee medical approval and fit test for respirator use	Specification	Available	
77A	Operator physicals	Proc. SH-2C1	Available	
78A	Biohazard and sharps disposal records	Proc. SH-2D3	Available	
79A	Hepatitis B vaccination or waiver for responders and persons designated to come in contact with bodily fluids	Proc. SH-2D3	Available	
Incidents				
80S	All injuries, illnesses (work related), property damage greater that $10,000, fires, crane incidents, personnel falls (even if caught), environmental spills or incidents	Specification	Verbal report immediately. Written report within 2 working days	Written report must address root cause, preventive measures.
81S	State workers compensation first report of injury	Specification	Submit	
Administrative				
82S	Proof of workers compensation and general liability insurance	Specification	Submit	
83S	Complaint, intent to inspect, or any contact with any regulatory agency	Specification	Immediate verbal notice	
84S	Contractor safety professional qualifications	Specification	Submit for approval prior to assignment.	

DOCUMENT		REFERENCE	DISPOSITION	NOTES
85S	Request for deviation from procedure	Proc. SH-1K	Submit	Must be approved by contractor corporate safety prior to submittal to Southern Company Generation.
86S	Proof of filing radiation safety training program with NRC for the state contractor is operating in.	Proc. SH-2D9	Submit	
87S	Radiation safety – NDT personnel qualifications	Proc. SH-2D9	Submit	
88S	Safety statistics including contractor and subs work hours, recordable injuries and illnesses, lost workdays, for month, year-to-date, and project-to-date.	Specification	Submit before the 5th of each month.	
26S*	MSDS for approval prior to ordering material	Specification/ Proc. SH-2A23	Submit	
89A	Nature of any contact with regulatory agency	Specification	Available	
90A	Permission from manf. for equipment modification or design by PE	Specification	Available	
91A	Permission from manf. for tool modification or design by PE	Specification	Available	
92A	List of hazardous materials	Specification	Available	
93A	Copy of all MSDSs	Specification/ Proc. SH-2A23	Available	
		Equipment-related		
67S*	Annual crane inspections per OSHA	Specification	Submit before using crane.	
25S*	Crane operator qualifications	Specification	Submit	
24S*	Critical lift plan	Spec. 7.d	Submit 15 days prior to lift.	Critical lift: A. 80-percent capacity. B. Multicrane lift. C. C. Over 25 tons.
23S*	Plan for using personnel suspended baskets	Specification	Prior to use submit.	*Must include justification for use and be approved.
94A	Crane load charts and maintenance manuals for each piece of heavy equipment	Proc. SH-2C3	Available	

DOCUMENT		REFERENCE	DISPOSITION	NOTES
68A*	Daily preuse inspection on all vehicles and mobile eq.	Specification	Available	Trucks, gators, cranes, carts, forklifts. Designed checklists.
77A*	Operator physicals	Proc. SH-2C1	Available	
69A*	Daily crane inspections	Specification	Available	
70A*	Monthly inspections cranes	Specification	Available	
71A*	Crane hook annual NDT	Proc. SH-2C3	Available	
95A*	Permission from manf. for equipment modification or design by PE	Specification	Available	
48A*	Operator training / all mobile eq.	Specification	Available	
37A*	Mobile equipment / boom truck overhead line permit form	Proc. SH-2C2	Available in equipment cab.	
96A	Plan for transporting equipment or material in same compartment with personnel. State plan for safety.	Proc. SH-2A24	Available	
30A*	Evaluation of alternate lifting methods (before using personnel lifting basket)	Proc. SH-2A11	Available	
31A*	Rigging and lifting plan (before using personnel lifting basket)	Proc. SH-2A11	Available	
32A*	Authorization for use of suspended personnel platform (before using personnel lifting basket)	Proc. SH-2A11	Available	
Hazardous materials-related				
5S*	Hazard communication program	Specification/Proc. SH-2D2	Submit	
7S*	Hazardous materials employee exposure and environmental monitoring plan	Specification	Submit	
26S*	MSDS for approval	Specification/Proc. SH-2D2	Submit	Submit for approval prior to ordering material.
22S*	Nonroutine task hazard analysis for when the possibility of chemical exposure exists	Proc. SH-2D2	Submit	
8S*	Respiratory protection program	Specification/Proc. SH-2B9	Submit	
12S*	Asbestos exposure control program	Proc. SH-2D7	Submit	
13S*	Radiation safety program	Proc. SH-2D9	Submit	
86S*	Proof of filing radiation safety training program with NRC for the state contractor is operating in.	Proc. SH-2D9	Submit	
87S*	Radiation safety – NDT personnel qualifications	Proc. SH-2D9	Submit	
45A*	Hazardous material training	Specification	Available	

DOCUMENT		REFERENCE	DISPOSITION	NOTES
28A*	Chemical specific training for chemicals present in the workplace	Specification/Proc. SH-2D2	Available	
76A*	Employee medical approval and fit test for respirator use	Specification	Available	
Structural steel erection-related				
14S*	Structural steel erection site specific safety plan	Proc. SH-2A9	Submit	
2S*	Project specific fall protection plan	Specification/Proc. SH-2A8/ SH-2A9	Submit	Include rescue plan.
27S*	Written notification of steel erection competent person and qualified rigger	Proc. SH-2A9	Submit	
23S*	Plan for using personnel suspended baskets	Specification	Prior to use submit.	*Must include justification for use and be approved.
24S*	Critical lift plan	Specification	Submit 15 days prior to lift.	
3S*	Controlled access zone work plan	Proc. SH-2A8	Submit	
34A*	Welding, cutting, and heating permit	Proc. SH-2A21	Available	Permit system in place when required by site manager.
52A*	Steel erection procedure 2.A.9 training	Proc. SH-2A9	Available	
50A*	Oxy burning and welding training	Specification	Available	
57A*	Electrical hazards of welding machines for welders	Proc. SH-2E6	Available	
Competent persons are required for the following tasks and materials				

Aerial lifts and bucket trucks
Arsenic
Asbestos
Blasting operations
Chain hoists, jacks and lever hoists
Cranes
Excavation and trenching
Fall protection
Forklift operations
Grinders, bench, pedestal, and portable
Lead
Pile driving
Rigging
Scaffold
Silica
Steel erection
Tunneling, cofferdams, and caissons

Engineering and Construction Services
These forms are available in the E&CS Construction EH&S Procedures Manual.

Aerial Lift/Bucket Truck Operator Authorization
Aerial Lifts and Bucket Trucks Daily Inspection
Authorization for the Use of a Suspended Personnel Hoisting Platform
Barricade Tag
Boom Truck Inspection
Boom Truck Operator Authorization
Boom Truck Operator Medical Examination
Boom Truck Operator Medical Qualification
Chain Fall and Come-a-Long Inspection
Chemical Inventory Report
Completed Scaffold Tag (Green)
Dragline/Clamshell Operator Medical Examination
Dragline/Clamshell Operator Medical Qualification
Drilling Equipment Inspection
Do Not Use Scaffold Tag (Red)
Earth Moving Equipment Inspection
Equipment Operator Authorization
E&HS Program Improvement and Error Correction
Evaluation of Alternate Lifting Methods
Excavation and Trenching Permit
Forklift Inspection
Forklift Operator Authorization
Grinder Inspection (Bench and Portable
Generation E&CS Hazard Communication Program
Hydraulic Crane Inspection
Incident Notification
Job Planning and Safety Analysis
Ladder Inspection Form
Lattice Boom Crane Inspection
Mobile Crane Operator Medical Examination
Mobile Crane Operator Medical Qualification
Mobile Equipment/Boom Truck Overhead Line Permit
Modified Scaffold Tag (Yellow)
Monthly Sling/Choker Inspection
Open Flame/Hot Work Permit
PPE Assessment
Rigging and Lifting Plan
Scaffold Inspection Tags
Scaffolding Inspection Checklist
Tower Crane Inspection
Tower Crane Operator Medical Examination
Tower Crane Operator Medical Qualification
Trenching and Excavation Daily Checklist
Vehicle Inspection

Southern Company Generations

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-1I

Regulatory Agency Inspections

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Reviewed By	Bruce Walker	Bruce Walker
Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides guidelines for managing an inspection by a regulatory agency on an Engineering and Construction Services (E&CS) construction project.

1.2 Scope

The procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

None.

3.0 RESPONSIBILITY

3.1 E&CS Project Management

E&CS project management shall develop a site-specific protocol for managing regulatory agency inspections of E&CS-managed construction activities.

3.2 E&CS Construction Site Manager

E&CS construction site manager is responsible for going the security gate to meet with the compliance officer to verify the individual's credentials.

3.3 Site Safety Professional

The site safety professional is responsible for going the security gate to meet with the compliance officer to verify the individual's credentials.

4.0 PROCEDURE

Company practice is to admit any lawfully delegated government employee who, upon presentation of proper credentials from a local, state, or federal regulatory agency, has the authority to conduct a site/facility inspection.

Each E&CS project management team, in conjunction with the host operating company, shall develop a site-specific protocol for managing regulatory agency inspections of E&CS-managed construction activities. The protocol shall be reviewed with all E&CS employees, contractors, and site security personnel. If an inspection occurs, E&CS corporate management shall be notified immediately or as soon as practical.

4.1 Onsite Inspection – Operating Facility

If a regulatory agency compliance officer arrives to conduct an inspection of the construction project, the E&CS construction site manager or site safety professional shall go the security gate to meet with the compliance officer to verify the individual's credentials. Concurrently, the host operating department representative shall be notified, and the site's protocol for managing regulatory agency inspections shall be implemented.

4.2 Onsite Inspection – Greenfield Construction Project

If a regulatory agency compliance officer arrives to conduct an inspection of the construction project, the E&CS site manager or site safety professional shall go to the security gate to meet with the compliance officer to verify the individual's credentials. If the credentials of the regulatory agency compliance officer are appropriate, the compliance officer shall be escorted directly to the site manager's office to discuss the following:

1. The nature of the inspection: random, scheduled, or complaint. If complaint, request a copy.

2. Activity and personnel being inspected: Southern Company, contractors, or both.

3. Scope of the inspection: complaint, limited to a specific contractor, activity, or area; or wall-to-wall.

4. Clarify the role of Southern Company as the site owner and that each employer working on the site has responsibility for his or her own regulatory compliance.

5. Review safety requirements applicable to the compliance officer during the field inspection.

6. Explain Southern Company's desire to be present during the opening conference, field inspection, and closing conference involving site contractors.

4.2.1 General Guidelines

1. Treat inspectors in a courteous and professional manner.

2. Answer all pertinent questions, but do not volunteer information. A U.S. Occupational Safety and Health Administration (OSHA) compliance officer is entitled to see OSHA injury forms, written policies, and training records.

3. Do not sign any forms or statements during any phase of the inspection.

4. The inspector should be escorted to the specific location to be inspected. The path should be the one that reveals the least of the rest of the workplace or employees at work that do not relate to the inspection scope.

5. Any photographs, measurements, samples, and so forth taken by the inspector should be duplicated if at all possible.

6. Notes should be taken to document the activities and comments of the inspector.

7. Ensure each contractor being inspected has a management/supervisory representative present while that contractor's activity is being inspected. The contractor's representative shall respond to inquiries from the inspector regarding the contractor's work activity.

4.3 Employee Complaints

Site contractors shall notify E&CS site management if the contractor receives an inquiry from OSHA regarding an employee complaint arising from activities on the construction site. The contractor shall investigate the complaint and share his or her response to OSHA with E&CS prior to its submittal.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-1J

Incident Investigation

	Rev. 0	**Rev. 1**
Date	5/6/2003	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the requirements for investigating incidents involving Engineering and Construction Services (E&CS) Construction Services and/or contractor personnel or property. An incident is an unplanned, undesired event that adversely affects the completion of a task. Incidents include injuries, illnesses, property damage, near hits, and chemical spills.

1.2 Scope

This procedure applies to E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- Generation Employee Injury Report.
- Generation Vehicular Accident Report.
- E&CS Construction Investigation Report.

3.0 RESPONSIBILITY

3.1 E&CS Construction Site Manager

The E&CS construction site manager is responsible to ensure the incident investigation is complete and accurate based on the available information.

3.2 Employees' Supervisors

The investigation of occupational injuries to or illnesses of E&CS Construction Services personnel is the responsibility of the employee's immediate supervisor. The supervisor and employee shall complete the Generation Employee Injury Report.

3.3 E&CS Corporate Management

All serious injuries occurring to contractor personnel while working on Southern Company premises shall be immediately communicated by E&CS corporate management to the appropriate operating company risk management group for consultation and guidance.

3.4 Contractors

The investigation of contractor incidents involving strictly contractor personnel, equipment, and/or materials is the responsibility of the contractor.

4.0 PROCEDURES

4.1 Requirements

1. When an injury-producing incident occurs, the initial focus shall be obtaining appropriate medical treatment for injured personnel and securing the scene to prevent additional injuries.

2. The purpose of the investigation is to determine the facts associated with the event to develop preventive measures.

3. All incidents shall be investigated. The investigation effort shall be commensurate with the results, or potential results, of the incident.

4. The investigation shall determine and document facts, not opinions or subjective commentary, answering the following questions:

   - **Who** was involved.
   - **What** happened.
   - **When** it happened.
   - **Where** it happened.
   - **How** it happened.
   - **Why** it happened.
   - **What** should be done to prevent similar events.

4.2 Investigation of E&CS Construction Incidents

1. A formal investigation with the participation of an E&CS safety professional shall be conducted for all U.S. Occupational Safety and Health Administration (OSHA)-recordable injuries and other specific incidents as determined by management.

2. The formal investigation report shall be submitted to E&CS management within 1 week of the incident.

3. The investigation of business-related vehicle accidents shall be conducted, at a minimum, by the supervisor and employee using the Generation Vehicular Accident Report.

4.3 Investigation of Contractor Incidents

In general, the following guidelines apply:

1. At times, the investigation of some contractor incidents, such as personnel fall incidents, lost workday injuries, crane incidents, and fires, should include E&CS personnel to ensure the contractor performs a quality job of determining the facts, root causes, and adequate corrective actions, because these incidents have the potential to impact E&CS. E&CS involvement is especially important when the incident has the potential to injure Southern Company personnel or damage critical equipment. The contractor shall immediately notify E&CS management of such incidents so as to provide E&CS personnel the opportunity to observe the contractor's investigation of contractor incidents. An initial report is required in 2 days with initial information and determination of incident severity, that is, first aid, doctor visit, recordable, or lost time. The results of the contractor's investigation will be documented in a report and shared with E&CS within 5 days of the event. The contractor's report will include an adequate explanation of who, what, when, where, how, and why along with corrective actions to prevent similar events.

2. The investigation of contractor incidents involving injury or potential injury to Southern Company personnel or significant damage to Southern Company equipment, and/or materials shall be led by E&CS or the appropriate operating company with appropriate participation by E&CS, the involved operating company, and involved contractors. The results of the investigation shall be documented and reviewed by Legal prior to being issued.

3. The investigation of incidents resulting in serious injury to contractor personnel because of Southern Company activities, facility operation, or equipment shall be investigated by E&CS and/or the appropriate operating company in accordance with the directions and consultation received from the operating company risk management group. The results of the investigation shall be documented and reviewed by Legal prior to being issued.

4.4 Investigation Reports

Contractors may use their own company report formats as long as the report includes an adequate explanation of who was involved, what happened, when it happened, where it happened, how it happened, why it happened, and what will be done to prevent similar events.

The investigation report of all investigations conducted by E&CS shall use the E&CS Construction Investigation Report template.

4.5 General Investigation Process Guidelines

1. Establish an investigation committee.
2. Visit the scene of the incident and take photos from all pertinent angles.
3. Collect and secure pertinent physical evidence such as tools, materials, and equipment.
4. One at a time, question involved personnel, supervision, and witnesses.
5. Determine the sequence of events associated with the incident: who did what, when, where, how, and why.
6. Determine the planning efforts and instructions given.
7. Determine personnel training history, work experience, physical conditions, and mental state.
8. Evaluate involved protective, mechanical, and electrical equipment to determine any contribution these items may have had to the event.
9. Review pertinent procedures associated with the work activity.
10. Determine facts versus opinions, including opinions based on what was readily observable.

5.0 KEY CONTACT

For questions regarding the content or implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-1K

Procedure Deviation Approval Process

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Reviewed By	Bruce Walker	Bruce Walker
Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for approving deviations from procedures contained in the Engineering and Construction Services (E&CS) Construction Environmental, Health, and Safety (EH&S) policies and procedures manual for work on E&CS construction projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 1-K, Procedure Deviation.

3.0 RESPONSIBILITY

3.1 Deviation Requestors

Those requesting deviations shall be responsible for gaining the appropriate approvals from management.

4.0 PROCEDURE

4.1 Deviations

Requests for deviations must be in writing and include the procedure to be deviated from, the justification for the deviation, the engineering or administrative controls to be implemented to ensure an acceptable level of risk for the operation, and whether the deviation is a one-time event or for the duration of the project. Any Southern Company Generation or contractor deviation requires the following written approvals:

1. Project manager.
2. Construction manager.
3. Construction site manager.
4. Site and regional EH&S coordinator.

A copy of each approved request must be provided to the following personnel immediately:

1. General manager of projects.
2. General manager of construction services.
3. Safety and health manager.

4.2 Contractors

When contractors request a deviation from an E&CS or facility-specific EH&S procedure, they shall first provide written approval from their corporate offices. Particular care shall be exercised by all E&CS personnel in not granting approval for actions contrary to regulatory requirements.

The request for deviation form 1.K, Procedure Deviation must be completed and accompanied with all supporting materials to justify the deviation.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-1L

EH&S Program Improvement

and Error Correction Form

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides a method for Engineering and Construction Services (E&CS) personnel to submit Environmental, Health, and Safety (EH&S) program improvement suggestions or notice of typographical, administrative, or technical errors in the E&CS Construction Safety and Health policies and procedures manual.

1.2 Scope

This procedure applies to all E&CS Safety and Health and Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- EH&S Program Improvement and Error Correction Form.

3.0 RESPONSIBILITY

3.1 The manager–E&CS Safety and Health – Construction

The manager–E&CS Safety and Health – Construction shall be responsible for receiving, evaluating, and determining outcome of submitted improvements and errors.

4.0 PROCEDURE

4.1 EH&S Program Improvement and Error Correction Form

Construction Services management values feedback on ways the EH&S policies, procedures, and processes can be improved. In addition, input on typographical, administrative, or technical errors in the policies or procedures are appreciated.

To submit improvement suggestions or error notices, complete the attached form and submit electronically to the manager–E&CS Safety and Health – Construction.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-1M

Safety Performance Recognition Programs

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides guidelines for recognizing superior safety and health (S&H) performance at Engineering and Construction Services (E&CS) construction projects and to describe the formal Construction S&H awards program.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

None.

3.0 RESPONSIBILITY

3.1 Construction Site Management

Construction Site Management shall be responsible for determining the project milestones and awards with the Construction Site Safety Committee.

3.2 Construction Site Safety Committee

The construction site safety committee shall be responsible for determining the project milestones and awards with the construction site management.

The construction site safety committee shall also be responsible for designing and administering the On-the-Spot Award and Safe Worker Award programs.

4.0 PROCEDURE

4.1 Construction Projects

4.1.1 Construction Project Milestone Awards

Appropriate milestones and awards will vary based on project size and duration.

Award examples include meals, mementos, shirts, and caps.

Milestone examples include:

1. Work hours without a recordable injury: 100,000, 250,000, 500,000.
2. Workdays without a recordable injury: 30, 60, 90, 120, 200.
3. Leading indicators such as achieving a safe-acts index of 100 percent for 4 consecutive weeks.

4.2 QUEST Award – Quarterly Employee Safety Triumph

The Quest Award trophy will be presented quarterly by the vice president–Environmental Projects and Construction – East, the vice president–Environmental Projects and Construction – West, or the general manager–Construction Services to the construction project with the best injury experience during the calendar quarter.

QUEST Award criteria include:

- Zero recordable injury to Southern Company Generation staff personnel.
- A project recordable-injury rate less than the annual target rate for Construction Services.
- Zero lost time injury and zero fatality.
- Project work hours during the quarter total at least 30,000.
- Ties in meeting the award criteria will be broken based on total site workhours during the quarter.

4.3 Safety Excellence Award

A Safety Excellence Award plaque will be presented annually by the general manager–Construction Services to all construction projects meeting the Safety Excellence Award criteria.

Safety Excellence Award criteria – calendar year performance include:

- Zero recordable injury to Generation staff personnel.

- A project recordable-injury rate less than the annual target rate for Construction Services.
- Zero lost time injury and zero fatality.
- Project work hours during the year total at least 40,000.

4.4 Contractor Award

4.4.1 Triangle Safety Award

A Triangle Safety Award plaque will be presented annually by the vice president–Environmental Projects and Construction – East, the vice president–Environmental Projects and Construction – West, or the general manager–Construction Services to each contractor company whose safety performance while working for E&CS during the calendar year meets all of the criteria for the Triangle Safety Award.

Triangle Safety Award criteria include:

- Zero incidents caused by the contractor resulting in injury to Southern Company personnel, shutdown of an operating unit, significant damage to Southern Company property, or significant injury to other contractor's personnel.
- Zero lost time injury and zero fatality.
- Recordable injury rate for all contractors' work on E&CS projects is less than the annual target rate for Construction Services.
- Contractor's work hours on E&CS projects exceed 100,000.

4.5 Individual Awards

4.5.1 On-the-Spot Award

A project safety committee designed and administered program intended to "catch and reward" craftsmen who are "doing things right."

Award examples include gas cards, phone cards, gift certificates, hats, shirts, and preferred parking spots.

4.5.2 Safe Worker Award

A project safety committee designed and administered program intended to recognize craftsmen who have demonstrated exceptional safe work practices and/or safety leadership and have been nominated by their supervision.

Award examples include gas cards, phone cards, gift certificates, hats, shirts, and preferred parking spots.

4.5.3 Safety Leadership Award

A Safety Leadership Award will be presented periodically by the vice president–E&CS to Generation employees such as managers, supervisors, coordinators, group leaders, and engineers who are safety role models for the organization and meet the Safety Leadership Award criteria.

Safety Leadership Award criteria includes:

- Individual has accumulated approximately 500,000 work hours without a lost time injury or fatality in his or her area of responsibility.
- Individual has significantly contributed to improving the safety process and/or safety culture within his or her group, project, or E&CS.
- Individual must portray the characteristics of a safety leader and advocate.

Safety Leadership Award nomination process:

1. Individuals may be nominated by any member of E&CS management.
2. The nomination must be in writing and include descriptions of meeting each of the three award criteria.
3. The nominations are to be sent to the general manager–Construction Services and the manager–Safety and Health – Construction.
4. Nominations will be evaluated and, if appropriate, approved by the vice president–Environmental Projects and Construction – East, the vice president–Environmental Projects and Construction – West, general manager–Construction Services, general manager–New Generation Projects, and the manager–Safety and Health – Construction.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-1N

Planning and Hazard Analysis

	Rev. 0	**Rev. 1**
Date	4/7/2003	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide planning and hazard analysis requirements for projects and tasks in order to identify and control potential environmental, health, and safety (EH&S) risks and compliance issues on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

Regulatory references applicable to this standard will include, but may not be limited to, the following:

- U.S. Occupational Safety and Health Administration, Training Requirements in OSHA Standards and Training Guidelines, OSHA publication no. 2254, 1995 (revised).
- 29 CFR 1910.1200, Hazard Communication.
- 29 CFR 1910.119, Process Safety Management.
- 29 CFR 1926.20, General Safety and Health Provisions.
- 29 CFR 1926.21, Safety Training and Education.

Job Planning and Safety Analysis (JPSA) Form.

3.0 RESPONSIBILITIES

3.1 E&CS Project Manager

The E&CS project manager shall ensure the following:

- Development of a Construction EH&S Policies and Procedures manual implementation plan for each new major project in accordance with the EPC strategy document.

- A project hazard analysis is conducted to customize the contract EH&S specifications to address the hazards peculiar to the project.

3.2 E&CS Supervisors

E&CS supervisors shall use the Job planning and safety analysis (JPSA) process when assigning personnel manual tasks or tasks involving exposure to typical construction hazards such as working at heights, on scaffolding or ladders, or entering excavations or confined spaces.

3.3 Contractors

Each contractor shall establish a process for conducting JPSA before beginning each task.

4.0 PROCEDURE

4.1 Project Management Requirements

The E&CS project manager shall ensure the development of a Construction EH&S Policies and Procedures manual implementation plan for each new major project in accordance with the EPC strategy document. At a minimum, this plan shall address manual compliance issues applicable to the site E&CS organization and personnel. The plan will include, but not be limited to, the following topics:

- Incident notification.
- Emergency procedures.
- EH&S training.
- EH&S assessments.
- Metrics reporting.
- Contractor EH&S.
- Regulatory agency inspections.
- Incident investigations.
- Planning and hazard analysis.
- Fall protection.
- Steel erection.
- Rigging and lift plans.
- Scaffold safety.
- Clearance procedure.
- Confined space entry.
- Personal protective equipment.
- Noise exposure.
- Hazard communications.
- Bloodborne pathogens.
- Electrical safety.
- Fire protection.
- Environmental protection.
- Office safety.

2. The E&CS project manager shall ensure that a project hazard analysis is conducted to customize the contract EH&S specifications to address the hazards peculiar to the project. A thorough project hazard analysis will identify the

following type issues that should be addressed in the customized EH&S specifications:

- Confined spaces.
- Radiological sources.
- Hazardous materials (asbestos, lead, arsenic).
- Biological hazards (sewers, cooling towers).
- Potential explosive atmospheres.
- Process safety management covered work.
- High-temperature surfaces.
- Railroad traffic.
- Electrical clearances.

4.2 Job Planning and Safety Analysis (JPSA)

Job planning and safety analysis (JPSA) is designed to assist supervisors and personnel to identify and minimize hazards prior to beginning tasks.

E&CS supervision shall use the JPSA process when assigning personnel manual tasks or tasks involving exposure to typical construction hazards such as working at heights, on scaffolding or ladders, or entering excavations or confined spaces.

Each contractor shall establish a process for conducting a JPSA before beginning each task. A properly executed JPSA will help personnel recognize hazards, identify training needs, and plan their work, thereby ensuring a safer and more efficient work process.

A typical JPSA exercise will include, but may not be limited to, the following questions:

- What hazards are associated with this task?
- Are there any special environmental conditions that pose an increased risk?
- Do we have the right tools and materials for the job?
- Are there any special training requirements for this task, and do all crewmembers have it?
- Do machines have guards in place?
- What personal protective equipment (PPE) is required?
- Are any special work permits required for this task?
- Will this task require working from heights and has fall protection been addressed, including adequate anchor points?
- Are plans to control hazardous energy sources needed and in place (lock out/tag out)?
- Are there other activities in the area that could create a hazard for other Generation (operating company) employees?

- Review and incorporate operating plant procedures where applicable.

The JPSA or a similar form shall be used to meet the requirements of this procedure.

The JPSA shall be reviewed with each contractor crewmember assigned to the task. The JPSA or a similar form shall be signed by each crewmember and the supervisor to document the review process.

5.0 KEY CONTACT

For questions regarding the content or implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-1O

First Aid Personnel and Facilities

	Rev. 0	**Rev. 1**
Date	06/30/2009	
Revised By	Bruce Walker	
Reviewed By	Construction Safety Leadership Team	
Approved By	Will Taylor	

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the minimum standards for planning and provisions of first aid personnel and facilities on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- Form 1-O, Recommended First Aid Supply List

3.0 RESPONSIBILITY

3.1 E&CS Construction Site Manager

The E&CS construction site manager shall ensure the jobsite is equipped with an adequate first-aid facility and staff.

3.2 Contractors

Contractors shall ensure adequate first-aid facilities, supplies, and staff are onsite and available at all times when their employees are present on the project, based on the number of employees (staff plus craft).

4.0 PROCEDURES

4.1 First-Aid Facility and Staff

The E&CS construction site manager shall ensure the jobsite is equipped with an adequate first-aid facility, supplies, and staff. The contractor, if working alternate shifts, extended hours, weekends, or holidays, is required to coordinate with the E&CS construction site manager the appropriate onsite first aid provider is available. Use the following table to determine the appropriate staffing:

Number of Craft Labor Personnel Onsite During Shift	First-Aid Staffing Recommendation
<50	1 person certified in each: • First aid • CPR • AED (if available onsite)
50+*	Registered nurse (RN), reporting to the safety professional -OR- (with approval of the regional construction manager and corporate safety manager) 2 people certified in each: • First aid • CPR • AED (if available onsite)

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

* See Form 1-O, Recommended First Aid Supply List for a list of supplies that should be available.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A1

Housekeeping

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides established requirements for housekeeping on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1910.22, General Requirements.
- 29 CFR 1926.25, Housekeeping.

3.0 RESPONSIBILITY

3.1 E&CS Construction Site Manager

The E&CS construction site manager shall be responsible for ensuring the adherence to this procedure.

3.2 Contractors

Contractors shall be responsible for keeping all work areas neat and orderly.

4.0 PROCEDURE

4.1 General

Housekeeping is a fundamental and necessary activity on all projects and is the responsibility of every individual working on the project. Contractors shall keep all work areas neat and orderly.

4.2 Requirements

1. Work areas, passageways and stairways, and other areas shall be kept free of debris and materials.

2. Unobstructed access to areas such as electrical panels, safety disconnect switches, fire extinguishers, and emergency exits shall be maintained at all times.

3. Contractors shall make provisions for timely and frequent removal of debris, scrap, and waste materials from the work areas and the project site.

4. Suitable containers shall be provided for waste disposal. Containers shall be provided for the collection and separation of waste, trash, oily and used rags, and other refuse. Containers used for garbage and other oily, flammable, or hazardous waste, such as caustics, acids, and harmful dusts, shall be equipped with covers. All containers shall be labeled to indicate the permissible contents. Outside waste and trash disposal receptacles must have lids.

5. Trash that does not contain any hazardous waste shall not be stored or disposed in bags or containers marked for hazardous waste.

6. Food and beverages shall be consumed in designated areas only. Where water kegs are provided, there shall be a proper paper cup waste receptacle that must be used and they shall be emptied daily.

7. Lunchroom area trash disposal cans shall be provided with covers, their use shall be enforced, and they shall be emptied daily.

8. Lunch and break areas shall be kept clean and free of all food scraps, wrappers, cups, and other disposable items. Where refrigerators are provided, they will be periodically cleaned to maintain sanitary conditions.

9. The use of glass bottles will be allowed only in designated lunch and break areas.

10. Work areas shall be cleaned as often as necessary to eliminate tripping and fire hazards. Particular attention shall be focused on the area around scaffolds, ladders, ramps, stairs, and electrical and mechanical equipment. Tools and loose materials shall also be removed if a hazard is created.

11. Extension cords, wires, and electrical cables shall be kept in an elevated position where they pose no potential danger to personnel and are not likely to be damaged by activities or equipment.

12. Timely response to spills such as oil, grease, or other liquid shall be according to E&CS site-specific plans.

13. Protruding nails shall either be removed or bent over in such a way that they no longer present a risk. This action shall be done as the hazard is created and not at a later time.

14. Cleaned lumber shall be stacked in orderly piles.

15. When nails are removed from lumber, the nails shall be collected and disposed of properly to eliminate puncture hazards.

16. Storage and laydown areas shall be kept clean and materials neatly stacked or placed.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A2

Sanitation

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for providing adequate sanitary facilities and potable water on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1910.141, Sanitation.
- 29 CFR 1926.51, Sanitation.

3.0 RESPONSIBILITY

3.1 E&CS Construction Site Manager

The E&CS construction sire manager shall ensure compliance with this procedure.

3.2 Contractors

Contractors working on E&CS projects shall be responsible for meeting the requirements in this procedure.

4.0 PROCEDURE

4.1 Potable Water

1. An adequate supply of potable water shall be provided in all places of employment.

2. Portable containers used to dispense drinking water shall be capable of being tightly closed, sealed, and equipped with a tap. Water shall not be dipped from containers.

3. Any container used to distribute drinking water shall be clearly marked as to the nature of its contents and shall not be used for any other purpose.

4. The common drinking cup is prohibited.

5. Where single-service (disposable) cups are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.

4.1.1 Handling of Drinking Water

Projects shall follow these guidelines when supplying and maintaining a sanitary system of drinking water for employees:

1. A drinking water container shall be impervious, heavy gauge, corrosion resistant, fully enclosed, and have a spigot at the bottom. The container shall also be labeled DRINKING WATER ONLY.

2. The container shall be kept off the ground or floor, preferably on a stand or rack designed for that purpose.

3. Containers shall be cleaned and sanitized on a daily basis during use. They shall be scrubbed inside and outside with a long-handled brush or similar object. Chlorine or bicarbonate cleaner shall be used daily. Water containers shall be disinfected with a 50-ppm chlorine and water solution monthly.

4. Unauthorized employees shall not be allowed to remove the lid of the drinking water container.

5. After cleaning, the containers shall be filled with ice and water maintaining sanitary conditions at all times. Ice must not be allowed to touch the ground at any time.

6. After the containers are filled with ice and water, they shall be sealed with duct tape, dated, and signed by the responsible employee who filled the containers.

7. No employee, except water handling personnel and safety department personnel, shall remove the lids from drinking water containers.

EXCEPTION

Personnel assigned to remove containers from work areas at the end of the work shift are allowed to empty contents to reduce carrying load.

8. Employees shall not be allowed to wash hands from drinking water containers.

EXCEPTION

Emergency eye or skin wash shall be permitted.

9. A supply of disposable drinking cups, a dispenser, and a trash receptacle shall be provided with all drinking water containers.

10. All employees working on the water supply delivery shall be instructed in handling drinking water and associated equipment and instructed in personal hygiene.

11. Water-handling employees shall have a supervisor assigned to monitor the performance of their duties.

12. The supervisor shall inspect assigned employees daily for open skin wounds, colds, or other medical conditions that may result in the contamination of drinking water.

13. Two employees shall be assigned to deliver drinking water cans. These containers have a weight of approximately 80 lb, and the improper handling of this amount of weight may cause injuries.

14. Water handling personnel shall maintain delivery trucks and filling points in a clean condition at all times. Trash and water shall not be carried at the same time on a delivery truck.

4.1.2 Employee Instructions for Handling Drinking Water

While cleaning, filling, and distributing drinking water, water handling personnel shall follow these requirements:

1. When an employee is assigned the task of cleaning drinking water cans, he or she shall wash his or her hands thoroughly before beginning the task. The employee shall then put on latex rubber gloves to prevent contamination.

2. The water can and its lid shall be rinsed and scrubbed with baking soda using a long-handled brush. When scrubbing is complete, the can and lid shall be thoroughly rinsed.

3. When placing ice in the can, the employee shall transfer the ice straight from the freezer to the can, without making contact with the ice. Before filling the can with water, the employee shall allow water to flow from the hose or nozzle for a few seconds to clear the line. After filling the cans, the employee shall place the hose back on the hose rack so the hose does not lie on the ground. If the hose is on the ground when the employee begins the process, he or she shall wash it first.

4. The employee shall place the lid on top of can, seal it with duct tape, and date and sign the tape. The lid shall be sealed to prevent any contamination from entering the can and prevent opening by other workers.

5. When distribution to sites is made, two employees shall carry cans to prevent possible injury. The can shall never be set on the ground. The can shall be set so that no contamination may occur to the spigot dispenser.

4.2 Non-potable Water

Outlets for non-potable water, such as water for industrial or firefighting purposes only, shall be identified by signs to indicate clearly that the water is unsafe and is not to be used for drinking, washing, or cooking purposes.

There shall be no cross-connection, open or potential, between a system furnishing potable water and a system furnishing nonpotable water.

4.3 Toilets at Construction Jobsites

1. Toilets shall be provided for employees according to the following table:

Number of Employees	Minimum Number of Facilities
20 or fewer	1
20 or more	1 toilet seat and 1 urinal per 40 workers
200 or more	1 toilet seat and 1 urinal per 50 workers

2. Temporary toilets shall be maintained in accordance with applicable regulations.

3. Toilets shall be constructed so as to shield the occupants from view and protect against weather and falling objects.

4. Toilets shall be ventilated and all windows and vents screened.

5. Adequate tissue shall be provided.

6. All toilet facilities shall be cleaned and emptied when necessary.

4.4 Washing Facilities

1. Washing facilities shall be made available in all places of employment.

2. The washing facilities shall be maintained in a sanitary condition.

3. Each washing facility shall be provided with hot and cold running water or tepid (lukewarm) running water or equivalent.

4. Hand soap or similar cleansing agents shall be provided.

5. Individual hand towels or sections thereof of cloth or paper, warm air blowers, or clean individual sections of continuous cloth toweling, convenient to the lavatories, shall be provided.

6. Whenever showers are required by a particular standard, the showers shall meet the following requirements:

   a. One shower shall be provided for each 10 employees of each sex, or numerical fraction thereof, who are required to shower during the same shift.

   b. Body soap or other appropriate cleansing agents shall be provided.

   c. Showers shall be provided with hot and cold water feeding a common discharge line.

   d. Employees who use showers shall be provided with individual clean towels.

4.5 Eating and Drinking Areas

No employees shall be allowed to consume food or beverages in a toilet room or in any area exposed to a toxic material.

4.6 Vermin Control

Every enclosed workplace shall be constructed, equipped, and maintained so far as reasonable to prevent the entrance or harboring of rodents, insects, and other vermin. A continuous, effective extermination program shall be instituted where their presence is detected. Extermination service contractors shall be properly licensed from the appropriate regulatory agency. Material Safety Data Sheets shall be available at the site for all pesticides applied by in-house or by outsourcers.

4.7 Change Rooms

Whenever employees are required by a particular standard to wear protective clothing because of the possibility of contamination with toxic materials, change rooms equipped with storage facilities for street clothes and separate storage facilities for the protective clothing shall be provided.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A3

Illumination

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides established requirements for illumination of work areas on Engineering and Construction Services (E&CS) construction projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926.56, Illumination.
- American National Standard and Practice for Industrial Lighting, A11.1-1965, R1970.

3.0 RESPONSIBILITY

3.1 Contractors

Contractors working on E&CS projects shall be responsible for following the requirements of this procedure.

4.0 PROCEDURE

4.1 Illumination Requirements

Construction areas, ramps, runways, corridors, offices, shops, and storage areas shall be lighted to not less than the minimum illumination intensities listed below while any work is in progress.

Foot-candles	Area of Operation
5	General construction area lighting.
3	General construction areas, concrete placement, excavation and waste areas, accesses, active storage areas, loading platforms, refueling, and field maintenance areas.
5	Indoors: warehouses, corridors, hallways, and exits.
5	Tunnels, shafts, and general underground work areas. (Exception: a minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. U.S. Department of Labor, Mine Safety, and Health Administration-approved cap lights shall be acceptable for use in tunnel heading.)
10	General construction plant and shops (for example, batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active storerooms, barracks or living quarters, locker or dressing rooms, messhalls, and indoor toilets and workrooms).
30	First-aid stations, infirmaries, and offices.

For areas not listed above, refer to the latest revision of American National Standard and Practice for Industrial Lighting, A11.1-1965, R1970.

During operations beyond normal daylight periods, sufficient artificial-light sources such as plug-in light systems, stadium-type light poles, or portable power light systems shall be provided to illuminate work and travel areas.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A4

Materials Storage and Handling

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for safe handling and storage of materials on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- Environmental, Health, and Safety Manual.
- 29 CFR 1910.176, Handling Materials, General.
- 29 CFR 1926.250, General Requirements for Storage.
- 29 CFR 1926.251, Rigging Equipment for Material Handling.
- 29 CFR 1926.953, Material Handling.
- SH-3, Fire Protection and Prevention

3.0 RESPONSIBILITY

3.1 Contractors

Contractors shall be responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

1. Both temporary and permanent storage shall be neat and orderly. When planning material storage, a minimum of 36 in. of clearance shall be allowed under sprinkler heads. Automatic sprinkler controls and electrical panel boxes shall be kept free and unobstructed.

2. There shall be a 3-ft unobstructed access way to fire hoses and extinguishers. Clear access to emergency exits and aisles shall be maintained. Areas immediately outside emergency exits shall be left clear for egress.

3. All materials stored in tiers shall be stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling, or collapse.

4. Manufactured storage bins and racks shall be used in accordance with manufacture's recommendations. Damaged racks shall not be used for storage. Employees shall not be allowed to climb racks. Racks' and bins' weight limits shall be labeled accordingly.

5. Maximum safe load limits of elevated floors within buildings and structures shall be conspicuously posted in all storage areas. Maximum safe loads shall not be exceeded.

4.1.1 Lumber

Lumber shall be stacked on level and solidly supported sills. Cross strips or cross pilings should be used where the pile is more than 4 ft. Lumber shall be stacked so it is stable and self-supporting. The top of each pile should be kept as level as possible when lumber is being removed. Used lumber shall have nails removed before stacking. As a rule of thumb, two workers should carry long boards for more control. While carrying boards, workers should exercise care at corners and crosswalks. Employees shall wear gloves when handling lumber.

4.1.2 Steel

Reinforcing steel shall be stored in a neat and orderly fashion on dunnage. Corrugated and sheet steel shall be stacked in flat piles. Spacing strips should be placed between each bundle. Employees shall wear gloves while handling steel.

4.1.3 Pipe

Pipe shall be stored on pipe sills or racks and shall be blocked to prevent rolling. When removing pipe, employees shall work from the end of the pile as much as possible. Pipe larger than 2 ft in diameter should be handled using mechanical equipment. As a rule of thumb, two workers should carry long lengths of small-diameter pipe for more control exercise care at corners and crosswalks. Employees shall wear gloves while handling pipe.

4.1.4 Petroleum Product Storage

Refer to E&CS Environmental Health and Safety (EH&S) Manual, SH-3, Fire Protection and Prevention.

4.1.5 Flammable Liquid and Gas Storage

Refer to E&CS EH&S Manual, SH-3, Fire Protection and Prevention.

4.1.6 Manual Material Handling

1. Aisles and passageways shall be kept clear to provide for the free and safe movement of material handling equipment or employees. Such areas shall be kept in good repair.

2. When a difference in road or working levels exist, means such as ramps, blocking, or grading shall be used to ensure the safe movement of vehicles between the two levels.

3. Supervisors shall give advance consideration to the size, shape, and weight of materials to be handled and plan the most efficient and safest method to accomplish the task.

4. Supervisors shall ensure the work fits the employee in terms of knowledge and physical abilities. Prior to performing unusual or hazardous operations, personnel shall be warned about possible hazards and given specific safety instructions by his or her immediate supervisor.

5. One person shall not be allowed to manually lift more than 50 lb of material at one time. If a load exceeds 50 lb, either mechanical help or help from other employees is required.

6. Best practices for handling materials are as follows:

   - Begin by examining the object you are going to lift to find out if it has cutting edges, rough or slippery surfaces, or is too heavy.

- When you lift, place your feet apart, bend your knees, keep your back straight, and get a secure grip on the object. Lift gradually by straightening your legs to put the weight on your strong leg muscles. Never overreach.

- If you have to lift a load shoulder high or above your head, first lift it waist high, rest it on a support if possible, and change your grip. Then bend your knees to get added power for the big upward push.

- When moving a load, be sure you can see where you are going. Never try to change the position of a load while you are carrying it. Rest it upon some object and then readjust your grip.

- You set a load down the way you picked it up – by bending your knees – but do not set it down on your hands. Put down one corner of the load first, and slide your hands away.

- Best practice is for all personnel who work in material storage and handling operations where the potential for foot injury exists to wear steel-toed safety shoes. Examples are those working in pipe storage, structural steel storage, rebar, lumber yards, concrete block, and brick storage areas.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A5

Signs and Barricades

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for the use of signs and barricades to restrict access to areas on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926.200, Accident Prevention Signs and Tags.
- 29 CFR 1926.202, Barricades.
- 29 CFR 1910.144, Safety Color-Codes for Marking Physical Hazards.
- 29 CFR 1910.145, Specifications for Accident Prevention Signs and Tags.
- 29 CFR 1926.502(b), Fall Protection Systems Criteria and Practices, Guardrail Systems.
- ANSI D6.1-1971, Manual Uniform Traffic Central Devises for Streets and Highways.
- Barricade Tag.

3.0 RESPONSIBILITY

3.1 Contractors

Contractors working on E&CS projects shall be responsible for complying with the requirements established by this procedure.

3.2 Contractor Supervisors

Contractor supervisors shall be responsible for erecting and maintaining barricades and signs required for employee protection and ensuring adherence to this procedure. Responsibility may be formally passed to another supervisor.

4.0 PROCEDURE

4.1 Requirements

1. A site-specific barricade procedure addressing warning and protective barricades shall be developed and implemented.

2. Contractor supervisors are responsible for erecting and maintaining barricades and signs required for employee protection and ensuring adherence to this procedure.

3. The supervisor (foreman, general foreman, and superintendent) who had the barricade installed shall retain responsibility for the integrity of the barricade and shall take additional appropriate action if the barricade is not adequately limiting access. Responsibility may be formally passed to another supervisor. When the need for the barricade has ended, the barricade shall be removed immediately.

4. All warning and protective barricades shall have a barricade tag attached. The tag shall be in a conspicuous location and shall contain the following information:

   - The date the barricade was erected.

   - The potential hazard.

   - The name of the contractor, responsible supervisor, and a contact phone number for the barricaded area.

4.2 Signs

1. Accident prevention signs and tags shall comply with the specifications contained in 29 CFR 1926.200, Accident Prevention Signs and Tags.

2. Signs designating hazard or giving instructions shall be placed on barricade stands, posts, or other suitable supports.

3. Signs shall be placed in visible locations before work starts and shall be removed to proper storage areas when they are no longer needed.

4. Signs shall be legible and maintained in a usable condition.

5. Employees shall obey posted signs.

4.3 Barricades – Warning

1. General

   - Barricades shall be used to alert employees to potential hazards and indicate if authorization, protective measures, or protective equipment are required.
   - Barricades shall be about 42 in. high, neat, uniform, and level.
   - Barricades shall be a minimum of 6 ft back from the edge of excavations, holes, platforms, and roof ledges.
   - Barricades shall have blinking lights when used on roadways or walkways after dark.
   - Barricades shall have an entrance, opening, or gate whenever possible.
   - Warning barricades are generally erected for a specific purpose and intended for quick and easy removal. Examples are colored tape, sawhorses, and safety cones. All barricades shall have a sign and color code signifying warning, caution, or danger to prevent or restrict access to the area.

2. Warning barricades

   Warning barricades are required around the following:

   - Excavations – 6 ft from the edge. Multiple excavations in an area may be barricaded by a single warning barricade.
   - Floor and roof openings – 6 ft from the edge.
   - Edges of roofs and elevated platforms – 6 ft from the edge.
   - Around overhead work areas, wherever necessary, to warn employees of potential for falling in, through, off, or the potential of being struck by a falling object.
   - Crane counterweight swing area.

3. Use of yellow-black barricade tape

   Yellow-black tape is used to indicate caution or warning. An employee may enter such an area only after reviewing the tag and taking the necessary precautions.

4. Use of yellow-magenta barricade tape

   Yellow-magenta tape is used to restrict access to a work area where a radioactive material is present or where X-raying is being done. Entry is prohibited without the authorization of the supervisor of the radiation work.

5. Use of red barricade tape

   - Red barricade tape is used to indicate danger. No one may enter a red barricaded area unless they are specifically authorized by the supervisor signing the barricade tag, and they have met the requirements indicated on the tag.

   - When it is not possible to eliminate or control the hazard, the supervisor shall authorize the use of the red barricade and establish the requirements for entering the barricade.

6. Removal of warning barricades

   When temporary barricades are no longer needed, they shall be removed only by the work group, supervisor, or competent person authorizing their use.

4.4 Barricades – Protective (Rigid)

1. Protective barricades shall consist of a guardrail system meeting the requirements of 29 CFR 1926.502(b), Fall Protection Systems Criteria and Practices, Guardrail Systems.

2. Protective barricades are required for, but not limited to:

   - Floor and roof openings when red, warning barricade cannot be placed 6 ft away.

   - Unprotected floor edges or platforms when red, warning barricade cannot be placed 6 ft away.

   - Ladderway floor openings.

   - Excavations adjacent to passageways and excavations when warning barricade cannot be placed 6 or more ft away.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A6

Ladders and Stairways

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for selecting, constructing, maintaining, inspecting, and using ladders on Engineering and Construction (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1910.25, Portable Wood Ladders.
- 29 CFR 1910.26, Portable Metal Ladders.
- 29 CFR 1926.1052, Stairways.
- 29 CFR 1926.1053, Ladders.
- 29 CFR 1910.27, Fixed Ladders.
- Ladder Inspection Form.

3.0 RESPONSIBILITY

3.1 Construction Services Construction Site Manager

The E&CS Construction Services construction site manager shall be responsible for ensuring contractors comply with the requirements in this procedure.

3.2 Contractors

Contractors working on E&CS construction projects shall be responsible for complying with the requirements in this procedure.

4.0 PROCEDURE

4.1 Compliance

Contractors shall ensure ladders used on E&CS projects comply with the requirements listed in section 4.2, Requirements.

4.2 Requirements

4.2.1 Ladder Selection

Great care should be taken in selecting the proper size and design of the ladder for the use intended.

- Ladders shall have nonskid surfaces on each cleat.
- Ladders shall be capable of supporting four times their intended load.
- Portable metal ladders shall not be used on E&CS projects.
- All manufactured ladders shall be extra-heavy-duty type 1A.

4.2.2 Straight Ladders/Extension Ladders

- All portable straight ladders shall be equipped with approved safety feet.
- A rope should be spliced onto the ladder at a level approximately 36 in. from the top to provide a ready method of securing the ladder.

4.2.3 Stepladders

- Stepladders (sometimes referred to as A-frame ladders) shall have positive locking spreaders that will be fully spread and locked when the ladder is in use.

- Stepladders shall not be used as straight ladders. Workers shall not be allowed to work from the rung next to the top or the top of a stepladder.

- Stepladders shall be firm and well constructed. Care shall be taken when setting a ladder on grating. Often the feet of a stepladder will slip through the grating causing the ladder to fall. Use of plywood under the feet when on grating is recommended.

- Stepladders shall be tied off, or a worker shall hold the ladder, when the user is 6 ft or more above the floor.

- Stepladders shall not exceed 12 ft in height.

4.2.4 Ladder Usage

- The feet of straight and extension ladders shall be placed approximately one quarter of their supported length away from the vertical plane of their top support (that is, set the ladder at a 4:1 slope.)

- Only light, temporary work should be performed from ladders.

- Ladders shall not be placed in front of doors that open toward the ladder unless the door is locked or otherwise guarded.

- Ladder feet shall be placed on a firm base, and the area at the top and bottom of the ladder shall be kept clear.

- When using straight or extension ladders, the top of the ladder shall be secured to prevent displacement. When possible, the bottom of the ladder should be secured. Use ladder shoes, stakes, or other means to secure the ladder.

- Ladders leading to landings, walkways, platforms, and so forth shall extend 36 in. above this point (that is, the point of contact) and shall be securely fastened to prevent moving. If the ladder is not long enough to extend 36 in. above the landing, suitable grabrails shall be installed. Long ladders shall be braced at intermediate points as necessary to prevent springing.

- On two-section straight/extension ladders, the minimum overlap for two sections in use shall be as follows:

Size of ladder (ft)	Overlap (ft)
Up to and including 36 ft	3 ft
Over 36 ft up to and including 48 ft	4 ft
Over 48 ft up to and including 60 ft	5 ft

- When ascending or descending ladders, workers are to face the ladder and use both hands to hold onto the ladder. Employees shall maintain a three-point contact at all times while ascending or descending a ladder. If material shall be moved from one level to another, a rope, block and tackle, or other means shall be used. Materials are not to be hand-carried on ladders.

- Ladders shall not be used horizontally as runways or scaffolds.

4.2.5 Job-Built Ladders

When it is necessary to build a ladder at the jobsite, the ladder shall comply with the following requirements:

- OSHA and ANSI requirements regarding job-made ladders.

- All lumber shall be thoroughly seasoned, straight grained, and free from large or loose knots, decay, and other defects. All surfaces shall be planed and free of splinters, and edges where handrails are used should be beveled.

- Rung spacing shall be uniform and not over 14 in. or less than 10 in. on centers. The wood for the rungs shall be clear, straight grained, and entirely free of knots. The slope of the grain in the cleats shall not be less than 1 in 15. The cleats should preferably be straight grained. Single cleat ladders shall not exceed 30 ft in length.

- Rungs or cleats should be recessed ½ in. into the rails or filler strips of the same thickness as the cleats shall be inserted between the cleats and nailed to the side rails.

- Portable ladders shall support four times the intended load.

- Ladders shall be at least 16 in. wide at the base.

4.2.6 Ladder Inspection

- Ladders shall be inspected before each use and quarterly for deterioration and damage.
- No employee shall be allowed to use (for any reason) any ladder that has broken, loose, or cracked rungs, side rails, or braces. Any ladder found in this condition shall be removed from service immediately.

- All quarterly inspections shall be documented. See the Ladder Inspection Form as an example.

4.2.7 Ladder Maintenance

- Wooden ladders may be periodically treated with a clear preservative such as varnish, shellac, or linseed oil. Ladders shall not be painted because painting covers up structural defects.
- All ladders should have the rungs cleaned to prevent accumulation of materials that might destroy their nonslipping properties, and all metal fittings should be carefully checked for rust and corrosion.
- When not in use, ladders shall be protected from the weather. Ladders stored horizontally shall be supported at both ends and at intermediate points to prevent sagging of the middle section, which tends to loosen the rungs and warp the rails.

4.2.8 Temporary Stairways

- Temporary stairways shall be installed between 30 and 50 degrees from horizontal.
- Landings shall be installed at every 12 ft or less of vertical rise. Landings shall be not less than 30 in. in the direction of travel by 22 in. in width.
- Riser height and tread depth shall be uniform within each flight of stairs to within 1/4 in.
- Where doors or gates open directly onto a stairway, platforms shall be provided so that the swing of the door or gate will not reduce the width of the platform to less than 20 in.
- Stairways having four or more risers or rising over 30 in. shall have at least one handrail and one stair-rail system along each unprotected side or edge.
- Stair rails shall be installed at a height where the distance from the top of the rail to the face of the tread at its forward edge is 36 in.
- Midrails shall be installed at a height half way between the stair rail and the tread.
- Handrails shall be installed at a height where the distance from the top of the rail to the face of the tread at its forward edge is not more than 37 in. or less than 30 in.
- Stair rails and handrails shall be surfaced in such a way to prevent injury to employees caused from punctures or lacerations and to prevent snagging of clothing.
- The ends of stair rails and handrails shall be constructed in such a way as to prevent projection hazards.

4.2.9 Permanent Stairways

- Except during stairway construction, foot traffic is prohibited on stairways with pan stairs where the treads and/or landings are to be filled in with concrete or other material at a later date, unless they are temporarily fitted with wood or other solid filler material installed the full width and depth of the stair.

- Except during actual construction of a stairway, foot traffic is prohibited on skeleton metal stairs where permanent treads and/or landings are to be installed at a later date, unless the stairs are fitted with secured temporary treads made of wood or other solid material long enough to cover the entire tread and/or landing area.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A7

Scaffold Safety

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the requirements for erecting, using, and dismantling elevated work platforms on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1910.28, Safety Requirements for Scaffolding.
- 29 CFR 1926.450, Scope, Application and Definitions Applicable to Subpart L.
- 29 CFR 1926.451, General Requirements.
- 29 CFR 1926.452, Additional Requirements Applicable to Specific Types of Scaffolding.
- SH-2A8, Fall Protection.
- Do Not Use Scaffold Tag (Red).
- Completed Scaffold Tag (Green).
- Modified Scaffold Tag (Yellow).
- Scaffold Inspection Checklist.

3.0 RESPONSIBILITY

3.1 Construction Services Construction Site Manager

The E&CS Construction Services construction site manager shall be responsible for ensuring the implementation of this procedure.

3.2 Contractors

Contractors working on E&CS construction projects shall be responsible for complying with the scaffold requirements in this procedure.

4.0 PROCEDURE

4.1 Compliance

Contractors shall ensure scaffolds used on E&CS projects comply with the requirements listed in the following sections.

4.2 General Requirements

1. Each contractor shall designate a scaffold competent person(s). This designation shall be made in writing, and the individual's qualifications shall be documented. All scaffolds and scaffolding systems shall be constructed and used under the supervision of the designated competent person.

2. Each contractor shall conduct training regarding the safe erection and dismantling of scaffolds for all employees involved in those activities. The training shall comply with the current version of OSHA's scaffolding standards.

3. Each contractor shall conduct safety training for all users of scaffolds in accordance with the current version of OSHA's scaffolding standards, 29 CFR 1926.454, subpart L, Scaffolds – Training requirements.

4. Each scaffold shall be erected, altered, and dismantled under the direct supervision of a competent person. Scaffolding systems in excess of 125 ft in height shall be designed by a registered professional engineer.

5. All working platforms shall be capable of supporting their own weight plus 4 times the maximum intended load.

6. All working platforms shall be capable of sustaining a minimum working load of 75 psf.

7. Posts shall be plumb, and scaffold platforms shall be level.

8. Handrail, midrail, and toeboards that meet requirements of procedure SH-2A8, Fall Protection, are required on all scaffolds regardless of height.

9. A stationary scaffold shall be secured to the building or a fixed structure vertically every 25 ft starting at the base of the scaffold and horizontally every 30 ft. This rule shall also apply to mobile scaffolds at their working stations. Outriggers may be used in lieu of tying off, or scaffolds may be clamped together so that the height does not exceed three times the smallest base dimension without additional stabilization.

10. Screens are required on scaffolds or elevated work platforms over walkways or work areas that expose personnel below to dropped objects. The screens shall reach from the toeboards to the midrail at minimum. The screen is to be made of #18, ½-in. wire mesh or equivalent material.

11. Tool tethers shall be used during assembly and disassembly of all scaffolds.

12. Welding leads, extension cords, hoses, etc., shall not be allowed to be suspended from scaffold components.

13. All workers shall tie off to an acceptable anchorage when there is no (or an incomplete) handrail, or when there are openings over 12 in. in the working platform. When working from suspended scaffold/platform, employees shall be secured to an independent lifeline.

14. Anchorage points for independent lifelines shall be able to withstand 5,000 lb per employee attached.

15. Swinging stages, floats, and boatswain's chairs shall be tested before initial use. Test by applying the maximum intended load with the unit close to the floor or ground.

16. Crews requiring scaffolds shall requisition them well in advance to avoid delays and to allow time to provide the best scaffold for the job.

17. Scaffold erection crews shall inspect all components for defects as the erection proceeds. Any components found to be defective shall be set aside and tagged for repair or disposal.

18. The contractor shall assign a competent person to perform daily inspections of the scaffolds to be used (prior to use). All defects shall be corrected at once or the scaffold shall have a red tag attached.

19. Scaffold handrails shall be about 42 in. above the platform. The minimum distance between the handrail and the platform is 38 in. The 38 in. allows for overlap of the

scaffold planks. A midrail shall be placed approximately midway between the platform and the handrail.

20. When scaffold platforms are more than 2 ft above or below a point of access, portable ladders, hook-on ladders, attachable ladders, stair towers (scaffold stairways/towers), stairway-type ladders such as ladder stands, ramps, walkways, integral prefabricated scaffold access, or direct access from another scaffold, structure, personnel hoist, or similar surface shall be used. Cross braces shall not be used as a means of access. Where possible, gates shall be used for safe access and egress.

21. E&CS policy is that contractors are to build each scaffold as complete as physically possible: complete deck, handrail/midrail, toeboards, and access ladder.

22. Scaffolds shall not be erected, used, dismantled, altered, or moved such that they or any conductive material handled on them may come closer to energized power lines than 10 ft for voltages up to 50 kV or 10 ft plus 4 in. for each kV over 50 kV.

23. Each platform on all working levels of scaffolds shall be a minimum of 18 in. wide and shall be fully planked or decked between the front uprights and the guardrail supports, with no more than a 1-in. gap between planks and between the platform and the uprights. The competent person shall approve any exceptions when the scaffold configuration does not allow for this requirement to be met.

24. The front edge of all platforms shall not be more that 14 in. from the face of the work unless guardrail systems are installed along the front edge and/or personal fall arrest systems are used.

25. The ends of each scaffold plank shall extend over its support at least 6 in. (unless it is cleated or otherwise restrained by hooks or equivalent means), but not more that 12 in.

26. On scaffolds where planks are overlapped to create a long platform, the overlap shall occur only over supports, and shall be not less that 12 in. unless the planks are nailed together or otherwise restrained to prevent movement.

27. At all points of a scaffold where the platform changes direction, such as turning a corner, any plank that rests on a bearer at an angle other than a right angle shall be laid first, and planks which rest at right angles over the same bearer shall be laid second, on top of the first plank.

28. Scaffold components manufactured by different manufacturers shall not be intermixed unless approved by the competent person; the components fit together without force and without modification; and the scaffold's structural integrity is maintained.

4.3 General Requirements for All Supported Scaffolds

1. The poles, legs, posts, frames, or uprights of supported scaffolds shall bear on base plates and mud sills or other adequate stable and firm foundations capable of supporting the maximum intended load without settling or displacement. They shall be plumb and braced to prevent swaying and displacement. Screw jacks may be used to level and plumb scaffolding but not to increase the height.

2. Supported scaffolds with a height to base width ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means. Restraints shall be installed according to manufacturers' recommendations or at the closest horizontal member to the 4:1 height.

3. Restraints shall be repeated vertically every 20 ft for scaffolds 3 ft wide or less and every 26 ft for scaffolds greater than 3 ft wide. Restraints shall be installed at locations where horizontal members support both inner and outer legs. They shall be installed at each end of the scaffold and repeated at horizontal intervals of 30 ft measured from one end toward the other.

4. Supported scaffolds with an eccentric load, such as a cantilevered work platform, shall be restrained from tipping by guying, tying, bracing, or outriggers regardless of the height-to-base width ratio.

4.4 Fabricated Frame Scaffolds

1. Frames shall be placed one on top of the other with coupling or stacking pins to provide proper alignment of legs and shall be locked together vertically by pins or other equivalent suitable means to ensure against displacement.

2. Frames shall be braced by cross, horizontal, or diagonal braces, or combination thereof, which secure vertical members together laterally. The cross braces shall be of such length as will automatically square and align vertical members so that the erected scaffold is always plumb, level, square, and rigid. All brace connections shall be secured.

3. When moving platforms to the next level, the existing platform shall be left undisturbed until the new end frames have been set in place and braced.

4. Cantilevered sections may be used only to support personnel. Brackets used to support cantilevered sections shall be seated with side-brackets parallel to the frames and end-brackets at 90 degrees to the frames, and shall not be bent or twisted from these positions.

4.5 Tube and Coupler Scaffolds

1. Posts shall be erected on required bases and maintained plumb.
2. Diagonal cross bracing shall be provided as follows:
   a. Horizontally every third section.
   b. Vertically every fourth section.
   c. Whenever posts are farther apart than 7 ft, the braces shall be at a 45 degree angle.
3. Runners shall be erected along the length of the scaffold located on both the inside and outside posts at level heights (when tube and coupler guardrails and midrails are used on outside posts, they may be used in lieu of outside runners.)
4. Bearers and braces shall extend beyond the posts and runners and shall provide full contact with the coupler.
5. Tube and coupler scaffold over 125 ft in height shall be designed by a registered professional engineer, and shall be constructed and loaded according to the design.

4.6 Wood-Pole Scaffolds

1. Wood-pole scaffolding shall be designed and erected so that the load capacity is at least 75 psf on 6-ft spans or the safety factor is at least four times the intended load.
2. Wood-pole scaffold higher than 60 ft shall be designed by a registered professional engineer. Pole scaffolds have many intricate requirements depending on their duty rating. See 29 CFR 1926.452.
3. Foundations for pole scaffolds shall be capable of sustaining the pole loads without sinking or shifting. Wood sills shall be a minimum of 2x10-in. lumber.
4. When poles are spliced, 4-ft wood splice plates or better shall be installed on at least two adjacent sides at the same height and length.
5. Pole scaffolds shall be secured at intervals of 25 ft vertically.
6. Diagonal and cross bracing of sufficient quantity and strength shall be used for scaffold erection to prevent any scaffold movement.
7. Where there is concern for combustible material in a work area, fire-resistant materials shall be used.

4.7 Trestle Scaffolds

The use of trestle scaffolds on E&CS projects is prohibited.

4.8 Suspended Scaffold Requirements

1. Two-point suspended scaffolds shall have standard toeboards, midrails, and handrails.

2. Platforms shall not be more than 36 in. (0.9 m) wide unless designed by a qualified person to prevent unstable conditions.

3. The platform shall be securely fastened to hangers (stirrups) by U-bolts or by other means, which satisfy the requirements of 29 CFR 1926.451A.

4. The platforms shall be of ladder-type, plank-type, beam-type, or light-metal-type. Light-metal-type platforms having a rated capacity of 450 lb or less and platforms 40 ft or less in length shall be tested and listed by a nationally recognized laboratory.

5. The blocks for fiber or synthetic ropes shall consist of at least one double and one single block. The sheaves of all blocks shall fit the size of the rope used.

6. Two-point scaffolds shall not be bridged or otherwise connected one to another during raising and lowering operations unless the bridge connections are articulated (attached), and the hoists properly sized.

7. Passage may be made from one platform to another only when the platforms are the same height, are abutting, and walk-through stirrups specifically designed for this purpose are used.

8. All suspension scaffold support devices such as outrigger beams, cornice hooks, parapet clamps and similar devices, shall rest on surfaces capable of supporting at least 4 times the load imposed on them by the scaffold operating at the rated load of the hoist (or at least 1.5 times the load imposed on them by the scaffold at the stall capacity of the hoist, whichever is greater).

9. When outrigger beams are used to support suspended scaffolds, they shall be:
   - Made of structural steel I-beams (or channel iron that is securely fastened together with the flanges turned out),
   - Installed with the web in a vertical position and all bearing supports perpendicular to the beam center line,
   - Restrained from movement, and stabilized by bolts or other direct connections to the floor or roof deck at the inboard end.

CAUTION
Counterbalanced outrigger beams cannot be used.

- Placed perpendicular to the bearing supports when possible, or placed as close to perpendicular as possible when obstructions are present and stabilized with opposing angle tiebacks that are secured to structurally sound anchorage points,
- Provided with stop bolts or shackles at both ends, and
- Designed and installed so that the shackle or clevis with which the rope is attached is directly over the center line of the stirrup.

10. When cornice hooks, roof hooks, roof irons, parapet clamps or similar devices are used to support suspended scaffolds they shall be:
    - Made of steel, wrought iron, or materials of equivalent strength,
    - Supported by bearing blocks, and
    - Secured against movement with tiebacks (that are equivalent in strength to the hoisting rope) installed at right angles to the face of the structure, and secured to a structurally sound point of anchorage.
11. Suspension scaffold hoists shall be either electric or pneumatic and shall be approved by a qualified testing laboratory. No gasoline-powered hoists are to be used.
12. Gears and brakes on all hoists shall be enclosed. In addition to the normal operating brake, all hoists shall be equipped with a braking device or locking pawl which engages automatically when the hoist makes either of the following uncontrolled movements:
    - An instantaneous change in momentum, or
    - An accelerated overspeed.
13. When winding drum hoists are used on suspended scaffolds, they shall contain not less than four wraps of the suspension rope at the lowest point of scaffold travel. When other types of hoists are used, the suspension rope shall be long enough to allow the scaffold to be lowered to the level below without the rope end passing through the hoist, or the rope end shall be configured or provided with means to prevent the end from passing through the hoist.
14. Wire suspension ropes, including connecting hardware shall be capable of supporting, without failure, at least six times the maximum intended load with the scaffold operating at either the rated load of the hoist or two times the stall load of the hoist, whichever is greater.

15. The load end of wire suspension ropes shall be equipped with proper size thimbles and secured by eye splicing. There shall be a minimum of three wire rope clips installed according to the manufacturer's recommendations with spacing of six rope diameters apart. Clips shall be:
    - Retightened to the manufacturer's recommendations after the initial loading, and
    - Inspected and retightened as needed at the start of each shift thereafter.
16. Wire suspension ropes shall be inspected by the competent person prior to each shift and after every occurrence which could affect the rope's integrity. Ropes shall be replaced if any of the following conditions exist:
    - Any physical damage which impairs the function and strength of the rope,
    - Kinks that might impair the tracking or wrapping of rope around the drum or sheave,
    - Six randomly distributed broken wires in one rope lay or three broken wires in one strand in one rope lay,
    - Abrasion, corrosion, scrubbing, flattening or peening causing loss of more than one-third of the original diameter of the outside wires,
    - Heat damage caused by a torch or any damage caused by electrical contact, or
    - Evidence that the secondary brake has been activated during an overspeed condition and has engaged the rope.
17. Suspension scaffolds shall be secured to prevent them from swaying as determined by the competent person.
18. Suspension ropes shall be adequately shielded from heat-producing processes and corrosive substances when needed.
19. When electric welding is performed from suspended scaffolds, the following precautions shall be taken to prevent current from arcing through the suspension wire rope:
    - An insulated thimble shall be used to attach each suspension rope to its support (such as cornice hook or outrigger beam),
    - The suspension wire rope shall be insulated for a distance of 4 ft above the hoist and any tail line below the hoist shall be insulated to prevent contact with the platform,
    - Each hoist shall be covered with insulated protective covers, and
    - A separate grounding conductor which is at least the size of the welding lead shall be connected from the scaffold to the structure at all times while the welding

machine is operating; this is in addition to the grounding conductor required by the welding process.

20. In addition to the standard guardrail system, all employees on suspended scaffolds shall be protected from falling by a personal fall arrest system consisting of a full body harness, shock absorbing lanyard with locking hook, and an appropriately sized rope grab attached to a vertical lifeline. Each employee shall be attached to separate vertical lifelines which are securely and independently attached to substantial members of the structure (not scaffold).

4.9 Multilevel Suspended Scaffolds Requirements

The use of multilevel suspended scaffolds is prohibited on E&CS projects.

4.10 Floats

1. The platform shall be supported by a minimum of two bearers, each of which shall project a minimum of 6 in. beyond the platform on both sides. Each bearer shall be securely fastened to the platform.
2. Rope connections shall be such that the platform cannot shift or slip.
3. When only two ropes are used with each float, they shall be arranged so as to provide four ends that are securely fastened to overhead supports.
4. Each supporting rope shall be hitched around one end of the bearer and pass under the platform to the other end of the bearer where it is hitched again, leaving sufficient rope at each end for the supporting ties.
5. Workers on floats shall tie off to an independent lifeline before getting on a float and untie after getting off a float.

4.11 Needle-Beam Scaffolds

1. Needle beams shall be installed on the edge.
2. Ropes and hangers shall be used for supports, except that one end of the needle beam may be supported by a permanent structural member.
3. Ropes shall be securely attached to the needle beams.
4. The support connections shall be arranged so as to prevent the needle beam from rolling or becoming displaced.

5. Platform units shall be securely attached to the needle beams by bolts or equivalent means. Cleats and overhang are not considered to be adequate means of attachment.

4.12 Boatswains' Chairs

1. Boatswains' chair tackle shall consist of correct size ball bearings or bushed blocks containing safety hooks and properly "eyed spliced" minimum 5/8 in. diameter first-grade manila rope, or other rope which will satisfy the criteria (for example: strength and durability) of manila rope.

2. Boatswains' chair seats slings shall be weave through four corner holes in the seat; shall cross each other on the underside of the seat; and shall be rigged so as to prevent slippage which could cause an out-of-level condition.

3. Boatswains' chair seats shall be a minimum of 5/8-in. diameter fiber, synthetic, or other rope which will satisfy the criteria (for example: strength, slip resistance, durability) of first-grade manila rope.

4. When a heat-producing process such as gas or arc welding is being conducted, boatswains' chair seat slings shall be a minimum of 3/8-in. wire rope.

5. Noncross-laminated wood boatswains' chairs shall be reinforced on their underside by cleats securely fastened to prevent the board from splitting.

6. The worker shall be tied off to an independent lifeline with a safety harness.

4.13 Electric Hoist Platforms

1. When working platforms are suspended from electric hoist mechanisms and used to raise and lower workers, a safety harness shall be worn and attached to an independently secured lifeline.

2. Such platforms shall have guardrails 42 in. in height above the platform.

3. Prior to each use, the hoist mechanism and support attachment shall be visually inspected and the load support checked at 1 ft off the ground.

4. The cable and the lay of the cable on the spool shall be checked constantly.

5. All wire rope associated with the support of an electric hoist platform shall be protected from abrasive sharp object contact via the use of softeners.

4.14 Mobile Scaffolds

1. Scaffolds shall be braced by cross, horizontal, or diagonal braces, or combination thereof, to prevent racking or collapse of the scaffold and to secure vertical members together laterally so as to automatically square and align the vertical members. Scaffolds shall be plumb, level, and squared. All brace connections shall be secured.

2. Scaffold casters and wheels shall be locked with positive wheel and/or wheel and swivel locks, or equivalent means, to prevent movement of the scaffold while the scaffold is being used in a stationary manner.

3. Manual force to move the scaffold shall be applied as close to the base as practicable, but not more than 5 ft above the supporting surface.

4. Power systems used to propel mobile scaffolds shall be designed for such use. Forklifts, trucks, similar motor vehicles, or add-on motors shall not be used to propel scaffolds unless the scaffold is designed for such propulsion systems.

5. Scaffolds shall be stabilized to prevent tipping during movement.

6. Employees shall not be allowed to ride on scaffolds during movement.

7. The height of freestanding mobile scaffolds shall not exceed four times the minimum base dimension.

8. Ladders used for access to mobile scaffolds shall be affixed and located in such a manner not to have a tendency to tip the scaffold.

9. Where leveling of the scaffold is necessary, screw jacks or equivalent means shall be used.

4.15 Scaffold Erection and Dismantling Requirements

1. Pockets, pouches, and tool belts shall be used to carry the necessary tools for the work.

2. Scaffold members shall be hoisted or lowered with a handline or passed from hand to hand. Throwing or dropping items to coworkers is not permitted.

3. Constant fall prevention measures shall be maintained. Provisions shall be established for using a safety harness and working on firm scaffold decks when this can be done safely. The contractor's competent person shall thoroughly evaluate each scaffold erection and determine feasibility of fall protection use.

4. Supported scaffold poles, legs, posts, frames, and uprights shall bear on base plates and mudsills or adequate firm foundation.

5. Footings shall be level, sound, rigid, and capable of supporting the loaded scaffold without settling or displacement.

6. When scaffolds are to be secured to fixed structures or outriggers are to be used, they shall be installed as soon as possible. When dismantling a scaffold, these should be left on as long as practical.

7. The coordination of this activity with surrounding operations and environment shall be given prior consideration.

4.16 Mounting and Dismounting Scaffold Requirements

1. Do not carry objects in hands. Keep both hands empty for climbing handholds.

2. Step only on secured ladder or access rungs.

3. Give full attention to stability while getting on and off the working platform. Do not use the toeboard as a handhold or foothold.

4. Pay attention to each step and handhold; most falls occur near the top or the bottom of the ladder.

4.17 Scaffold Tagging

4.17.1 General Scaffold Tagging Requirements

1. A green scaffold tag designates a complete scaffold as defined by the manufacturer and/or 29 CFR 1926, subpart L.

2. A yellow scaffold tag designates a scaffold which is safe to use but has been altered to suit a specific job. A yellow scaffold tag shall detail any hazards (incomplete handrail, incomplete decking, low-overhead, limited climbing clearance, etc.) and the necessary protective measures. Yellow tags shall not be used as a substitute for scaffolds that can be fully completed.

3. If a scaffold is in the process of being erected, changed, or dismantled, it shall have a red tag. A scaffold that has a red scaffold tag shall be considered unsafe and shall not be used.

4. If a scaffold has been damaged or is defective, a red tag shall be attached.

4.17.2 Installation and Removal of Scaffold Tags

1. A competent person shall determine whether a usable scaffold receives a yellow or a green tag. The competent person shall be responsible for completing all pertinent information on the tag and affixing the tag.

2. The scaffold tag shall be affixed to each scaffold access ladder approximately 5 ft 6 in. from its base, where it will not interfere with normal access.

3. Anyone may remove a green or yellow scaffold tag if the scaffold does not meet the requirements (for example, a scaffold that has been damaged, has been improperly modified, is missing components, or is deficient in any safety aspect). A red tag will be used in these circumstances. Only a competent person in scaffold erection may place a yellow or green scaffold tag on a scaffold.

4. After a scaffold has been repaired, a scaffold-competent person shall inspect it and retag it accordingly.

5. Daily inspections by the competent person shall be performed to ensure that all scaffolds are in safe condition and tags are legible.

6. If a scaffold has been erected and does not have a tag, contact the scaffold foreman or competent person to inspect and tag the scaffold before work begins.

4.18 Inspection and Testing - Scaffold Planks

1. Scaffold planks shall be inspected by a designated competent person upon receipt and prior to use as a platform. Users shall examine planks visually prior to each use.

2. Examine planks for knots, excessive grain slope, shakes, decay, dry rot, burns, cracks, and other defects. Scaffolds with noted defects shall be immediately removed from service.

3. Density of lumber shall be equivalent to Douglas fir and capable of supporting four times the intended load. Moisture content shall not exceed 20 percent.

4. All scaffold planks shall be scaffold grade or equivalent as recognized by approved grading rules.

5. Planks shall be 2x10 in. or 2x12 in. heavy duty (75 psi on 6-ft span lumber).

6. Discard the plank as a scaffold plank if evidence of a defect is noted.

7. Requirements 3 and 5 above shall be specified on the purchase requisition.

8. Scaffold planks are to be used for designated purpose only.

4.19 Special Scaffolding

Any scaffold which shall be specially adapted to the workplace where the requirements above cannot be met shall be approved by a qualified registered professional engineer, the site manager, and ES&H professional.

4.20 Storage of Scaffolding

1. Scaffold materials shall be temporarily stored in a manner that will protect and prevent damage to them. Scaffold materials, in particular wood scaffold planks, should be stored under a protective roof when possible.

2. Scaffold materials shall not be left in work areas where they obstruct traffic and/or cause fire hazards.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A8

Fall Protection

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

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1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide fall-prevention and fall-protection system requirements on Engineering and Construction Services (E&CS) projects to ensure personnel are protected when work activities place them in an elevated position or in a position where a fall to a subground elevation is possible.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

3.2 References

- 29 CFR 1926.500-.503 with appendices, subpart M.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Fall Prevention

E&CS has a 100-percent fall-protection policy. Fall-prevention measures shall be implemented when the potential for a fall of 6 ft or more or into hazardous machinery or equipment exists. One-hundred-percent fall protection may be accomplished through the use of a guardrail system (as specified in 29 CFR 1926.502(b)), approved safety net systems, covers, or personal fall-arrest systems.

Prior to beginning a project, E&CS and contractor management who have personnel that are exposed to falls shall perform an initial survey carefully evaluating the potential fall hazards and develop written plans for fall protection for those specific hazards.

1. The plan shall meet the requirements of 29 CFR 1926, subpart M and must address the elements of this procedure. The fall-protection plan shall first address methods to engineer fall hazards from work activities.

2. An engineered solution is to design the work to prevent (or minimize) employee exposure to falls. An example of an engineered fall-protection solution is a guardrail system including handrails, midrails, and toeboards. Erecting steel on the ground and then erecting the assembled sections is an example of minimizing the exposure to a fall hazard.

3. When engineered solutions are not feasible, then plans shall address such methods as the use of full body harnesses, lanyards, lifelines, and safety nets.

4.2 Fall Prevention Plan

Before starting any elevated work, the contractor shall submit a written fall-prevention plan to the E&CS site manager. Elevated work includes, but is not limited to, scaffold erection, steel erection, work in pipe bridges, roof work, Q-decking, grating installation and removal, formwork and reinforcing steel, and any other potential for a fall of 6 ft or greater, except work performed from a ladder. The plan must include:

- A list of elevated work tasks.
- The proposed method(s) of fall protection for each task.
- If a personal fall-arrest system is to be used, identify anchor points.
- Rescue provisions.
- Means of access and egress to elevated work locations.

- Name(s) and qualifications of the contractor's competent person(s).
- Description of the fall-protection training program.

See appendix A, Sample Fall Protection Plan.

4.3 Guardrails General

A guardrail system designed to support 200 lb of force in either the downward or outward directions shall be required if the walking or working surface is 6 ft (4 ft for general industry) or more above a lower level. Handrails shall be 42 in. (plus or minus 3 in.) above the walking surface. Midrails are to be halfway between the handrail and the floor but cannot have more than 19-in. opening between the midrail and either the walking surface or handrail. The guardrail system shall have toeboards and/or screens. Screens are required on scaffolds or elevated work platforms over walkways or work areas that expose personnel below to dropped objects. The screens shall be from the toeboards to the handrails. The screen is to be of #18, ½-in. wire mesh or equivalent material.

Where access openings for ladders are provided through guardrails systems, there must either be a swing gate or an offset so an employee cannot back into the opening. Access openings for stairs do not require a gate or offset.

1. Wooden guardrails shall be constructed of a minimum of a 2-in.x 4-in. handrail with a 1-in.x 4-in. midrail with 2-in.x 4-in. posts spaced no more than 8 ft on centers. Material shall have no loose or large knots and shall be free of splinters or protruding nailheads.

2. Pipe guardrails (posts, toprails, and midrails) shall be made of schedule 40 pipe that is at least 1½-in. inside diameter (I.D.). The post shall be placed a maximum of 8 ft apart on centers.

3. Structural steel guardrails (posts, rails, midrails) shall be of at least 2-in. x 2- in. x ⅜-in. angle iron with posts spaced not more than 8 ft apart on center.

4. Wire rope guardrails shall be made of at least ⅜-in. wire rope. Wire rope midrails shall be at least ¼-in. wire rope. The posts shall be on 8-ft centers or less and the wire rope stretched tight to keep the deflection to less than 3 in. Wire rope handrails shall not deflect to a height less than 39 in. above the floor. The wire rope shall be flagged every 6 ft with a highly visible material.

   For ¼-in. wire rope, a minimum of 2 clips shall be used and shall be spaced no more than 1 ½ in. apart and torqued to 15 fp. For ⅜-in. wire rope, a minimum of 2 clips shall be used and shall be spaced 2¼ in. apart and torqued to 45 fp. For ½-in. wire rope, a minimum of 3 clips shall be used and shall be spaced 3 in. part and torqued to 65 fp.

Openings between the handrail and midrail shall not exceed 19 in. Often this restriction requires the use of two midrails spaced evenly between the handrail and the platform. Wire rope handrail shall be spliced only by utilizing an eye-to-eye method.

5. Toeboards are required on platforms with guardrails and on scaffolds that are above the ground or floor as falling object protection and fall protection. Toeboards shall be 3½ in. (4 in. nominal for scaffolds) or more in height. They shall be made of wood, metal, or ½-in. wire mesh. There shall be no more than ¼-in. clearance between the top of the platform and the bottom of the toeboard. The toeboard shall be capable of withstanding 50 lb of force.

6. Rebar is prohibited for use as handrail material.

4.4 Floor Hole Covers and Wall Opening Barricades

1. Any hole larger than 2 in. in its least dimension shall have either floor hole covers or guardrails. Hole covers shall be used to protect employees from falling through holes, tripping into holes, and from material falling through holes. Covers shall be designed to support at least twice the intended weight of personnel, material, or maximum axle load of the largest piece of equipment expected to pass over the cover.

2. Covers shall be made of ¾-in. plywood or equivalent if one dimension of the opening is 18 in. or less, otherwise 2-in. lumber or doubled ¾-in. plywood or equivalent is required. Additional support systems may be required for longer spans.

3. If covers become damaged due to equipment traffic, they shall be replaced by covers designed to be substantially stronger.

4. Covers shall be secured to prevent accidental displacement. Securing can be achieved by wiring or nailing the covers down. If such action is not feasible, cleat the bottom of the cover by nailing 2-in. x 4-in. boards (or similar material) the size of the hole. Place the covers over the hole with the 2-in. x 4-in. boards firmly in the hole to keep the covers from being accidentally displaced.

5. Covers shall be marked with the words HOLE COVER legible and clearly visible.

6. When not in use, the covers shall be neatly stacked out of the way. Personnel shall be cautioned about removing covers and stepping into the hole. Fall protection devices may be needed when working around the open hole. Work groups shall replace the hole cover when the task is completed and a hazard still exists. Do not leave open holes unattended.

7. Wall openings where the potential for a fall of 6 ft or greater exists shall be protected by a standard guardrail system.

4.5 Fall Protection/Personal Fall Arrest Systems

1. Only full-body harnesses are to be used for fall arrest. The harness must be of the proper size and adjusted to fit in order to provide the proper protection.

2. **The use of employee-owned fall-arrest equipment is strictly <u>prohibited.</u>**

3. Lanyards shall be of the shock-absorbing-type. Two lanyards (or twin lanyards) shall be worn at all times to facilitate tie off while moving.

4. Shock-absorbing lanyards allow for no more than a 6-ft freefall and 3.5 ft of deceleration distance. This distance totals 9.5 ft plus the suspended distance of the torso and the legs. Personnel need an anchor point that will not allow them to hit any objects below them. Falling 9.5 ft to a floor that is 10 ft below will involve a severe impact for the employee. Employers and employees need to ensure the fall zone is adequate for the size of the employee and the length of the lanyard or the lanyard needs to be secured high enough above the employee's head to prevent contacting any lower objects in the event of a fall.

5. One end of the lanyard shall be attached to the D-ring between the employee's shoulder blades. The other end shall be attached to an anchorage that is high enough so that a fall of more than 6 ft cannot occur (usually at least the same height as the D-ring). The lanyard shall restrict the freefall to no more than 6 ft and the deceleration distance to 3.5 ft.

   NOTE

   Some lanyards from foreign countries do not always meet this requirement.

6. Snapping the lanyard back onto itself is prohibited unless approved by the manufacturer.

7. Avoid sharp edges that can damage the lanyard. Softeners and other devices are available.

8. Snap hooks shall be of the double action, self-locking type. Snap hooks that have a throat opening greater than 25/32 in. cannot be used on Southern Company Generation construction projects. Snap hooks with a throat opening greater than 25/32 in. can be used on fixed structural elements, such as rebar, only if they have self-locking carabineer load gates rated to 5,000 lb. Snap hooks with throat openings greater than 25/32 in. and gates rated less than 5,000 lb cannot be used without exceptions. Fall arrest equipment must be designed to meet ANSI A10.14, Requirements for Safety Belts, Harnesses, Lanyards and Lifelines for Construction and Demolition, and ANSI Z359.1, Safety Requirements for Personal Fall Arrest Systems and Components.

9. Anchorage and anchor connectors (tie-off points) shall be capable of supporting 5,000 lb per person or engineered with a 2-to-1 safety factor. This restriction

eliminates items like small-bore pipe (less than 2 in.), conduit, handrails, most all-thread systems, most scaffolding components, etc. The best anchorages are manufactured anchorages; for example, girder grips, beamers, beam straps, lifelines (horizontal and vertical), retractable lifelines, and rope grabs.

10. Horizontal lifelines shall be erected above the employee's shoulders whenever possible. The lifelines shall be protected from sharp edges and abrasion. Lifelines shall be independent of scaffold systems and capable of supporting 5,000 lb per person attached.

11. Horizontal lifelines shall be designed and erected with a 30-degree sag angle.

12. Wire rope guardrail systems shall not be used as horizontal lifelines unless it is designed and engineered by a competent person to the specifications for horizontal lifeline requirements.

4.6 Safety Net Systems

1. Safety nets, when used for fall protection, shall be installed as close as practical under the walking/working surface, but in no case more than 30 ft below such level and shall have sufficient clearance under them to prevent contact with the surface or structures below.

2. Safety nets shall extend outward from the outermost projection of the work surface as follows:

   - 8 ft for a vertical distance up to 5 ft.
   - 10 ft for a vertical distance of 5 ft to 10 ft.
   - 13 ft for a vertical distance greater than 10 ft.

3. Safety nets shall have a maximum mesh opening of 6 in. x6 in.

4. Each safety net shall have a border rope for webbing with a minimum breaking strength of 5,000 lb.

5. Connections between safety-net panels shall be as strong as integral net components and shall be spaced not more than 6 in. apart.

6. Each safety-net system shall be drop tested after initial installation, whenever relocated, after major repairs, and at 6-month intervals if left in one place. This drop test shall be conducted using a 400-lb bag of sand, 30 in. (+/-2 in.) in diameter dropped into the net from the highest surface, at which employees are exposed to fall hazards, but not less than 42 in. above the net.

7. Safety nets shall be cleared of any materials, scrap, equipment, tools, etc., that may have fallen into the net as soon as possible, and at least prior to the next work shift.

8. Safety nets shall be inspected at least once per week and after any occurrence which could affect the integrity of the system. Damaged or defective nets shall be removed from service.

4.7 Controlled Access Zones

A controlled access zone is a floor or platform that has no perimeter guardrail system but does have a fall hazard of 6 ft or greater. Leading edge work is an example of where a controlled zone is used. Controlled access zone work shall require contractors to submit a detailed written plan to the site manager prior to implementation. Plans shall clearly address a method by which fall protection or a personal fall-arrest system will be implemented as an adjunct to prevent an actual fall. Only authorized and trained personnel shall work in a controlled access zone. The use of a controlled access zone does not supersede the need for 100-percent fall protection on E&CS projects.

4.8 Warning Line System and Safety Monitoring System

The warning line system and safety monitoring system are prohibited on E&CS projects.

4.9 Competent Person

The fall protection plan shall address the responsibilities and authority of the competent person(s) and designate who they are for E&CS and each site contractor. The competent person(s) shall oversee all aspects of the fall protection program. The competent person(s) shall ensure component compatibility to help reduce the risk of equipment failure or rollout.

4.10 Inspection

Components of fall-protection systems shall be inspected prior to each use for mildew, wear, damage, and other deterioration. Defective components shall be removed from service if their function or strength has been adversely affected. The body-harness system or components subject to impact loading shall be immediately removed from service and shall not be used again for employee protection unless inspected and determined by a competent person (as defined by 29 CFR 1926, subpart M) to be undamaged and suitable for reuse.

4.11 Rescue

1. Rescue plans shall be provided for suspended employees. Prompt rescue shall be readily available for employees who are not able to self-rescue.

2. Rescue equipment shall be identified in the project fall-protection plan. All rescue equipment shall be routinely inspected and immediately available.

4.12 Care, Use, and Maintenance of Equipment

All lifelines and lanyards shall be protected against being cut or abraded. For example, independent lifelines used on rock-scaling operations or in areas where the lifeline may be subjected to cutting or abrasion shall be protected from such hazards and shall have a minimum breaking strength of 5,000 lb or twice the anticipated arresting force; whichever is greater.

4.13 Training Content and Requirements

1. All site personnel shall be trained by a qualified or competent person on the nature of site fall hazards, procedures for erecting, using, inspecting, and dismantling fall protection systems, limitations of fall protection equipment, selection of anchor points, and how to don/doff safety harnesses. Additional training shall include the elements of the site/facility specific fall-protection plan and the requirements of applicable standards.

2. Retraining shall be conducted annually, when the fall-protection program changes, a new hazard is introduced into the work place, new fall-protection equipment is introduced, or when performance indicates the need for retraining to restore the desired level of competency.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 ATTACHMENTS

Appendix A, Sample Fall Protection Plan.

Appendix A – Sample Fall Protection Plan

Plant [name]
[name] Project
Fall Protection Program

SAMPLE

Issued [date]

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SAMPLE

1.0 PURPOSE AND SCOPE

The purpose of this fall protection program is to establish guidelines to protect all employees on Engineering and Construction Services (E&CS) projects engaged in outdoor or indoor work activities that expose them to potential falls from elevations.

The scope of this fall protection program includes all employees or agents of [company name], in particular those employees engaged in work activities that expose them to falls from heights of 6 ft or more.

2.0 GOAL

The goal of this fall protection program is to prevent the occurrence of falls from elevations of 6 ft or higher. This goal shall be accomplished through effective education, engineering and administrative controls, the use of fall protection systems, and enforcement of the program. This fall protection program will be continually improved upon to prevent all falls from occurring.

3.0 DEFINITIONS

anchor point - a secure point of attachment for lifelines, lanyards, or deceleration devices. An anchor point must be capable of supporting at least 5,000 lb (3,600 lb if engineered/certified by a qualified person) per person and must be independent of any anchorage being used to support or suspend platforms.

authorized person - a person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or job site (building maintenance, roof repair, and so forth).

competent person - a person capable of identifying existing and predictable hazards in the surroundings or working conditions that are hazardous or dangerous to employees. A person who has the authority to take prompt corrective action to eliminate such hazards.

connector - a device used to couple (connect) parts of the personal fall arrest system.

deceleration device - any mechanism, such as a rope grab, rip-stitch lanyard, a specially woven lanyard, tearing or deforming lanyard, or automatic self-retracting lifeline/lanyard, that serves to dissipate a substantial amount of energy during a fall arrest.

deceleration distance - the additional vertical distance a falling employee travels excluding lifeline elongation and free-fall distance, before stopping, from the point at which the deceleration device begins to operate. The deceleration distance is measured as the distance between the location of an employee's body harness attachment point at the moment of activation of the

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deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.

free fall - the act of falling before a personal fall arrest system begins to apply force to arrest the fall.

free-fall distance - the vertical displacement of the fall arrest attachment point on the employee's body harness between the onset of the fall and just before the system begins to apply force to arrest the fall. Free fall distance must not exceed 6 ft. **This distance excludes deceleration distance and lifeline/lanyard elongation distance.**

full body harness - webbing/straps secured about an employee's body in a manner that will distribute the fall arrest forces over the thighs, pelvis, waist, chest, and shoulders. A full body harness will include a means for attaching it to other components of a personal fall arrest system, preferably at the shoulders.

guardrail system - a barrier erected to prevent employees from falling to lower levels. This system includes a toeboard, midrail, and toprail able to withstand 200 lb of force applied in any direction.

lanyard - a flexible line of rope or strap that has self-locking snaphook connectors at each end for connecting to body harnesses, deceleration devices, and anchor points.

leading edge - the edge of a floor, roof, or other walking/working surface, that changes location as additional floor, roof, and so forth, is placed or constructed. A leading edge is considered an unprotected side or edge when not under active construction.

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

low slope roof - a roof having a slope of less than or equal to 4-in-12 (vertical to horizontal). A roof with approximately a 19.5-degree slope or less.

personal fall arrest system - a system used to arrest (catch) an employee in a fall from a working level. It consists of an anchorage location, connectors, a body harness, and may include a lanyard, deceleration device, lifeline, or any combination of these items.

qualified person - an individual, who by possession of a recognized degree, certificate, or professional standing or who by extensive knowledge, training, and experience has successfully demonstrated his or her ability to solve or resolve problems relating to the subject matter, work, or project.

rope grab - a deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest the fall of an employee.

roof work - the hoisting, storage, installation, repair, and removal of materials or equipment on the roof.

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safety monitoring system - a safety system in which a competent person is responsible for recognizing and warning employees of fall hazards. All other fall protection systems must be deemed not feasible (through a feasibility study/review) to select/use a safety monitoring system. The use of this system is specifically **PROHIBITED** on Southern Company Generation (Generation) construction projects.

snaphook - a connector comprised of a hook-shaped member with a closed keeper that can be opened to permit the hook to receive an object and when released, automatically closes to retain the object. Snaphooks must be self-closing with a self-locking keeper that remains closed and locked until unlocked and pressed open for connection or disconnection, thus preventing the opportunity for the object to roll out of the snaphook.

steep slope roof - a roof having a slope greater than 4-in-12 (vertical to horizontal). A roof with a slope greater than 19.5 degrees.

toeboard - a low protective barrier that will prevent the fall of materials and equipment to lower levels, usually 4 in. or greater in height.

total fall distance - the maximum vertical change in distance from the bottom of an individual's feet at the onset of a fall to the position of the feet after the fall is arrested. The total fall distance includes the free-fall distance and the deceleration distance. Total fall distance = total length of shock absorbing lanyard + height of the person + location distance of the D-ring from the work surface or platform.

unprotected sides and edges - any side or edge of a walking or working surface (for example, floor, roof, ramp, or runway) where there is no guardrail at least 39 in. high.

warning line system - a barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, that designates an area in which work can be conducted without the use of guardrails, personal fall arrest systems, or safety nets to protect employees in the area. A warning line system shall be used on any roof greater than 50 ft wide and in conjunction with a safety monitor only where the other forms of fall protection have been deemed infeasible to use. The use of this system is specifically **PROHIBITED** on Generation construction projects.

4.0 TYPES OF FALL PROTECTION SYSTEMS

1. An articulating manlift provided with a restraint system and full body harness to an anchor point below the waist (preferably at the floor level).
2. Guardrail with a toeboard, midrail, and toprail.
3. Personal fall arrest systems:
   - Anchor points (rated at 5,000 lb per person).
   - Full body harness.
   - Restraint line or lanyard.

SAMPLE

- Retractable lanyard.
- Rope grabs.
- Connectors (self-locking snaphooks).

4. Engineered lifelines.
5. Warning lines.
6. Safety nets.
7. Safety monitor systems are specifically prohibited on the Plant [plant name] [project name].

Appropriate fall protection will be determined based on the task (job) to be performed.

5.0 FALL PROTECTION LOCATIONS

Fall protection is required when a worker has the potential to fall 6 ft or more. [construction company name] has identified the following places concerning fall protection:

- All flat and low-sloped roof locations, when within 6 ft of the roof edge or during roof repair/maintenance (4:12 pitch or less).
- All exterior and interior equipment platforms, catwalks, antennas/towers, and similar features.
- All exterior and interior fixed ladders above 20 ft.
- All mezzanine and balcony edges.
- All open excavations or pits.
- All tasks requiring use of the articulating manlifts and scissor lifts.
- All tasks requiring employees to lean outside the vertical rails of ladders (for example, painting, stairwell light bulb replacement, or bolt up).
- Scaffolding erection 6 ft in height or greater.
- Steel erection 6 ft in height of greater.
- Mezzanine/catwalk areas. When an employee must step outside the catwalk, additional fall protection (that is, 6-ft lanyard to full body harness, self-retracting lanyard, or rope grab system) shall be used.

SAMPLE

6.0 FALL PROTECTION GUIDELINES – OPTIONS

6.1 Engineering Controls

Engineering controls should always be the first option for fall protection when possible (for example, use a telescoping arm when changing a light bulb or relocate valves at ground level to avoid sending workers to heights to change them) or using mechanical equipment in extremely hazardous areas.

6.2 Guardrails

On all projects, guardrails made from steel, wood, and wire rope only shall be acceptable. All guardrail systems shall comply with the current U.S. Occupational Safety and Health Administration (OSHA) standards (that is, contain a 42-in. high toprail, a midrail, and a toeboard that can withstand 200 lb of force in any direction). These guardrails shall be placed in the following areas if necessary or feasible based on job location or requirements:

- On all open-sided floors.
- Around all open excavations or pits.
- On leading edges of roofs or mezzanines.

6.3 Personal Fall Protection Systems

All employees on any project who are required to wear a personal fall arrest or restraint system shall follow these guidelines:

- A full body harness shall be used *at all times*.
- Only shock-absorbing lanyards or retractable lanyards are to be used so as to keep impact forces at a minimum on the body.
- Only nylon rope or nylon straps with locking snaphooks are to be used for restraints. *Large "pelican"- or "rebar"-type snaphooks are prohibited*.
- All lanyards shall have self-locking snaphooks.
- Before each use, the employee shall inspect all personal fall arrest equipment. Any harness showing deterioration, bends, damage, impacts, and/or excessive wear shall be removed from service.

The maximum free-fall distance shall not exceed 6 ft. Consideration must be given to the total fall distance. The following factors can affect total fall distance:

SAMPLE

- Length of connecting means (that is, lanyard, carabiners, snaphooks, and so forth).
- Position and height of anchorage relative to work platform/area (above the person's head whenever possible).
- Position of attachment and D-ring slide on the full body harness.
- Deployment of shock absorber (maximum 32 in.).
- Movement in the lifeline.
- Initial position of worker before free fall occurs (that is, whether the person will be sitting, standing, and so forth).

6.4 Calculating Total Fall Distance

Always allow a minimum of 6 ft of clearance above the ground, equipment, and so forth, at the end of the fall from the fall arrest point.

6.5 Engineered Lifeline

Lifeline systems shall be designed and approved by an engineer or qualified person.

Lifeline systems shall be engineered to have appropriate anchorages, strength of line designed to hold [X] number of individuals connected to it, line strength to aid in the arrest of a fall, and durability to hold a fallen employee(s) suspended until a rescue can occur.

7.0 INSPECTION OF FALL PROTECTION SYSTEMS

The following criteria shall be used to maintain all equipment in good working condition:

7.1 Full Body Harnesses

1. Before each use, inspect each full body harness:

    - Closely examine all of the nylon webbing to ensure there are no burn marks, which could weaken the material.
    - Verify there are no torn, frayed, or broken fibers, pulled stitches, or frayed edges anywhere on the harness.
    - Examine the D-ring for excessive wear, pits, deterioration, or cracks.
    - Verify that buckles are not deformed, cracked, and that they operate correctly.
    - Check to see that each grommet (if present) is secure and not deformed from abuse or a fall.

SAMPLE

- The harness should never have additional punched holes.
- All rivets should be tight and not deformed.
- Check tongue/straps for excessive wear from repeated buckling.

2. A competent person shall complete a monthly inspection of all harnesses and documentation will be maintained (see appendix A, Full Body Harness Inspection Checklist).
3. To protect harnesses from damage, they shall be stored hanging in an enclosed cabinet or placed in a fall protection gang box.
4. All harnesses involved in a fall shall be destroyed.

7.2 Lanyards/Shock-Absorbing Lanyards

1. Before each use, inspect each lanyard/shock-absorbing lanyard:

   - Check lanyard material for cuts, burns, abrasions, kinks, knots, broken stitches, and excessive wear.
   - Inspect the snaphooks for distortions in the hook, locks, and eye.
   - Check carabiner for excessive wear, distortion, and lock operation.
   - Ensure that all locking mechanisms seat and lock properly.
   - Once locked, the locking mechanism should prevent the hook from opening.
   - Visually inspect the shock absorber for any signs of damage, paying close attention to where the shock absorber attaches to the lanyard.
   - Verify that points where the lanyard attaches to the snaphooks are free of defects.

2. A competent person shall complete a monthly inspection of all lanyards and documentation will be maintained (see appendix B, Lanyard Inspection Checklist).
3. To protect lanyards from damage, they shall be stored hanging in an enclosed cabinet or placed in a fall protection gang box.
4. All lanyards involved in a fall shall be destroyed.

7.3 Snaphooks

1. Before each use, inspect all snaphooks:

   - Inspect each snaphook for any distortions of the hook or eye.
   - Verify there are no cracks or pitted surfaces.
   - Verify that the keeper latch is not bent, distorted, or obstructed.
   - Verify that the keeper latch seats into the nose without binding.
   - Verify that the keeper spring securely closes the keeper latch.

SAMPLE

- Test the locking mechanism to verify that the keeper latch locks properly.

2. A competent person shall complete an annual inspection of all snaphooks and documentation will be maintained (see appendix C, Snaphooks/ Carabiners Inspection Checklist).
3. All snaphooks involved in a fall shall be destroyed.
4. *Large "pelican"- or "rebar"-style snaphooks are prohibited for fall arrest.*

7.4 Self-Retracting Lanyards/Lifelines

1. Before each use, inspect self-retracting lanyards/lifelines:
   - Visually inspect the body to ensure there is no physical damage.
   - Make sure all nuts and rivets are tight.
   - Make sure the entire length of the nylon strap/wire rope is free from any cuts, burns, abrasions, kinks, knots, broken stitches/strands, or excessive wear.
   - Verify that the lanyard retracts freely.
   - Test the unit by pulling sharply on the lanyard/lifeline to verify that the locking mechanism is operating correctly.
   - If the manufacturer requires, make certain the retractable lanyard is returned to the manufacturer for scheduled annual inspections.
2. A competent person shall conduct a monthly inspection of all self-retracting lanyards/lifelines, and documentation will be maintained (see appendix D, Self-Retracting Lanyard/Lifeline Inspection Checklist).
3. Service self-retracting lanyards/lifelines per manufacturer specifications (usually 1 to 2 years).
4. Inspect for proper function after every fall.

7.5 Tie-Off Adapters/Anchorages

1. Inspect tie-off adapters/anchorages for integrity and attachment to a solid surface.
2. A competent person shall complete an annual inspection of all tie-offs and anchorages, and documentation shall be maintained.
3. All tie-offs and anchorages shall be destroyed after a fall.

7.6 Articulating Manlift/Scissor Lift

1. Inspect the articulating manlift /scissor lift before each use.
2. Inspect/service per manufacturer guidelines. Manlift, scissors lifts, and safety nets shall be inspected at the beginning of each shift in use. Structural integrity of the manlift basket shall be checked per the same schedule.

SAMPLE

3. A competent person shall complete an annual inspection of the manlift basket, and documentation shall be maintained.

7.7 Horizontal Lifelines

1. Inspect horizontal lifelines before each use for structural integrity of line and anchors.
2. Horizontal lifelines shall be inspected at the beginning of each shift and after any circumstance bringing the integrity of the system into question (fall, damage, relocation, and so forth).
3. A competent person shall complete a monthly inspection.

7.8 Guardrails

1. Temporary guardrail systems shall be visually inspected by a competent person.
2. Temporary guardrail systems shall have a complete structural inspection by a competent person weekly.
3. Permanent guardrail systems shall have a complete structural inspection by a competent person annually. In addition, a competent person shall inspect permanent guardrail systems based on conditions/controls present.

8.0 STORAGE AND MAINTENANCE OF FALL PROTECTION EQUIPMENT

1. Never store personal fall arrest equipment in the bottom of a toolbox, on the ground, or outdoors exposed to the elements (such as sun, rain, or snow).
2. Hang equipment in a manner that retains its shape in a cool, dry location.
3. Always follow manufacturer recommendations for inspections.
4. Clean with a mild nonabrasive soap, and hang to dry. Never force dry or use strong detergents in cleaning.
5. Never store equipment near excessive heat, chemicals, moisture, or sunlight.
6. Never store in an area with exposures to fumes or corrosive elements.
7. Avoid dirt or other types of build-up on equipment.
8. Never use this equipment for any purpose other than personal fall arrest.
9. After any piece of fall protection equipment is involved in a fall, remove equipment from service immediately.

9.0 TRAINING

Document the attendance of all trainees (see appendix E, Safety Training Record).

SAMPLE

All employees engaged in fall protection will be trained and have the knowledge to:

1. Recognize the fall hazards of/on their job sites.
2. Understand the hazards associated with working near fall hazards.
3. Work safely in hazardous areas by using appropriate fall protection measures.
4. Understand and follow all components of this fall protection program.
5. Identify and understand the enforceable OSHA and ANSI standards as well as the site-specific requirements that pertain to fall protection.

10.0 ENFORCEMENT

1. All employees are subject to discipline.
2. Documentation of any violations will be kept in the employee's personnel file.

11.0 RESCUE PROCEDURES

11.1 Rescue Methods/Options of Fallen Personnel

In the unlikely event that a fall arrest occurs onsite, personnel using an articulating manlift, man basket, or ladders where feasible shall rescue all employees. Alternate rescue would be through the local and emergency services.

11.2 Communication Issues

In the event of a fall, the following people shall be notified as soon as possible.

1. Rescue personnel (that is, the site's Emergency Response Team).
2. Manager/supervisor.
3. Safety manager
4. Fire department and emergency medical services, if necessary.

At the beginning of any work activity where fall protection is an issue, rescue plans shall be *identified and discussed with all employees*. The general foreman and foreman with the help of the Safety Department shall develop the rescue plan(s).

All employees involved in a fall arrest or fall shall be sent immediately for a medical evaluation to determine the extent of injuries, if any.

12.0 FALL INVESTIGATION

SAMPLE

All fall investigations shall be conducted by the supervision of those involved, [company name] project management, and E&CS Safety and Health – Construction.

The following documentation shall be completed as part of the fall investigation:

1. Interviews with staff and witnesses.
2. Employee injury/accident report.
3. Supervisor injury/accident report.
4. Investigation report addressing the root causes and corrective actions of the incident.

13.0 PROGRAM EVALUATION

This fall protection program shall be evaluated periodically to determine its effectiveness. The following criteria shall be used to evaluate its performance:

1. Accident reports.
2. Number of accidents.
3. Management/staff compliance with program components.
4. Periodic onsite audits.
5. Staff feedback and interviews.

14.0 ATTACHMENTS

- Appendix A, Full Body Harness Inspection Checklist.
- Appendix B, Lanyard Inspection Checklist.
- Appendix C, Snaphooks/Carabiners Inspection Checklist.
- Appendix D, Self-Retracting Lanyard/Lifeline Inspection Checklist.
- Appendix E, Safety Training Record.

SAMPLE

Appendix A – Full Body Harness Inspection Checklist

Harness Model/Name:	_____		
Serial Number:	_____	Lot Number:	_____
Date of Manufacture:	_____	Date of Purchase:	_____
Comments:			

General Factors	Accepted/Rejected	Supportive Details/Comments
1. **Hardware:** Includes D-rings, buckles, keepers, and back pads. Inspect for damage, distortion, sharp edges, burrs, cracks, and corrosion.	Accepted Rejected	
2. **Webbing:** Inspect for cuts, burns, tears, abrasions, frays, excessive soiling, and discoloration.	Accepted Rejected	
3. **Stitching:** Inspect for pulled or cut stitches.	Accepted Rejected	
4. **Labels:** Inspect, making certain all labels are securely held in place and are legible.	Accepted Rejected	
5. Other:	Accepted Rejected	
6. Other:	Accepted Rejected	
Overall Disposition	Accepted Rejected	**Inspected By:** **Date Inspected:**

SAMPLE

Appendix B – Lanyard Inspection Checklist

Lanyard Model/Name:	_____		
Serial Number:	_____	Lot Number:	_____
Date of Manufacture:	_____	Date of Purchase:	_____
Comments:			

General Factors	Accepted/ Rejected	Supportive Details/Comments
1. **Hardware:** Includes snaphooks, carabiners, adjusters, keepers, thimbles, and D-rings. Inspect for damage, distortion, sharp edges, burrs, cracks, corrosion, and proper operation.	Accepted Rejected	
2. **Webbing:** Inspect for cuts, burns, tears, abrasions, frays, excessive soiling, and discoloration.	Accepted Rejected	
3. **Stitching:** Inspect for pulled or cut stitches	Accepted Rejected	
4. **Synthetic Rope:** Inspect for pulled or cut yarns, burns, abrasions, knots, excessive soiling, and discoloration.	Accepted Rejected	
5. **Energy Absorbing Component:** Inspect for elongation, tears, and excessive soiling.	Accepted Rejected	
6. **Labels:** Inspect, making certain all labels are securely held in place and are legible.	Accepted Rejected	
Overall Disposition	Accepted Rejected	**Inspected By:** **Date Inspected:**

SAMPLE

Appendix C – Snaphooks/Carabiners Inspection Checklist

Hook/Carabiner Model/Name	_____		
Serial Number:	_____	Lot Number	_____
Date of Manufacture:	_____	Date of Purchase:	_____
Comments:			

General Factors	Accepted/Rejected	Supportive Details/Comments
1. **Physical Damage:** Inspect for cracks, sharp edges, burrs, deformities, and locking operations.	Accepted Rejected	
2. **Excessive Corrosion:** Inspect for corrosion, which affects the operation and/or the strength.	Accepted Rejected	
3. **Markings:** Inspect and make certain marking(s) are legible.	Accepted Rejected	
4. Other:	Accepted Rejected	
5. Other:	Accepted Rejected	
6. Other:	Accepted Rejected	
Overall Disposition:	Accepted Rejected	**Inspected By:** **Date Inspected:**

SAMPLE

Appendix D – Self-Retracting Lanyard/Lifeline Inspection Checklist

Self-Retracting Lanyard/Lifeline Model/Name: _____

Serial Number: _____ Lot Number: _____

Date of Manufacture: _____ Date of Purchase: _____

Department/Location: _____

Comments:

General Factors	Accepted/Rejected	Supportive Details/Comments
1. **Impact Indicator:** Inspect indicator for activation (rupture of red stitching, elongated indicator, etc.).	Accepted Rejected	
2. **Screws/Fasteners:** Inspect for damage and make certain all screws and fasteners are tight.	Accepted Rejected	
3. **Housing:** Inspect for distortion, cracks, and other damage. Inspect anchoring loop for distortion or damage.	Accepted Rejected	
4. **Lanyard/Lifeline:** Inspect for cuts, burns, tears, abrasion, frays, excessive soiling, and discoloration. (See impact indicator section.)	Accepted Rejected	
5. **Locking Action:** Inspect for proper lock-up of brake mechanism.	Accepted Rejected	
6. **Retraction/Extension:** Inspect spring tension by pulling lanyard out fully and allowing to retract fully (lifeline must be taut with no slack).	Accepted Rejected	
7. **Hooks/Carabiners:** Inspect for physical damage, corrosion, proper orientation, and markings.	Accepted Rejected	
8. **Labels:** Inspect, making certain all labels are securely held in place and are legible.	Accepted Rejected	
Overall Disposition:	Accepted Rejected	**Inspected By:** **Date Inspected:**

SAMPLE

Appendix E – Safety Training Record

Training Topic: _____
Instructor Name: _____
Date of Training: _____

Employee Name	Bureau/Location

SAMPLE

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A9

Steel Erection

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for the safe erection of structural steel on Engineering and Construction Services (E&CS) projects. This procedure does not cover erection of electrical transmission towers, communication towers, or tanks.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926, Subpart R, Steel Erection.
- SH-2A8, Fall Protection.
- SH-2A10, Rigging and Lift Plans.
- SH-2A12, Chains, Slings, and Miscellaneous Rigging Accessories.
- SH-1K, Procedure Deviation Approval Process.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 REQUIREMENTS

Each contractor erecting and installing structural steel or support components shall establish a site/facility-specific plan to assess and address specific and foreseeable hazards associated with structural steel erection. Work methods shall be established to ensure the safety of the employees performing steel erection as well as others adjacent to the affected area. As a minimum, the site erection plan shall detail provisions necessary to accomplish the following objectives:

1. Assess and secure the surrounding affected area, structures, process equipment, and so forth, prior to swinging suspended loads over the area.

2. Locate both overhead and underground piping or utilities that could be contacted or affected by the steel erection activity. Provisions shall be established to ensure utilities, pipelines, or process equipment is not affected.

3. Routing of personnel, equipment, and vehicular traffic around the affected area.

4. Pre-job planning, including rigging and lifting plans.

5. Personal protective equipment including fall-protection systems that will be used.

6. Refer to appendix A, Sample Steel Erection Plan.

4.1 Special Roles and Responsibilities

E&CS shall act as the controlling contractor for steel erection activities on the project. The controlling contractor means the prime contractor, general contractor, construction manager, or any other legal entity which has overall responsibility for the construction of the project, its planning, quality, and completion.

1. The controlling contractor shall be responsible for the following actions:

   a. Certify in writing that concrete used for support of structural steel has reached 75 percent of minimum compression strength.

   b. Provide written notification to the steel erector of any anchor rod (bolt) modifications or repair and certify that they are adequate. This notification includes approval from the project structural engineer of record for any repairs, replacement, or field modifications to any anchor rod (bolt).

c. Provide adequate access roads for movement of steel and cranes.

d. Provide adequate laydown yards that are firm, properly graded, and drained.

e. Control work to ensure that other contractors or craft do not work under steel erection activities without proper overhead protection systems in place.

f. Assume the control of fall protection systems when the erection contractor is directed to leave them in place after they have completed erection activities.

2. The steel erection contractor shall submit written installation plans for floor grating and Q-decking to the E&CS site manager for approval. The plan shall include details such as, but not limited to, sequencing and fall protection practices.

3. The steel erection contractor shall not erect steel unless he or she has received written notification that the concrete in the footings, piers, and walls or the mortar in the masonry piers and walls has attained, on the basis of an appropriate ASTM standard test method, either 75 percent of the intended minimum compressive design strength or sufficient strength to support the loads imposed during steel erection.

4. The steel erection contractor shall provide the E&CS site manager written notification of the individual(s) assigned as the steel erection competent person and qualified rigger.

4.2 General

Structural stability and the safety of all personnel shall be maintained at all times during the structural steel erection process.

1. Temporary periphery guardrails shall be used for the smallest possible duration. Proper planning shall include the timely delivery and installation of the permanent guardrail system.

2. The E&CS site/facility manager and the E&CS Safety and Health – Construction professional shall examine the need for wire rope guardrails and approve the design of the system. The use of wire rope guardrails shall meet the following requirements:

   a. Wire rope guardrails shall be made of at least 3/8-in. wire rope. Wire rope midrails shall be at least 1/4-in. wire rope. The posts shall be on 8 ft centers or less and the wire rope stretched tight to keep the deflection to less than 3 in. Wire rope handrails shall not deflect to a height less than 39 in. above the floor. The wire rope shall be flagged every 6 ft with a highly visible material. For 1/4-in. wire rope, a minimum of two clips shall be used and shall be spaced no more than 1½ in. apart and torqued to 15 fp. For 3/8-in. wire rope, a minimum of two clips shall be used and shall be spaced 2¼ in. apart and

torqued to 45 fp. For 1/2-in. wire rope, a minimum of three clips shall be used and shall be spaced 3 in. apart and torqued to 65 fp. Openings between the handrail and midrail shall not exceed 19 in. Often, this requires the use of two midrails spaced evenly between the handrail and the platform. Wire rope handrail shall be spliced only by utilizing an eye-to-eye method.

b. Wire rope shall be routed through prefabricated holes in perimeter columns and properly secured. Additional uprights shall be spaced no more than 8 ft apart.

c. A toeboard shall be installed. The toeboard shall not be more than ½ in. above the platform and shall be a minimum of 1 in.x4 in. nominal lumber.

d. The guardrail system shall support without failure a force of 200 lb in either a downward or outward direction. The force shall be placed 3 in. below the top of the uprights.

3. A tag line of proper length shall be used on all crane loads.

4. Personnel shall not be allowed to ride the headache ball, hook, or load.

5. Personnel shall maintain 100-percent fall protection at all times when exposed to falls of 6 ft or greater. Personnel shall straddle (coon) the beams when moving. If the beam is too large to straddle, the employee may walk the flange while using 100-percent fall protection as part of the fall protection plan.

6. Before unhooking the column from the lifting device, all columns shall be set by a minimum of four anchor rods, the nuts on the anchor bolts shall be drawn down tight or temporary guy lines shall be secured. Each anchor rod assembly, including the column-to-base plate weld and column foundation, shall be designed to resist a minimum eccentric gravity load of 300 lb located 18 in. from the extreme outer edge of the column face in each direction at the top of the column shaft. This 300 lb of force requirement shall also apply to column splices.

7. During final placement of solid web structural members, at least two bolts per connection, of the same size and strength as specified in the erection drawings, shall be installed at least wrench tight before load is released from the hoisting line. The diagonal bracing for solid web structural members may be drawn up wrench tight by a minimum of one bolt per connection.

8. Systems engineered (metal) buildings erection procedure requirements include the following:

   a. Columns shall have a minimum of four anchor bolts.

   b. Hoisting lines shall not be released from rigid frames until 50 percent of their bolts are installed and tightened both sides of the web adjacent to each flange.

c. Construction loads shall not be placed on any structural steel framework until adequately secured.

d. Shared common connection hole shall have at least one bolt wrench tight or a seat-type connection device present in the first member of girt and eave installation to prevent displacement.

e. Both ends of all steel or cold-formed joists shall be fully bolted and/or welded to support the structure before releasing the hoist line, allowing personnel on the joists, or allowing any construction loads on the joists.

f. Purloins and girts shall not be used as anchorage points for a fall arrest system.

9. Open web steel joists requirements are as follows:

   a. Steel joists or girders shall be field bolted at or near columns to provide stability.

   b. Joist spans < 60 ft shall be designed to allow one employee to release hoisting line without bridging.

   c. Joists with spans > 60 ft shall be set in tandem with all bridging installed unless a qualified person approves an alternate method.

   d. Joists stability shall be maintained through the use of stabilizer plates on columns, preventing rotation of the bottom chords of steel joists and girders, and by not placing joists on any support structure that is not stable.

   e. At least one end of each steel joist shall be attached to the support structure before additional joists are placed and before the hoist line is released from the joist.

   f. All erection bridging shall be in accordance with OSHA 1926,757 (d).

10. Double connections at columns and/or beams require at least one wrench tight bolt remain connected or a seat/equivalent device be in place at the shared common connection hole to the first member to prevent column displacement.

11. Areas below structural steel erection shall be barricaded and signs indicating overhead work shall be posted.

12. Christmas treeing (the hoisting of multiple loads suspended below the hook) of structural steel is permitted. The contractor shall comply with the following requirements as a minimum:

    a. A multiple lift rigging assembly designed for this purpose must be used.

    b. A maximum of five pieces per multilift is allowed.

c. All employees involved in the multilift must receive special training for this activity.

d. Only beams and similar structural members may be lifted in a multilift.

e. The crane manufacturer specifications for multipart lifting requirements must be met.

f. The rigging assembly must be designed for the lift with a **5:1** safety factor.

g. The load cannot exceed at rated capacities.

h. Rigging shall be at the center of gravity, rigged from the top down, separated by 7 ft, set from the bottom up, and controlled lowering used.

13. Containers shall be provided to ensure proper storage for bolts, drift pins, and other loose objects. These containers shall be secured against accidental movement and shall be removed to a permanent level at the end of the shift.

14. Two employees shall operate drilling and reaming machines, unless the handle is firmly secured to resist the torque reaction of the machine if the bit would stick.

15. Magnetic drills shall be secured to the structure to prevent dropping in the case of a power failure.

16. Shear connectors shall not be installed on beams or joists until after decking is installed to prevent tripping hazards.

4.3 Flooring Requirements, Permanent

1. Permanent flooring shall be installed as the erection of structural members progresses, and there shall be no more then eight stories between erection floor and the uppermost permanent floor, except where the structural integrity is maintained as a result of the design.

2. At no time shall there be more than four floors or 48 ft of unfinished bolting or welding above the foundation or uppermost permanent secured floor.

4.4 Flooring Requirements, Temporary

1. Temporary flooring such as the derrick or erection floor of every building shall be solidly planked or decked over its entire surface except for access openings. Planking, or decking of equivalent strength, shall be thick enough to carry the working load. Planking shall be no less than 2-in. thick, full-sized undressed, and shall be laid tightly and secured to prevent movement.

2. On buildings or structures not adaptable to temporary floors and where scaffolds are not used, safety nets shall be installed and maintained whenever the potential fall distance exceeds 30 ft. Nets shall be hung with sufficient clearance to prevent falling objects from contacting structural surface below.

3. Temporary planked or temporary metal decked floor periphery (including all floor openings) of tier buildings and other multifloored structures shall be protected by a standard guardrail system during structural steel assembly. A standard guardrail system including top rail, midrail, and toe boards shall be installed. The top rail shall be 42 in. high and the midrail shall be approximately 21 in. high.

4. Where skeleton steel erection is in progress, a substantial tightly planked floor or nets shall be maintained within two stories or 30 ft, whichever is less, below and directly under any erection work being performed. Because E&CS requires 100-percent fall protection, debris nets or temporary flooring is to be used at the 30-ft requirement to prevent falling objects during the erection process. The use of barricades below the erection area will not prevent falling objects.

5. When gathering and stacking temporary floor planks, the planks shall be removed successively, working towards the last panel of the temporary floor so that work is always done from the planked floor.

6. In erecting a building having double-wood-floor construction, the rough flooring shall be completed as the building progresses, including the tier below the one on which floor joist are being installed.

7. For single-wood-floor or other flooring systems, the floor immediately below the story where the floor joist are being installed shall be kept planked or decked over.

4.5 Specifications

Specifications for the size, dimensions, and placement of the structural steel and flooring requirements shall be provided by the contractor, steel fabricator, contracted structural steel firm, or a registered professional engineer in accordance with both federal and local standards. These specifications along with the availability of storage and laydown facilities will dictate the delivery and site erection sequence of the structural steel members. Modification to any portion of the structural steel system requires the written approval of the project structural engineer of record.

Particular attention shall be afforded to potential modularization and opportunities where components can be joined at ground level to eliminate work done from heights.

4.6 Fall Protection

The contractor shall develop a written fall protection plan that at a minimum shall meet E&CS fall protection policies found in procedure SH-2A8, Fall Protection. Additional elements of the plan shall include the following:

1. General requirements:

   Guardrail systems, safety net systems, personal fall-arrest systems, position device systems, or fall restraint systems shall be utilized during steel erection at anytime there is exposure to a fall of 6 ft or greater.

   a. Perimeter guardrail systems shall be installed as soon as the metal deck has been installed.

   b. Connectors shall be issued and used as fall protection when exposed to a fall of 6 ft or greater.

2. Controlled decking zone (CDZ) requirements:

   a. Fall-arrest protection to be issued and used when decking operations expose workers to a fall of 6 ft or greater.

   b. Access to the CDZ shall be restricted to trained and authorized personnel only.

   c. The maximum boundary is 90 ftx90 ft (8,100 ft^2) from any leading edge and shall be clearly demarcated.

   d. Unsecured decking shall not exceed 3,000 ft^2.

   e. Shear connectors shall not be installed from within a CDZ.

3. Fall protection systems criteria and practices:

   a. Guardrail systems shall be installed to meet E&CS procedure.

      1.) Top rails- height = 42 in. plus or minus 3 in.

      2.) Midrails- height = 21 in. or half way between toprail and toeboard.

      3.) Designed and installed to withstand 200 lb of force at the toprail.

      4.) Shall have no more than 3 in. of deflection.

5.) Designed and installed to withstand 150 lb of force at the midrail.

b. Personal fall arrest systems selection, design, and use shall comply with procedure 2.A.8.

c. Steel joists and steel girders shall not be used as anchorage points for a fall arrest system unless permission is granted by the competent person in the steel erection and fall protection plans.

d. All personnel using fall arrest protective equipment shall have documented training for the hazards for which it is issued and its proper use.

e. Walking/working surfaces shall be kept clear of trip hazards (bolts, bars, deformed anchors, and so forth), shear connectors, attachments to top flanges of beams or joists until after metal decking or other suitable clear walking/working surface has been installed.

f. Other alternative fall protection systems such as safety nets and positioning devices shall be installed and used under the direction of a competent person. Alternative methods shall not be utilized as primary means of protection from falls.

4.7 Protection From Falling Objects

The controlling contractor shall prohibit other construction activities below steel erection unless overhead protection is provided. This protection shall ensure that all materials, equipment, and tools not in use are secure from falling. In addition all potential openings through which objects can fall shall be adequately closed, covered, meshed, or have protective nets below. Areas of particular concern are as follows:

1. Metal decking operations.

   a. Secure all loose bundles and installed deck at end of shift.

   b. Land deck bundles on adequate support.

   c. Do not lift bundles with any loose debris or objects.

   d. Provide adequate space around bundles to be unbanded.

   e. Metal decking holes shall not be cut until immediately prior to being needed, or they shall be immediately covered with an adequately designed hole cover.

   f. Cover roof and floor holes immediately as they are created in the erection process with a properly designed cover.

2. Decking gaps around columns, including webbing openings, shall have wire mesh, exterior plywood, or equivalent installed where planks or metal decking does not fit tight. The materials must be of sufficient strength to provide fall protection for personnel and prevent objects from falling through.

3. Roof, floor openings, skylights, or smoke domes not covered or where covered but not sufficient to meet this standard shall have additional covers installed. The covers shall be capable of supporting, without failure, twice the weight of employees, equipment, and materials that may imposed on the cover. The cover shall be secured against displacement and be marked or painted with high-visibility wording HOLE or COVER to warn of the hazard.

4.8 Rigging

Rigging activities shall meet E&CS requirements in procedures SH-2A10, Rigging and Lift Plans, and SH-2A12, Chains, Slings, and Miscellaneous Rigging Accessories.

4.9 Landing Loads During Construction Period

1. Loads shall be distributed so as not to exceed the carrying capacity of any steel joist.

2. The weight of a bundle of joist bridging shall not exceed 1,000 lb. The bundle shall be placed on a minimum of three steel joists secured at one end and the bundle edge shall be within one foot of the secured end.

3. No bundle of decking may be landed until all bridging has been installed and all joists ends are attached unless all of the following conditions are met:

   a. A qualified person has determined and documented in the erection plan that the structure (or portion) can support the load.

   b. The bundle of decking can be placed on a minimum of three joists.

   c. The joists supporting the bundle are secured at both ends.

   d. At least one row of bridging is installed and anchored.

   e. The total weight of the bundle does not exceed 4,000 lb.

   f. The edge of the load shall be placed within 1 ft of the bearing surface of the joist end.

4.10 Accessing the Structural Steel

1. Access to the steel shall be part of the steel erection plan. The permanent access stairs shall be placed, with a guardrail system, as the structural steel is placed. In areas that do not have permanent stairs, temporary stairs may be used; for example, scaffold stair towers. The temporary stairs shall have a guardrail system installed. If stairs are not possible, ladders with self-retracting lifelines or articulating boom lifts (JLGs, snorkel lifts, etc.) may be used for employees to access the structural steel.

2. Employees are not allowed to climb the columns of structural steel.

3. Employees are not allowed to cross the load line during the erection process. Proper planning and other mechanical means are to be used to accomplish this task. While crossing the load line is a common practice in the steel erection industry, it is not permitted on E&CS projects. In the unlikely event the load line must be crossed, procedure SH-1K, Procedure Deviation Approval Process, must be used to request a deviation.

4.11 Training

Each contractor shall train personnel involved in structural steel erection to the requirements of this procedure, OSHA subpart R, and OSHA subpart M. All training shall be conducted by a qualified person, documented, and made available upon request to E&CS for review. Topics of training shall include, but are not limited to:

1. Fall protection training on hazard recognition, guardrail systems, fall protection systems, and fall prevention.

2. Multilift rigging procedures and precautions.

3. Connection requirements and safe work practices while connecting.

4. Controlled decking zone requirements.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

- Appendix A, Sample Steel Erection Plan.

Appendix A – Sample Steel Erection Plan

[Add operating company name here]

PLANT [NAME] SITE-SPECFIC STEEL ERECTION PLAN AND CHECKLIST

SAMPLE

Issued [DATE]

SIGNATURES

Completed by: _____ Date: _____
[John Doe – Company Name] Safety Manager

Reviewed by: _____ Date: _____
[Tom Jones – Company Name] Project Manager

SAMPLE

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- Attachment A, Crane Operator List.
- Attachment B, JHAs and JSAs.
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SAMPLE

PREFACE

This plan states ways [company name] will manage exposure to the risk of injury or death to workers during steel construction for [project name] at Plant [name].

The primary risks to the health and safety of workers involved in steel erection work are falls from heights, falling objects, or collapse of the structure due to inadequate or improper erection sequencing. Risk management, vital in the control of workplace health and safety, is a logical and systematic approach that can result in a reduction in the incidence of injury and illness.

The control measures contained in this plan shall be followed in order to address these risks and shall be implemented in priority order, known as the "'hierarchy of control."

The primary task of this plan is to determine whether the risk can be eliminated. Where eliminating a risk is not possible, a less hazardous method shall be used. If substituting a less hazardous method is not possible, consideration should be given to each of the other controls:

- Isolation/engineering controls.
- Administrative controls.
- The use of personal protective equipment (PPE).

These methods shall be considered in turn, starting with substitution and working down to the use of PPE, until a control or combination of controls is identified that can achieve the required reduction in risk.

The planning of work has been developed in accordance with the drawings, and specifications and the requirements of 29 CFR 1926, subpart R, Steel Erection, and but also the additional requirements laid out in E&CS Construction Environmental, Health, and Safety (EH&S) Policies and Procedures Manual, procedure SH-2A9, Steel Erection.

SAMPLE

PROJECT IDENTIFICATION AND INFORMATION

[COMPANY NAME[

[Plant Name] Steel Erection Plan and Checklist

Project Name: __xxxx xxxxxx xxxxxxxxxxxxxxxxxxxxxx_____

Project Number: _1234567_____ Date: __mm/dd/yyyy____

Erector: __[Company Name]_____

Project Engineer: _John Doe_____

Competent Person: __XXXXXXXXX/[Title] _____

Crane Operator: _[can be attached as a list as appendix A, Crane Operator List]__

Qualified Rigger: ___XXXXX XXXXXXX/[Title] _____

_____

SAMPLE

1.0 SCOPE

This plan will cover preoutage, outage, and the remainder of steel erection for the [project name; example: FGD Desulphurization Project, Units 3 and 4] at Plant [name] located in [city, state]. The attached JHAs and JSAs are also part of this plan.

2.0 AFFECTED AREAS

- The duct laydown/fab yard is located south of Unit(s) [No(s).] The 21,000 and 4100 cranes will be moved from this area to the roadway located south of ID fans [No(s).] Material for the job will be transported by tractor/trailer from the south or east laydown areas where it will be staged until needed. Steelwork is also located in the east laydown located across railroad in the limestone storage area, as well as the south end of the craft parking lot. The materials contained in these areas are for utility bridge, ball mill areas, duct, structural steel duct support, and the remainder of the miscellaneous steel work for the FGD project. These components will be installed in the scrubber project area as noted in the attached drawing. The transportation of these materials will be coordinated with Southern Company Generation (Generation) during the weekly contractor's meeting to minimize impact to other contractors and plant operations.

- Units [No(s).] ID fans, and roadway south of fans. Steel and stair towers will be moved from staging area and into place using 21,000 crane.

2.1 Footings, Piers, Walls, and Anchor Bolts

1. Has concrete reached 75 percent of sufficient strength?	☑Yes	☐No
2. Proof of strength:		
• ASTM test method result.	☑Yes	☐No
• Engineer verification.	☐Yes	☑No
3. Were anchor bolts repaired, replaced, or modified?	☐Yes	☑No
4. Was erector notified in writing?	☑Yes	☐No

As project progresses and additional areas are released, all pertinent documentation will be requested from Southern Company before steel erection activities may begin.

2.2 Notification of Commencement of Steel Erection

Was written notification given to the steel erector?	☑Yes	☐No

SAMPLE

2.3 Site Layout

1. Has controlling contractor provided adequate access to site? ☑Yes ☐No
2. Is laydown area firm, properly graded, well drained, and accessible? ☑Yes ☐No

Laydown and fabrication areas will be maintained by _[company name]__.

2.4 Equipment

To include 21000 crawler, 4100 crawler, 90T Terex, 165 demag, 100T Terex, air compressors, truck and floats, aerial lifts, personnel suspended platforms, and forklifts. Other equipment may be used or substituted; revisions will be made as needed. The Manitowoc 21000 will initially be located on the north side of Units [No(s).] stack between the ID fans; 165 demag on the south side of Units [No(s).] stack between precipitators; Manitowoc 4100 will be used in fabrication and laydown areas to support fabrication and loading operations.

Will critical lifts be performed?	☑Yes	☐No
Are lift permits attached for critical lifts?	☐Yes	☑No

Every effort will be made to submit critical lift plans 15 days prior to the lift according to Generation requirements for their review and concurrence.

3.0 TRAINING CERTIFICATION/DOCUMENTATION

1. Are all personnel properly trained for performing steel erection activities including this plan?	☑Yes	☐No
2. Are all personnel properly trained for the use of fall protection system?	☑Yes	☐No
3. Documentation of training available upon request?	☑Yes	☐No
4. Will fall protection systems be designed by a qualified person?	☑Yes	☐No
5. Is a competent person onsite at all times?	☑Yes	☐No

List of qualified and competent persons:

- Qualified person for site erection plan: ___John Doe
- Qualified person for fall protection system design: John Doe
- Qualified rigger: __XXXXXX/ IW General Foreman____
- Crane operator: __See appendix A, Crane Operator List__
- Crane inspector: __Operator Foreman XXXXXX_____
- Fall protection competent person: ___Safety Sam_____

SAMPLE

4.0 HAZARDOUS NONROUTINE TASKS

1. Are job safety analyses (JSA) performed on all nonroutine hazardous tasks?	☑Yes	☐No
2. JSAs attached?	☑Yes	☐No
3. Is any asbestos-containing materials involved?	☐Yes	☑No
4. Do any lead contamination issues exist?	☐Yes	☑No

CAUTION

During construction, if any asbestos or lead issues are encountered, Generation management shall be notified immediately, and an appropriately trained contractor shall be used to remediate any contamination.

5.0 SEQUENCE OF STEEL ERECTION ACTIVITY

An in-depth sequence of events for the preoutage and outage has been initially provided below. Additional sequences for steel erection will be discussed with client in the weekly contractor's meeting before work begins. The sequence of events will be provided in the project schedule updates transmitted to Southern Company Generation. This method is the most efficient way due to the dynamic nature of construction and the necessary coordination activities among client, contractors, and startup personnel. The project schedule is a living document that will guide all these activities among the different parties involved.

5.1 Structural Steel Preoutage

5.1.1 Modify Steel Base/Cover Plates (ID Fan) **[mm/dd/yyyy] to [mm/dd/yyyy]**

Installation of strap plates and base plates will occur. We will also be grinding paint from the edges of the pieces in order to obtain a proper weld. This activity was a change that is documented as Field Change Notice 001. Also, due to a piece size bust on the base plates and strap plates, Field Change Notice 002 was submitted. FCN 002 includes Evans construction cutting concrete from around the piers, to be replaced after the strap plates are installed. It also includes machining of base plates in order to account for the translation and rotation of some of the columns off their center.

5.1.2 Install Support Steel

a. Column Extensions **[mm/dd/yyyy] to [mm/dd/yyyy]**

Install column extensions on columns.

b. Beef up Support Steel Beams (ID Fan) **[mm/dd/yyyy] to [mm/dd/yyyy]**

SAMPLE

Install WTs and beam stiffeners from FH line to FK line and from F3.9 to F7. Remove old diagonal bracing and install new bracing. One piece will be removed at a time and then replaced with a new diagonal.

c. Erect Skid Air Platform **[mm/dd/yyyy] to [mm/dd/yyyy]**

The platform located at the 778-ft elevation will be erected to serve as a platform for the seal air skid and hydraulic skid for service to the Unit [No.] damper. This work will also include installation of the grating and handrails.

d. Set Columns on Extended steel **[mm/dd/yyyy] to [mm/dd/yyyy]**

Angle clips will be installed on the FK line for the new support steel. Cover plates and five column extensions on FL and FM lines will be installed.

e. Erect Elevation 811 Damper Support **[mm/dd/yyyy] to [mm/dd/yyyy]**

The 811-ft elevation damper support steel will be installed. Some of this support steel will be installed preoutage and some outage as indicated in the provided drawings.

f. Tie-in Steel Elevation 811 to Columns **[mm/dd/yyyy] to [mm/dd/yyyy]**

Installation of three columns on the FL line and two columns on the FM line will take place. The beams and bracing will be installed parallel with this action in order to provide support. Also the beams and bracing between the new columns and the existing steel north of the FL line will be installed during FL column installation.

g. Erect E1 Columns **[mm/dd/yyyy] to [mm/dd/yyyy]**

Columns at E1, F1/EJ will be installed. This activity will be paralleled with actions 2i, Erect E2 Columns, and 2j, Erect E1-E2 Bracing.

h. Stair Tower at Damper **[mm/dd/yyyy] to [mm/dd/yyyy]**

The stair tower will be prefabricated in the east laydown yard between [date] and [date], then transported by a gold-hopper and lifted into place using the 21000. (We may have to stick-build the stair tower depending on lifting angles and obstructions in a lifting path of the prefabricated stair tower.)

i. Erect E2 Columns **[mm/dd/yyyy] to [mm/dd/yyyy]**

Columns at E2, FM/EJ will be installed. This activity will be paralleled with actions 2g, Erect E1 Columns, and 2j, Erect E1-E2 bracing.

j. Erect E1-E2 Bracing **[mm/dd/yyyy] to [mm/dd/yyyy]**

SAMPLE

Beams and bracing will be installed in parallel with this activity up to the first splice. Then beams and bracing will be installed up to the top of steel. This activity will parallel with actions 2g, Erect E1 Columns, and 2i, Erect E2 Columns.

k. Stair Tower E2 **[mm/dd/yyyy] to [mm/dd/yyyy]**

Stair-tower at E2 will be installed piece by piece. (The stringers will be left out from the ground up to the first elevation of steel in order for the crane and steel to pass through.) After the E1-E2 columns, beams, and bracing have been installed, the stringers will be added to the stair tower. This activity will occur between **[mm/dd/yyyy] and [mm/dd/yyyy]**.

l. Erect E2-F Line Truss **[mm/dd/yyyy] to [mm/dd/yyyy]**

The truss section will be prefabricated in two sections. The first to be installed will be line F6.9 to E1. After it is installed, line F5 to E1 will be installed. Finally, the platforms from the E2 line to the diverter damper stair tower will be installed.

5.2 Unit [No(s).] Steel Erection

5.2.1 Install Support Steel

a. Unit [No(s).] FGD support steel

Structural and miscellaneous steel erection will start on the west end tying into the unit [No.] outage steel. It will then be erected toward the east to the booster fans. The columns, beams, and braces will be erected with the use of various cranes depending on the accessibility of equipment. The truss sections over the Unit [No.] precipitator will be erected in sections due to its configuration. A critical lift plan will be developed for the stair tower on the south side of the damper and any other critical lifts that might occur.

b. Utility bridge

The utility bridge will be preassembled in the laydown yard and hauled to its location for erection. This activity will consist of bents and truss sections with a few braces added after the bents are stood and trusses set. Lift plans will be submitted as required. The truss sections over the roads will be left out until all the large loads are transported to the absorber and stack area. The utility bridge passes over both new and existing equipment. Swing paths will be coordinated so that only a minimal amount of loads will be passed over such equipment.

c. Ball mill structure

The steel will be erected in individual pieces except for isolated sections that will be preassembled. Special precautions will be taken for the new plant equipment in this area.

SAMPLE

d. Unit [No.] booster fan steel

The steel will be erected in individual pieces except for isolated sections that will be preassembled. Special precautions will be taken for the new plant equipment in this area.

e. Unit [No.] absorber support steel

The steel will be erected in individual pieces except for isolated sections that will be preassembled. Special precautions will be taken for the new plant equipment in this area. Coordination with Generation and other subcontractors will be of high importance for this structure. Access for personnel, cranes, and material will be preplanned and discussed with all parties prior to start of work.

f. Gypsum dewatering structure

The steel will be erected in individual pieces except for isolated sections that will be preassembled. Special precautions will be taken for the new plant equipment in this area.

g. Unit [No.] outage

Similar to the work performed for Unit [No.]. The cover plates will be added to the existing steel and bracing changed out. During the outage, the existing steel will be removed and new steel added for the new duct and damper support. Existing plant equipment consists of Unit [No.] precipitator and fans. Overhead work in these areas will be barricaded off, and any closure of plant access will be coordinated with Generation.

h. Unit [No.] absorber steel

The steel will be erected in individual pieces except for isolated sections that will be preassembled. Special precautions will be taken for the new plant equipment in this area. Coordination with Generation and other subcontractors will be of high importance for this structure. Access for personnel, canes, and material will be preplanned and discussed with all parties prior to start of work.

i. Unit [No.] booster fan steel

The steel will be erected in individual pieces except for isolated sections that will be preassembled. Special precautions will be taken for the new plant equipment in this area.

6.0 CONTROLS TO PREVENT FALLS FROM HEIGHTS

The control measures to prevent death or injury from a fall will be in place before work commences. Persons carrying out steel erection work at a height of 6 ft or more may be exposed to the risk of death or injury from falling. Several control measures are available in these circumstances, and more than one control measure

SAMPLE

may be necessary. Ground level prefabrication will also be considered as a fall prevention strategy. To reduce the need to work at heights, some alternative means of erection are:

- Construct as much of the steelwork as possible at ground level or from erected floor slabs or decks in the structure. This alternative has been taken into consideration during the planning of the work.

- Where possible, a lifting sling or device will be used to release from floor level by the use of long slings, remote release shackles, or other suitable devices.

- The use of fall-arrest harnesses is not the preferred control measure for persons working on steel construction as a harness does not actually prevent a fall from occurring. Wherever possible and practicable, the use of methods that reduce the risk of a person falling (for example, perimeter guardrail or aerial work platforms) will be selected.

Control measures that may prevent the risk of death or injury from falls from heights include:

- Work platforms.
- Fall prevention systems.
- Fall arrest systems.
- Edge protection systems.
- Fall protection covers.

6.1 Fabricated Work Platforms

These platforms can be used in many locations as they can be designed to fit a variety of beam and column configurations. A work platform will be secured against uplift or displacement to a structure and installed with edge protection systems. The area of the platform will be of a size and strength to carry the tools, materials, and persons required to work from it.

6.2 Aerial Work Platforms (AWPs)

An elevating work platform is a telescoping, scissor, or articulating device or any combination thereof used to position personnel, equipment, and materials at work locations, and to provide a working area for persons elevated by and working from the platform.

AWPs include scissor lifts, boom lifts, and truck-mounted AWPs (travel towers). AWPs are primarily designed so that a person can work at an elevated position, on a structure from within the confines of the AWP platform or basket.

AWPs are regularly used for steel construction. They provide an efficient access system and are preferable to other methods that involve the use of fall-arrest

SAMPLE

systems, because they reduce the risk of a fall occurring. Both boom lifts and scissor lifts are used in steel erection.

AWPs are used as access for workers to help position steelwork as it is being lifted by a crane. They are also used by workers when installing and tightening bolts.

AWPs are not specifically designed for a person to move from the platform to gain access onto another elevated surface, although they are sometimes used in this application instead of other more conventional forms of access, such as scaffold stair access towers.

In some situations, AWPs may not be suitable for providing access/egress onto a roof or structure due to factors such as the following.

- The number of workers required to access the roof/structure may be in excess of what an AWP could safely transport in case of an emergency evacuation from the roof/structure.
- The platform of the AWP can move as the person gets in and out with the potential for the person to fall through the gap when the platform is beside the roof/structure.
- The AWP can be removed from the access area while persons are located at height leaving them stranded.
- The stability of the unit relies on firm and level ground, which is not the case on some construction sites due to environmental conditions.

In comparison with stair access, an AWP is not available for access at all times because it takes time to raise and lower persons. This issue becomes a greater problem when more workers are required to work on the roof or structure. When an AWP has been selected to provide access for workers onto a roof/structure, the system of access will include the following factors to ensure safe access:

- The AWP should not be used for any other purpose and should not be driven away from the building.
- The area around the AWP should be free of vehicular traffic.
- The ground condition should be suitable for the use of the AWP.
- The AWP should not be used near live electrical power lines.
- All operators of AWPs should be competent and have documented training.
- A competent person should be available at ground level to lower the platform in case of malfunction. However, in this situation, all personnel will be removed with the use of another AWP before using ground controls.
- When the AWP platform is raised so that it is next to the roof/structure edge, the gap between the landing and the platform should not exceed 4 in. The preferred method will be to land the platform/basket on structure if possible.

SAMPLE

- The platform should be secured against sideways movement as necessary (that is, the platform should not move as workers get on and off, which may be more of an issue with smaller AWPs). When securing the platform, use a restraint system that does not snag on the building when the platform is lowered.

Safe access and egress should be provided by either the use of a safety harness by workers, or a system that will prevent a worker entering or leaving the AWP from falling off or through the structure. The latter at a minimum will require the use of a double lanyard system.

All persons in boom-type and scissor-type AWPs shall wear a full body harness and a double energy-absorber-type lanyard attached to an anchorage point in the basket of the AWP.

In some situations, AWPs may be used to lift lighter steelwork (for example, purlins, girts, and bridging), where the AWP **manufacturer states that this is an acceptable practice.**

The following points should be noted when lifting steelwork with an AWP.

- Total load on the AWP including workers and materials must not exceed the rated capacity, sometimes referred to as safe working load (SWL), of the platform.
- Steelwork must not be loaded so that it will damage the AWP in any way or become imbalanced.
- Where an AWP is used to lift steel components, the steelwork should not be loaded onto the AWP guardrails, which may damage the guardrails or allow the steelwork to roll off the platform.
- The AWP must never be used to force the steelwork into place. Such action places excessive load on the unit.
- The working surface for the AWP must be level, firm, have clear access, and no stepup or stepdown from placement area.
- AWPs used for steel erection must be adequate for the intended use and the effects of wind loading must be considered.
- Workers in boom-type and scissor-type AWPs must use full body harness with a double energy-absorber-type lanyard attached to an anchorage point in the basket of the AWP.

6.3 Temporary Work Platforms

Temporary work platforms (angle wings) will be fitted to members at ground level before erection or lifted into position following the erection of steelwork.

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6.4 Crane-Suspended Work Platforms

- The use of a crane or other similar hoisting equipment to hoist personnel is prohibited, unless the use of other means would be more hazardous or is not possible because of structural design or worksite conditions.
- The [Company Name] project manager and EH&S manager shall determine that there is not a safe alternative method to perform the needed work such as ladders, scaffold, and aerial lifts.
- After determining that a crane-suspended personnel platform is the only safe method of accomplishing the job, the following Generation forms shall be completed and transmitted to Generation for their review and concurrence:

  ☑ Evaluation of Alternate Lifting Methods.
  ☑ Rigging and Lift Plan.
  ☑ Authorization for the Use of a Suspended Personnel Platform.
  ☑ Appropriate daily crane inspection report (before making lift).

All the procedures of Southern Company Generation E&CS Construction Environmental, Health, and Safety (EH&S) Policies and Procedures Manual, specifically procedure SH-2A11, Crane-Suspended Work Platforms, shall be adhered to at all times. In the event of a conflict between owner, state, Federal, or local regulations, the most stringent will be followed.

6.5 Fall Prevention Systems

Personal fall prevention systems that prevent a person from falling are preferred over systems that arrest a person when the person has fallen. An example of a fall prevention system is a travel restraint device where a person is tethered to an anchorage point to restrain the person from reaching an unprotected edge. The anchorage points shall be capable of supporting the intended load.

6.6 Fall Arrest Systems

A fall arrest system is designed to arrest the fall of a person and consists of a full fall arrest harness connected to a lanyard assembly and attached to a fall arrest static line or an anchorage point where there is a risk of free fall. The use of fall arrest harnesses is not the preferred control measure for persons working on steel erection as these do not actually prevent a fall from occurring. Wherever possible and practicable, a method will be selected which reduces the risk of a person falling (for example, perimeter guardrail or AWPs).

The use of a fall arrest harness system has limitations:

- Because individual fall arrest anchorages require a capacity of at least 5,000 lbs, locating or designing anchorage points that will have adequate capacity to resist fall-arrest loads can be difficult. .

SAMPLE

- Locating fall arrest anchorages points on beams during steel erection is not ideal because the beam is usually the highest part of the structure. As anchorage points generally cannot be located directly above head height, the distance a person falls will be greater.
- Most manufacturers of fall arrest inertia reels state that the reel is to be located directly above head height, with the user working in a small arc below the device, which can rarely be achieved on steelwork.
- In the event of a fall, the fall arrest line can sometimes come in contact with an edge and may fail in some situations.
- The system requires substantial clearance distances below the working surface to ensure that the worker does not hit the ground or other obstruction prior to the fall being arrested.
- The system requires high levels of training and supervision to ensure its safe use. It will also require the active participation and cooperation of users to operate effectively.
- Ropes and lanyards can become entangled and snagged on obstructions, which can be a particular problem when a number of workers are on the work area.
- It can be difficult to have an effective rescue procedure to ensure users are rescued before injury occurs without putting others at risk. Persons suspended in harnesses after falling can lose consciousness or suffer modified cardiac rhythm if not rescued promptly.
- Even when a system is set up correctly, a person falling may be injured. The system does not prevent a fall from occurring; rather, it prevents the user, should he or she fall, from colliding with the ground or an obstruction underneath. The user may still receive some injury as a result of the fall due to factors such as:
  - Swinging into an obstruction prior to the fall being arrested.
  - Falling in an unusual manner (for example, sideways) so that the fall-arrest force is not transmitted to the body in the best possible manner.
  - The harness not operating as designed because the user is in an irregular shape (for example, obese).

Fall protection may be provided by the use of fall arrest harnesses where other control measures cannot be used. Fall arrest harnesses, lanyards, and static lines provide a degree of fall protection, provided the following points are taken into account:

- All persons who may be exposed to the risk of falling, such as riggers, should be properly trained and supervised in the use of the equipment.
- All persons who may be exposed to the risk of falling, such as riggers using fall protection such as a fall arrest harness, should not work in isolation.
- A lanyard assembly should be as short as possible to minimize the pendulum effect should a person fall

SAMPLE

- The fall arrest anchorage point should be located so that the lanyard can be attached before the user moves into a position where he or she would be at risk from a fall. Anchorage points should have a force capacity of 5,000 lb.
- Traveling anchorages should also be located so that the lanyard can be attached to a traveling anchorage before the user moves into position.
- The components of a fall arrest system should be compatible. The use of noncompatible components could lead to ineffective equipment that presents a risk of the user being injured from a fall.

6.7 Edge Protective Systems

Temporary periphery guardrails when installed shall be used for the smallest possible time period only. Proper planning shall include the timely delivery and installation of the permanent guardrail system, if applicable.

6.8 Fall Protection Covers

All holes and openings, other than lift shafts and stairwells, will be protected to prevent persons falling. A fall protection cover is a protective structure placed over a hole or opening to prevent a person from falling through the hole or opening. A fall protection cover should be capable of supporting the impact of a person falling onto it. Covers shall be made of ¾-in. plywood or equivalent if one dimension of the opening is 18 in. or less, otherwise, 2-in. lumber or doubled ¾-in. plywood or equivalent is required. Covers shall be marked with the words HOLE COVER legible and clearly visible.

Where a fall protection cover is used on an opening, it should be secured against movement and should not be used as a working platform.

6.9 Emergency Recovery

An emergency recovery system shall be in place to quickly retrieve a fallen worker whenever a fall arrest harness is used. Persons with responsibilities should ensure that adequate training and supervision are provided to allow effective recovery when required.

Research indicates that persons wearing a fall arrest harness can lose consciousness or suffer modified cardiac rhythm in 2 to 12 minutes after a fall. The methods listed below will be used to accomplish emergency rescue by [Company Name] employees. In addition, these methods may also be supplemented by local EMS and Plant [name] Emergency Rescue Team.

☑ Self-rescue
☑ Personnel basket
☑ Hoist
☐ Others_____
☑ Emergency response team
☑ Stair tower
☑ Aerial lift

SAMPLE

6.10 Falling Objects

Work activities such as working at heights and lifting loads over work areas are likely to produce falling objects. Work shall not commence until controls are put in place to prevent the risk of injury to workers and other persons from falling objects.

Control measures that shall be used to prevent falling objects and resultant injuries in steel construction are:

- Tool lanyards.
- Securing the load.
- Containment sheeting.
- Toeboards.
- Exclusion zones.
- Debris nets.

6.11 Tool Lanyards

A tool lanyard is a short rope or webbing used to secure tools and equipment to an anchorage point to reduce the risk of injury from a failing object. The tool lanyard may be attached to an anchorage point such as the person using the tool or around a column or beam.

A lanyard should be made from material such as synthetic fiber, natural fiber, or steel rope or webbing that will maintain the required strength and resistance to abrasion under harsh conditions. Consideration should be given to the length of rope or webbing used to secure a tool, especially if the tool is to be used near the edge of a working platform and if other persons are working below. For example, a tool lanyard attached at the wrist should have a length no longer than 24 in. This length will ensure that if the tool is dropped, the lanyard would not allow the tool to hit a person working below. The length of the lanyard should also be kept to a minimum to reduce the risk of the line snagging as the worker moves about.

For example, a rigger who is erecting steel may secure working tools to his or her body by a lanyard to prevent a person below from being hit by a dropped tool.

6.12 Securing the Load

Steelwork will be stored onsite in such a way that it cannot fall on workers or cause damage to equipment or plant property. Where steelwork is stacked, the stacks should be stable, and safe access will be available when workers are required to sling a load.

Where steelwork is strapped together, caution shall be exercised when releasing the strapping. The strapping may whip back and cause an injury, or the bundle can fall apart and injure workers.

SAMPLE

Before lifting any steelwork, the qualified rigger will sling the load to be lifted and attach tag lines to the ends of the load. Crane operators and riggers will give audible warning with crane horn and portable air horns before lifting loads near persons.

When transferring lifts from a horizontal to a vertical position, care will be taken to avoid unrestrained movement of the lower end. The use of lifting beams may be necessary during lifting and positioning of some members to ensure member stability.

6.13 Containment Sheeting

If containment sheeting is used, it will be fixed to the perimeter of the structure or working surface to prevent a person or objects, such as building materials, from falling into an area accessed by persons at or near the workplace. The working surface/structure will be sheeted with one or more of the following materials:

- Timber or plywood.
- Metal or synthetic sheets.
- Metal or synthetic mesh.

Where containment sheeting is used, the sheeting will extend to a height that will prevent falling objects. When selecting containment sheeting, the following factors will be considered:

- Whether the sheeting is capable of supporting the loads to be imposed on it.
- Whether the sheeting is capable of containing materials and equipment, such as nuts, bolts, and tools.
- The likely forces that will be imposed on the structure from wind effects.

6.14 Toeboards

A toeboard is a vertical barrier that will be used to prevent the fall or displacement of tools or materials. Toeboards where necessary will be used to prevent objects falling into an area accessed by persons at or near a workplace. Toeboards may be constructed with timber or metal and will be securely fixed to the work surface and extended a nominal minimum of 4 in. above the work surface. The height of the toeboard should increase as the size and height of the materials or equipment stored near the edge increases. The gap between the toeboard and the work surface will not be greater than ¼ in.

6.15 Exclusion Zones

Proper flagging or barricades with suitable signage will be erected around the perimeter of an exclusion zone to exclude personnel from the area under which the riggers and connectors are erecting steelwork, reducing the risk of personnel being hit by falling objects.

SAMPLE

6.16 Debris Nets

Where skeleton steel erection is in progress and other overhead protection methods are not feasible, debris nets shall be installed directly under any erection work being performed. The nets shall be capable of supporting the anticipated loads imposed on them by potential falling objects. **Debris nets are not for fall protection of employees.**

6.17 Grating Installation

- All leading edges of platforms, catwalks, and stair landings shall be protected by means of periphery wire rope cable guardrail or permanent guardrail systems. Temporary guardrail systems will be constructed of ½-in. wire rope cable secured with Crosby clamps.
- Fall protection will follow the [Company Name] fall protection plan and the work methodology contained in this steel erection plan.
- Handling and installation:
  - A hi line shall be installed with a grate block and chain fall affixed to the hi line to assist in installation of grating or,
  - When a hi line is not feasible, grating hooks shall be used to handle grating.
  - Grating shall be fastened by means of saddles and screws (furnished by fabricator). Pilot holes shall be drilled for self-threading screws and saddles installed per design. Any panel less than 6 ft requires a minimum of 4 clips. Panels larger than 6 ft require a minimum of 5 clips for every 6 ft of panel.

6.18 Grating, Q-Decking, and Roofing

- Q-decking: To be developed and submitted prior to installation.
- Roofing: To be developed and submitted prior to installation.

NOTE

At this stage of the project, not all documentation is available to design an adequate Q-decking plan for the ball mill area.

7.0 KEY CONTACT

8.0 QUALITY RECORDS

9.0 ATTACHMENTS

- Attachment A, Crane Operator List.
- Attachment B, JHAs and JSAs.

SAMPLE

- Attachment C, Sketch of Scrubber Area.
- Attachment D, Sketch of Large Crane Placement.

SAMPLE

Attachment A – Crane Operator List

NAME	

SAMPLE

Attachment B – JHAs and JSAs

SAMPLE

Attachment C – Sketch of Scrubber Area

SAMPLE

Attachment D – Sketch of Large Crane Placement

SAMPLE

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A10

Rigging and Lift Plans

	Rev. 1	**Rev. 2**
Date	3/11/2009	7/15/2009
Revised By	Bruce Walker	Bob Fitzgerald
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Will Taylor	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the requirements for rigging and lift plans on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926.550, Cranes and Derricks.
- 29 CFR 1926.551, Rigging equipment for Material Handling.
- ASME B30.5, Current.
- ASME B30.20 (2003).
- ANSI B15.1 (1958), Safety Code for Mechanical Power Transmission Apparatus.
- SAE J959 (1966).
- Rigging and Lift Plan.
- SH2C1, Qualifying Equipment Operator.
- SH-2C3, Mobile Cranes.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

1. Each contractor shall plan all lifts involving cranes. Each member of the lift crew shall be properly trained to understand the hazards of the lift and the necessary precautions to assure a safe lift.

2. Special custom-designed grabs, hooks, clamps, or other lifting accessories for such units as modular panels, prefabricated structures, and similar materials shall be marked to indicate safe working loads and be proof-tested prior to use for 125 percent of their rated load. Such test must be documented.

3. All critical lift plans shall be posted in the crane at the time of the critical lift.

4. Each contractor shall designate a specific individual(s) as the competent person (rigging/lift supervisor) to develop plans, to monitor, and to direct the lift as described in plans.

4.2 Critical Lifts

1. The contractor shall develop an engineered rigging/lift plan for all critical lifts. The following criteria shall be used to determine when a lift is deemed critical:
   - Lift involving more than one crane to handle a common load.
   - Any lift greater than 25 tons.
   - A lift of 80 percent or more of the rated crane capacity.

2. The contractor's critical lift plan shall be stamped by a professional engineer (PE) registered in the state in which the work is performed. The critical lift plan shall contain as a minimum:
   - Manufacture, model, and capacity of the crane(s).
   - Capacity charts of the crane(s).
   - Working radius of the crane(s).
   - Boom length and angle of the crane(s).
   - Weight of the load, including rigging, load block, headache ball, cable.
   - How the weight of the load was determined.
   - Size and capacity of all rigging hardware.
   - Plot plan showing crane(s) location with pick, swing, and set points.
   - Plan approval signatures.
3. The contractor's site manager shall approve the written critical lift plan and submit the plan to the E&CS site/facility manager within a reasonable number of calendar days prior to the lift.

4.3 Competent Person

The rigging/lifting supervisor shall act as the competent person for the contractor. Qualifications shall be based on previous experience and training. The competent person shall be responsible for the safe handling and rigging of all loads. The competent person's responsibilities shall include:

1. Determine if the soil in the lift area is sufficient to hold the weight of the crane and load. If the soil is not sufficient, improved soil may be used or mats or both.

2. Identify the rigging/lifting activities, rigging equipment, lift accessories, operating equipment, and any other materials needed to perform assigned duties.

3. All rigging equipment, operating equipment, and material shall be listed by serial number or identified by name, diameter, length, and documented on the critical lift plan.

4. Develop rigging sketches and plot plans showing all the above methods of attachment, boom angles, crane orientations, limitations to be applied on any equipment or rigging accessories, and any other factors affecting the capacity of equipment and accessories to be used in the lift.

5. Hold a meeting with all site personnel involved with or affected by the critical lift, including E&CS site management. The supervisor shall cover the contents of the rigging/lift plans, person in charge of the lift, individual duties, and any associated hazards.

6. Ensure that all crane operator(s) are trained and licensed for the crane they use per the requirements of procedure SH2C1, Qualifying Equipment Operator, and procedure SH-2C3, Mobile Cranes.

7. Personally inspect the load, crane placement, rigging, shims, anchor bolts, etc., to verify compliance to the rigging plan. The supervisor shall certify this inspection by signature on the critical lift plan form.

4.4 Equipment

1. The crane(s) involved in the critical lift plan shall be inspected by a qualified person prior to use per procedure SH-2C3, Mobile Cranes.

2. All rigging and rigging accessories will undergo a thorough documented inspection prior to use in a critical lift.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

Each contractor shall retain rigging plans for a period of 1 year after the completion of the lift for which it was written.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A11

Crane-Suspended Work Platforms

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide requirements for the safe lifting of personnel with a crane-suspended personnel platform on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926.552(g).
- 29 CFR 1926.500, Subpart M.
- ANSI A10.4, Current Safety Requirements for Workman's Hoist.
- Evaluation of Alternate Lifting Methods.
- Rigging and Lift Plan.
- Authorization for the Use of a Suspended Personnel Hoisting Platform.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

1. Except during steel erection, the use of a crane or other similar hoisting equipment to hoist personnel is prohibited unless the use of other means would be more hazardous, or is not possible because of structural design or worksite conditions.

2. The contractor's site manager and environmental, health, and safety (EH&S) resource shall determine that there is not a safe alternative method to perform the needed work such as ladders, scaffold, and aerial lifts.

4.2 Forms

After determining that a crane-suspended personnel platform is the only safe method of accomplishing the job, the following forms shall be completed:

- Evaluation of Alternate Lifting Methods.
- Rigging and Lift Plan.
- Authorization for the Use of a Suspended Personnel Platform.
- Appropriate daily crane inspection report (before making lift).

The forms shall then be submitted for E&CS review and concurrence before conducting any work from a platform suspended from a crane. Included in the details must be a clear justification for using a crane-suspended work platform rather than another method.

4.3 Prelift Meeting

A meeting for planning the lift and work activities shall be attended by the supervisor responsible for the work, operator of the hoisting equipment, signal person, personnel to be lifted, the EH&S resource, and the contractor's site manager. The step-by-step work procedure shall be discussed, along with the appropriate requirements from 29 CFR 1926.550(g). The following requirements apply:

1. The number of employees to be lifted shall not exceed the number required for the work. Employees using the hoisting platform shall be considered to weigh a minimum of 250 lb each.

2. Prior to lifting any personnel, the hoisting device and personnel platform shall be inspected and maintained in accordance with the requirements for that particular piece of equipment.

3. Equipment operator and signal person should stay in plain sight at all times. When using two-way radios, an isolated frequency shall be maintained.

4. The operator shall remain at the controls and maintain visual/voice contact with the signal person at all times while personnel platform is occupied.

5. Employees shall keep hands, feet, and arms inside perimeter of platform.

6. Tools, equipment, and materials needed for the job shall be secured and shall be distributed to balance the platform while in motion.

4.4 Welding

1. While welding or cutting torch activities are being performed from a crane-suspended personnel platform, an ABC 20-lb fire extinguisher shall be kept on the platform. All welding leads and torch hoses shall be secured. All 110-V service used on the platform shall be protected by ground fault circuit interrupters.

2. Welding leads, cords, hoses, or similar items shall not be tied to the personnel platform and suspended during the lift. Items such as these should be lowered from the platform for connection after the basket is positioned for use. The weight of these items must be included in the total weight of the lift..

3. Precautions shall be taken to ensure that torch flame tails and welding electrodes do not come into contact with personnel platform rigging.

4.5 General Precautions

1. The hoisting platform shall not be used during winds exceeding 20 MPH, electrical storms, snow, dense fog, or other adverse weather conditions that could endanger personnel on the hoisting platform.

2. All lifts shall be made in accordance with the hoisting equipment manufacturer's lifting recommendations.

4.6 Personnel Platform

1. The personnel platform shall be designed with a safety factor of five by a qualified engineer who is competent in structural design. The suspension shall be designed to minimize tipping of the platform due to movement of personnel occupying the platform. Upon request, contractors will provide documentation of design to E&CS personnel. The basket will be marked with a unique identifier that is referenced on the design documents.

2. Each personnel platform shall be provided with a standard guardrail system that is enclosed from the toe board to the midrail to keep tools, material, and equipment from falling out of the basket. The platform also shall have a grab rail, overhead protection, adequate headroom for employees, and a plate or other permanent marking that clearly indicates the platform's weight and rated-load capacity or maximum intended load. The rated-load capacity of the platform shall not be exceeded.

3. Access gates shall only swing inward.

4. All welding shall be performed by a qualified welder that has been tested and certified for the weld grades, types, and material specified in the design.

5. Employees shall not be exposed to any rough edges on the platform.

6. Personnel platforms shall be easily identifiable by color markings. Personnel platform should be clearly and permanently marked for personnel hoisting only.

4.7 Rigging

1. Hooks on ball assembles, load block, or other type of attachment assemblies shall be a type that can be closed and locked, eliminating the open throat hook.

2. When a wire rope bridle is used to connect the platform to the load line, the bridle legs shall be connected to a master link or shackle so that the load is evenly positioned between legs. Bridle ends shall be fabricated with thimbles in both ends. Bridle shall be a match set and used only to hoist personnel platform.

3. A separate wire rope sling shall be connected to a shackle on the load line directly above the headache ball to the padeye or shackle to the hoisting platform.

4. Rigging used to suspend the platform from the crane hook shall not be used for any other purpose or hoisting activities. *(Non-Regulatory)*

4.8 Crane Components and Safe Operational Specifications

1. The boom angle indicator shall be readily visible to the operator.

2. Telescoping booms shall be marked or equipped with device that indicates the boom`s extended length to the operator.

3. The load line hoist drum shall have a system or device on the power train, other than the load hoist brake, which regulates the lowering rate of speed of the hoist mechanism. Free falling is prohibited.

4. The use of cranes with live booms (booms in which lowering is controlled by a brake without aid from other devices which slow the lowering speeds) is prohibited.

5. All hoisting equipment shall be equipped with an operating anti-two-block device.

6. Load and hoist drum brakes, swing brakes, and locking devices such as pawls or dogs, shall be engaged when the occupied personnel platform is in a stationary working position.

7. Hoisting or lowering of employees while the crane is traveling is prohibited, except for tower and locomotive cranes.

8. There shall be no slack in the cable between the personnel platform and load drum before lifting. If any slack is present, the operator shall make sure the cable is straight on the hoist drum, then tighten up the hoist until the slack is no longer present.

9. The crane shall be uniformly level within 1 percent and located on firm footing. Outriggers shall be fully deployed.

10. Hoisting or lowering shall not exceed 100 ft per minute.

11. The total weight of the loaded personnel platform and related rigging shall not exceed 50 percent of the rated capacity for the radius and configuration of the crane.

4.9 Testing and Documentation

1. The crane to be used for lifting personnel must have a current annual inspection.

2. The crane operator must be trained and licensed for the make and model of crane used in the lift of the personnel work platform, in accordance with the applicable procedures contained in section SH-2C, Major Equipment. *(Non-Regulatory).*

3. For each new setup and at the start of each shift, a full-cycle operational test lift at 125 percent of the intended load of the unoccupied personnel platform, holding it in a suspended position for 5 minutes, shall be made prior to hoisting of employees. If the crane is changed, moved, personnel changed, work locations changed, or any part of the permit system changed, a new test lift is required. (The test lift must be conducted in furthest location employees are to be lifted.)

4. The crane lifting the personnel platform will be downgraded to 50 percent of the load chart capacity at the maximum anticipated radius and boom angle *(Regulatory)* to insure a safe lifting operation.

5. After the test lift, a competent person shall inspect the personnel platform and rigging checking for any damage. Damage shall be repaired before use.

6. After forms and permits have been completed, appropriate signatures affixed, test lifts, and inspections have been completed, authorization to lift employees in a personnel platform requires final approval and signature by the contractor's site manager.

7. All forms and permits to lift the personnel platform will be located in the crane while the lift is in progress. The contractor shall make provisions to retain permits for the duration of the project.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction

Environmental, Health, and Safety Procedures

SH-2A12

Chains, Slings, and Miscellaneous

Rigging Accessories

	Rev. 1	**Rev. 2**
Date	3/11/2009	9/3/2010
Revised By	Bruce Walker	Bruce Walker
Reviewed By		
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1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide requirements for the use, care, and inspection of rigging equipment on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1910.176, Handling materials -- general, and 1910.184, Slings.
- 29 CFR 1926.251, Rigging equipment for material handling.
- SH-2C3, Mobile Cranes.
- Monthly Sling/Choker Inspection Form.
- ANSI/ASME B30.9 – Slings.
- ANSI/ASME B30.10 – Hooks.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Rigging Requirements – General

1. All rigging operations shall be performed by qualified personnel under the direction of a competent person.

2. Rigging equipment shall be inspected prior to each use to ensure that it is safe. Defective rigging equipment shall be removed immediately from service for repair or replacement.

3. Rigging equipment shall not be loaded in excess of its recommended safe working load. Rigging equipment shall have a safety factor of five to one.

4. Rigging equipment when not in use shall be removed from the immediate work area so as not to present a tripping hazard to personnel and properly stored to prevent damage.

5. Special custom design grabs, hooks, clamps, or other lifting accessories for such units as modular panels, prefabricated structures, and similar materials shall be marked to indicate the safe working loads and shall be proof-tested prior to use for 125 percent of their rated load.

6. Rigging equipment shall be compatible with the environments where it is to be used (that is, nylon slings should not to be used around torch cutting or certain chemicals such as caustics, etc.).

7. During rigging operations, riggers shall avoid placing body parts in pinch points and under loads. In particular, rigger's hands shall not be placed on the rigging or the load during the lift.

8. Blocks, heavy padding, or other means (softeners) shall be used on the corners of the load or edges to protect slings or rigging devices from damage.

9. Rigging equipment with missing or illegible identification shall be removed from service immediately.

NOTE

Since 2001, all slings, including wire rope, synthetics, metal mesh, or chain, must be manufactured under ANSI/ASME guidelines and must have an identification tag.

4.2 Chains, Shackles, and Hooks

1. The manufacturers recommended safe working loads for chains, shackles, and hooks shall not be exceeded.
2. Job or shop hooks and links or fasteners, formed from bolts, rods, etc., shall not be used unless they have been properly designed by a qualified engineer and load tested. The use of rebar to form hooks or other lift devices is prohibited.
3. Shackles shall be used to secure more than one eye in a hook.
4. Never place a load on the point of a hook.
5. All hooks shall have a safety latch or the rigging shall be moused on to the hook to prevent dislodgment.
6. The pin of the shackle should be placed in the hook with the eyes of slings bearing on the shank.

4.3 Miscellaneous Rigging Accessories

4.3.1 Beam Clamps

1. Only approved-type beam clamps shall be used to lift loads.
2. Beam clamps shall be attached to approved structural members that will support the intended load.
3. The beam clamp shall fit securely on the structural member.
4. Beam clamps shall be used for straight lift only, unless specifically designed for angle lifts.
5. Attach rigging to beam clamps with shackles.
6. Beam clamps shall be inspected prior to each use.

4.3.2 Plate Grips

1. Only positively self-clamping and locking-type plate grips shall be used.
2. Only plate grips with the proper capacity for the load shall be used.
3. When selecting a plate grip, the user must consider the hardness and surface of the material to assure proper gripping and bite of the device.
4. Use of proper grips designed for vertical and horizontal lifts is essential.
5. Use of tag lines and strict adherence to the restriction that there be *absolutely no body parts under the load* shall be maintained at all times while lifting with plate grips.
6. Plate grips shall be inspected prior to use.

4.3.3 Eyebolts

1. Spreaders or other devices shall be used in conjunction with eyebolts when lifting loads to maintain a vertical pull to avoid damaging angular pulls on the eyebolt.
2. Shouldered eyebolts are preferred at E&CS projects. The eyebolt shoulder and the mating part shall be firmly and squarely seated.
3. Unshouldered eyebolts shall have a minimum of 90 percent of the threads firmly engaged in the hole.
4. Always use eyebolts with a capacity rated to sufficiently handle the intended load.
5. Avoid painting or coating eyebolts which may hide defects or damage.

4.3.4 Rollers

1. Rollers shall be used on surfaces that are as smooth and level as practicable.
2. Skid-mounted materials or loads to be moved on rollers must be securely fastened to the skid. The force to move the load must be applied to the skid, not the load.
3. To avoid pinch points, the work group must keep body parts clear of the rollers during movement.
4. Keep movement of the load along the rollers perpendicular to the centerline of the rollers. Change of directions shall be carefully executed to avoid dragging load over the rollers.

5. Maintain sufficient number of rollers under the load to keep the load level and stable.

6. Avoid metal-to-metal contact of rollers by use of softeners.

4.4 Slings

1. Mechanical hoisting operations shall always include slings or other lifting devices and must be kept in good condition. Use of the load line wrapped around the load is prohibited.

2. Wire rope slings must be inspected and lubricated frequently and regularly. Slings shall be stored on racks and protected from moisture.

3. Eyes of synthetic web slings shall be formed by stitching designed and sufficient in number to develop full strength.

4.5 Manila and Synthetic Fiber Rope

1. Only number-1 grade or better manila rope shall be used for rigging purposes. Each size and kind of rope shall be used and maintained in strict accordance with 29 CFR 1926.251(d).

2. Rope shall be stored on racks or platforms protected from moisture and extremes in temperature.

3. Splices shall be made in accordance with the manufacturer's recommendations. Knots or clamps shall not be used in place of splices.

4.6 Wire Rope

1. All wire ropes must be inspected before being used.

2. Kinking and untwisting of the wire rope shall be avoided. At no time shall a load be applied to a kinked rope.

3. Wire ropes shall be lubricated with the lubricant recommended by the wire rope manufacturer.

4. Wherever necessary, wire ropes shall be guarded to prevent persons or materials from coming in contact with them.

5. Friction of wire ropes with other objects causing chaffing or breaking of wires shall be prevented.

6. Protruding ends of strands in splices on slings and bridles shall be covered or blunted.

7. Eyes formed from wire rope shall have a protective thimble.

8. The U-bolt of all wire rope clips must be applied on the dead end of the rope (Remember: never saddle a dead horse).

9. Fiber core wire rope slings of all grades will be permanently removed from service if they are exposed to temperatures in excess of 200° F. When nonfiber core wire rope slings of any grade are used at temperatures above 400° F or below minus 60° F, recommendations of the sling manufacturer regarding use at that temperature will be followed.

10. The recommended number and spacing of wire clips is illustrated in the following table:

Table 2.A.12-1

Number and Spacing of U-Bolt Wire Rope Clips

	Number of Clips		
Improved Plow Steel Rope Diameter (in.)	Drop Forged	Other Material	Minimum Spacing (in.)
½	3	4	3
5/8	3	4	3-3/4
¾	4	5	4-1/2
7/8	4	5	5-1/4
1	5	6	6
1-1/8	6	6	6-3/4
1-1/4	6	7	7-1/2
1-3/8	7	7	8-1/4
1-1/2	7	8	9

4.7 Inspections

4.7.1 Sling Inspection Frequencies

1. Initial Inspection - The sling and its hooks, rings, links, and attachments are to be inspected, load tested, and certified by the manufacturer or a recognized agency or company.

2. Frequent Inspection - The rigger is to visually examine each sling and its hooks, rings, links, and attachments before use for damage, evidence of deficiencies, which could lower the load rate of the sling, and the presence of the current periodic inspection tape or paint. Deficiencies, or lack of a current periodic inspection tape or paint, shall be cause to remove the sling from service and a periodic inspection to be performed.

3. Periodic Inspection - Each chain and wire rope sling and their hooks, rings, links, and attachments are to be visually examined at least semiannually and each fiber rope/synthetic web sling is to be inspected quarterly. The inspection is to be performed by a qualified individual for deficiencies, which would lower the load rating of the sling. This inspection is to be performed on the entire length of the sling and on each of its components. The qualified personnel shall use procedures recommended by the manufacturer and/or ANSI/ASME B30.9 and ANSI/ASME B30.10.

4.7.2 Repair or Reconditioning

Repair or reconditioning of slings shall be performed only by qualified personnel. Repaired or reconditioned slings will be proof-tested as stated in ANSI/ASME B30.9 prior to being placed back into service.

4.7.3 Inspection Criteria

1. Alloy Steel Chain Slings Frequent Inspection

   - Wear, nicks, cracks, breaks, gouges, stretch bands, weld splatter, discoloration from excessive temperature, and evidence of opening of the hook throat.

   - Free movement between chain links and attachments.

   - Free movement and proper seating of hook latches.

2. Periodic Inspection

   a. Each link and each attachment will be individually visually examined for the characteristics stated in paragraph 7.3, Inspection Criteria.

b. Worn links shall not exceed the following values as stated below or the manufacturer specifications.

Nominal Chain or Coupling Link Size	Maximum Wear (Diameter)
9/32	3/32
3/8	5/64
1/2	7/64
5/8	9/64
3/4	5/32
7/8	11/64
1	3/16
1 1/4	1/4

3. Wire Rope Slings

a. Frequent Inspection:

- Distortion of rope such as kinking, crushing, unstranding, bird caging, main-strand displacement, or core protrusion.
- Loss of rope diameter in short rope lengths or unevenness of outer strands.
- General corrosion.
- Any rope showing excessive wear, corrosion, or rust, or when any of the following conditions exist, shall be taken out of service:
  - In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay.
  - Wear of 1/3 the original diameter of outside individual wires. Kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure.
  - Reductions from nominal diameter of more than 1/64 in. for diameters up to and including 5/16 in., 1/32 in. for diameters 3/8 in. to and including 1/2 in., 3/64 in. for diameters 9/16 in. to and including 3/4 in., 1/16 in. for diameters 7/8 in. to 1-1/8 in. inclusive, 3/32 in. for diameters 1-1/4 to 1-1/2 in. inclusive.
  - Evidence of any heat damage from any cause.
  - In standing ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection.

b. Periodic Inspection:

1.) The entire length of the sling and its splices, end attachments, and fittings are to be visually examined for the characteristics stated in paragraph 7.3.

2.) Evaluation of the sling and determination of its suitability for continued use depends on the judgment of the qualified individual inspecting the sling.

3.) The following conditions shall be sufficient to remove the sling from service:

- For strand laid and single part slings, 10 randomly distributed broken wires in 1 rope lay, or 5 broken wires in 1 strand in 1 rope lay.
- Severe localized abrasion or scraping.
- Kinking, crushing, bird caging, or any other damage.
- Evidence of heat damage.
- Cracked, deformed, or worn end attachments.
- Corrosion of the rope or end attachments.

4.) Criteria for cable laid and braided slings:

Sling Body	Allowable Broken Wires Per Lay or One Braid	Allowable Broken Strands Per Sling Length
Less than 8 part braid	20	1
Cable laid	20	1
8 part or more	40	1

4. Natural and Synthetic Fiber Rope Slings

a. Frequent Inspection:

- Cuts, gouges, and abrasions.
- Worn fibers or yarns. Variations in size or roundness of strands.
- Broken filaments or fibers.
- Particles of debris (powder, etc.) or broken fibers between strands.

- Evidence of chemical agents and/or sunlight damage (discoloration, harshness, brittleness, etc.).
- Kinks or knots.
- Evidence of heat damage (melting or charring).
- Damaged fittings and/or attachments.

b. Periodic Inspection:

1.) The entire length of the sling and its splices, end attachments, and fittings are to be visually examined for the characteristics stated in paragraph 7.3.

2.) Evaluation of the sling and the determination of its suitability for continued use depend on the judgment of the qualified individual inspecting the sling.

3.) Conditions such as the following shall be sufficient reason to remove the sling from service:

- Cuts, gouges, and badly abraded spots.
- Serious worn surface fibers or yarns.
- Considerable filament or fiber breakage along the line where adjacent strands meet.
- Particles of broken filament or fibers inside the rope between the strands (inspect inside the rope).
- Discoloration or harshness that may mean chemical damage or excessive exposure to sunlight. Inspect filaments or fibers for weakness or brittleness.
- Kinks or brittleness.
- Melting or charring on any part of the sling.
- Excessive pitting or corrosion or cracked, distorted, or broken fittings.
- Other visible damage that causes doubt as to the strength of the sling.

5. Synthetic Webbing Slings

a. Frequent Inspections:

- Acid or caustic burns.
- Evidence of heat damage (melting or charring).

- Holes, tears, cuts, or snags.
- Abrasive wear.
- Knots.
- Damaged fittings and/or attachments.

b. Periodic Inspections:

1.) The entire length of the sling and its stitching, end attachments, and fittings are to be visually examined for the characteristics stated in paragraph 7.3.

2.) Evaluation of the sling and the determination of its suitability for continued use depend on the judgment of the qualified individual inspecting the sling.

3.) Conditions such as the following shall be sufficient reason to remove the sling from service:

- Acid or caustic burns.
- Melting or charring of any part of the sling.
- Holes, tears, cuts, or snags.
- Broken or worn stitching in load bearing splices.
- Excessive abrasive wear.
- Knots in any part of the sling.
- Excessive pitting or corrosion; or cracked, distorted, or broken fittings.
- Other visible damage that causes doubt as to the strength of the sling (for example, exposed colored threads).

4.7.4 Hook Inspections

1. Inspection of hooks is to be performed in conjunction with the inspection of slings when an integral part of the sling or the inspection of the hoist or crane when part of the hoist or crane. The inspection shall be documented per paragraph 7.5, Inspection Documentation, or in the case of crane hooks, in accordance with procedure SH-2C3, Mobile Cranes.

2. Inspection Defect Criteria.

   Hooks having any of the following deficiencies are to be removed from service unless a qualified person approves their continued use and initiates corrective action:

- Wear exceeding 10 percent, or as recommended by the manufacturer of the original sectional dimension.
- Any visible apparent bend or twist from the plane of the unbent hook.
- An increase in throat opening exceeding 15 percent or as recommended by the manufacturer.
- If a latch that is provided becomes inoperative because of wear or deformation and is required for the service involved, it will be replaced or repaired before the hook is put back into service. If the latch fails to fully close the throat opening, the hook will be removed from service or moused until repairs are made.

3. If hooks are coated, visual inspection shall take this coating into consideration. Surface variations can disclose evidence of heavy or severe service to require more detailed analysis. In such instances, the surface condition may then call for stripping the coating or nondestructive testing.

4.7.5 Inspection Documentation

1. Initial Inspection - This inspection is documented by the manufacturer's identification markings on the sling. Should the sling be job-made, the site manager or his or her authorized designee will ensure that it is load tested per ANSI/ASME B30.9 and identified with company name, job number, and load rating before it is placed in service.

2. Frequent Inspections - Documentation of frequent inspections is not required. The rigger will identify slings removed from service for suspected deficiencies with a conspicuous tag with wording such as DANGER - OUT OF SERVICE printed on it. The rigger shall also remove the periodic inspection identification and cause the sling to be inspected. Removal of the warning tag is to be performed only by qualified inspection personnel.

3. Periodic Inspection

   a. Chain and Wire Rope Slings - The periodic inspection shall be performed every 6 months and documented by using colored tape or paint, placed near the hook end, with the colors stated below:

January through June	=	Red
July through December	=	Brown

b. Fiber Rope and Synthetic Slings - The periodic inspection shall be documented, and the slings identified by applying colored tape to the sling near the manufacturers label towards the loop eye using a color scheme such as the following:

January through March	=	White
April through June	=	Green
July through September	=	Yellow
October through December	=	Blue

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

Attachment A – Historical Summary of Changes.

Attachment A – Historical Summary of Changes

Rev. 0
12/10/2002

Approved by Don Gaddy
Reviewed by Construction Safety Leadership Team
Revised by Bruce Walker

Remarks:
Issued

Rev. 1
3/11/2009

Approved by Will Taylor
Reviewed by Construction Safety Leadership Team
Revised by Bruce Walker

Remarks:
General revision.

Rev. 2
9/3/2010

Approved by Will Taylor
Reviewed by Construction Safety Leadership Team
Revised by Bruce Walker

Remarks:
Added language to update requirements for hook bends and twists, and reference to the applicable ANSI/ASME standards.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A13

Chain Hoists, Lever Hoists, and Jacks

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for the safe operation and inspection for manually operated lifting equipment on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References/Additional Resources

- 29 CFR 1910.241, Definition.
- 29 CFR 1910.244, Other Portable Tools and Equipment.
- 29 CFR 1926.305, Jacks - Lever and Ratchet, Screw, and Hydraulic.
- Chain Fall and Come-a-Long Inspection.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Chain Hoist and Lever Hoist

Each contractor shall designate a competent person(s) to administer an operations, maintenance, and inspection program for all manually operated hoist and jacks. The program shall ensure that this equipment is used, maintained, and inspected in accordance with the safe operating procedures and manufacturer's specifications.

4.2 Testing and Inspection: Chain Hoist, Lever Hoist

The designated competent person(s) shall perform and document a detailed inspection. This inspection shall be performed quarterly and on all new and repaired hoists. When any extensive repairs are performed, the hoist shall be load tested for the maximum designed rated capacity by the manufacturer. All tests shall be documented on a written log, and a tag affixed to the device that denotes date of inspection. The following components shall be inspected, and if any defective condition is present, the equipment shall be taken out of service and repaired or replaced.

1. Check the top and bottom hooks. If the hooks are bent, cracked, or if the hook throat is opened greater than the designed measurement, they shall be replaced.

2. Check the pull handle on the lever hoist for bends or cracks. The handle shall operate (ratchet) freely in the up or down direction. The up or down pull switch or toggle switch shall operate freely.

3. Check housing for any cracks, dents, or gouge marks.

4. Check the load chains interlink points for signs of wear. Check the length of the chain against the original length using, at a minimum in length, 20 links of chain. If the length shows an increase of 3-percent elongation, replace the chain.

5. Check load chain and pull chain for any other defects such as bends, cracks, gouges, or arc marks.

6. All lubrication shall be performed according to the equipment manufacturer's specifications. Never lubricate clutch brakes.

4.3 Visual Inspection: Chain Hoist and Lever Hoist

Prior to each assigned task, all users shall perform a visual inspection of the list of the following components, looking for any damage, wear, or irregularities:

1. Brake mechanism.
2. Hoist housing and sheaves.
3. Hooks and safety latches.
4. Lever handles.
5. Wire rope.
6. Load chains and pull chains.
7. Lubrication.

4.4 General Precautions: Chain Hoist and Lever Hoist

When operating the hoist, observe the following safety precautions:

1. Make sure the supporting structure, monorail system, and trolleys capacities are equal to or greater than the capacity of the hoist and the load. The system shall support the loads and forces imposed by the lifting operation. The monorail system and the hoist shall be clearly marked with the maximum rated capacity.
2. Never use a hoist to lift more than its maximum rated capacity load. Use a larger capacity hoist if necessary.
3. Do not leave a load on any hoist unattended without proper warning signs and barricades.
4. Do not stand below or expose any parts of the body below a hoisted load. Use a tag line to control load.
5. Hoists are designed for a one-person operation. Use a larger capacity hoist if one person cannot operate the hoist.
6. Never use damaged or malfunctioning equipment. Make sure the hoist has been inspected and properly tagged.
7. Do not throw or drop the hoist. Handle the equipment with care.
8. Never use the load chain as a sling. The load line shall not be hooked back into itself.

9. The hoist shall have an automatic, fail-safe-type load brake to prevent the load from dropping while the hoist is in the up or down position.

10. Make sure the load chain and the pull chain are not twisted.

11. Never use a manual material hoist to lift or support personnel. Specially designed rescue/extrication or other approved devices shall be used to lift personnel.

12. Always use a shackle when using two or more eyes in the hook.

13. Barricade the perimeter of the lift area. Alert others in the general area.

14. Load hook shall be equipped with a safety latch or mouse.

15. Suitable softeners shall be used to protect hoist chains and slings as applicable.

16. Wire rope-type come-a-longs (fence pullers) are prohibited except for chain link fence installation.

17. Do not engage hooks directly on beam flanges, angle iron, channel iron, or similar structures (the technique is commonly referred as “point loading”).

18. Follow the manufacturer’s recommendations when using chain-and-lever-type hoists.

4.5 Testing and Inspection: Jacks

Prior to each work assignment, every jack shall be visually inspected. Observe the following points when evaluating this equipment:

1. Make sure fluid is at the proper levels.

2. Check for leaks around the ram, jacking lever, and the toggle switch. All these functions shall be working properly before lifting.

3. Check housing for cracks, gouge marks, and dents.

NOTE

These inspection procedures and general precautions shall also apply to port-a-powers.

4.6 General Precautions: Jacks

1. Always store hydraulic jacks in the vertical position.
2. Do not leave a load on jacks unattended.
3. Handle jacks carefully. Do not throw or drop them.
4. Never use a damaged, leaky, or malfunctioning jack. Make sure jacks have been inspected and properly tagged before using.
5. Never jack metal to metal. Use wood or rubber softeners. Never jack against rollers.
6. Operate jack handles with your hands only. Never step on a jack handle to get additional force or add leverage through the use of a jack handle extension ("cheater bar").
7. Properly position jacks and raise loads uniformly to avoid unexpected load shifts.
8. To prevent the load from shifting or keep the jack from kicking, as the load is elevated, place wooden blocks between the load and the jacking surface. Never leave a jack under a load without blocking the load.
9. When jacking large profile loads, determine the center of gravity and place the jacks at an equal distance apart from the center of gravity. Always place the jacks as wide as possible to ensure a stable lift.
10. Place the jack base firmly and evenly on a solid footing to ensure that the jack is stable when loaded. Never place the jack directly on soil. Wood or plate is good temporary footing support.
11. If blocking is necessary for elevation adjustment, place the block under the jack instead of between the ram and the object being lifted.
12. Make sure jacks are level before lifting.
13. When raising a load with a multijack system, brace the load laterally with struts to prevent the jacks from upsetting at once.
14. Lash or block the jacks when used in the horizontal position.
15. When using a multijack system, use matched jacks for uniform performance.
16. Use caution when lowering loads with a multijack system.
17. When hydraulic jacks are used to lift such items as vehicles for repair, there shall be positive means of support (dunnage) before entry under vehicle.

4.7 Record Retention

Each contractor shall keep inspection records on file and available for review for the length of his or her contract on the project.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A14

Power Tools

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 PURPOSE

To provide requirements for the safe use of power tools on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References/Additional Resources

- 29 CFR 1910.243, Guarding of Portable Power Tools.
- 29 CFR 1910.213, Woodworking Machinery Requirement.
- 29 CFR 1926.302, Power Operated Hand Tools.
- 29 CFR 1926.300, General Requirements.
- 29 CFR 1926.304, Woodworking Tools.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 General

1. Employees shall follow all manufacturers' instructions regarding the safe storage, operation, and maintenance of power tools.
2. Employees shall not use a power tool unless they have been trained to use it properly and safely.
3. All guards shall be in place before operating the tool.
4. Appropriate eye protection shall be worn when operating or working near power tools.
5. Hearing protection shall be worn when using high noise-producing power tools such as saws and jack hammers.
6. Employees shall not wear loose-fitting clothing or jewelry when using power tools.
7. Employees shall disconnect the tool from power source before changing blades, bits, etc.
8. Employees shall remove chuck keys, etc., before using a power tool.
9. Employees shall disconnect power tools from the power source by pulling out the plug; they shall not pull on the power cord.
10. Portable electric power tools shall be disconnected from power source when unattended.
11. Tools shall be either double insulated or have three-prong plugs with grounded extension cords and ground-fault circuit interruption (GFCI) protection.
12. Employees shall be required to keep their finger off the trigger and ensure the switch is in the OFF position before plugging in a tool.

13. Employees shall not use electric tools that have worn or damaged plugs or cords.

14. Employees shall secure small pieces of work with a clamp or in a vise.

15. When using power tools, the work area shall be kept free of any trip hazards or slippery conditions.

16. Employees shall never use compressed air to blow off equipment or clothing; use a brush.

17. Safety devices and automatic cutoff switches on all power tools shall not be disabled or removed.

18. Where oil is used in conjunction with power tools such as drills and threaders, a means of containing the debris shall be provided. An example is a box with oil absorbent under the tool.

4.1.2 Saws (General)

1. Employees shall not jam or force saws into the work.

2. Portable saws shall have a spring-loaded operating switch.

3. Employees shall be instructed to stay out of the saw's line of cutting.

4. Employees shall be instructed to start and stop the saw outside the work piece.

4.1.3 Circular Saws

1. Employees shall not retract the lower guard while the blade is moving.

2. Employees shall use the retracting handle or safety lift lever to move the lower guard.

3. Employees shall not clamp or tie the guard open.

4. Employees shall not operate the saw if the guard is not working properly.

5. Employees shall keep their hand(s) away from the blade while using the saw.

6. Employees shall keep the power cord out of the line of the saw cut.

7. The work piece shall be supported by means other than solely handheld such as a cut table or other safe, solid surface.

4.1.4 Reciprocating Saws

1. Employees shall not use the saw unless the insulating boot is in place.
2. Employees shall be especially careful to keep their hands away from the blade when using a reciprocating saw.

4.1.5 Drills

1. Employees shall not use dull or chipped bits.
2. Employees shall let the bit cool down before changing or adjusting it.
3. Employees shall not force the drill into the work.
4. Employees shall use light oil to keep the bit lubricated and cool during use.
5. Oil and metal shaving shall be cleaned frequently from around drill operations.
6. The additional handgrip provided on large high torque drills shall not be removed and must be used during operation of the drill.

4.1.6 Pneumatic Tools

1. Appropriate hand protection shall be worn, including gloves sufficiently padded to absorb the shock of such tools as jack hammers.
2. Pneumatic power tools shall be securely attached to the compressed air hose.
3. Employees shall not make adjustments to pneumatic tools until air pressure is no longer being supplied to the hose or tool.
4. Employees shall not hoist, lower, or carry a tool by the hose.
5. Pneumatic impact tools shall have safety clips or retainers for tool bits.
6. Employees shall follow the manufacturers' guidelines for safe operating pressures.
7. Employees shall locate all air hoses so they do not present a tripping hazard.
8. An excess flow valve shall be installed at the source of supply to reduce pressure in case of hose failure for all hoses exceeding ½ inch inside diameter.
9. Airline hose section connections shall be secured against separation. Chicago couplings shall be pinned together by positive means such as a pin or wire.

10. When using pneumatic tools in a confined space, the air source must provide clean air and must not increase the hazard of the confined space.

11. Additional foot protection (that is, metatarsal guards) are required when operating tools such as jack hammers and tampers.

4.1.7 Portable Band Saws

Employees shall not use dull or damaged blades. Do not leave blades in the work area because they create trip hazards. Dispose of used or defective blades properly. Do not change the blade with the tool plugged in.

4.1.8 Radial Arm Saws

1. The radial arm shall be self-retracting.
2. Employees shall not remove any manufacturers' guards.
3. Only properly trained and authorized employees shall use a radial arm saw.
4. Eye, face, chest, and hearing protection are required to operate a radial arm saw.

4.1.9 Magnetic Base Drills

1. Employees shall use a safety chain to secure magnetic base drills to the work.
2. Electrical cord connections shall be taped.
3. Electrical connections at the source of power shall be tagged DO NOT UNPLUG so that they cannot be inadvertently unplugged during use.
4. Where magnetic base drills are used in overhead locations, the area below shall be barricaded.
5. The supply circuit shall not be GFCI protected.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A15

Grinders – Pedestal, Bench, and Portable

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements to safely use abrasive, wheel-grinding machines including pedestal, stationary bench, and hand-held portable grinders designed and guarded for use with abrasive wheels on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1910.243, Guarding of Portable Powered Tools.
- 29 CFR 1910.215, Abrasive Wheel Machinery.
- 29 CFR 1926.300, General Requirements.
- 29 CFR 1926.303, Abrasive Wheels and Tools.
- ANSI B7.1, Safety, Code for the Use, Care, and Protection of Abrasive Wheels.
- Grinder Inspection (Bench and Portable).
- SH-2B1, Personal Protective Equipment

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 Safe Practices

1. Each contractor shall ensure that his or her employees are trained by a competent or qualified person prior to using grinders and grinding wheels. Training shall be documented.

2. Prior to performing repair or maintenance on grinders, proper electrical/ pneumatic disconnect procedures shall be followed.

3. Operators shall inspect their grinders for proper wheel RPM rating, washers, and spacing of work rest and guards.

4. Grinding wheels shall be run at full operating speed with safety guards in place before beginning work. While starting the grinder, stand to the side of the grinding wheel and out of the plane of rotation. Do not stand in line with the unprotected part of the wheel.

5. For bench grinders, the operator shall ensure the wheel not in use is guarded to protect the operator and other personnel in the area in case of wheel breakage.

6. Do not grind soft metals (such as aluminum, brass, or copper) with general purpose wheels. These soft metals will clog the grinding wheels making them useless and can cause wheels to overheat leading to the potential to explode.

7. Peripheral grinding wheels shall not be used for side grinding. They lack sufficient support to withstand the pressure exerted by this operation. For side grinding, use only wheels that are manufactured and designed for that purpose.

8. All grinding and cutting wheels and grinders (pedestal, bench, and portable) shall bear the RPM identification affixed by the manufacturer. This identification shall be maintained in readable condition.

9. Employees shall not wear loose-fitting clothing when using a grinder.

4.1.2 Personal Protection

1. Safety glasses and a face shield shall be worn when using abrasive wheels. If the work creates significant airborne dust, consider adding monogoggles to your personal protective equipment. Grinding while in confined spaces increases potential eye injury and requires use of additional precautions such as the upgrade to monogoggles with face shield.

2. Gloves shall be worn when using portable grinders. Depending on the work, gloves may not be appropriate when operating a bench grinder.

3. Many grinding machines produce noise levels that require hearing protection. Refer to procedure SH-2B1, Personal Protective Equipment, for additional information on hearing protection.

4. Consider the need for respiratory protection or a ventilation system when dusty conditions exist. Consult the Material Safety Data Sheet (MSDS) on materials being ground for more information about health hazards and the need for respiratory protection.

5. Protection shall be provided for personnel near the grinder, with protection equivalent to the operator's, or keep personnel away or shielded from the exposure area.

6. Portable screens for spark containment shall be used if the potential for fire from sparks exists.

4.1.3 Grinding Wheels

1. Only grinding wheels of the proper type and construction for the work shall be used. Wheels shall be properly attached to the grinder per the manufacturer's requirements. No special adapters, arbors, or other improvisations are permitted. No more than one wheel shall be mounted between a single set of flanges.

2. Installation and inspection of grinders and grinding wheels shall be performed by a qualified person.

3. Reinforced wheels reduce the hazard of flying parts or pieces in case of breakage. Organic (resinoid) bonded wheels have greater resistance to shock and breakage than do inorganic (vitreous) bonded wheels.

4. Before mounting or using a grinding wheel, inspect it closely and perform a ring test to make sure it has not been damaged while in shipping, handling, or use.

5. The wheel RPM rating shall be equal to or above the maximum potential RPM of the grinder on which it is mounted. Reducing air pressure or volume to the grinder is not an acceptable substitute for the use of a wheel that has a higher RPM rating than the grinder.

6. Grinding wheels shall be stored in accordance with manufacturer's recommendations and shall be protected from physical damage that could cause cracking.

7. Avoid grinding on the sides of a wheel. This action weakens it and can lead to wheel failure.

4.1.4 Pedestal and Bench Grinders

1. Bench or pedestal grinders shall be securely anchored in place.

2. The operator using the grinder is responsible for maintaining the proper clearance (1/8 in. maximum) between the work rest and the wheel. Do not allow work rests to extend to the side of the wheel, unless the wheel is specifically made and designed for this purpose.

3. Safety Guards

   Provide all abrasive wheel benches and pedestal grinders with safety guards that cover the spindle ends as well as the nut and flange projection. These guards shall be strong enough to withstand the effects of a bursting wheel. The angular exposure of the grinding wheel periphery and sides of safety guards shall not exceed 90 degrees.

4. Hood Guards

   The distance between the wheel and the hood guard at the top of the opening shall not be more than 1/4 in. (0.5 centimeters).

5. A dressing tool shall be available to keep the wheel in proper condition.

6. An EYE PROTECTION REQUIRED caution sign shall be posted at the grinder. A face shield will also be available at the grinder.

4.1.5 Portable Grinders

1. Portable grinders shall not be used as a replacement for a bench grinder.

2. Each contractor shall ensure that all portable grinders are inspected before initial use and at least quarterly thereafter. Employees shall inspect their grinders before each use.

3. Each contractor shall ensure that air-powered grinders are speed checked quarterly.

4. Employees using portable grinders shall be responsible for changing the wheels when necessary. Use only wheels with RPM ratings equal to or above that of the grinder.

5. All wheels shall be used with safety guards, with the single exception of wheels 2 in. or less in diameter to which it is impossible to apply safety guards. In this case, wear a full heavy-duty face shield, along with safety glasses. Allow safety guards on portable grinders a maximum exposure angle of 180 degrees, and affix them firmly to the grinder. Position guards so that pieces of an accidentally broken wheel are deflected away from the operator. Protect cup-type wheels with either a revolving-cup guard or a band-type guard.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A17

Excavation and Trenching

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide requirements for work in and around excavations and trenches on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926, Subpart P, Excavations.
- Trenching and Excavation Daily Checklist.
- Excavation and Trenching Permit.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 General

1. Each contractor who has personnel who enter excavations and trenches shall develop a site-specific written excavation procedure. The contractor's procedure shall, at a minimum, meet all requirements of this procedure and any local, state, and Federal government regulations.

2. Each person in an excavation shall be protected from cave-ins.

3. Each contractor shall designate a competent person who will remain onsite at all times during which excavation activities are conducted. The contractor shall provide the name of the competent person to the E&CS site manager.

4. An excavation permit system shall be implemented by any contractor performing excavation work. The excavation permit is intended to ensure that interferences that might be encountered during underground digging are identified and located, if possible, before work begins. The excavation permit shall be completed by the contractor with input from the authorized person for underground testing (utility identification) and/or contractor's excavation competent person. A properly executed excavation permit is critical when digging in and around operating facilities. Any excavation 18 in. or greater in depth requires an excavation permit.

5. Excavation work on greenfield sites can be managed under a blanket excavation permit until permanent underground systems are energized and/or pressurized. Excavation in areas containing temporary construction services and utilities shall be managed by specific excavation permits.

6. The estimated location of underground utility installations such as sewers, telephone, fuel, electric, water lines, or any other undergound installations that reasonably may be expected to be encountered shall be determined and marked prior to beginning any excavation or trenching operation. The appropriate state utilities protection center, proper utility company, or owner shall be notified 72 hours prior to excavating.

7. Soil classification shall be made by the contractor's competent person or a registered professional engineer (P.E.) trained in soil classification. Unclassified soil shall be assumed to be type C. The contractor shall keep written documentation on the methodology used to determine soil classification, and upon request, make the record available to E&CS for review.

8. All excavations over 5 ft deep shall be shored, sloped, or benched in accordance with 29 CFR 1926.652, Requirements for Protective Systems.

9. Type C soil shall be sloped 1½:1 or shored/shielded. Type B soil shall be sloped 1:1 or shored/shielded. Type A soil shall be sloped 3/4:1 or shored/shielded.

Type C soil may not be benched but must be sloped to bottom of the excavation if not shielded or shored. Written documentation for criteria used to determine the protective system selected shall be made available to E&CS upon request for review.

10. All shoring for excavations over 20 ft shall be designed by a registered professional engineer, and all shoring installed shall be approved and signed off by a P.E.

11. All spoils shall be placed a minimum of 2 ft from the edge of the excavation. Loose soil or rocks shall be removed from the sides of excavation walls.

12. Excavations 4 ft or greater in depth shall have a stairway, ladder, ramp, or other safe means of egress within 25 ft of any employee.

13. Excavations shall be inspected by the contractor's competent person when employee exposure can be reasonably anticipated:

    - Prior to the start of work and as needed throughout the shift.

    - After every rainstorm or other hazard-increasing occurrence, such as snowfall, and when freezing and/or thawing temperatures occur.

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

15. Personnel shall not work in excavations in which there is accumulated water or in excavations in which water is accumulating unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. The competent person shall monitor the operation if water is controlled or prevented from accumulating by the use of water-removal equipment.

16. Where an oxygen deficiency (less than 19.5 percent) or a hazardous atmosphere exists or could reasonably be expected to exist (such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby), the atmosphere in the excavation shall be tested before employees enter excavations greater than 4 ft in depth. This test will be performed by the contractor's qualified individual. Additional indications of the potential for a hazardous atmosphere include, but are not limited to gas lines, sewer lines, proximity to emissions sources for H_2S, SO_2, CO, and other gases that are heavier than air.

17. The contractor shall evaluate excavations for hazards in addition to cave-in potential. Electrical sources, energized (pressurized) pipes, underground tanks,

etc., may present a hazard to personnel who are required to enter the excavation.

18. The contractor's competent person responsible for the crew working in the excavation shall inspect the excavation throughout the work period and stop operations when unsafe conditions exist. The Trenching and Excavation Daily Checklist shall be used to document the daily inspections.

19. The number of workers in the excavation shall be limited to the number needed to perform the work.

20. Stability of adjacent structures shall be evaluated before starting an excavation and monitored daily thereafter.

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

22. No one will be allowed under loads handled by shovels, derricks, or hoists, or near vehicles being loaded by such equipment. Employees exposed to vehicular traffic operating in the area of excavations or trenches shall be provided with and instructed to wear warning vests or other personal protective equipment marked with or made of reflectorized or highly visible material.

4.2 Training

1. E&CS and each contractor who has personnel who work in or around an excavation shall be trained to recognize potential hazards associated with excavations such as cave-in potential, fall hazards, safe entry and exit, proximity to excavating equipment, air quality, back-filling and compacting activities, and protective systems.

2. Each individual assigned as an excavation-competent person shall have documented training or shall have documentation of experience and qualifications available to E&CS upon request.

4.3 Record Retention

Each trenching and excavation contractor shall maintain a copy of the Excavation and Trenching Permit and Trenching and Excavation Daily Checklist for the duration of the project and make the file available upon request to E&CS. Should an incident occur in an excavation or trench, a copy of the excavation permit and inspection form(s) shall be provided to the E&CS site manager.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A18

Tunneling, Caissons, and Cofferdams

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides minimum requirements for personnel building and working in tunnels, caissons, and cofferdams on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References/Additional Resources

- 29 CFR 1926:
  - Subpart E, section 103.
  - Subpart J, section 352.
  - Subpart D, section 55.
  - Subpart C, section 20.
  - Subpart K.
  - Subpart N.
  - Subpart S.
  - Subpart U.
- U.S. Mine Safety and Health Administration (MSHA).
- U.S. Bureau of Reclamation, Coast Safety Standards.
- U.S. Army Corp of Engineers, EM 385-1-1, Section 18.
- Specific state plans.

- SH-2A3, Illumination.
- SH-2A8, Fall Protection.
- SH-2A19, Blasting Operations.
- SH-2A21, Welding, Cutting, and Heating Operations.
- SH-3, Fire Protection and Prevention

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 General

The contractor(s) performing operations in tunnels, caissons, and/or cofferdams shall have a written procedure detailing the following requirements for tunnels, caissons, and cofferdams:

1. Safe means of access and egress to protect personnel in all work areas. The safe means of access and egress shall protect personnel from being struck by excavators, hauling machines, trains, and other mobile equipment. No personnel, other than equipment operators operating their equipment, shall be allowed in tunnels during mucking operations.

2. Check-in/checkout shall be established to ensure an accurate count of personnel in the event of an emergency.

3. Employees shall be trained in the following safety procedures:

- Air monitoring.
- Ventilation.
- Illumination.
- Hazard communication.
- Personnel hoisting.
- Communications.
- Flood control.
- Mechanical equipment.
- Personnel protective equipment (PPE).
- Explosives.
- Fire prevention.
- Emergency procedures.
- Fall protection.

4. Designated personnel shall inform oncoming shifts of any hazardous occurrences or conditions that have affected or might affect personnel safety.

5. The workforce from the surface shall maintain continuous and uninterrupted communications to all portions of the underground work.

6. If the shaft is used for access and egress, emergency hoisting capabilities shall be readily available.

7. Fall protection shall be maintained at all times around caisson openings and tunnel shafts in compliance with procedure SH-2A8, Fall Protection, and 29 CFR 1926, subpart M.

8. Self-rescuers (respirators) shall be immediately available to all personnel at workstations in underground areas where employees might be trapped by smoke or gas.

9. Rescue team(s) shall be established to fulfill the needs and requirements of the site/facility and regulatory requirements.

10. At least one designated person shall be on duty above ground whenever any personnel are working underground. The designated person shall be responsible for securing immediate aid and keep an accurate count of personnel underground in case of an emergency.

11. Each person underground shall have an acceptable cap lamp on for emergency use or an emergency lighting system that provides adequate illumination for escape.

12. Underground construction shall have a hazardous classification if geographical or geological location indicates 10 percent lower explosive limit (LEL) of flammable gases are likely to be encountered or actual monitoring indicates a gassy operations of 10 percent LEL for methane or other explosive gas.

13. The contractor shall perform air quality and monitoring check for LEL, O_2 deficiencies, and other potential contaminants. Provisions shall be made for fixed continuous air monitoring when high potential to generate or release hazardous contaminates exists. The continuous monitoring shall be in the immediate affected area or adjacent areas where the hazard has the potential to travel and accumulate. In addition to the continuous monitoring, hand-held monitoring shall be performed at least at the start of shift and midway through the shift in the affected areas.

14. Ventilation of fresh air shall be supplied to all underground work areas in sufficient quantities to prevent dangerous or harmful accumulations of dust, fumes, mist, vapors, and gases.

15. Illumination shall conform to procedure SH-2A3, Illumination, and table D-3 of 29 CFR 1926.56.

16. Provisions shall be implemented to divert surface water flow away from tunnels and caissons. Measures, such as pumps or other means, shall be used to prevent, control, and remove groundwater intrusion. Rescue plans need to contain effective methods of rapid evacuation in cases of sudden and significant groundwater intrusion.

17. Fire prevention and control measures shall conform to procedure SH-3, Fire Protection and Prevention, 29 CFR 926, subparts S, F, J, and K. When an operation is designated as potentially producing a hazardous atmosphere, the contractor shall implement a hot-work permit system.

18. Gasoline-powered engines shall be prohibited in underground operations.

19. Welding, cutting, and other hot work shall conform to procedure SH-2A21, Welding, Cutting, and Heating Operations, and 29 CFR 1926, subpart J and subpart S.

20. Ground support:

    a. Portal areas: Shoring, fencing, head walls, shotcreting, or other equivalent means shall protect portal areas.

    b. Subsidence areas: The contractor shall ensure ground stability in subsidence areas by shoring or erecting barricades in hazardous areas.

c. Underground areas shall be inspected by a competent person at least at the start of the shift and as often as needed thereafter for the following:

- Stability and condition of any installed supports.
- Ground conditions along haulageways and travelways to ensure safe passage of personnel and equipment.
- Rock bolts for proper torque.
- Support nets to ensure proper tension.

21. Blasting will conform to procedure SH-2A19, Blasting Operations, and 29 CFR 1926, subpart S and U.

22. Drilling rigs, associated drilling equipment, and jumbo decks shall be inspected prior to use each shift. All regulatory requirements and project requirements shall be adhered to for inspection, fall protection, etc.

23. Hauling equipment such as power mobile haulers, personnel transportation equipment, and material hauling shall be inspected each shift. Personnel shall only ride equipment that is equipped for personnel transportation.

24. Electric power lines shall be insulated and located away from water lines, telephone lines, airlines, or other conductive materials. Lighting circuits shall be located so that personnel or equipment movement shall not damage the circuits or disrupt service. All other requirements shall comply with 29 CFR 1926, subpart K.

25. Hoisting of personnel and material shall conform to 29 CFR 1926, subpart N and S.

4.1.2 Caissons

1. A shield shall be erected for the protection of the employees when all of the following conditions exist:
   - Compressed air is used during caisson work.
   - The working chamber is less than 11 ft in length.
   - Such caissons are at any time suspended or hung while work is in progress so that the bottom of the excavation is more than 9 ft below the deck of the working chamber.

2. Shafts shall be subjected to a hydrostatic or air-pressure test, at which pressure they shall be tight. The shaft shall be stamped on the outside shell about 12 in. from each flange to show the pressure to which they have been subjected.

3. All caissons having a diameter greater than 10 ft shall be provided with a man lock and shaft for the exclusive use of employees.

4.1.3 Cofferdams

1. Warning signals for evacuation of employees in case of emergency shall be developed and posted.

2. Cofferdam walkways, bridges, or ramps with at least two means of rapid exit shall be provided with guardrails.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A19

Blasting Operations

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure establishes requirements for the safe handling, transportation, and use of explosive material on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926.900, Subpart U.
- ANSI A10.7, Current.
- 27 CFR 555, Commerce in explosives.
- 49 CFR 171-179, 290-297.
- 29 CFR 1910.109, Explosives and blasting agents.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

The blasting operations contractor shall develop and submit a written site-specific program. The written procedure shall cover at a minimum the following:

- Training of employees in handling, transporting, loading, and detonating of explosives, and inspecting the blast area postdetonation.
- Ordering, receiving, and storage of explosives.
- Disposing of old or damaged explosives.
- Safety of all employees in the area of the blast and mucking operations.
- Heavy equipment safety.

4.1 Receipt and Inventory Records of Explosives

- The blasting contractor shall designate authorized individuals who are allowed to receive shipments of explosive materials.
- The E&CS site manager shall ensure that the blasting contractor contacts the proper authority and informs them that the site/facility is storing explosive devices onsite.
- The blasting contractor, in conjunction with approval from the E&CS site manager, shall have two separate designated storage areas, one for the explosive material and the other for blasting caps.
- The blasting contractor shall maintain a perpetual inventory of all receipts and issues. All explosives shall be accounted for at all times and any loss, theft, or unauthorized entry into storage shall be immediately reported to the E&CS site manager and the proper authorities.

4.2 Surface Transportation of Explosives

Transportation of all explosive material shall be in compliance with government regulations. The contractor shall provide a safe and reliable vehicle for onsite transportation of explosive materials. Appropriate placards shall be affixed, and no person will be allowed to carry any spark-producing agents in or near the vehicle. The vehicle will be attended at all times when explosives are onboard.

4.3 Storage of Explosives and Blasting Agents

All explosive material shall be stored according to 27 CFR 555, Commerce in explosives, and ANSI Standard A10.7. A certified copy of the permit or license must be posted at each storage magazine. Magazines shall be safely isolated from other project activities and posted as NO SMOKING OR OPEN FLAME areas.

4.4 Use of Explosives and Blasting Agents

1. The handling of explosives and blasting agents shall be performed by a qualified blaster or by other employees under his or her direct supervision. The contractor and blaster shall be duly licensed by any required regulatory authorities.

2. All explosives, blasting agents, and blasting supplies shall be used in accordance with the manufacturer's recommendations.

3. Original containers or Class II magazines shall be used for taking detonators and other explosives from storage magazines to the blasting area.

4. When blasting is done in congested areas or in proximity to a structure, railway, or highway, or any other installation that may be damaged, the blaster shall take special precautions in the loading, delaying, initiation, and confinement of each blast with mats or other methods so as to control the throw of fragments, and thus prevent bodily injury or property damage. Above ground blasting shall be conducted during daylight hours only.

5. Persons authorized to prepare explosive charges or conduct blasting operations shall use every reasonable precaution, including but not limited to, visual and audible warning signals, flags, or barricades to insure the safety of the general public and site personnel.

6. Whenever blasting is being conducted in the vicinity of gas, electric, water, fire alarm, telephone, telegraph, and steam utilities, the blaster shall notify the appropriate representatives of such utilities **at least 24 hours in advance** of blasting, specifying the location and intended time of such blasting. Verbal notice **shall** be confirmed with written notice. In an emergency, the authority having jurisdiction may waive this time limit.

7. Where critical receptors, as in paragraph 6 above and additionally any existing operating plant facilities or adjacent structures such as homes could receive or claim damage, the blasting contractor shall make arrangements for seismographic blast monitoring. Copies of all seismographic test monitoring shall be provided to the E&CS site manager.

8. Precautions shall be taken to prevent accidental discharge of electric blasting caps from current induced by radar, radio transmitters, lightning, adjacent power lines, dust storms, or other sources of extraneous electricity. These precautions shall include ensuring that mobile radio transmitters which are less than 100 ft

away from electric blasting caps in other than original containers shall be deenergized and effectively locked. In addition where roads are within 1,000 ft of the blasting operations, signs with appropriate lettering reading BLASTING AREA - RADIO TRANSMITTING PROHIBITED shall be posted.

4.5 Blaster Qualifications

1. Shall be in adequate physical condition to perform the work required.
2. Shall be able to understand and give written and verbal orders.
3. Shall be qualified by reason of training, knowledge, and experience in the field of transporting, storing, handling, and use of explosives, and have a working knowledge of state and local laws and regulations, which pertain to explosives.
4. Shall be duly licensed as required by regulatory authorities.
5. Shall be required to furnish satisfactory evidence of competency in handling explosives and performing in a safe manner the type of blasting that will be required.

4.6 Loading of Explosives or Blasting Agents

1. All drill holes shall be checked for water or other hazardous conditions before loading and be sufficiently large enough to admit freely the insertion of the cartridges of explosives.
2. Tamping shall be done only with wood rods without exposed metal parts. Violent tamping shall be avoided. The primer shall never be tamped.
3. No holes shall be loaded except those to be fired in the next round of blasting.
4. Drilling shall not be started until all remaining butts of old holes are examined for unexploded charges.
5. No explosives or blasting agents shall be left unattended at the blast site.
6. Machines and all tools not used for loading explosives into boreholes shall be removed from the immediate location of holes before explosives are delivered.
7. No activity of any nature other than that which is required for loading holes with explosives shall be permitted in a blast area.
8. Power lines and portable electric cables for equipment being used shall be kept a safe distance from explosives or blasting agents being loaded into drill holes.

Cables in the proximity of the blast area shall be deenergized and locked out by the blaster.

9. Holes shall be checked prior to loading to determine depth and conditions.

10. Standard-type warning signs indicating a blast area shall be maintained at all approaches to the blast area.

11. No loaded holes shall be left unattended or unprotected.

12. The blaster shall keep an accurate, up-to-date record of explosives, blasting agents, and blasting supplies used in a blast and shall keep an accurate running inventory of all explosives and blasting agents stored on the operation.

4.7 Initiation of Explosive Charges

Only electric blasting caps, delay electric blasting caps, nonelectric delay blasting caps, or detonating cord shall be used for blasting operations in congested areas or adjacent to highways open to traffic. Electric blasting caps shall not be used where sources of extraneous electricity make the use of electric blasting caps dangerous. Electric blasting methods require the prior approval of the E&CS site manager.

4.8 Safety Fuse and Primer Blasting

1. Safety fuses shall only be used where sources of extraneous electricity make the use of electric blasting caps dangerous. The use of a fuse that has been hammered or damaged in any way shall be forbidden.

2. The average burning rate of the safety fuse being used shall be determined by test burns and posted on bulletin boards or other conspicuous places where all employees can see it.

3. Before capping a safety fuse, a short length shall be cut from the end of the supply reel so as to assure a fresh-cut end in each blasting cap.

4. Only a cap crimper of approved design shall be used for attaching blasting caps to a safety fuse.

5. No unused cap or short-capped fuse shall be placed in any hole to be blasted; such unused detonators shall be removed from the working place and destroyed.

6. No fuse shall be capped or primers made up in any magazine or near any possible source of ignition.

7. No one shall be permitted to carry detonators or primers of any kind on his person.

8. The minimum length of a safety fuse to be used in blasting shall be that which is required by state law or as established by the authority having jurisdiction, but in no instance shall it be less than 30 in.

9. At least two workers shall be present when multiple cap and fuse blasting is done by hand-lighting methods.

10. When blasting with safety fuses, consideration shall be given to the length and burning rate of the fuse. Sufficient time, with a margin of safety, should always be provided for the blaster to reach a place of safety.

4.9 Nonelectric Blasting

1. Care shall be taken to select a detonating cord consistent with the type and physical condition of the borehole and stemming and the type of explosives used.

2. Detonating cord shall be handled and used with the same respect and care given to other explosives.

3. Detonating cord shall be handled and used with care to avoid damaging or severing the cord during and after loading and hooking-up.

4. All detonating cord connections shall be inspected before firing the blast.

5. Manufacturer's recommendations shall be followed when using detonating cords with millisecond-delay connectors or short-interval electric blasting caps.

6. Detonators for firing the trunkline shall not be brought to the loading area nor attached to the detonating cord until everything else is in readiness for the blast.

4.10 Firing the Blast

1. A code of blasting signals shall be posted at one or more conspicuous places at the work site. All employees shall be required to familiarize themselves with the code and conform to it. The blast signal code is as follows:

   a. Warning signal - a 1-minute series of long blasts, 5 minutes prior to blast signal.

   b. Blast signal - a series of short blasts 1 minute prior to the shot.

   c. All-clear signal - a prolonged blast following the inspection of the blast area.

2. Before a blast is fired, a loud warning signal shall be given by the blaster in charge who has made certain that all surplus explosives are in a safe place and

all persons, vehicles, and equipment are at a safe distance or under sufficient cover.

3. The blast contractor shall provide adequate numbers of trained personnel to clear the blast area and prevent pedestrian or vehicular traffic from entry during blasting operations.

4. Before firing an underground blast, warning shall be given and all possible entries into the blasting area and any entrances to any working place where a drift raise or other opening is about to hole through shall be carefully guarded. The blaster shall make sure that all persons are out of the blast area before firing a blast.

5. The blaster shall give three verbal shouts: “Fire in the hole.”

6. When electric blasting operations are conducted, appropriate precautions shall be taken to prevent accidental discharge of electric blasting caps.

4.11 Procedures After Blasting

1. No person shall return to the blast area until permitted to do so by the blaster.

2. During postblast clean up, only the operator and blaster are allowed in the area.

3. Sufficient time should be allowed for the smoke and fumes to leave the blasted area before returning to the blast area.

4. An inspection of the area shall be made by the blaster to determine if all charges have been exploded before employees are allowed to return to the operation.

5. If a misfire is found, the blaster shall provide proper safeguards for excluding all personnel from the danger zone. No misfired loads will be extracted. No other work will begin until the misfire is reprimed and reblasted if safe, otherwise it will be washed out with water.

6. After the postblast inspection is complete and all is determined safe, the blaster will sound the "all clear."

4.12 Underwater Blasting

1. Loading tubes and casings of dissimilar metals shall not be used because of possible electric transient currents from galvanic action of the metals and water.

2. Only water-resistant blasting caps and detonating cords shall be used for all marine blasting. Loading shall be done through a nonsparking metal loading tube when a tube in necessary.

3. No blast shall be fired while any vessel under way is closer than 1,500 ft to the blasting area.

4. Blasting flags shall be displayed.

5. The storage and handling of explosives aboard vessels used in underwater blasting operations shall be in accordance with the provisions outlined under handling and storing explosives as prescribed in ANSI A10.7 - current.

4.13 Blasting in Excavation Work Under Compressed Air

1. Detonators and explosives shall not be stored or kept in tunnels, shafts, or caissons.

2. When detonators or explosives are brought into an air lock, no employees except the powderman, blaster, lock tender, and the employees necessary for carrying, shall be permitted to enter the air lock. No other material, supplies, or equipment shall be locked through with the explosives.

3. All metal pipes, rails, air locks, and steel tunnel lining shall be electrically bonded together and grounded at or near the portal or shaft, and such pipes and rails shall be cross-bonded together at **not less than 1,000-ft intervals** throughout the length of the tunnel. In addition, each low air supply pipe shall be grounded at its delivery end.

4.14 Underground Blasting

1. Holes shall be electrically fired to give all personnel a chance to get out of the shaft or tunnel.

2. In shaft blasting where there is danger of damaging property or injuring personnel by flying rocks and debris, blasting mats shall be used. When mats are metal, care shall be taken to keep them from grounding out the blasting circuit and possibly causing a misfire.

3. In underground operations, blasting machines should be used. However, when firing from a power circuit, a safety switch shall be placed in the permanent firing line at intervals. This switch shall be made so it can be locked only in the OFF position and shall be provided with a short-circuiting arrangement of the firing lines to the cap circuit.

4.15 Poisonous Gas Hazards

1. Confine the charge with incombustible stemming.

2. Provide adequate ventilation and make frequent tests for carbon monoxide and gases.

3. Spray muck pile with water.

4. Allow the maximum practical time for debris, smoke, and fumes to clear from air after blasting before returning to the blast area.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A21

Welding, Cutting, and Heating Operations

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for safe welding, cutting, and heating on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926.350, Gas welding and cutting.
- 29 CFR 1926.351, Arc welding and cutting.
- 29 CFR 1926.352, Fire prevention.
- 29 CFR 1926.353, Ventilation and protection in cutting, welding, and heating.
- 29 CFR 1926.354, Welding, cutting, and heating in way of preservative coatings.
- Open Flame/Hot Work Permit.
- SH-2D4, Lead.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 General Requirements

1. Workers shall follow the applicable facility's procedures when engaged in welding, cutting, or heating operations.

2. Depending on potential hazards and the scope of the project, the E&CS site manager may determine the need to implement a welding, cutting, and heating permit system.

3. All welding, cutting, or heating operations on surfaces that have the potential to be coated with a lead-based paint or primer shall comply with procedure SH-2D4, Lead. Other potentially hazardous substances contained in coatings such as zinc, cadmium, hexavalent chromium, and asbestos also require additional safeguards to be implemented.

4. A dry-chemical fire extinguisher shall be within the immediate vicinity (25 ft) of all welding and burning activities.

5. All flammable and combustible materials potentially exposed to flame, sparks, or molten metal shall be removed or covered by fire-resistant material prior to welding or burning.

6. The need for firewatches during welding or cutting operations will be determined by project requirements.

7. Firewatch personnel shall have fire extinguishing equipment readily available and be trained in its use. They shall be familiar with facilities for sounding an alarm in the event of a fire. They shall watch for fires in all exposed areas and try to extinguish them only when obviously within the capacity of the equipment available, or sound the alarm. A fire watch shall be maintained for at least a half-hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires.

NOTE

Certain power generation facilities use Powder River Basin (PRB) coal as a fuel source and require a firewatch a full 8 hours after welding, burning, or grinding ceases in designated areas. Firewatch personnel may have to be on different levels

and possibly in other rooms, depending on the configuration of the building.

8. All users of oxyfuel burning and welding equipment shall be trained in safe-operating practices. Training shall be documented and available for review by E&CS.

9. The need for welding screens during welding or cutting operations will be determined by project requirements. Any welding operation adjacent to walkways, stairways, or other high traffic areas shall implement measures to protect passers-by from weld flash, splatter, and/or grinding debris.

4.2 Arc Welding and Cutting

1. Welders shall wear the head and eye protection required in their work area. They shall wear appropriate welding helmets, long-sleeved shirts, leathers, and welder's gloves. Soft-hat welding is not allowed without a formal exemption. If grinding or chipping is done, a face shield shall be worn. If respirators are required, these also shall be used.

2. At a minimum, employees who are working with welders shall wear clothing made of 100-percent natural fibers or fire-retardant material, long-sleeved shirts, and appropriately tinted glasses with side shields or welding eye goggles.

4.2.1 Equipment and Inspection

1. Arc-welding and cutting equipment shall be industrial rated, in good condition, and meet local governing authority requirements regarding application, installation, and operation. Trained and qualified people shall make a complete, preventive maintenance inspection at least annually. The last inspection date shall be marked on the equipment.

2. All oxyfuel burning and welding units shall be equipped with flashback arrestors installed between the regulator and the hose and between the hose and the torch. Arrestors shall be inspected and maintained in accordance with the manufacturer's recommendations.

3. Before each use, the following items shall be inspected:
   - All leads for broken or cut insulation.
   - Electrode holders for broken insulators or worn holders.
   - Oil and fuels on gas- or diesel-powered units.
   - Covers are in place where leads attach to welding machines.
   - All connections have no exposed current-carrying parts.

4.3 Electric Shock Hazard

1. Almost all electric currents present some degree of potential shock hazard. Under optimum conditions, even welding voltages as low as 30 V can be hazardous. Operating voltages listed on nameplates are usually much lower than open-circuit voltages, which should not exceed 100 V dc or 80 V ac.

2. Either ac or dc current can be used for welding, and although both present serious shock hazard, ac is potentially more hazardous. Do not use any equipment that is either wet or that has been recently drenched. Welding units that are powered by ac shall be adequately grounded. To change polarity, the unit shall be shut down.

3. Electrodes shall never be changed with bare hands or wet gloves or when standing on a wet floor or grounded surface. Cables that become worn enough to present a hazard shall be replaced immediately. Keep welding cables away from power supply cables and high-voltage wires. Do not dip hot electrode holders in water to quickly cool them.

4. Ground-fault circuit interrupters (GFCIs) shall not be used on welding machines with dc current outlets for cord plugs. They do not function properly in this application.

4.4 Inert and Toxic Gas Exposure

Many welding procedures require an inert gas, such as argon and/or helium, both of which present an asphyxiation hazard. Welders and fitters need to keep the following points in mind:

- Inert gases are odorless and colorless. They can only be detected by monitoring with the proper detection meters.

- Large-diameter pipes contain larger volumes of inert gas and greater potential for problems. Removing the gas containment quickly will release the gas into the immediate area.

4.5 Ventilation Requirements

4.5.1 Welding, Cutting, and Heating In Enclosed Spaces

General mechanical or local exhaust ventilation shall be provided whenever welding, cutting, or heating is performed in areas with inadequate ventilation and in enclosed spaces. The ventilation shall be of sufficient capacity and so arranged as to produce the number of air changes necessary to maintain welding fumes and smoke within safe limits. (Levels below OSHA permissible exposure limits (PELs) and/or threshold

limit values (TLVs) will be considered to be safe limits as described above. In some cases, OSHA action levels, excursion limits, and short-term exposure limits (STELs) may be substituted as safe limits.) The adequacy of the ventilation shall be determined by air monitoring.

a. When sufficient ventilation, as described above, cannot be obtained, the employees shall be protected by appropriate respiratory protection.

b. Oxygen shall never be used to ventilate an area.

c. Employees performing welding and/or cutting operations on the materials listed below in enclosed spaces shall use local exhaust ventilation, or the employees shall be protected with airline respirators. Airline respirators shall also protect other employees working in the immediate area.

- Lead-base metals or materials coated with lead-bearing materials (see procedure 2.D.4).
- Cadmium-bearing or cadmium-coated materials.
- Metals coated with mercury-bearing materials.
- Beryllium-containing base or filler metals (because of its high toxicity, work involving beryllium shall be done with both local exhaust ventilation and air-supplied respirators).

d. Upon completion of the work, the atmosphere in the confined space shall be monitored. If a toxic atmosphere is present, the confined space shall be purged and/or vented to return the space to a nontoxic status.

4.5.2 Welding, Cutting, and Heating in Open Air (areas with adequate ventilation)

Employees performing welding and/or cutting operations on the materials listed below in the open air shall be protected by air-purifying respirators (filter type). Air-purifying respirators shall also protect other employees working in the immediate area.

- Lead-based metals or materials coated with lead-bearing materials (see procedure 2.D.4).
- Cadmium-bearing filler materials.
- Chromium-bearing metals or metals coated with chromium-bearing materials.
- Metals coated with mercury-bearing materials.
- Beryllium-containing base or filler metals. Because of its high toxicity, work involving beryllium shall be done with both local exhaust ventilation and air-supplied respirators.

4.5.3 Inert-Gas Metal Arc Welding

a. The use of chlorinated solvents (example: tap-free) shall be kept at least 200 ft away from any inert-gas metal arc welding unless shielded from the exposed arc.

b. Surfaces prepared with chlorinated solvents shall be thoroughly dry before welding is permitted on such surfaces.

c. Welders and other employees who are exposed to welding flash shall be protected so that skin is covered completely to prevent burns and other exposure to ultraviolet radiation.

d. When inert-gas metal arc welding is performed on stainless steel, either local ventilation or air-supplied respirators shall be used. The local ventilation shall be of sufficient capacity and so arranged as to maintain nitrogen dioxide levels at or below the current TLV for nitrogen dioxide (3 ppm).

4.5.4 Welding, Cutting, and Heating Paints and Coatings

a. Before welding, cutting, or heating any surface covered by a coating whose flammability is not known, a test shall be made by a competent person to determine its flammability. Coatings shall be considered to be highly flammable when scrapings burn rapidly.

b. When coatings are determined to be flammable, they shall be stripped from the area to be heated/burned/welded to prevent ignition (a minimum of 4 in. to each side of the location heated).

c. When coatings are determined to be toxic, the coating shall be stripped at least 4 in. from the area of heat application, or the employees shall be protected with appropriate respiratory protection. Half-mask cartridge respirators equipped with HEPA filters are the minimum acceptable respiratory protection that can be used when welding on surfaces with toxic coatings.

d. When working in enclosed spaces on surfaces covered with toxic preservatives (for example, lead, cadmium, or zinc chromate paints), the coating shall be stripped at least 4 in. from the area of heat application. If stripping the area is not possible, the employees in the enclosed space shall be protected by air-supplied respirators.

e. When working in enclosed spaces on surfaces covered with coatings that have been determined to be other than toxic, the coatings shall be removed a sufficient distance from the area that is to be heated to ensure that the temperature of the unstripped metal will not be appreciably raised. Artificial cooling of the metal surrounding the heated area may be used to limit the size of the area required to be stripped.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A22

Pressure Vessel, Tank, and Piping System Testing

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure establishes requirements to ensure personnel safety while performing pressure vessel, tank, and piping system testing on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- ANSI/ASME B31.1, Power Piping.
- ANSI/ASME Boiler & Pressure Vessel (B&PV) Code, Section I, Power Boilers.
- ANSI/ASME Boiler & Pressure Vessel (B&PV) Code, Section VIII, Pressure Vessels.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

- For the purpose of this procedure, pressure vessels include both temporary construction and permanent equipment installations.
- Testing should be hydrostatic or pneumatic. Tests shall be performed only to prove the integrity of a pipe system, pressure vessel, or tank.

4.2 Maximum Test Pressure

Maximum test pressure, as allowed by specifications, shall not be exceeded without E&CS approval.

4.3 Relief Valves

Relief valves shall be installed for all tests. The relief valve setting shall not be set more than 110 percent or 10 psi above the test pressure, whichever is lower.

4.4 Test Gauges

Test gauges shall have a sufficient range, allowing the upper limits of the test pressure to be 33 to 66 percent of the gauge range. Use pressure snubbers on gauges used in hydrostatic tests to protect the gauges from shock damage from the test pumps. Test gauges shall be calibrated at least every 6 months, with calibration current prior to use on any test.

4.5 Temporary Test Blanks

Temporary test blanks shall be fabricated in accordance with applicable engineering specifications.

4.6 Test Limitations

1. Blinding or bypassing is required for the isolation of:

   a. Equipment and equipment seals, for example, pumps, turbines, compressors, and package units, that have been previously tested by the manufacturer.

   b. Exchangers and/or vessels that are not to be subjected to pressure testing.

   c. Vessel components that would be contaminated or damaged by the testing media.

   d. Equipment that cannot be drained or pneumatically tested, or when the manufacturer specifically recommended that tests should not be made.

2. Filter elements that may have been installed shall be removed from the system prior to pressure testing.

3. All instruments shall be protected from damage when hydrotesting piping systems.

4. All instrument air signal tubing shall be excluded from testing.

5. Process lead lines for instruments that are to be excluded from pressure testing shall be tested to the first block valve.

4.7 Hydrostatic Testing

1. Vents or drains shall be installed at the high or low points of all lines to be hydrostatically tested. The vents or other connections shall be opened to eliminate air from lines that are to be hydrostatically tested. Lines shall be thoroughly purged of air before hydrostatic test pressure is applied. If required, additional vents or drains shall be installed upon engineering approval.

2. Adequate vents and drains shall be installed in the system for filling and draining. Each system shall be analyzed to locate vents for removal of all air.

   CAUTION

   Vents shall be fully opened while filling and draining the system to purge all air and to prevent a possible collapse of the system.

3. The preferred location for the test pressure gauge is the lowest elevation of the system and as near the test pump as practical. Test pressures shall be increased to compensate for any static head above the gauge connection. For water, use 0.433 psig for each foot of head.

4. Lines which are variable spring, constant support, or counterweight supported shall be temporarily blocked up during testing, unless specifically directed otherwise by E&CS.

5. Large ducts for air or steam/vapor service shall be checked for temporary supporting requirements, which may be necessitated by the weight of the test media. Foundations and supports for all vessel, tank, and piping systems to be hydrostatically tested shall be verified adequate to support the weight of the liquid medium used for testing.

6. Care shall be taken to avoid overloading any parts of supporting structures, which may not be able to support the test fluid weight. An example is equipment that is to be hydrotested and is supported by another piece of equipment.

7. Test pressure shall not be applied until the piping, equipment, or vessel and the pressurizing fluid are at approximately the same temperature and meet requirements of ANSI/ASME B&PV Code Section 1, PG-99 for Boiler External Piping (BEP) and ANSI/ASME B31.1 paragraph 137.4 for nonboiler external piping (NBEP).

8. The system under test shall be held at full test pressure until all welds and joints are examined for leaks. In no case shall the duration of the pressure test be less than 10 minutes as shown in ANSI/ASME B31.1, paragraph 137.4 for NBEP or ASME B&PV Code Section 1, PG-99 (BEP), or a period of time specified by engineering.

9. Employees shall wear a face shield when making a close inspection for leaks.

10. The maximum test pressure shall be in accordance with ANSI/ASME B31.1, paragraph 137.4 or B&PV Code Section 1, PG-99.

11. Employees shall relieve pressure before making any repairs to the system being tested.

12. Hydrostatic test above 600 psi should be considered high pressure. The area where such a test is performed shall be evaluated for access and egress and limited by barricades and/or signs.

4.8 Pneumatic Testing

1. Pneumatic testing shall not be done without engineering approval and consultation with E&CS Safety and Health - Construction.

2. Pneumatic testing method requires careful supervision and shall be performed as follows:

    a. When the test pressure is 25 psig or less, the initial pressure level can be taken directly to the test pressure.

b. When the test pressure is greater than 25 psig, the system shall be initially pressured to 25 psig.

c. All welds and connections shall be inspected for leaks by applying a soap-type solution to the joints and checking for bubbles.

d. The pressure shall then be increased gradually to 50 percent of the test pressure. This pressure shall be maintained at least 10 minutes. The pressure shall be further increased in steps of approximately 10 percent of the test pressure until the required test pressure has been reached.

e. After holding the test pressure for a minimum of 10 minutes, personnel shall inspect for leaks of all piping welds and connections. The system shall not be depressurized during this procedure unless it leaks to the extent that the required test pressure cannot be obtained.

f. In that event, the system shall be depressurized, and the necessary repairs shall be made. The system shall then be repressurized in accordance with the procedure originally outlined.

3. Maximum test pressure shall be in accordance with ANSI/ASME B31.1, paragraph 137.5.

4. Any pressure vessel included in any system to be pneumatically tested or pressured during normal working hours shall have had a previous code hydrotest, and shall not be pressured to more than 110 percent of allowable working pressure.

5. No adjustments or repairs requiring mechanical force or heat are to be made on any part of the test system while it is pressurized above 25 psig. Such adjustments or repairs shall not be made without consultation with E&CS Safety and Health - Construction if the system has a stored energy level of 50,000 (PV, or pressure times volume in cubic ft) or more.

6. The area of pneumatic testing shall be evaluated for access and egress and limited by barricades and/or signs.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A23

Compressed Gas Cylinders

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides established safe practices for identifying, handling, and storing compressed gas cylinders on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None

2.2 References

None.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 General

1. All personnel whose duties involve the use, handling, and storage of compressed gas cylinders shall be properly trained.

2. Compressed gas cylinders shall not be accepted from the distributor or supplier unless the cylinder is clearly identified with a visible and proper manufacturer's label.

3. A material safety data sheet shall be supplied with and kept in the site files for each type of product contained in compressed gas cylinders.

4. E&CS site managers shall ensure that periodic inspections are performed on both vendor-supplied and site-owned cylinders. The condition of the cylinders and U.S. Department of Transportation (or other regulating authority) required testing shall be verified.

5. Defective cylinders shall be tagged and identified as defective and shall be segregated from other cylinders. Management shall establish a policy for exchanging or disposing of defective cylinders.

6. Cylinders shall be moved or stored in the upright position. Racks or cradles shall be used to prevent them from tipping, falling, or dropping. Approved lifting racks shall be used to lift cylinders from one level to another. Rope or chain slings shall not be used. When transporting cylinders on trucks or trailers, cylinders shall be stored and secured upright in a cage or cradle. Individual bottle carts containing oxy/fuel cylinders shall not be stored together.

7. The valves on compressed gas cylinders shall always remain closed unless the cylinder is in use.

8. If the cylinder is designed to accept a cap, valve protection caps shall always be in place and hand tight, except when cylinders are in use or connected for use.

4.1.2 Storage and Use

1. Compressed gas cylinders shall be stored and used in the upright position. Cylinders shall be secured with a noncombustible material to provide maximum stability and prevent them from falling. Cylinders shall not be secured by their valves or collars. Cylinders shall be placed in carts or storage racks only.

2. Segregate cylinders by the type and amount of their contents. Full and empty cylinders shall be stored separately. Cylinders of oxygen or other oxidizing gases

shall be stored separate from fuel-gas cylinders and other flammable materials by a minimum of 20 ft (6 m), unless a suitable, 1/2-hour rated, flame-resistant partition is provided.

3. Cylinders shall be kept 25 ft away from all sources of heat including boilers in operation.

4. Smoking, spark-producing work, and open flame are not permitted within 20 ft (6 m) of any cylinder storage area containing cylinders of flammable gas. Signs shall be posted prohibiting these activities in cylinder storage areas.

5. Cylinders shall not be placed where they can become part of an electrical circuit.

6. Cylinders should be stored so they can be used in the order they were received.

7. All existing facility policies shall be adhered to before cylinders are stored inside buildings. Cylinders stored inside buildings shall be stored in a well-ventilated and protected location. Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards.

8. The bulk storage facility shall be a minimum of 50 ft (15 m) from adjacent buildings and easily accessible for pickup and delivery of cylinders. The storage rack or site/facility should have a ramp with a 1:12 maximum pitch so that cylinders can be lifted or rolled off forklifts without dropping or chipping them. Consider installing ramps on bottle racks to eliminate the need to manually lift cylinders in or out of the racks.

9. While in use, cylinders shall be placed or shielded to prevent contact with hot sparks or slag.

10. Compressed gas cylinders that are used daily, such as skid-mounted racks and bottle carts, may be stored closer than 50 ft (15 m) to adjacent buildings as determined by site/facility management.

11. Compressed gas cylinders shall not be taken into confined or enclosed spaces.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A24

Transporting Personnel

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
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Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides minimum requirements for the safe transport of personnel in vehicles or transporters on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- Vehicle Inspection Form.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Equipment Inspection

Vehicles that transport personnel shall be inspected as follows:

1. A new vehicle shall receive an initial inspection prior to being placed in service.
2. The vehicle operator shall conduct a daily preuse inspection.
3. State safety inspections shall be conducted per any applicable state requirements.

4.2 Operator Qualifications

Vehicles used to transport personnel shall be operated only by a qualified operator. The operator of a vehicle used to transport personnel must be familiar with the contents of this procedure, possess the appropriate class vehicle operator's license valid for use on public roadways, and meet any additional site or governmental requirements.

4.3 Equipment Requirements

Equipment used to transport personnel must have the following safety features as a minimum:

1. All appropriate safety features shall be operational including, but not limited to brakes, horns, headlights, tail lights, brake lights, turn signal lights, and windshield wipers. In addition, the vehicle shall have an undamaged windshield.
2. Vehicles that have an obstructed view to the rear shall have an adequate audible warning device when backing.
3. The vehicle must have a safe means of access and egress. Methods include, but are not limited to, steps and ladders.

4.4 Operating Requirements

1. When operating vehicles onsite or on public roadways, the vehicle operator shall obey all site rules and all applicable laws.
2. Before operating any equipment on public roadways, the vehicle operator shall make sure it meets the requirements of local governing body.

3. The vehicle operator shall always observe posted speed limits.

4. When seatbelts or shoulder harnesses are provided, the vehicle operator shall limit the number of occupants (operator plus passengers) to the number of seatbelts or shoulder harnesses available in the vehicle. The operator shall ensure that all vehicle occupants use the seatbelts or shoulder harnesses.

4.5 Passenger Requirements

When riding in vehicles, passengers and drivers must observe the following safety precautions:

1. Vehicles shall not be loaded in excess of capacity as designed by the manufacturer.

2. Use the proper method of access and egress.

3. Always keep torsos and extremities within the confines of vehicles or transporters.

4.6 Transporting Personnel with Materials or Equipment

1. When purchasing, designing, and using vehicles, ensure personnel are not transported in the same compartment with materials or equipment whenever possible.

2. When it is necessary to transport personnel and materials or equipment in the same compartment, the E&CS site manager or designee must develop a written procedure that details the rules for preventing injury to personnel.

4.7 Transporting Personnel in Pickup Truck Beds

1. Transporting personnel in truck beds offsite is strictly prohibited.

2. Personnel being transported to or from locations within the confines of projects may be permitted to ride in the bed of pickup trucks, provided that the following conditions are met:

   a. Trucks shall be equipped with benches and properly constructed side guardrails.

   b. Personnel shall remain seated with all body parts inside the bed at all times.

   c. The tailgate of the vehicle shall be closed.

d. Transport speed shall not exceed 15 mi/h.

e. The vehicles shall be completely stopped while loading and unloading.

f. Personnel and material shall not be transported together.

g. No more than 8 persons shall be transported in the bed of a long (8 ft) bed pickup; n o more than 6 in the bed of a short (6 ft) bed pickup.

h. The operator shall ensure the truck is not overloaded.

3. The preferred method of transporting personnel to and from locations on projects shall require that employees be seated inside a vehicle that has been designed to carry passengers (such as a school bus).

4.8 Alternate Means of Transportation

Other special forms of transporting personnel (for example, bicycles, golf carts, gators, mules, and four-wheelers) require site/facility procedures that address safe operation, inspection, and maintenance.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A25

Working Over or Near Water

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the requirements to protect personnel on Engineering and Construction Services (E&CS) projects from hazards associated with working over or near water.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- Procedure SH-2A8, Fall Protection.
- Procedure SH-2B7, Personal Flotation Devices.
- Section SH-2E, Electrical Safety.
- 29 CFR 1926.502, Fall protection systems criteria and practices.
- 29 CFR 1926.106, Working over or near water.
- 29 CFR 1926, Subpart K, Electrical.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

Each contractor shall conduct a hazard assessment and develop a site/facility-specific plan that details how the contractor's employees will be protected from recognized or foreseeable hazards while engaged in activities that require them to work over or near water. The site/facility-specific plan shall address the following elements:

1. Employees working over or near water, where the danger of drowning exists, shall be provided with U. S. Coast Guard-approved life jackets or buoyant work vests.

2. Fall protection including:
   - Fall-arresting devices.
   - Fall-restraint devices.
   - Safety nets.
   - Lifelines.

3. Working in an isolated setting - Work shall be monitored so at least one person is capable of initiating the rescue plan. Methods shall be established to allow prompt notification of rescue services in the event of an emergency.

4. Electrical safety - Refer to section SH-2E, Electrical Safety.

5. Rescue plan - Shall indicate equipment, methods, and persons involved in rescue operations.

6. Water rescue equipment such as:

   - Ring buoys with at least 90 ft of rope shall be readily available. The distance between ring buoys shall not exceed 200 ft.

   - Rescue boat or lifesaving skiff immediately available when working over or adjacent to water.

- Self-rescue or egress from the water to dock, barge, or boat shall be provided.

7. Transportation of an injured or drowning victim to a treatment facility.

8. Training requirements:

   - Training shall cover the elements of the site-specific plan. Employees shall be trained prior to being assigned activities that require them to work over or near water.

   - Retraining shall be conducted annually, when work conditions or procedures change, or when the employees' performance indicates the need for retraining.

NOTE

It is recommended that only personnel who know how to swim be assigned to tasks involving work on or near water. Work near open tanks, vessels, sluiceways, holding ponds, and other areas where personnel can fall into and have the potential to drown shall be considered in the site plan.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A26

Commercial Diving Operations

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for safe commercial diving operations on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926, Subpart Y.
- 20 CFR 1910, Subpart T.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

1. E&CS shall hire approved contractors to perform any required commercial diving operations. Each contractor performing underwater diving operations shall develop, maintain, and provide the E&CS site manager with a copy of the contractor's site-specific safe practices manual, and shall ensure that a copy of this manual is made available at the dive location to each dive-team member. The safe practices manual shall contain:
   - A copy of OSHA Standard 29 CFR 1926, Subpart Y or 29 CFR 1910, Subpart T.
   - The contractor's policies for implementing the requirements of 29 CFR 1926, Subpart Y or 29 CFR 1910, Subpart T.
   - Safety procedures and checklists for diving operations.
   - Assignments and responsibilities of the dive-team members.
   - Equipment procedures and checklists.
   - Emergency procedures for fire, equipment failure, adverse environmental conditions, and medical illness and injury.
2. Each contractor performing underwater diving operations shall provide the E&CS site manager with the name of the contractor's designated person-in-charge who will be at the dive location in charge of all aspects of the diving operation affecting the safety and health of dive-team members.
3. The designated person-in-charge shall have experience and training in the conduct of the assigned diving operation and shall have the authority to ensure that all requirements outlined in the safe practices manual are adhered to.
4. Each dive-team member shall have the experience and training necessary to perform assigned tasks in a safe and healthful manner. This training shall include:
   - The use of tools, equipment, and systems.
   - Techniques of the assigned diving mode.
   - Diving operations and emergency procedures.
   - Cardiopulmonary resuscitation and first-aid.
   - Diving-related physics and physiology.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A27

Commercial Motor Vehicle Operations

	Rev. 0	**Rev. 1**
Date	03/04/2004	06/30/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for the operation, maintenance, and recordkeeping of commercial motor vehicles (CMV) used by Engineering and Construction Services (E&CS) personnel.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 49 CFR 390, Federal Motor Carrier Safety Regulations.
- Alabama Power Company Safety and Health “Commercial Drivers License and FMCS Regulations” Program Guide.
- Georgia Power Company Safety and Health Guides
- Gulf Power Company Transportation Safety Manual.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Commercial Motor Vehicle Description

"Commercial motor vehicle" (CMV) means any self-propelled or towed vehicle used on public highways to transport property or passengers when:

A. The vehicle has a gross vehicle weight rating (GVWR) or a combination GVWR that exceeds 10,000 pounds; or

B. The vehicle of any size is used to transport hazardous materials in a quantity that requires the vehicle to be placarded; or

C. The vehicle is designed to transport 16 or more passengers, including the driver.

4.2 Requirements

All company vehicles used by E&CS are owned or leased by the operating companies. E&CS employees shall abide by the guidelines for operating CMVs issued by the appropriate operating company where the specific E&CS operation is based.

NOTE

Alabama, Georgia, Florida, and Mississippi may have differing state requirements for the CMV operation.

When the need arises for E&CS to use a company-owned or -leased vehicle meeting the definition of CMV(see 4.1, Commercial Motor Vehicle Description), the E&CS manager responsible for the operation of the vehicle shall consult with the appropriate operating company fleet manager to determine appropriate contacts to make and steps to take to ensure all applicable federal, state, local, and operating company requirements are met. (See appendix A, Commercial Motor Vehicle Driver Qualifications, for a listing of items required for drivers of CMVs.)

All applicable requirements shall be met prior to allowing the operation of the CMV on a public roadway.

These requirements include, but may not be limited to:

A. Drivers licenses of the appropriate class and endorsements.

B. Training specific to the vehicle to be operated.

C. Physical qualifications of drivers.

D. Drug and alcohol testing of drivers.

E. Development and maintenance of driver qualification files.

F. Hours of service limitations for drivers.

G. Record of duty logs for drivers.

H. Vehicle pre-trip and post-trip inspections.

I. Vehicle maintenance records.

J. Vehicle markings.

K. Vehicle safety equipment.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

Attachment A, Commercial Motor Vehicle Driver Qualifications.

ATTACHMENT A – COMMERCIAL MOTOR VEHICLE DRIVER QUALIFICATIONS

In accordance with 49 CFR 391.51, Southern Company must maintain driver qualification files for each employee who drives a CMV weighing more than 10,000 lb. At a minimum, the following records must be contained in the employee's driver qualification file:

- Driver's completed application for employment.
- Copy of the response by each State agency concerning a driver's driving record.
- Certificate of driver's road test issued to the driver, or a copy of the license or certificate which the motor carrier accepted as equivalent to the driver's road test.
- Response of each State agency to the annual driver record inquiry.
- Note relating to the annual review of the driver's driving record.
- A list or certificate relating to violations of motor vehicle laws and ordinances.
- Medical examiner's certificate of driver's physical qualification to drive a CMV
- Letter from the Field Administrator, Division Administrator, or State Director granting a waiver of a physical disqualification, if a waiver was issued.
- Additional documentation as provided by the manager–E&CS Safety and Health – corporate.

In addition to maintaining the items identified above in an employee's driver qualification file, employees who drive CMVs exceeding 26,000 lb must meet the following requirements:

- Random drug test.
- Commercial Driver's License.

Resource: http://www.fmcsa.dot.gov/rules-regulations/administration/fmcsr/FmcsrGuideDetails.asp?menukey=391

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A28

Demolition Operations

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for safe demolition operations of existing facilities, buildings, or equipment at Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

2.2 References

- 29 CFR 1926, Subpart T.
- ANSI A10.6, Current, Safety Requirements for Demolition Operations.
- 40 CFR 61, Subpart M, National Emission Standards for Hazardous Air Pollutants.
- 29 CFR 1926.1101, Asbestos.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

The E&CS site manager is responsible for ensuring demolition operations are properly planned and controlled. As part of this responsibility, he or she shall coordinate demolition operations with operating company representatives, engineering personnel, and contractors. In addition, the E&CS site manager is responsible for ensuring that the requirements defined in this procedure are met.

4.1 Engineering Survey and Written Job Plan

Before permitting the start of any demolition operation, the E&CS site manager shall ensure that a competent person has conducted an engineering survey to determine the exact scope of work, any regulatory permit requirements, and the method for safely executing the demolition operation. The engineering survey shall be documented in writing. Depending upon the complexity of the work or the hazards involved, a written job plan may be necessary.

4.2 Structural

The engineering survey shall determine the condition of the framing, floors, and walls, and the possibility of unplanned collapse of any portion of the structure in the demolition area and any adjacent areas that could be affected by the demolition. Shoring or bracing requirements shall be identified and installed prior to allowing employees to work within the area.

4.3 Control of Hazardous Energy

The control of hazardous energy procedure is a prerequisite for the demolition of any electric, gas, water, steam, sewer, or other service, lines, pipes, tanks, vessels, etc. Before authorizing any equipment removal, the E&CS site manager shall ensure that all potentially hazardous energy sources planned for demolition have been physically identified and traced. A positive means of identification shall be used such as marking, tagging, maintaining visual and physical contact, or another approved method to verify that the correct equipment, cables, pipes, etc., are being dismantled or rearranged.

4.4 Control of Hazardous Materials

Any hazardous chemicals, PCBs, radiation, gases, explosives, flammable materials, asbestos, or similar dangerous substances used in any pipes, tanks, or other equipment shall be identified before any demolition work begins and methods shall be determined for decontaminating or containing them.

4.5 Rigging

Special consideration shall be given to rigging because of the potential deteriorated state of the facilities. Give special consideration to rigging and removing equipment and materials during demolition.

4.6 Burning, Cutting, or Welding

A hazard assessment shall be performed prior to any cutting, burning, or welding on any coated surface to determine if hazardous substances such as lead, cadmium, or zinc are present.

4.7 Special Precautions

1. Job briefings with all involved personnel shall be conducted and documented at the beginning of each shift and for each significant daily job change. At a minimum, the following aspects of the job shall be covered during job briefings:
   - The status of demolition operations.
   - Hazards associated with the job.
   - Work procedures involved.
   - Special precautions.
   - Hazardous energy controls.
   - Personal protective equipment requirements.
2. Existing floor and wall openings and those created during the work shall be guarded by standard handrail systems or appropriate hole covers. When this is not practical, personnel exposed to 6 ft or greater falls shall be protected with an approved fall-arrest system.
3. Where glass is present, appropriate precautions shall be taken to protect personnel from laceration hazards.

4. Appropriate drop zones and chute systems shall be designated and/or installed.

5. Hazardous areas shall be prominently identified with signs. Access to demolition areas shall be restricted to authorized personnel only.

6. Appropriate, well-illuminated access/egress stairways, passageways, and ladders shall be provided and maintained throughout the demolition work.

7. Debris shall be routinely removed and disposed of properly. Waste material and debris shall not be allowed to accumulate or be stored where it will exceed floor capacities.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A29

Concrete and Masonry Construction

	Rev. 1	**Rev. 2**
Date	3/11/2009	1/26/2011
Revised By	Bruce Walker	Bruce Walker
Reviewed By		
Design		Thomas Ricketts
Engineering Svcs		Tom Chandler, Grady Luster, Karen McDonald, Valerie Piazza
Environmental		Darcy Prince
Projects and Construction Svcs		
Gasification Tech		Jill Lollar
New Generation		W.Z. Looney
QA		Anne Lugar
Safety and Health	Construction Safety Leadership Team	Bob Fitzgerald, Construction Safety Leadership Team
SCM		Kristy Lilly
Technical Svcs		Tanisha Marshall
Approved By		
Safety and Health*	Will Taylor	Will Taylor

*Denotes procedure owner.

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for safe concrete and masonry construction on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926, Subpart Q.
- SH-2A8, Fall Protection.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

The E&CS site manager shall ensure that requirements of this procedure are adhered to during all concrete and masonry construction operations.

4.1.1 Concrete Construction

1. All vertically protruding reinforced steel onto which employees could fall shall be capped or otherwise protected to prevent the possibility of impaling personnel. Nonreinforced plastic caps are not approved protection for falls greater than 6 ft. Use covers of wood or other approved devices.

2. Reinforcing steel for walls, piers, columns, and similar vertical structures shall be adequately supported to prevent collapse and overturning.

3. Personnel shall be required to tie-off properly in accordance with procedure SH-2A8, Fall Protection, when placing or tying reinforcing steel 6 ft or more above adjacent surfaces.

4. All form work shall 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.

5. Shoring equipment shall be inspected prior to erection, immediately prior to concrete placement, during the placement, and immediately after the placement.

6. Concrete buckets shall be connected by shackles or approved safety hooks.

7. No personnel shall be allowed to ride concrete buckets.

8. No personnel shall be allowed to work under concrete buckets while they are being elevated or lowered into position.

9. To the extent practical, concrete buckets shall not be hoisted over employees.

10. Electric concrete vibrators shall be protected by ground-fault circuit interrupters (GFCI).

11. All powered concrete trowels shall be equipped with a dead-man switch or equivalent that will automatically shut off the power when the operator removes his or her hand from the equipment.

12. Employees shall wear appropriate head, eye, face, and skin protection (gloves and boots) while placing concrete or grout.

4.1.2 Masonry Wall Construction

1. Whenever a masonry wall is being constructed, a limited access zone shall be established on the side of the wall that will not be scaffolded. This zone shall meet all of the following characteristics:
   - Equal to the height of the wall plus 4 ft.
   - Run the entire length of the wall.
   - Remain in place until the wall is adequately supported to prevent collapse and overturning.
   - Restricted to entry by employees actively engaged in constructing the wall.
2. All masonry walls over 8 ft in height shall be adequately braced to prevent overturning and collapse unless the wall is supported so that it will not do so. This bracing shall remain in place until permanent supporting elements of the wall are in place.

4.1.3 Concrete Pump Truck Safety

1. When a concrete pump truck is to be used for concrete placement, the concrete placement subcontractor shall be responsible for the adherence to the following tasks:
   - Establish proper placement of concrete pump truck to include
     - Adequate ground support to support the pump truck and concrete truck.
     - Adequate accessibility by concrete trucks.
     - Adequate working distances from any obstructions, such as overhead obstructions or power lines.
     - Traffic/Equipment control needs (such as flaggers or spotters).
     - A “clean out” area.
     - Controlled access zones, as needed.
     - Minimum distance of 6 ft from excavation edge to nearest pump truck outrigger pad.
   - Inspection of pump truck including, but not limited to:
     - Hoses.
     - Hose connections.
     - Outriggers.
     - Outrigger pads.
     - Controls.
     - Emergency shut off.
     - Maintenance records.

- Other safety requirements and considerations:
  - Face shields for hose operator, vibrator operator(s), and pump truck hopper attendant.
  - Radios, hand signals and other communications.
  - Emergency contact numbers.
  - Evacuation routes.

2. Prior to concrete deliveries and starting any concrete placement, the concrete placement subcontractor shall complete a Concrete Pump Truck Safety Checklist and document a Job Safety Analysis (JSA), specifically informing the pump truck operator and all parties involved in the concrete pumping operation of the hazards involved.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

Attachment A – Historical Summary of Changes.

Attachment A – Historical Summary of Changes

Rev. 0
12/10/2002

Approved by Don Gaddy
Reviewed by Construction Safety Leadership Team
Revised by Bruce Walker

Remarks:
Issued

Rev. 1
3/11/2009

Approved by Will Taylor
Reviewed by Construction Safety Leadership Team
Revised by Bruce Walker

Remarks:
General revision.

Rev. 2
01/26/2011

Approved by Will Taylor
Reviewed by Construction Safety Leadership Team
Revised by Bruce Walker

Remarks:
Added Concrete Pump Truck Safety section.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A30

Fiberglass Reinforced Plastics Production

	Rev. 0	**Rev. 1**
Date	3/11/2009	
Revised By	Bruce Walker	
Reviewed By	Construction Safety Leadership Team	
Approved By	Will Taylor	

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for the fabrication and installation of fiberglass reinforced plastics (FRP) at Engineering and Construction (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926, subpart C, General Safety and Health Provisions.
- 29 CFR 1926, subpart F, Fire Protection.
- 29 CFR 1926, subpart I, Tools - Hand and Power.
- 29 CFR 1926, subpart H, Materials Handling, Storage, Use and Disposal.
- 29 CFR 1926, subpart D, Occupational Health and Environmental Controls.
- 29 CFR 1910.1200, Hazard Communication.
- 29 CFR 1926, subpart K, Electrical.
- 49 CFR Part 172, subpart H, Training.
- 40 CFR Chapter 1, subchapter I, Solid Wastes.
- Procedure SH-2A8, Fall Protection.
- Procedure SH-2A14, Power Tools.
- Procedure SH-2A15, Grinders – Pedestal, Bench, and Portable.
- Procedure SH-2B, Personal Protective Equipment.
- Procedure SH-2B9, Respiratory Protection.
- Procedure SH-2D2, Hazard Communication.
- Procedure SH-3, Fire Protection and Prevention.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 Site-Specific Safety and Health Plan

1. Each contractor shall submit a written site-specific safety and health plan to the E&CS project manager for review and acceptance. The plan shall provide specific procedures for the protection of personnel during FRP production activities. Elements of the site-specific plan shall include, but are not limited to, the following:

   - Methods for elimination or mitigation of hazards associated with FRP production.
   - An industrial hygiene plan that includes methods for exposure control along with methods and frequency of personal sampling activities for styrene, dusts, and other airborne contaminants. The industrial hygiene sampling plan must be approved in writing by a certified industrial hygienist (CIH).

     NOTE

     The use of colorimetric tubes for sampling is not considered to be an effective method to determine a time weighted average of employee dose. Personal sampling methods such as OSHA Method 09 must be used.

   - Methods for fire prevention and protection including types and placement of fire suppression equipment.
   - Methods for maintaining sanitary conditions.
   - The lockout/tagout program to be used for contractor-controlled machinery.

4.1.2 Hazardous Materials

1. All hazardous materials to be used onsite shall be approved by the E&CS EHS resource in accordance with procedure SH-2D2, Hazard Communication.
2. All personnel shall be trained on the hazards and use of the materials being used during FRP production. Training shall be documented.
3. Location and types of storage for hazardous materials shall be included in the contractor's site-specific safety and health plan submitted before beginning work. The contractor shall provide information to E&CS on the quantities of hazardous materials that will be used on the project. The contractor shall notify E&CS weekly on the amounts of hazardous materials received or shipped from the project and the amount of hazardous waste generated for disposal, unless facility-specific hazardous waste and materials management rules apply.
4. Containers such as buckets and drums shall be labeled in accordance with 29 CFR 1910.1200, Hazard Communication. The type of label to be used shall be included in the site-specific safety and health plan.
5. Contractor personnel who will handle or supervise hazardous materials for shipment shall be trained in accordance with applicable U.S. Department of Transportation regulations, 49 CFR Part 172, subpart H. The training shall be documented and available for review.
6. Catalysts, such as methyl ethyl ketone peroxide (MEKP), shall be stored in a cool, secure location away from promoters (such as cobalt) or promoted resins. Catalysts shall be stored in original containers away from direct sunlight, sparks, and sources of heat. Storage area temperature shall follow manufacturer's recommendations or be kept below 100 °F, whichever is lower. Temperatures above 100 °F may cause product degradation, gassing, and container rupture resulting in a fire.
7. The original catalyst containers shall not be reused, and steps shall be taken to ensure contaminants such as promoted resin are not allowed to be rinsed or washed into an open catalyst container. This action could result in an uncontrolled reaction.
8. Flammable resins and solvents shall be stored in areas away from direct sunlight and where temperatures are controlled to less than 120 °F.
9. The contractor shall submit a site-specific safety plan to E&CS for the use of acetone/solvent distillation units or similar methods of acetone/solvent recovery prior to being used on the project. Acetone shall be stored in approved fire-rated/fire-proof containers, and appropriate fire protection equipment shall be readily available for use. Acetone shall not be used in confined spaces where there is limited access.
10. The use of flammable and combustible liquids shall conform to requirements contained in E&CS Safety and Health Manual, SH-3, Fire Protection and Prevention.

11. Resin storage tanks and associated piping shall be designed for the storage of flammable liquids in accordance with applicable codes. The contractor shall submit documentation of engineering and construction.
12. Spill containment shall be provided in accordance with the established facility SPCC plan.
13. Management of hazardous wastes shall be in accordance with facility-specific plans and/or EPA RCRA regulations.
14. An emergency safety shower and eyewash that can deliver tepid water for at least 15 minutes shall be available in all areas where hazardous materials are handled and used. Areas shall also be available for washing of the hands and body with appropriate cleaning soaps when the skin is exposed to hazardous materials.
15. All materials shall be used and handled in accordance with the Material Safety Data Sheet.
16. The contractor shall inspect all hazardous material's storage areas on a daily basis. Any spills or leaks will be properly cleaned and disposed of. The daily inspection shall be documented. Inspection requirements will be included in the facility SPCC plan.

4.1.3 Personal Protective Equipment

1. The types of personal protective equipment (PPE) needed to complete specific tasks shall be included in the site-specific safety plan including, but not limited to, the following:
   - Hand lay-up.
   - Spraying (single or multisprayer tasks).
   - Winding.
   - Resin mixing or promoting.
   - Handling of catalysts.
   - Sanding.
   - Cutting.
   - Grinding.
   - Tool cleaning.
   - Drum handling.
   - Fiberglass cutting.
2. PPE shall be provided and used in accordance with the E&CS Safety and Health Manual SH-2B, Personal Protective Equipment, along with the following requirements.

- Skin and eye protection shall used when sanding, cutting, or any activity that produces fiberglass dust. Protection should be in the form of protective clothing. Where protective clothing is not feasible for areas of the body, appropriate barrier creams can be used for protection. Eye protection methods shall provide full protection from dusts (examples include goggles, foam seal spectacles, and full face respirator).
- Skin and eye protection shall be used for body parts potentially exposed to acetone, resins, catalysts, and other hazardous materials. The contractor shall ensure that the appropriate protective materials are used that will not allow permeation of the chemical. Appropriate barrier creams shall be used to protect areas of the body that may potentially be exposed to chemicals from normal use where full protection from clothing is not feasible. Protective clothing exposed to catalysts shall not be disposed of in containers containing other items contaminated with resins or solvents and shall not be stored in direct sunlight. Methods for disposal or laundering of contaminated clothing shall be included in the site-specific safety and health plan.
- Fall protection shall be in accordance with SH-2A8., Fall Protection. A site-specific fall protection plan including rescue methods shall be included in the site-specific safety and health plan. Measures shall be included in the plan for protection of fall arrest equipment from exposure to resin mists or chemical exposures that can degrade fibers and damage parts used in construction of full body harnesses, lanyards, lifelines, retractable lifelines, etc.
- Respiratory protection shall be provided in accordance with SH-2B9, Respiratory Protection. A site-specific written respiratory protection program meeting the requirements of 29 CFR 1910.134, Respiratory Protection, shall be submitted with the site-specific safety and health plan. The plan shall include feasible engineering controls for potential contaminants.

4.1.4 Safe Practices Requirements for Hand Lay-up Operations

1. Containers used for application of resin, putty, or catalyst shall be labeled in accordance with 29 CFR 1910.1200, Hazard Communication. The type of label to be used shall be included in the site-specific safety and health plan.
2. Box knives or utility knives shall not be used for cutting fiberglass roving, mat, strand, etc. Scissors or similar means shall be employed.
3. Wet-out areas shall be placed to avoid spillage of materials.
4. Catalyst bottles shall not be placed in close proximity to promoters.
5. Precautions shall be taken for eye and face protection when performing overhead rolling activities.

4.1.5 Safe Practice Requirements for Spraying Operations

1. The use of air atomizing spray guns is prohibited unless the contractor can demonstrate that the application of the resin cannot be accomplished through the use of flow-coating chamber mixing spray guns.
2. All spray guns shall be effectively grounded during normal use and during flushing operations.
3. Electric hose line heaters shall be an approved type and be effectively grounded.
4. Sprayers shall not be operated if pointed in the direction of other employees.
5. Precautions shall be taken to ensure the build up of resin or chop strand on floors will not produce a slip hazard.
6. Catalyst containers shall not be stored or left in areas where spraying is being conducted.
7. Precautions shall be included in the site-specific safety and health for prevention or dissipation of static electricity.
8. Molds shall be free from sharp edges.
9. Precautions shall be taken to prevent damage to adjacent structures, electrical cords, tools, equipment, and so forth from overspray. Hoists and cable used on suspended scaffolds for FRP spraying activities shall be protected. The specific methods to be used for protection shall be included in the site-specific safety and health plan.

4.1.6 Safe Practices Requirements for Winding Operations

1. Mandrel shaft couplings shall be guarded if less than 7 ft from the floor or working surface. If fixed access is provided to shaft coupling areas, then guards shall be installed.
2. Point of operation nip-and-pinch points shall be guarded or equivalent methods used to protect employees, such as rails, restraints, light curtains, etc.
3. Precautions shall be taken to protect employees from rotating mandrels.
4. Resin bath carriages shall be equipped with an emergency stop switch that can be accessed from the operator's working position.
5. A fire extinguisher shall be accessible from the operator's elevation on elevated winding platforms.
6. Signs shall be posted on all automatic winding machines that warn of an automatic start.
7. Employees shall not climb on or over resin baths that are in operation.
8. Creel racks for fiberglass strand shall be placed in a manner to avoid producing a hazard to employees.

9. Specific rigging plans and safety precautions shall be included in the contractor's site-specific safety and health plan for the removal of FRP shells from mandrels. Rigging and lifting devices shall not be subjected to unknown loading.
10. When winding in a structure, there shall be more than one exit, each labeled appropriately.

4.1.7 Safe Handling of Drums

1. The practice of rolling drums for movement is prohibited. Drums shall be moved through the use of drum dollies, drum carriages, or similar devices.
2. The contractor shall ensure drum carriages are placed securely between the chimes and are designed for use on steel drums. The use of drum carriages on plastic drums is prohibited.
3. Bung openings shall not be left open unless material is being dispensed from the drum. Solvent collection drums will be equipped with a drum funnel and lid with flash arrestor or equivalent device.
4. Drums shall be electrically bonded when dispensing flammable liquids such as resin or acetone. Hoses and pumps for dispensing flammable liquids shall be an approved type.
5. Belt-type drum heaters shall be an approved type and shall be used for resin drums only. Drum heaters shall be used only where atmospheric conditions warrant.
6. Drums shall not be placed directly on the forks of a forklift or powered industrial truck.

4.1.8 Sanding, Grinding, and Cutting FRP Material

1. Methods shall be included in the site-specific safety and health plan for the control of dust. Feasible engineering controls shall be implemented. Sampling programs for the determination of dust exposure shall be included in the industrial hygiene plan. Where engineering controls cannot maintain dust below established permissible exposure levels (PEL), an effective respiratory protection program in accordance with 29 CFR 1910.134, Respiratory Protection, shall be implemented.
2. The use of power tools shall be in accordance with SH-2A14, Power Tools, and SH-2A15, Grinders – Pedestal, Bench, and Portable.
3. Guards and handles on portable grinders shall not be removed when abrasive wheels or discs are in use. Tools shall not be altered from the manufacturer's design.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A31

Line Break

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Date	3/11/2009	
Revised By	Bruce Walker	
Reviewed By	Construction Safety Leadership Team	
Approved By	Will Taylor	

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the minimum requirements for safely entering a piping system on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- Line Break Permit.
- Open Flame/Hot Work Permit.
- Procedure SH-2B9, Respiratory Protection.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

1. The E&CS site manager shall ensure the contractor completes a Line Break Permit under the following conditions:
   - The initial opening of a piping system.
   - Subsequent opening of an undrained system.
   - Hot tap tie-ins.
   - Any unknown or abandoned system.
2. Any contractor requiring line breaks must develop a site-specific line break procedure.

4.1.1 Preparation for Line Break

1. The E&CS representative responsible for the work, appropriate contractor personnel including craft, and facility representatives shall hold a planning meeting prior to breaking any line. The purpose of the meeting is to determine the necessary clearance procedure or lockout/tagout (LO/TO) isolation points for the system. The isolation point identification shall be determined by both available drawing verification and walking down the system with the contractor.
2. After all isolation points are identified, the system shall be placed in a zero energy state. The LO/TO shall be established by use of the facility clearance if the system is under the operating plant control or a contractor lockout/tagout if under E&CS control. A Line Break Permit shall be completed by the contractor with approval from the E&CS site representatives.
3. Determine the appropriate level of PPE for the line break and include the information on the permit. Refer to the appropriate MSDS.
4. Obtain a Open Flame/Hot Work Permit if necessary.
5. The contractor crew foreman shall be present when the line break is performed.

4.1.2 Execution of Line Break

1. The area where the line break will occur shall be barricaded, and all drains plugged to prevent exposing other workers in adjacent areas and on floors below. Volume and pressure of the system being worked on shall be considered when setting the barricade and drains to be plugged. Only those personnel immediately involved with the line break operation shall be allowed in the barricaded area.

2. Each employee involved in the line break shall be shown the location of the nearest exit, safety shower, and eyewash station before the line break occurs. Employees shall be instructed in emergency first-aid procedures for the system they will be working on. Employees shall be trained in the use of special protective equipment such as air-supplied respirators, self-contained respirators, and/or air purifying respirators if used. Employees making the first line break shall be instructed where to stand so that any initial spray is directed away from them, that is, upwind and on the opposite side from the first loosed bolt. Standard practice for breaking a flange is to loosen the bolts on the lower and opposite side from the mechanic, keeping the bolts nearest the mechanic under control and allowing the line to separate in a manner that will cause any spillage to be away from the mechanic. The flange should then be spread apart. The mechanic shall always be positioned on the upwind side of the flange being broken.

3. Respirators shall be worn where concentrations of a toxic substance might exceed allowable limits. Contact the site, divisional, or corporate EH&S office for assistance. See procedure SH-2B9, Respiratory Protection.

4. After the first break is completed and the line is verified by management to cleared (that is, drained, vented, flushed, and demonstrated to be clear of any hazardous residue, plugged, or pressure), work may be done on the system or in the area without special PPE. If the line or system cannot be verified to be clear, all workers shall remain in required PPE for the line break.

5. When a valve bonnet is removed, the line shall be drained, and the valve placed in the open position before the bonnet bolts are loosened. Ball-and-plug valves may have pressure in the cavity under the stem packing and bonnet, regardless of the position of the valve and the pressure in adjacent lines. Ball-and-plug valves that are to be removed from the system shall be opened, closed, and reopened to relieve pressure after the line is drained.

6. For first line breaks requiring hot suits, acid suits, or any type of respirator or fresh air breathing apparatus, a standby member of the work team and the pipe superintendent shall be present. The standby person shall have the same PPE and the same training as the person performing the first line break. The standby person and the superintendent shall both remain in full view of the job and be prepared to render emergency assistance.

7. Should the conditions of the task to be performed differ from the job planning and safety analysis (JPSA), work shall stop, and a new plan developed.

4.1.3 Hot Tap

Hot taps shall be treated the same as line breaks with the following additional requirements:

- The E&CS site manager shall approve all hot taps.

- All hot taps shall be performed by a qualified contractor. Documentation of training shall be submitted to the E&CS safety representative.
- Ultrasonic thickness testing shall be performed on piping in the area of the hot tap. The hot tap shall not be made if the pipe wall shows thinning in excess of corrosion allowance according to applicable codes.
- Additional signatures are required on the Line Break Permit.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2A-32

Falling Objects

	Rev. 0	Rev. 1
Date	01/26/2011	
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure identifies key positions responsible for ensuring safety of workers at Engineering and Construction Services (E&CS) work sites and methods to be used to eliminate the risk of injury from falling objects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

WARNING
The methods discussed in this procedure are not intended to act as fall protection for employees.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

SH-2A-05, Signs and Barricades.

SH-1H, Contract Safety and Health Management.

SH-2A7, Scaffolding.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure. Specific activities include the following:

- Implementing falling object protection measures.
- Reviewing written requests from contractors for alternative measures for tool security, and approving, if appropriate.

3.2 Contractors

Each contractor working on E&CS construction projects is responsible for complying with the requirements established by this procedure. Specific activities include the following:

- Submitting a written plan to the E&CS site manager that demonstrates how to prevent falling object hazards.
- If tools are not compatible with lanyards and tethers, requesting from site manager, in writing, an alternative measure for tool security.
- Weekly designating an individual to do a documented inspection of all barricades.
- Where steel erection is in progress, barring other construction processes below the steel erection, unless overhead protection for the employees working below is provided.
- Where debris nets are installed, ensuring the nets are inspected and cleaned on a weekly basis.
- During the scaffold erection and dismantling process, building a temporary protection deck over the vertical pass line route to protect the person receiving materials on the ground level.

3.3 Qualified Rigger

A qualified rigger is responsible for slinging a load to be lifted and affixing tag lines to the ends of a load before any material is lifted. Along with a crane operator, riggers give audible warning with the crane horn and/or portable air horns before lifting a load near persons.

3.4 Lifting Monitor

A lifting monitor is designated to follow the overhead load to keep people from being underneath it if loads are being lifted long distance, and red barricade tape is not being used to secure the area.

3.5 Crane Operator

Crane operators work with qualified riggers to provide an audible warning with the crane horn and/or portable air horns before lifting a load near persons.

4.0 PROCEDURE

WARNING
Work activities, such as working at heights and lifting loads over work areas, produces an environment at risk for falling objects.

Southern Company is committed to eliminating the hazards associated with a work environment at risk for falling objects. To support this commitment, each E&CS construction site manager shall implement falling object protection measures. These are some of the following methods of hazard prevention that can be used:

- Lanyards and tethers.
- Canvas-type bolt bags.
- Load slings and tag lines for crane-lifted loads.
- Barricades or ground man.
- Canopies, catch platforms, and debris nets.
- Scaffolding.
- Housekeeping.
- Training (including job safety analyses (JSAs)).

4.1 Written Plans

Along with their site-specific safety plan, each contractor shall submit to the EC&S site manager a written plan that prepares for falling object hazard prevention. The methods listed in this procedure can be used as a guide to develop a falling object safety plan. The examples are not an all-inclusive list of hazards or safety measures.

4.2 Tools

All hand-held tools used in overhead work must be secured with a tool lanyard or tether to prevent the tools from dropping to lower levels. A tool lanyard, a short rope or webbing used to secure tools and equipment to an anchorage point to reduce the risk of injury from a falling object, may be attached to an anchorage point such as the person using the tool or around a column or beam.

A lanyard should be made from material such as synthetic fiber, natural fiber, or steel rope or webbing that is able to maintain the required strength and resistance to abrasion under harsh conditions. Give consideration to the length of rope or webbing used to secure a tool, especially if the tool is to be used near the edge of a working platform and other persons are working below.

For example, a tool lanyard attached at the wrist should have a length no longer than 24 in. This length will ensure that if the tool is dropped, the lanyard would prevent the tool from hitting a person working below. The length of the lanyard should also be kept to a minimum to reduce the risk of the line snagging as the worker moves about. If the tool weight is more than 24 oz, tool lanyards for striking tools (hammers) shall be secured to an anchorage point, not to the body.

Striking tools heavier than 24 oz can adversely affect a worker’s balance and cause greater injury if control of the tool is lost. For this reason, if tethers are used, they must be secured to an appropriate structural anchorage.

For example, a rigger who is erecting steel may secure working tools to his or her body by a lanyard to prevent a person below from being hit by a dropped tool. However, heavier tools may be secured to the structural steel or work platform with a tether.

Contractors may have some tools that are not compatible with tool lanyards or tethers. They may request an alternative measure of protection. Requests for using the alternative measure must be made in writing to the site manager for his or her approval. The site manager must sign the request before it is in effect.

4.3 Material Handling

While working on upper levels not protected by handrails, workers shall transfer tools and materials in canvas type bolt bags instead of buckets. Do not use plastic and metal buckets to hoist materials or tools to upper levels, because these types of buckets are not designed for lifting. This includes rope and pulley type systems. All buckets used for lifting must be approved lifting devices.

4.4 Overhead Loads

Before lifting any material, a qualified rigger will sling the load to be lifted and affix tag lines to the ends of the load. Crane operators and riggers will give audible warning with crane horn and/or portable air horns before lifting loads near persons. If horns are not effective, the contractor shall develop another means of warning. If loads are lifted long distances, a designated monitor(s) shall follow the overhead load to keep people from being underneath it. To eliminate the use of a monitor, the contractor can use red barricade tape to secure the area.

4.5 Barricades

The contractor shall barricade areas below overhead work to prevent objects from falling on or hitting people. The contractor shall label all barricades with the following information, at a minimum:

- Contractor name.
- Person responsible for the work.
- Type of hazard.
- Date erected.
- Contact number or radio channel.
- Estimated completion date.

Each week the contractor shall have a designated person to do a documented inspection of all barricades. The designated individual must evaluate barricades for proper and effective installation.

4.6 Overhead Protection

Areas where people are working over other workers require hard barriers, such as canopies, catch platforms, and/or debris nets.

Where required, canopies shall be fixed to the perimeter of the structure or working surface to prevent a person or objects, such as tools and materials, from falling into an area accessed by persons at or near the workplace. The working surface/structure shall be covered with:

- Timber or plywood.
- Metal or synthetic sheets.
- Metal or synthetic mesh.

Where a canopy is used, the sheeting shall extend to a height that will prevent falling objects. When selecting containment sheeting, workers shall consider the following:

- Whether the sheeting is capable of supporting the loads to be imposed on it.
- Whether the sheeting is capable of containing materials and equipment, such as nuts, bolts, and tools.
- The likely forces that will be imposed on the structure from wind effects.

Where skeleton steel erection is in progress, the controlling contractor shall bar other construction processes below steel erection unless overhead protection for the employees below is provided. Where other overhead protection methods are infeasible, the controlling contractor shall install debris nets directly under any erection work being performed. The debris nets shall be capable of supporting the anticipated loads imposed on them by potential falling objects and be tight enough to catch intended hazards. The controlling contractor shall ensure debris nets are inspected and cleaned on a weekly basis.

4.7 Scaffolding

Contractors shall build all scaffolding as physically complete as possible, with the following components (see procedure SH-2A7, Scaffolding):

- A fully decked scaffolding having no more than 1-in. openings.
- Handrails, mid-rails, and toe boards.
- If people are working under or walking underneath a scaffold, a mid-rail screen is required. A mid-rail screen is a mesh or equivalent screen material that prevents material from falling. The screen should extend from the toe board to the mid-rail.

WARNING
The rope hoist area shall be barricaded or have a ground person to make sure no one walks under the area during hoisting operations.

All scaffold ladders shall have a rope to hoist tools and materials.

During the scaffold erection and dismantling process, the contractor shall build a temporary protection deck over the vertical pass line route to protect the person receiving materials on the ground level.

WARNING
To protect the ground person, locate the racks on which to stack materials near the deck.

The ground person should receive the material while under the protection of the deck.

4.8 Housekeeping

All workers shall practice good housekeeping to keep items from falling on persons below. Most notably:

- Store material away from edges of scaffolding or platforms.
- Tie down metal sheeting, plywood, or lightweight materials to prevent them from being blown away or falling.
- Store round stock materials in racks or crib/block them to prevent them from falling.
- Secure all materials, equipment, and tools, which are not in use while aloft, against accidental displacement.

4.9 Training

Contractors shall ensure all workers are trained on identifying falling object hazards. Training shall instruct workers who perform work at elevated heights to survey the work area prior to start, and identify hazards relating to the overhead work and falling objects in a job safety analysis (JSA). Any possibility of items falling must be mentioned in the JSA. The foreman shall determine the control measures to implement that will eliminate or mitigate the hazards for the protection of personnel below, and shall list the control measures on the JSA.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–EC&S Safety and Health - Construction.

6.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2B1

Personal Protective Equipment

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Reviewed By	Bruce Walker	Bruce Walker
Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for the use of personal protective equipment (PPE) on Engineering and Construction Services (E&CS) projects to reduce the risk of injury to personnel whenever a hazardous or potentially hazardous condition exists.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1910.123.
- 29 CFR 1926.95.
- Personal Protective Equipment procedures 2.B.2 through 2.B.9.
- PPE Assessment Form.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURES

4.1 Requirements

E&CS reserves the right to select and/or approve all PPE to be issued and used by its employees, visitors, and/or contractors. Only equipment issued or approved by E&CS shall be allowed on its sites/facilities.

The site manager shall ensure the workplace has been assessed to determine if hazards are present or likely to be present. This assessment shall be documented in writing. The documentation shall identify the workplace, the person(s) evaluating the workplace, the dates of the assessment, and the hazards found, if any. The site manager shall certify the hazard assessment as accurate and complete.

If hazards are present, engineering and administrative controls shall be implemented to eliminate the hazard. If engineering and administrative controls will not eliminate the hazard, PPE shall be used. Site management shall:

- Select the PPE and have each affected employee use the PPE chosen.
- Communicate the selection of PPE to employees (training).
- Ensure that employees have properly fitting PPE.

Defective or damaged PPE shall be removed from service and shall not be reused unless repaired.

Each employee who is required to wear PPE shall be trained on the following:

- When PPE is necessary.
- What PPE is necessary.
- How to don, doff, adjust, and wear the PPE.
- The limits of the PPE.
- The proper care, maintenance, useful life, and disposal of the PPE.

The PPE training shall be documented. The written documentation shall include the name of each employee trained, the dates of the training, and the subject of the training.

NOTE

The use of employee-owned fall protection PPE is prohibited.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2B2

Head Protection

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Date	12/10/2002	3/11/2009
Reviewed By	Bruce Walker	Bruce Walker
Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for head protection on Engineering and Construction Services (E&CS) projects to reduce the risk of injury to personnel whenever a hazardous or potentially hazardous condition exists.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- ANSI Z89.1, Current.
- ANSI Z89.2, Current.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

1. All workers shall wear E&CS-approved hardhats while working in construction/maintenance areas or areas of an existing site/facility that have been designated as a hardhat area. This restriction includes visitors, contractors, engineers, inspectors, and anyone else who has authorized access to the project. When company activities result in establishing a hardhat area in an area that typically does not require hardhats, signs shall be posted to inform others that hardhats are required.

2. Hardhats shall not be altered by drilling, cutting, or other means unless approved by the manufacturer. Hardhats that have been altered by the addition of any items on the outside of the hat other than approved items shall not be permitted. When it is necessary to use additional personal protective equipment that is attached to the hardhat, only those hardhats designed for this purpose may be used.

3. Hardhats shall be inspected monthly and replaced when damaged, or every 5 years at a minimum due to the effects of ultraviolet light on the polymers of the shell. Headband assemblies shall be in good condition and shall be exchanged whenever they become broken or weakened. The area between the top of the headband and the top of the hardhat shall not be used for storage.

4. Welders are required to wear hardhats when in a hardhat area. Soft-cap welding is not permitted without the approval of the site manager and the environmental, health, and safety (EH&S) professional.

5. Hardhats shall be required in areas that typically would not require the use of a hardhat (offices, break areas, barracks, etc.) when the work activity creates an overhead hazard.

6. Hardhats shall comply with the requirements of the most current ANSI Z89.1 standard with the exception that metal hardhats and cowboy-style hardhats shall not be allowed.

7. Hardhats shall be worn with the bill facing forward. Welders shall wear their hardhats with the bill facing forward while not welding.

8. In addition, any employee potentially exposed to any voltage shall wear a hardhat that meets Di-electric Standards. It is therefore recommended that all hardhats purchased meet both the Z89.1 and Z89.2 specifications.

NOTE

Hardhats will clearly identify the respective employer by means of company name and/or logo on the front of the hardhat.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2B3

Eye and Face Protection

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Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for eye and face protection on Engineering and Construction Services (E&CS) projects to reduce the risk of injury to personnel whenever a hazardous or potentially hazardous condition exists.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- ANSI Z87.1, Current.
- 29 CFR 1910.133, Eye and face protection.
- 29 CFR 1926.102, Eye and face protection.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

In general, eye protection is required in all work areas except offices. Approved eye and face protection shall be worn whenever warranted by the work exposure. Eye and face protection shall be kept clean and in good repair. Eye protection shall also be worn in office settings when the work conducted creates the potential for eye injuries.

4.1 Safety Glasses With Side Shields

1. Each E&CS project shall be deemed a 100-percent eye protection project. ANSI-approved safety glasses with full rigid side shields shall be worn in all areas of the project and/or plant site.

2. Employees requiring corrective lenses shall have glasses in which the frames and lenses meet ANSI specifications, or they shall be required to wear protective eyewear over their corrective lenses. The addition of side shields to nonsafety glasses shall not be permitted.

3. Employees who wear contact lenses shall wear safety glasses in addition to the contact lenses where safety glasses are required. Contacts shall not be worn in chemical atmospheres.

4. Safety glasses shaded greater than shade #1 shall not be worn by employees working indoors or in any other artificially lit area.

4.2 Visitors' Glasses

Visitors shall wear ANSI Z87.1-approved glasses when in areas where safety glasses are required.

4.3 Face Shields

1. In addition to safety glasses, an approved face shield shall be worn during activities such as the following:

   - Grinding.
   - Cad welding.
   - Handling chemicals, corrosive liquids, or molten materials.
   - Chain sawing.
   - Chipping.

- Jackhammering.
- Chiseling.
- Concrete placement using pumps or pump trucks.

2. Face shields shall be used any time work activities place the employees in the zone of danger where the employee would be struck if something is unexpectedly splashed, sprayed, or propelled. Other employees in the area (that is, in any area in which grinding dust is falling/flying) shall be protected by screens, goggles, or face shields.

4.4 Goggles

Goggles shall also be worn in areas where dusty operations are conducted, windy conditions result in greater potential for flying particles, or the potential for a chemical splash, spray, or mist exists. Examples include grinding operations inside ductwork and enclosed vessels or spaces.

4.5 Welding Shields

1. Welders shall wear a welder's hood with lenses that have the correct color density for the type of welding involved.
2. Welder's helpers and others exposed to the same level of hazard as the welder shall wear the same level of eye protection as the welder.
3. Safety lenses shall be worn in front of and behind the welder's shaded lenses.
4. Welders shall wear safety glasses under their welding hood.

4.6 Burning Goggles

Use an approved burning goggle with no less than a #4 filter plate during all torch-cutting operations.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2B4

Foot Protection

	Rev. 0	**Rev. 1**
Date	12/10/02	3/11/2009
Reviewed By	Bruce Walker	Bruce Walker
Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for foot protection at Engineering and Construction Services (E&CS) projects to reduce the risk of injury to personnel whenever a hazardous or potentially hazardous condition exists.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- ANSI Z41-1991, Safety-Toe Footwear.
- 29 CFR 1926.96, Occupational foot protection.
- 29 CFR 1910.136, Foot protection.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

1. Hard-soled boots with a defined heel and leather uppers that support the ankle shall be worn by all personnel in construction work areas. Canvas top or athletic shoes and sandals are prohibited.

2. Safety-toed boots shall be worn by all employees performing tasks with the potential hazard of falling or rolling objects such as sorting rebar, shaking out structural steel, and sorting scaffold components. The safety-toed boots shall meet the requirements of ANSI Z41.1, Safety-Toe Footwear.

3. Metatarsal guards shall be worn by employees operating hand vibratory tampers, jackhammers, and similar operations with a potential for serious foot injury.

4. When working in wet concrete, workers shall wear rubber boots.

5. Shoes and boots shall be kept in good repair, and those with worn heels or thin or worn soles shall not be permitted.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2B5

Hand Protection

	Rev. 0	**Rev. 1**
Date	12/10/02	3/11/2009
Reviewed By	Bruce Walker	Bruce Walker
Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for hand protection at Engineering and Construction Services (E&CS) projects to reduce the risk of injury to personnel whenever a hazardous or potentially hazardous condition exists.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1910.138, Hand protection.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

Each contractor shall develop a hand protection matrix that shall list the types of gloves used onsite and the type of work that each glove is used for. All major activities shall be listed.

Appropriate gloves shall be worn when persons work with materials or equipment with the potential for hand injury due to sharp edges, corrosives, flammable and irritating materials, extreme temperatures, splinters, etc. General requirements for wearing gloves are described in the following paragraphs.

4.1.1 Leather Gloves

1. Leather gloves shall be worn when working with the following materials, equipment, or when work conditions present the potential for hand injury:

   - When handling material with rough, sharp, or splintered edges.
   - When handling rough or unfinished lumber, metal banding, or materials likely to cause hand injuries.

     NOTE

     Leather gloves may not be sufficient for razor-sharp edges often encountered with stamped steel, metal shavings, and gaskets with sharp edges, etc.

   - Tools causing friction such as shovels, picks, and sledge hammers.

2. Do not use leather gloves for handling caustic, hydrocarbons, corrosive, irritating liquids, or acids. Heavily soiled leather gloves shall be discarded to avoid skin irritation.

3. Personnel operating drill presses, threading machines and similar rotating equipment shall not wear gloves.

4.1.2 Rubber or Vinyl Gloves

Appropriate rubber or vinyl, chemical-resistant gloves shall be worn when handling corrosive and irritating materials such as acids, caustics, and hydrocarbons.

4.1.3 Thermal Insulated Gloves

Insulated gloves (such as Kevlar) shall be worn when handling equipment or materials at extremely low or high temperatures that could cause thermal burns if contact with the hands occurs.

4.1.4 Cut-Resistant Gloves

Cut-resistant gloves (Kevlar or metal reinforced) should be worn when handling extremely sharp instruments or equipment that could cause severe lacerations if hand contact occurs.

4.1.5 Cloth Gloves

In general, cloth gloves may be worn to keep hands from getting dirty when handling harmless substances such as dirt, dust, etc.

4.1.6 Chemical Gloves

Gloves such as neoprene, nitrile, butyl rubber, polyvinyl alcohol, Silver-Shield, or Black Knight may be required when handling specific chemicals. Consult the Material Safety Data Sheet for the chemical and use the glove specified.

4.1.7 Welder's Gloves

Personnel shall wear leather welding gloves with a cuff that fully covers the hand and wrist during all welding and burning operations.

4.1.8 Voltage-Rated Rubber Gloves

See procedure SH-2E7, Work On or Near Energized Electrical Circuits, for the requirements regarding use, storage, and testing of voltage-rated rubber gloves.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2B6

Traffic Vests

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Reviewed By	Bruce Walker	Bruce Walker
Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for the use of high visibility traffic vests at Engineering and Construction Services (E&CS) projects to reduce the risk of injury to personnel whenever a hazardous or potentially hazardous condition exists.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

None.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

When employees are assigned work that places them near moving traffic, engineering controls such as guards, barriers, or the rerouting of traffic shall be used to protect employees. Where engineering controls cannot safely and effectively be used, such as for vehicle or equipment flaggers or spotters and possibly surveyors, employees shall wear a high-visibility safety vest, jacket. or shirt. If such activities are conducted at night, the garment shall be reflective.

All Southern Company Generation personnel, onsite vendor representatives and all construction site visitors should wear a high-visibility safety vest, jacket, or shirt while on the project site. If such activities are conducted at night, the garment shall be reflective.

At the owner's discretion, it will be a requirement to wear a high-visibility safety vest or garment when it is determined by the owner that an area is congested and subjects personnel to greater than normal risk. These additional requirements will apply to all contractor craft personnel and supervision.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental Health and Safety Procedures

SH-2B7

Personal Floatation Devices

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Reviewed By	Bruce Walker	Bruce Walker
Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for the use of personal flotation devices at Engineering and Construction Services (E&CS) projects to reduce the risk of injury to personnel whenever a hazardous or potentially hazardous condition exists.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- SH-2A25, Working Over or Near Water.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

1. Personnel working over or near water where the danger of drowning exists shall be provided with and wear an orange U.S. Coast Guard-approved life jacket or buoyant work vest that has been inspected for defects prior to and after each use. Defective units shall not be used.

2. Ring buoys shall be provided within 200 ft of any location where employees are working over or adjacent to water. Each ring buoy shall be equipped with at least 90 ft of line and shall be readily available for emergency rescue operations.

3. At least one life-saving skiff shall be immediately available at locations where employees are working over or adjacent to water.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2B8

Basic Work Clothing

	Rev. 0	**Rev. 1**
Date	12/10/02	3/11/2009
Reviewed By	Bruce Walker	Bruce Walker
Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides minimum requirements for basic work clothing in construction work areas on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

None.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

1. Clothing with full-length trousers and shirts that cover the shoulders are minimum requirements at all E&CS projects. At certain times, the nature of the job or local requirements may necessitate the wearing of full-length sleeves. When long sleeves are not required, sleeves shall be a minimum of 4 in. in length. Perforated or mesh shirts or trousers are prohibited.

2. The wearing of synthetic clothing should be discouraged, as it tends to absorb greases and oil more readily than natural fibers.

3. All personnel working on E&CS projects who are performing work which has the potential to expose them to the hazard of flames or electric arcs, shall wear clothing made of 100-percent cotton, other natural fibers, or flame-retardant (FR) materials.

4. Raingear and rubber boots shall be issued as necessary.

5. Normally construction and maintenance workers should wear clothing that is reasonably snug particularly about the neck, wrists, and ankles. Employees shall be cautioned against wearing loose clothing, rings, watches, necklaces, or having long hair, all of which may catch in power-driven equipment and cause serious injury.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedure

SH-2B9

Respiratory Protection

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Reviewed By	Bruce Walker	Bruce Walker
Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure establishes requirements for respiratory protection on Engineering and Construction Services (E&CS) construction projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926.103, Respiratory protection.
- 29 CFR 1910.134, Respiratory protection.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 General

1. The primary function of E&CS and contractors in the control of occupational disease caused by breathing air contaminated with harmful levels of dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors is to prevent the atmospheric contamination through the use of engineering controls.

2. When effective engineering controls are not feasible or while they are being instituted, appropriate respiratory protection shall be provided and used per the following requirements.

4.2 Written Plans

1. When Southern Company Generation (Generation) employees must use respiratory protection, E&CS shall adopt and ensure compliance with the appropriate operating company's written respiratory protection plan.

2. Each contractor using respiratory protection shall develop and implement a written respiratory protection plan for the specific respiratory hazards of each site/facility where respirators are used. The written plan shall be administered by a suitably trained program administrator who is qualified to recognize, evaluate, and determine appropriate controls for respiratory hazards in the workplace and shall address the following issues:

   - Procedures for selecting respirators for use in the workplace.
   - Medical evaluations of employees required to use respirators.
   - Fit-testing procedures for tight-fitting respirators, including disposable particulate respirators.
   - Procedures for the control and issuance of respirators to qualified users.
   - Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations.
   - Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators.
   - Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators.

- Training of employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations.
- Training of employees in the proper use of respirators, including putting on and removing them, any limitations on their use, and their maintenance.
- Procedures for regularly evaluating the effectiveness of the program.
- Recordkeeping/documentation.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2C1

Qualifying Equipment Operators

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for qualifying and authorizing personnel to operate mobile equipment on Engineering and Construction Services (E&CS) construction projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- Equipment Operator Authorization.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

1. Employees who are assigned work involving the operation of construction equipment shall be trained to use that equipment.

2. Each employee must have a valid state driver license to operate any mobile equipment or vehicle (including utility carts) on the project.

3. Employee training shall include a written and practical examination demonstrating the employee's ability to safely operate and inspect the equipment. The training must be make and model specific to the particular equipment involved.

4. The training, written test, and practical examination shall be conducted and documented by a supervisor designated as an equipment competent person, a recognized outsource, or by a manufacture's representative.

5. Upon completion of the training and successfully demonstrating competence in the operation of the equipment, the employee shall be issued a written authorization by their employer to operate the equipment. See Equipment Operator Authorization sample form.

6. The employee shall maintain possession of the written authorization at all times when operating equipment. The employer shall maintain and keep available for review a record of the training, practical examination results, and written authorization.

7. Equipment that requires operator qualification and authorization includes large motorized mobile equipment including, but not limited to, bulldozers, pans, front-end loaders, track hoes, grade-alls, scrapers, and rollers.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2C2

Mobile Equipment Near Energized Electric Lines

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for mobile boom equipment in transit and while operating near overhead lines and cables at Engineering and Construction Services (E&CS) projects. This procedure also covers insulated bucket trucks operating near electric lines and cables.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- ANSI A 92.2, Vehicle Mounted Elevating and Rotating Aerial Devices.
- 29 CFR 1910, Subpart S.
- 29 CFR 1926, Subpart K.
- NFPA 70E Part II, Section 2.9.
- 29 CFR 1926, Subpart N.
- Mobile Equipment/Boom Truck Overhead Line Permit.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 Operating Mobile Equipment Near Electric Lines (Insulated and Uninsulated, Open Conductors)

1. Mobile Equipment in Transit.

   Follow procedure SH-2C16, Equipment in Transit.

2. Minimum Working Distances for Mobile Boom Equipment in Operation

   Other than in transit, an approved permit as described in paragraph 2.5, Overhead Line Permit, is required for any piece of equipment or any part of its load coming closer than the distance listed below:

Voltage	Minimum distance
50 kV or less	10 ft
51 kV to 230 kV	16 ft
231 kV up to 500 kV	25 ft
Greater than 500 kV	Contact E&CS regional safety consultant.

3. When operating mobile boom equipment closer than 10 ft, the line shall be deenergized, locked out/tagged and tested, equipment properly grounded, or have approved insulating barriers properly installed by qualified personnel.

4.1.2 Operating Mobile Equipment Near Cable Trays or Conduit

1. Energized Cables

   When operating mobile equipment near cable trays or conduit containing energized cables, the minimum approach distances specified in prior sections do not apply. However, the equipment and its load shall not be allowed to contact the cable tray or conduit.

2. Critical Cables

   If the conduit or cable tray contains cables considered critical (cables that disrupt production or create a serious environmental incident if damaged) and the mobile equipment or its load are to come within 4 ft (1.2 m) of the conduit or cable tray, a qualified electrical person shall review the setup prior to starting the task. Additionally, the work group shall consider adding such protective measures as wood covers over conduit or cable trays in case small items drop during lifts.

4.1.3 Insulated Bucket Trucks

Insulated bucket trucks used to perform electrical work around overhead lines, cables, and open substations shall be operated only by trained and qualified persons. Special minimum approach distances shall be established by the contractor and submitted to the E&CS site manager for approval prior to the use of insulated bucket trucks for any close proximity work.

4.1.4 Overhead Line Permit

1. Contractors shall develop and implement an overhead line permit required by this procedure.

2. An authorized and signed permit is required to use any piece of mobile equipment other than bucket trucks working closer to electric lines or cables (not in cable tray or conduit) than the distances outlined in section 4.1.1, Operating Mobile Equipment Near Cable Trays or Conduit.

3. All safety requirements specified on the permit shall be met before written approval to proceed with the work is given.

4.1.5 Mobile Equipment Operation

When operating mobile equipment in compliance with this procedure, the following requirements shall be observed:

1. A signal person shall ensure that specified clearances are maintained.

2. The area around the equipment shall be barricaded and signs posted warning personnel to stay clear.

3. The operator is the only person permitted on the equipment.

4. All personnel shall maintain a safe distance while the mobile equipment is being positioned and during the lift.

5. A copy of the approved permit shall be posted in the equipment cab.

6. The equipment and/or load shall be properly grounded at all times. Grounding requirements shall be determined and installed by qualified personnel only.

4.1.6 Additional Requirements

1. Do not park mobile equipment with rubber tires under high voltage transmission lines. A static charge can build up and a severe shock transmitted to the operator accessing the mobile equipment.

2. All employees shall be instructed regarding all the hazards involved, including potential hazard present when a high-voltage line contacts the earth or contacts an object that is not insulated from the earth.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2C3

Mobile Cranes

	Rev. 1	**Rev. 2**
Date	10/29/2008	06/30/09
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide requirements for the operator, qualification, inspection, and operation of mobile cranes on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- ASME B-30.5 – Current, Mobile and Cranes.
- 29 CFR 1926, Subpart N.
- 29 CFR 1910, Subpart N.
- SH-2C2, Mobile Equipment Near Energized Electric Lines.
- Hydraulic Crane Inspection.
- Lattice Boom Crane Inspection.
- Mobile Crane Operator Medical Examination.
- Mobile Crane Operator Medical Qualification.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

Each contractor shall designate a competent person for mobile crane inspection. This person shall be responsible for administering and documenting a crane-operator license program and an equipment inspection program.

4.1.1 Equipment Inspection

1. All cranes used onsite shall have an OSHA annual inspection performed by a third-party crane inspector that meets OSHA/ASME qualification requirements before the crane is authorized for service. Some states require a yearly inspection sticker posted on the windshield; at a minimum, a copy of the annual inspection shall be kept on file. If the annual inspection expires while the crane is on the project, a new inspection shall be performed by a third-party crane inspector that meets OSHA/ASME qualification requirements prior to authorizing continued operation of the crane.

2. Each mobile crane shall be inspected upon arrival. Listed below are some of the components that shall be inspected. If any of these components are damaged or show signs of extreme wear, they shall be repaired or replaced before the crane is authorized for service.

   - Tires (proper pressure and wear).
   - Outriggers, beams, pads, hydraulic system (proper functions, leaks, wear).

- Engine and torque converter (proper pressure and fluid levels).
- Cab, controls, windshield, instruments, seat belts, brakes (proper functions, wear).
- Gantry (pins, sheaves, lubrication, and wear).
- Cable for boom hoist, main hoist, auxiliary hoist (proper lubrication, broken wires, flat spots, wear).
- Boom (pins, bent or dented lattices, bent boom sections).
- Boom point (pins, bent or dented lattice, sheaves, lubrication).
- Boom pendant lines (pins, broken wires in cable, flat spots, lubrication, wear).
- Jib (pins, bent or dented lattices, sheaves, and lubrication).
- Jib pendants and jib gantry (pins, broken wires in cable, flat spots, lubrication, wear).
- Load block and ball (sheaves, lubrication, cracked becket, cracks in hooks, wear).
- Anti-two block system (proper functions, wear).
- Wind gauges shall be mounted per manufacturer recommendations.

NOTE

It is a good practice to have needed repairs performed before the equipment is delivered to the project. A detailed inspection shall be performed after repairs have been made to ensure adequacy of the repair(s) and operational status of the equipment.

Any crane disassembled for transport and reassembled at the site requires a third-party inspection prior to use. This is applicable even if the crane has a current annual sticker from the previous work site.

3. A monthly inspection and preventive maintenance (PM) shall be performed on all equipment. All inspection forms and PM schedules shall be documented.

4. A daily operator's inspection shall be performed at the beginning of each shift. This form shall be posted in the crane, then turned over to the contractor's competent person at the end of the shift.

4.1.2 Crane Operator License

All crane operators shall have current certification for the class of crane they will operate. The certification shall be issued by a nationally recognized certifying agency, accredited by a nationally recognized agency, such as the National Commission for Certifying Agencies (NCCA). In addition, all mobile crane operators shall be licensed to operate the specific make and model of the crane to which they are assigned. The operator shall pass a preassignment physical examination (per ASME B30.5 – Current), written examination (make and model specific), and a functions test on the actual piece of equipment to be assigned.

1. The operator shall meet the following physical qualifications:

   - Vision of at least 20/30 Snellen in one eye and 20/50 in the other eye, with or without corrective lenses.
   - Ability to distinguish colors, regardless of position, if color differentiation is required for operation.
   - Adequate hearing, with or without hearing aids, for the specific operation.
   - A medical opinion indicating any condition(s) that would preclude safe operation of a crane.

2. Evidence that an operator is subject to seizures or loss of physical control shall be sufficient reasons for disqualification. Specialized medical evaluations may be required to determine these conditions.

4.1.3 Safe Operating Practices

1. Only a licensed operator shall be permitted to operate a crane.

2. The operator shall perform a daily mobile crane inspection before the start of each shift or prior to daily first use.

3. Each crane shall have a complete manufacturer's load chart. A maintenance manual for each piece of equipment shall be kept on file for proper PM service.

4. The crane shall not be unattended while the engine(s) is operating.

5. The operator shall stay at the controls while a load is suspended.

6. Mechanics shall not be permitted to adjust, oil, lubricate, or repair any mechanism with moving parts until the equipment is shut down. Some adjustments require the operation of the equipment to perform the final adjustment; extreme caution shall be used while these tasks are being

performed. Any guards that are removed to adjust, oil, etc., shall be promptly replaced.

7. Rubber-tired mobile cranes shall be equipped with an audible backup alarm that can be heard above ambient noise levels. This device shall sound continuously while the crane is backing up.

8. No employee shall be permitted to ride the load, block, hook, or ball of any crane, derrick, or hoist.

9. All loads being landed or received by personnel shall be controlled by a tag line. Keep hands off suspended loads.

10. The accessible swing radius of the crane shall be barricaded. Only the rigging crew and the mechanics working on the crane shall have access inside the barricade. Extreme caution shall be used when working in the path of the rotating counterweight.

11. All cranes shall be equipped with a functioning anti-two block device.

12. The load block and the auxiliary ball shall be equipped with a positive safety latch.

13. Mobile cranes shall be moved only when directed by a designated signal person. All employees shall use caution and stay clear of the rotating wheels and moving equipment.

14. Personnel shall not climb on or off a moving crane.

15. All loads shall be signaled by only one designated flagger. If the operator loses sight of or audible contact with the flagger, the operator shall stop all crane functions until a clear view or contact is established.

16. When cranes are setup on soft or unstable ground, mats shall be used.

17. All outriggers shall be extended when the crane is hoisting or lowering a load. Some of the newer cranes have load charts for retracted outriggers; extreme caution shall be used when the crane is setup in this configuration. Strict adherence to manufacturer's recommendations for outrigger use and lift capacities must be maintained.

18. Use extreme caution when operating cranes next to or near excavations or in an area that may become impassable or unstable by rainfall, flash floods, etc. Proper matting and shoring shall be used in these applications.

19. No suspended loads shall be permitted to swing over other employees.

NOTE

Exceptions to this rule shall be approved by E&CS construction site management, based on approved notification plan. Steel erection would be an exception and should be addressed under the contractor's steel erection plan.

20. Wind conditions and speeds must be accounted for in lift operations. Forces on the boom, load, and ability to control the load are all factors to consider. Follow manufacturer's recommendations for maximum windspeeds allowable for lift operations.

21. Use caution when lifting in wet or icy weather. Always check the operating mechanisms (such as brakes, hoisting levers, all controls, and other mechanical parts) prior to lifting a load.

22. All the crane's components shall be maintained and kept in functional order.

23. No modifications or alteration to the equipment shall be made by the project or any individual without the manufacturer's written approval.

24. Mobile cranes mounted on barges shall be positively secured to the barge and when required by the manufacturer, shall be equipped with a load chart that reduces capacity to stay within the limits for the list of the barge.

25. The contractor shall contact local authorities to determine requirements for aviation lighting regulations.

26. The load line shall be positively secured at the end of the shift or left in a configuration as prescribed by the crane manufacturer.

NOTE

For example, the recommended best practice for the CC6800 at Plant Scherer is to allow the crane boom to "weather vane" as opposed to securing it, which puts less stress on the boom components.

27. Booms shall be lowered in the event of inclement weather such as high winds or icy conditions, per manufacturer's recommendation for the expected conditions.

4.1.4 Operating Hazards, Electrical

Crane operations shall be in accordance with procedure SH-2C2, Mobile Equipment Near Energized Electric Lines.

4.1.5 Operating Hazards, Traveling With Loads (Pick and Carry)

Traveling with a load is not recommended as a means of transporting loads and shall only be performed as a last resort. Other means of transportation shall be used such as forklifts, boomtrucks, farm wagons, and flatbed trucks. Load charts for dynamic and static loading of such equipment are provided by the manufacturer. Use extreme caution when using this equipment in this application.

Listed below are general precautions that shall be considered while transporting loads on rubber tires:

- Never exceed the rated-capacity load chart or the manufacturer's safe operating procedures.
- Position the boom and load directly over the rear or the front of the crane.
- Swing (house) lock shall be engaged.
- Keep boom as short as possible. The boom angle shall be kept as high as possible; however, do not adjust the boom angle too high where the crane is top heavy or unstable.
- Secure load to carrier with tag line or wire rope.
- Position load as close to the ground as possible.
- Travel on smooth, firm, and level terrain.
- Maintain a constant and controlled speed that is suitable to the terrain and load.
- Avoid sudden starting or stopping.
- Use flaggers, both front and rear.

4.1.6 Operating Hazards, Wire Rope

Wire rope with one or more of the following defects shall be replaced immediately:

1. When one wire rope in a set of pendant lines requires replacement, the entire set shall be replaced.
2. In standing ropes, more than two broken wires in one lay in areas beyond end connections, or more than one broken wire at the end connection.
3. In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay.

4. Wear of one-third of the original diameter of the outside individual wires caused by abrasion, scrubbing, flattening, or peeling.

5. Kinking, crushing, birdcaging, or any other damage resulting in distortion of the rope structure.

6. Evidence of heat damage from any cause.

7. Reduction from nominal diameter of more than:

   - 1/64 in. for diameters up to and including 5/16 in.
   - 1/32 in. for diameters from 3/8 in. up to and including 1/2 in.
   - 3/64 in. for diameters 9/16 in. to and including 3/4 in.
   - 1/16 in. for diameters from 7/8 in. up to and including 1 in.
   - 3/32 in. for diameters from 1-1/4 in. up to and including 1-1/2 in.

4.1.7 Operating Hazards, Hook and Becket Inspection

The hook and becket inspection program shall coincide with the initial crane inspection.

1. Before the crane is authorized for use, a nondestructive inspection test shall be performed. The most accurate methods of inspecting hooks and beckets for cracks are dye penetrate testing and magnetic-particle inspection. Hooks with threaded shanks shall be carefully inspected for wear in the thread area. If the hook shows signs of wear or stress, the hook shall be removed from service. For an effective inspection, the block and or ball must be disassembled. The magnetic particle test shall be conducted by a level II technician. Items to be checked during this annual inspection are listed below:

   - Cracks, severe nicks, or gouges.
   - Wear not to exceed 10 percent of original sectional dimension.
   - A bend or twist not to exceed 10 degrees from the plane of the unbent hook.
   - Safety latch engagement damage or any malfunctioning.
   - Hook attachment and securing means.
   - Measurement of hook throat.

2. Results of this inspection and original measurements, for the purpose of comparison in subsequent annual inspection, shall be kept by the respective maintenance or equipment supervisor.

CAUTION:

Any crane involved in an incident including, but not limited to, shock loading, two-blocking, the load contacting the boom, the boom contacting a stationary object, a lightning strike, or load/crane contact with an electrical source, shall be immediately removed from service. An annual inspection shall be performed, and any repairs made in accordance with manufacturer's recommendations before returning the crane to service.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2C4

Tower Cranes

	Rev. 2	**Rev. 3**
Date	3/11/2009	7/29/2009
Revised By	Bruce Walker	Bob Fitzgerald
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Will Taylor	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide requirements for operation, inspection, and operator qualifications for tower cranes used on Engineering and Construction Services (E&CS) construction projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- ASME B30.3 – Current, Hammerhead Tower Cranes.
- 29 CFR 1926.550 (c), Cranes and Derricks, Hammerhead Tower Cranes.
- SH-2C2, Mobile Equipment Near Energized Electric Lines.
- Tower Crane Inspection.
- Tower Crane Operator Medical Examination.
- Tower Crane Operator Qualification.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 Inspections/Erection

1. Crane components shall be inspected and have required repairs complete prior to arrival on the site. All repairs must be done by qualified individuals in accordance to the manufacturer's specifications.

2. All cranes used onsite shall have an OSHA annual inspection performed by a third-party crane inspector that meets OSHA/ASME qualification requirements before the crane is authorized for service. Southern Company follows individual state guidelines regarding the application of a yearly inspection sticker posted on the windshield; but at a minimum, a copy of the annual inspection (long form) shall be kept on file. If the annual inspection expires while the crane is on the project, a new inspection shall be performed by a third-party crane inspector that meets OSHA/ASME qualification requirements prior to authorizing continued operation of the crane.

3. The bolt torque on the crane structure shall be checked according to manufacturer's recommendations.

4. Crane operators shall perform a daily inspection prior to use or prior to each shift. This inspection shall be documented and the form posted in the crane cab. At the end of the shift, the inspection form shall be turned over to the supervisor for retention in site files.

5. A monthly inspection and preventive maintenance (PM) shall be performed on all equipment. All inspections and PM schedules shall be documented.

6. All tower, jib, and structural bolts and nuts, and other structural fasteners shall be new at erection time and meet the manufacturer's specifications. All tower, jib, and slewing ringbolts and nuts shall be closely inspected and replaced as required during erection. All inspections, nondestructive examination (NDE) tests, preventive maintenance, and repairs to tower cranes shall be performed by a qualified, competent person.

4.1.2 Operations

1. Tower cranes shall have flags or other indicators on the jib identifying the working load radius.

2. Tower cranes shall have devices to limit:

   - Trolley travel at both ends of the jib.
   - Two-blocking.
   - Operating radius in accordance with lifted load.
   - Pressures in hydraulic or pneumatic circuits.
   - Crane travel at both ends of the runway tracks.

3. Limiting devices for the load, acceleration, and deceleration, when provided, shall be installed in enclosures that can be locked or sealed to inhibit tampering. Operational tests shall be conducted, and a load-limit device setting shall be verified by applying test loads of 100 percent or the manufacturer's requirements of the applicable ratings. These tests shall be performed prior to using newly erected and altered cranes with dated records kept on site.

4. Use portable radios or telephones for all signaling when visibility is limited. Hand signals are not recommended for tower crane operations.

5. Prior to setting up the crane, evaluate underground conditions for utilities, compaction, or any other possible dangerous conditions.

6. The hoist line should always be vertical.

7. Comply with safe work distances for work near live electric lines in accordance with procedure SH-2C2, Mobile Equipment Near Energized Electric Lines.

8. Continuous fall protection shall be used at all times when climbing tower or mast of crane. This restriction also includes inspection of the boom and jib.

9. Follow manufacturer's instructions for entering and exiting the cab.

10. Cranes shall be able to weathervane in high winds or when left overnight.

11. Follow manufacture's recommendations regarding operation during winds. Always consider wind loading on the crane and the load that is going to be lifted.

12. Operator shall always maintain visual or vocal contact with signal person. If for any reason contact is lost, operator shall stop all operations until contact is restored.

13. A device indicating wind velocity shall be mounted at or near the top of the crane. Velocity readout shall be provided at the operator's station in the cab, and a visible or audible alarm shall be triggered in the cab and at remote control stations when a preset wind velocity, recommended by the manufacturer, has been exceeded.

14. The manufacturer's operator's manual shall be kept with the crane while it is onsite.

4.1.3 Operator License

All crane operators shall have current certification for the class of crane they will operate. The certification shall be issued by a nationally recognized certifying agency, accredited by a nationally recognized agency, such as the National Commission for Certifying Agencies (NCCA). In addition, all mobile crane operators shall be licensed to operate the specific make and model of the crane to which they are assigned. The operator shall pass a preassignment physical examination (per ASME B30.5 – Current), written examination (make and model specific), and a functions test on the actual piece of equipment to be assigned. (Contractors shall be able to produce operator certification documentation upon request.)

1. The operator shall meet the following physical qualifications:

   - Vision of at least 20/30 Snellen in one eye and 20/50 in the other eye, with or without corrective lenses.
   - Ability to distinguish colors, regardless of position, if color differentiation is required for operation.
   - Adequate hearing, with or without hearing aids, for the specific operation.
   - A medical opinion indicating any condition(s) that would preclude safe operation of a crane.

3. Evidence that an operator is subject to seizures or loss of physical control shall be sufficient reasons for disqualification. Specialized medical evaluations may be required to determine these conditions.

4.1.4 Maintenance

Regular inspections and maintenance of cranes shall be conducted and performed in accordance with the manufacturer's specifications and current ASME standards. Maintaining tower cranes in good working condition must be of utmost consideration to eliminate unnecessary downtime and to prevent accidents. Companies (outside owner, vendor, or contractors) shall be able to provide documentation for inspection.

CAUTION

Any crane involved in an incident including, but not limited to, shock loading, two-blocking, the load contacting the boom, the boom contacting a stationary object, a lightning strike, or load/crane contact with an electrical source shall be immediately removed from service. An annual inspection shall be performed and any repairs will be made in accordance with manufacturer's recommendations prior to returning the crane to service.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

Attachment A – Historical Summary of Changes.

Attachment A – Historical Summary of Changes

Rev. 0
12/10/02

Approved by unknown
Reviewed by unknown
Revised by unknown

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Rev. 1
10/29/08

Approved by Don Gaddy
Reviewed by Construction Safety Leadership Team
Revised by Bruce Walker

Remarks:
General revision.

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03/11/09

Approved by Will Taylor
Reviewed by Construction Safety Leadership Team
Revised by Bruce Walker

Remarks:
General revision.

Rev. 3
07/29/09

Approved by Will Taylor
Reviewed by Construction Safety Leadership Team
Revised by Bob Fitzgerald

Remarks:
Changed load testing of newly installed cranes to 125 percent of capacity. Clarified language regarding annual inspection stickers, use of hand signals, and weathervaning.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2C5

Derricks and A-Frames

	Rev. 2	**Rev. 3**
Date	3/11/2009	7/29/2009
Revised By	Bruce Walker	Bob Fitzgerald
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Will Taylor	

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide requirements for the erection, use, inspection, and maintenance of derrick and A-frame cranes at Engineering and Construction (E&CS) construction projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- ASME B30.6 – Current, Derricks.
- 29 CFR 1926, Subpart N.
- 29 CFR 1910, Subpart N.
- SH-2C2, Mobile Equipment Near Electric Lines.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

This paragraph applies to guy, still-leg, breast, gin, pole, and A-frame derricks of the stationary type capable of handling loads at variable reaches and powered by hoists through systems of rope reeving, used to perform lifting hook work, single- or multiple-line bucket work, grab, grapple, and magnet work. Derricks may be permanently installed or for temporary use as in construction work.

1. All new derricks constructed and installed on or after the effective date of this standard shall meet the design specifications of the American National Standard Institute Safety Code for Derricks, ANSI B30.6. Derricks constructed prior to December 31, 1971 shall be modified to conform to these design specifications by December 31, 1973 unless it can be shown that the derrick cannot feasibly or economically be altered and that the derrick substantially complies with the requirements of this paragraph.

2. Operating controls shall be marked or an explanation of the controls shall be posted in full view of the operator. Cranes or derricks having a movable working boom shall have a radius- or boom-angle indicator installed. This indicator shall be located where the operator can readily read it while in his normal operating position.

3. The top 6 ft of the boom or jib shall be painted bright yellow.

4. All crane operators shall have current certification for the class of crane they will operate. The certification shall be issued by a nationally recognized certifying agency, accredited by a nationally recognized agency, such as the National Commission for Certifying Agencies (NCCA). In addition, all mobile crane operators shall be licensed to operate the specific make and model of the crane to which they are assigned. The operator shall pass a preassignment physical examination (per ASME B30.5 – Current), written examination (make and model specific), and a functions test on the actual piece of equipment to be assigned. (Contractors shall be able to produce operator certification documentation upon request.)

    1. The operator shall meet the following physical qualifications:

        - Vision of at least 20/30 Snellen in one eye and 20/50 in the other eye, with or without corrective lenses.

- Ability to distinguish colors, regardless of position, if color differentiation is required for operation.
- Adequate hearing, with or without hearing aids, for the specific operation.
- A medical opinion indicating any condition(s) that would preclude safe operation of a crane.

2. Evidence that an operator is subject to seizures or loss of physical control shall be sufficient reasons for disqualification. Specialized medical evaluations may be required to determine these conditions.

5. For permanently installed derricks with fixed lengths of boom, guy, and mast rigging, a substantial, durable, and clearly legible rating chart shall be provided with each derrick and securely affixed where it is visible to personnel responsible for the safe operation of the equipment.

   The chart shall include the following data: manufacturer's approved load ratings at corresponding ranges of boom angle or operating radii; specific lengths of components on which the load ratings are based; and required parts for hoist reeving (size and construction of rope may be shown either on the rating chart or in the operating manual). For nonpermanent installations, the employer shall provide sufficient information from which capacity charts can be prepared for the particular installation. The capacity charts shall be located at the derricks.

6. Prior to initial use, all new and altered derricks shall be inspected to insure compliance with the provisions of this procedure.

4.1.1 Inspections

Inspection procedure for derricks in regular service is divided into two general classifications based upon the intervals at which inspection shall be performed. The intervals in turn are dependent upon the nature of the critical components of the derrick and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are herein designated as frequent and period with respective intervals between inspections as defined below: frequent inspection - daily to monthly intervals and periodic inspection 1 to 12 month intervals, or as specified by the manufacturer.

4.1.2 Frequent Inspections

Items such as the following shall be inspected daily for defects, including observation during operation for any defects which might appear between regular inspections:

- Deficiencies shall be carefully examined for any safety hazard. All control mechanisms shall be checked for adjustment, wear, and lubrication.

- All chords and lacing shall be inspected visually.
- Tension in guys and plumb of the mast shall be inspected.
- Inspect for deterioration or leakage in air or hydraulic systems.
- Derrick hooks shall be inspected for deformations or cracks.
- Hooks with cracks or having more than 15 percent in excess of normal throat opening or more than 10 degree twist from the plane of the unbent hook shall be discarded immediately and not reused on any equipment subject to the provisions of this standard.
- Rope reeving shall be visually inspected for noncompliance with derrick manufacturer's recommendations.
- Hoist brakes, clutches, and operating levers shall be checked for proper functioning before beginning operations.
- Electrical apparatus shall be inspected for malfunctioning, signs of excessive deterioration, dirt, and moisture accumulation.

4.1.3 Periodic Inspection

Complete inspections of the derrick shall be performed at periodic intervals as defined in this paragraph depending upon its activity, severity of service, and environment, or as specifically indicated below.

NOTE:

Deficiencies shall be carefully examined and a determination made as to whether they constitute a safety hazard.

These inspections shall include the requirements of paragraph 4.1.1 above and in addition, items such as the following:

- Bolts or rivets for tightness.
- Parts such as pins, bearings, shafts, gears, sheaves, drums, rollers, locking and clamping devices for wear, cracks, and distortion.
- Structural members for deformations, cracks, and corrosion; gudgeon pin for cracks, wear, and distortion each time the derrick is to be erected.
- Power plants for proper performance and compliance with applicable safety requirements.

- Hooks shall have magnetic particle or other suitable crack-detecting inspection should be performed at least once each year.

- Foundation or supports shall be inspected for continued ability to sustain the imposed loads.

- Proper control function such as load hoisting and lowering, boom up and down, and swing.

4.1.4 Annual Certification and Return to Service Inspection

Prior to initial use, all new, newly installed, and altered derricks shall have an OSHA annual certification inspection performed by a third party crane inspector that meets OSHA/ASME qualification requirements before it is placed in service. A derrick which has been idle for a period of over 6 months shall have an OSHA annual certification inspection performed by a third party crane inspector that meets OSHA/ASME qualification requirements before it is returned to service. A derrick which has been idle for a period of 1 month or more, but less than 6 months shall be given an inspection conforming to requirements of paragraphs 3.1 and 3.2 above before it is placed in service.

4.2 Installation and Maintenance

4.2.1 General

1. All anchorages shall be approved by the competent person in charge of crane operations. Rock and hairpin anchorages shall require special testing.

2. A preventive maintenance program based on the derrick manufacturer's recommendations shall be established.

3. Before adjustments and repairs are started on a derrick, the following precautions shall be taken:

    a. The derrick to be repaired shall be arranged so it will cause the least interference with other equipment and operations in the area.

    b. All hoist drum dogs shall be engaged; the main or emergency switch shall be locked in the open position, if an electric hoist is used.

    c. Warning or out of order signs shall be placed on the derrick and hoist; the repairs of booms or derricks shall either be made when the booms are lowered and adequately supported or safely tied off.

d. A good communication system shall be set up between the hoist operator and the appointed individual in charge of the derrick operations before any work on the equipment is started.

e. Any welding repairs shall be approved by the competent person and performed by a certified welder in accordance with the manufacturer's recommendations.

f. After adjustments and repairs have been made, the derrick shall not be operated until all guards have been reinstalled, safety devices reactivated, and maintenance equipment removed. Any unsafe conditions disclosed by inspection shall be corrected before operation of the derrick is resumed. Adjustments shall be maintained to assure correct functioning of components.

g. Repairs or replacements shall be provided promptly as needed for safe operation. The following are examples of conditions requiring prompt repair or replacement: hooks showing defects described in ANSI B30.6 shall be discarded; all critical parts which are cracked, broken, bent, or excessively worn; pitted or burned electrical contacts shall be corrected only by the replacement and in sets.

h. Controller parts should be lubricated as recommended by the manufacturer.

i. Replacement and repaired parts shall have at least the original safety factor.

4.2.2 Safe Operating Practices

1. Derrick operation shall be directed only by the individual specifically designated for that purpose.

2. No derrick shall be loaded beyond the rated load. When loads approach the maximum rating of the derrick, it shall be ascertained that the weight of the load has been determined within plus or minus 10 percent before it is lifted.

3. A derrick shall not be used for side loading except when specifically authorized by a responsible person who has determined that the various structural components will not be overstressed. Boom and hoisting rope systems shall not be twisted.

4. The operator shall not be allowed to leave the controls while the load is suspended.

5. Personnel shall not be permitted to stand or pass under a load on the hook. If the load must remain suspended for any considerable length of time, a dog, or

pawl and ratchet, or other equivalent means, rather than the brake alone, shall be used to hold the load.

6. Dogs, pawls, or other positive holding mechanism on the hoist shall be engaged. When not in use, the derrick boom shall: be laid down; be secured to a stationary member, as nearly under the head as possible, by attachment of a sling to the load block; or be hoisted to a vertical position and secured to the mast.

7. Exposed moving parts, such as gears, ropes, setscrews, projecting keys, chains, chain sprockets, and reciprocating components which constitute a hazard under normal operating conditions shall be guarded. Guards shall be securely fastened. Each guard shall be capable of supporting without permanent distortion, the weight of a 200-pound person unless the guard is located where it is impossible for a person to step on it.

8. Hooks shall meet the manufacturer's recommendations and shall not be overloaded. Safety latch-type hooks shall be used, or the hooks shall be moused.

9. A carbon-dioxide, dry-chemical, or equivalent fire extinguisher shall be kept in the immediate vicinity of the derrick. Operating and maintenance personnel shall be familiar with the use and care of the fire extinguishers provided.

10. Refueling with portable containers shall be done with Underwriters' Laboratory, Inc., (UL) - or Factory Mutual Laboratories-approved or equivalent, safety-type metal containers equipped with automatic closing spout and flame arrester. Machines shall not be refueled with the engine running.

11. Except where the electrical distribution and transmission lines have been deenergized and visibility grounded at point of work or where insulating barriers not a part of or an attachment to the derrick have been erected to prevent physical contact with the lines, derricks shall be operated proximate to, under, over, by, or near power lines only in accordance with procedure SH-2C2, Mobile Equipment Near Electric Lines. Cage-type boom guards, insulating links, or proximity warning devices may be used on derricks, but the use of such devices shall not operate to alter the requirements of above.

12. All timbers for A-frames shall be of correct size, length, and condition to sustain the maximum contemplated loads. A-frame timbers shall be braced with two spreaders spaced 1/4 the length of the A-frame from each end. Cross bracing shall cross between the two spreaders. Bracing material shall be not less than 2/3 of the rated strength of the A-frame timbers. Tie rods (stay bolts) of not less than 1½ times the diameter of the main A-frame timbers shall be used.

13. Tie rods shall be placed directly above the upper spreader and directly below the lower spreader. Ends of bolts shall be secured at each end with malleable washers and nuts. The base of the A-frame shall be securely anchored.

14. Elevating type A-frames shall be set in pinion-type sockets. Pinion bases shall be securely anchored. Guy lines shall be of sufficient strength to carry the load imposed upon them and shall be securely fastened in place.

CAUTION

Any crane involved in an incident including, but not limited to, shock loading, two-blocking, the load contacting the boom, the boom contacting a stationary object, a lightning strike, or load/crane contact with electrical source shall be immediately removed from service. An annual inspection shall be performed, and any repairs will be made in accordance with manufacturer's recommendations prior to returning the crane to service.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

Attachment A – Historical Summary of Changes.

Attachment A – Historical Summary of Changes

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Revised by Bruce Walker

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Reviewed by Construction Safety Leadership Team
Revised by Bruce Walker

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General revision.

Rev. 3
07/29/09

Approved by Will Taylor
Reviewed by Construction Safety Leadership Team
Revised by Bob Fitzgerald

Remarks:
Clarified crane operator certifications.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2C6

Draglines and Clamshells

	Rev. 2	**Rev. 3**
Date	3/11/2009	7/29/2009
Revised By	Bruce Walker	Bob Fitzgerald
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Will Taylor	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide established requirements for inspecting and safely operating draglines and clamshells at Engineering and Construction Services (E&CS) construction projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- SH-2C2, Mobile Equipment Near Energized Electric Lines.
- Dragline/Clamshell Operator Medical Examination.
- Dragline/Clamshell Operator Medical Qualification.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 Inspection

1. All cranes used onsite shall have an OSHA annual inspection performed by a third party crane inspector that meets OSHA/ASME qualification requirements before the crane is authorized for service. Southern Company follows individual state guidelines regarding the application of a yearly inspection sticker posted on the windshield; at a minimum a copy of the annual inspection shall be kept on file. If the annual inspection expires while the crane is on the project a new inspection shall be performed by a third party crane inspector that meets OSHA/ASME qualification requirements prior to authorizing continued operation of the crane.

2. The operator shall test all controls, safety devices, and wire rope before beginning work each day. If any of the controls do not operate properly, they shall be repaired before the crane is operated. A daily inspection is required before each work shift.

3. All mechanical and control repairs made to a crane shall be performed by a competent person according to the manufacturer's recommendations and approvals.

4.1.2 Environmental Qualifications

Hydraulic lines shall be maintained to prevent leakage. If a leak or failure occurs in a hydraulic system, the spill shall be cleaned up according to site, local, state, and federal regulations. The site shall have a written procedure to respond to this type of spill.

4.1.3 Crane Operator License

All crane operators shall have current certification for the class of crane they will operate. The certification shall be issued by a nationally recognized certifying agency, accredited by a nationally recognized agency, such as the National Commission for Certifying Agencies (NCCA). In addition, all mobile crane operators shall be licensed to operate the specific make and model of the crane to which they are assigned. The operator shall pass a preassignment physical examination (per ASME B30.5 – Current), written examination (make and model specific), and a functions test on the actual piece of equipment to be assigned. (Contractors shall be able to produce operator certification documentation upon request.)

1. The operator shall meet the following physical qualifications:

   - Vision of at least 20/30 Snellen in one eye and 20/50 in the other eye, with or without corrective lenses.
   - Ability to distinguish colors, regardless of position, if color differentiation is required for operation.
   - Adequate hearing, with or without hearing aids, for the specific operation.
   - A medical opinion indicating any condition(s) that would preclude safe operation of a crane.

2. Evidence that an operator is subject to seizures or loss of physical control shall be sufficient reasons for disqualification. Specialized medical evaluations may be required to determine these conditions.

4.1.4 Equipment Requirements

Every crane must be equipped with a legible, durable load and range chart that shows the manufacturer's recommended load configurations and maximum load weights. The chart must be kept visible to operators at all times when they are seated at the control station.

4.1.5 Operation

A crane operator must observe the following minimum safety precautions:

1. Maintain continuous contact, either visual or verbal, with qualified signal person. If for any reason contact is lost, the crane operator must stop all operations until full contact is restored.

2. Loose items, such as tools, oilcans, and waste materials, shall be prohibited in the operator's cab.

3. Be constantly alert to the effects of dynamic loading when swinging, hoisting, and lowering the load or when moving the crane.

4. Prior to moving a crane into an area, evaluate underground conditions for crane stability and for the possibility of damage to underground facilities or injury to personnel.

5. Make sure the hoist line is vertical.

6. Barricade the swing radius of the counterweight. Use other barricades according to site procedures.

7. Know the radius of the load at all times.

8. Make sure the bucket attachment pins/shackles are in good working order and are used properly.

9. Follow the manufacturer's instructions for entering and exiting the crane's cab.

10. Do not operate cranes when windspeeds are in excess of manufacturer's recommendations.

11. Make sure cranes are able to weathervane in high winds and when left overnight or unattended.

12. Make sure the crane is level before operations begin.

13. When the crane is loading or unloading trucks, the truck's cab shall be unoccupied.

14. Make sure that no one walks or stands between the dragline or clamshell load and a bank, high wall, spoil, or other obstacle.

15. Do not allow anyone else on the crane when it is in use.

16. Keep the loading areas clear of personnel.

17. Keep the swing path clear.

18. Ensure that all parts of the crane and load maintain a safe distance from live electric lines in accordance with procedure SH-2C2, Mobile Equipment Near Energized Electric Lines.

19. Make sure that the equipment is shut down and a fire extinguisher is available during refueling.

20. Prevent the bucket and its contents from striking the boom.

21. Make sure dragline or clamshell buckets are sized according to the load capacity of the crane.

22. Lower the load bucket to the ground before leaving the controls so that it does not remain suspended while the crane is inactive.

23. Maintain minimum safe working distances from overhead electric lines and cables.

24. The EC&S requirement of use of an anti-two block device is not required on cranes with dragline or clamshell configurations.

CAUTION

Any crane involved in an incident including, but not limited to, shock loading, two-blocking, the load contacting the boom, the boom contacting a stationary object, a lightning strike, or load/crane contact with an electrical source shall be immediately removed from service. An annual inspection shall be performed, and any repairs will be made in accordance with manufacturer's recommendations prior to returning the crane to service.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

Attachment A – Historical Summary of Changes.

Attachment A – Historical Summary of Changes

Rev. 0
06/27/08

Approved by Don Gaddy
Reviewed by Construction Safety Leadership Team
Revised by Bruce Walker

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Reviewed by Construction Safety Leadership Team
Revised by Bruce Walker

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Reviewed by Construction Safety Leadership Team
Revised by Bob Fitzgerald

Remarks:
Clarified language regarding annual inspection stickers and contractor examination documentation.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2C7

Overhead Cranes

	Rev. 2	**Rev. 3**
Date	3/11/2009	7/15/2009
Revised By	Bruce Walker	Bob Fitzgerald
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Will Taylor	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the requirements for the installation, inspection, maintenance, load testing, and operation of overhead cranes on Engineering and Construction Services (E&CS) construction projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- ASME Standard B30.2 - Current.
- 29 CFR 1926.554.
- 29 CFR 1910.179, Overhead and Gantry Cranes.
- 29 CFR 1910.184, Slings.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

Only authorized personnel shall move materials with overhead cranes. Overhead cranes shall be designed, installed, and tested to meet the specifications of applicable standards.

4.1.1 Rated Load Marking

1. The rated load of overhead cranes shall be plainly marked on each side. Overhead cranes containing more than one hoisting unit shall have a rated load marked on each hoist or its load block. In all cases, the marking shall be clearly legible from the ground.

2. Newly installed overhead cranes shall be load tested to 125 percent of their rated capacity prior to routine use of the crane.

4.1.2 Inspections

1. All cranes used onsite shall have an OSHA annual inspection performed by a third party crane inspector that meets OSHA/ASME qualification requirements before the crane is authorized for service. Southern Company follows individual state guidelines regarding the application of a yearly inspection sticker posted on the windshield; but at a minimum, a copy of the annual inspection shall be kept on file. If the annual inspection expires while the crane is on the project a new inspection shall be performed by a third party crane inspector that meets OSHA/ASME qualification requirements prior to authorizing continued operation of the crane.

2. Overhead cranes in regular service shall have two classifications of general inspections:

   a. Frequent inspection: Occurring daily to monthly.

   b. Periodic inspection: Occurring monthly to yearly.

3. The frequency of inspection within each classification is dependent upon the nature of the critical components and the degree of their exposure to wear, deterioration, or malfunction.

4. Overhead cranes that have been idle for a period of 1 month or more, but less than 6 months, shall be given a frequent inspection and rope inspection prior to use. Overhead cranes out of service more than 6 months shall be given a periodic inspection prior to use. All inspections shall conform to the requirements of 29 CFR 1910.179. Only a competent person shall perform frequent and periodic inspections.

4.1.3 Lifting Devices

Inspect all lifting equipment before each use. Do not use any device that is damaged or missing the identification tag. Report all unserviceable equipment to your supervisor, and tag and remove the lifting device from service.

4.1.4 Operator Training

1. All personnel operating overhead cranes shall receive the following training:

   - Daily operation inspections.
   - Rigging techniques.
   - Lifting and moving the load.
   - Storage of equipment.
   - Selection and use of lifting devices such as slings (nylon, wire rope, or chain), sling hooks, spreader bars, clamps, fixtures, and any other rigging equipment used to lift the load.
   - The use of equipment per manufacturer instructions.

2. An employee shall be retrained if there is any reason to believe he or she does not possess the understanding or skills required to work safely. The following circumstances require retraining:

   - Workplace changes that render the previous training obsolete.
   - The employee demonstrates lack of knowledge of equipment or safe working procedures.

4.1.5 Operator License

All crane operators shall have current NCCCO certification for the class of crane they will operate. In addition, all overhead crane operators shall be licensed to operate the specific make and model of the crane to which they are assigned. The operator shall pass a preassignment physical examination (ASME B30.2- current), written examination, and a functions test on the actual piece of equipment to be assigned. A preassignment physical shall be completed before the operator is allowed to operate any overhead crane. (Contractors shall be able to produce operator certification documentation upon request.)

1. The operator shall meet the following physical qualifications:

   - Vision of at least 20/30 Snellen in one eye and 20/50 in the other eye, with or without corrective lenses.
   - Ability to distinguish colors, regardless of position, if color differentiation is required for operation.
   - Adequate hearing, with or without hearing aids, for the specific operation.
   - A medical opinion indicating any condition(s) that would preclude safe operation of a crane.

2. Evidence that an operator is subject to seizures or loss of physical control shall be sufficient reasons for disqualification. Specialized medical evaluations may be required to determine these conditions.

4.1.6 Maintenance Requirements

1. A preventive maintenance program based on the overhead crane manufacturer's recommendation shall be established.

2. When making repairs or adjustments, the following precautions shall be taken:

   a. Move the crane to a place on the runway where it will not cause interference with other cranes or operations.

   b. Shut off the main power disconnect and lock it in the open position.

   c. Place warning or out-of-order signs on the crane so they are visible from the floor. Use barricades to secure the area under the crane to protect personnel from falling objects.

   d. Use rail stops or other suitable means to prevent interference from other cranes on the same runway.

e. After adjustments and repairs have been made, the crane shall not be operated until guards have been reinstalled, safety devices reactivated, and maintenance equipment and parts removed.

4.1.7 Load Handling

The following procedures shall be followed when lifting and moving a load:

1. The rated load shall not be exceeded at any time except during an authorized load test.

2. The hoist rope shall not be wrapped around the load.

3. The load shall be attached to the hoist hook by means of a sling or other approved lifting devices.

4. The load shall be balanced and well secured in the sling or lifting device before it is lifted more than a few inches.

5. A tag line shall be used to control the load.

6. Before moving the load, the operator shall insure that the hoist rope is free from kinks, multiple-part lines are not twisted around each other, and the hook is centered to prevent the load from swinging.

7. When moving the crane, the operator shall ensure that no one is on the hook or the load, the load does not pass over any personnel, and the load is not lowered below the point where there are two full wraps of rope on the drum.

8. The operator shall not leave the controls with a load suspended on the crane.

9. Where supplied, an anti-two block device will be tested and functional.

10. The load hook shall be equipped with a safety latch or mouse.

CAUTION

Any crane involved in an incident including, but not limited to, shock loading, two-blocking, the load contacting the boom, the boom contacting a stationary object, a lightning strike, or load/crane contact with electrical source shall be immediately removed from service. A thorough periodic-type inspection of the crane shall be performed, and any repairs will be made in accordance with manufacturer's recommendations prior to returning the crane to service.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

Attachment A – Historical Summary of Changes.

Attachment A – Historical Summary of Changes

Rev. 0
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Reviewed by unknown
Revised by unknown

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Reviewed by Construction Safety Leadership Team
Revised by Bruce Walker

Remarks:
General revision.

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Approved by Will Taylor
Reviewed by Construction Safety Leadership Team
Revised by Bruce Walker

Remarks:
General revision.

Rev. 3
07/29/09

Approved by Will Taylor
Reviewed by Construction Safety Leadership Team
Revised by Bob Fitzgerald

Remarks:
Changed load testing of newly installed cranes to 125 percent of capacity. Clarified language regarding annual inspection stickers and operator physical exam.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2C8

Boom Trucks for Lifting Material

	Rev. 2	**Rev. 3**
Date	3/11/2009	7/29/2009
Revised By	Bruce Walker	Bob Fitzgerald
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Will Taylor	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide requirements for operator qualifications, inspecting, and operating telescoping and articulating boom trucks on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- ANSI B30.5 – CURRENT
- 29 CFR 1910, Subpart N.
- 29 CFR 1926, Subpart N.
- SH-2C2, Mobile Equipment Near Energized Electric Lines.
- Boom Truck Operator Authorization.
- Boom Truck Inspection.
- Boom Truck Operator Medical Examination.
- Boom Truck Operator Medical Qualification.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 Inspection

1. All cranes used onsite shall have an OSHA annual inspection performed by a third party crane inspector that meets OSHA/ASME qualification requirements before the crane is authorized for service. Southern Company follows individual state guidelines regarding the application of a yearly inspection sticker posted on the windshield; at a minimum a copy of the annual inspection shall be kept on file. If the annual inspection expires while the crane is on the project a new inspection shall be performed by a third party crane inspector that meets OSHA/ASME qualification requirements prior to authorizing continued operation of the crane.

2. Before using a boom truck, the operator must inspect the work location for any unsafe conditions and report them to the supervisor immediately so they can be corrected. The operator must test all controls and safety devices before beginning work each day. If any of the controls does not operate properly, the control must be repaired by a competent person before the boom truck is operated.

4.1.2 Environmental Qualifications

Hydraulic lines must be maintained to prevent leakage. If a leak or failure occurs in a hydraulic system, the spill must be cleaned up according to site- and governing-agency regulations.

4.1.3 Operator Qualifications

All crane operators shall have current certification for the class of crane they will operate. The certification shall be issued by a nationally recognized certifying agency, accredited by a nationally recognized agency, such as the National Commission for Certifying Agencies (NCCA). In addition, all mobile crane operators shall be licensed to operate the specific make and model of the crane to which they are assigned. The operator shall pass a preassignment physical examination (per ASME B30.5 – Current), written examination (make and model specific), and a functions test on the actual piece of equipment to be assigned. (Contractors shall be able to produce operator certification documentation upon request.)

1. The operator shall meet the following physical qualifications:

   - Vision of at least 20/30 Snellen in one eye and 20/50 in the other eye, with or without corrective lenses.
   - Ability to distinguish colors, regardless of position, if color differentiation is required for operation.
   - Adequate hearing, with or without hearing aids, for the specific operation.
   - A medical opinion indicating any condition(s) that would preclude safe operation of a crane.

2. Evidence that an operator is subject to seizures or loss of physical control shall be sufficient reasons for disqualification. Specialized medical evaluations may be required to determine these conditions.

4.1.4 Equipment

Every boom truck must be equipped with legible, durable load and range chart that shows the manufacturer's recommended load configurations and maximum load weights. The chart must be easily visible to operators when they are at the controls. A fire extinguisher must be kept in the truck's cab.

4.1.5 Safe Operating Practices

1. Boom truck operators must operate their equipment according to the manufacturer's recommendations.

2. All boom trucks must have a functioning anti-two block device.

3. Make sure the boom truck is level before operations begin. Extreme caution must be used when setting up a boom truck for use near an excavation. The

excavation competent person must be notified prior to set up to assess any cave-in potential. Additional matting or shoring may be necessary.

4. Where provided, outriggers shall be fully extended during lifting operations. Where boom trucks are set up on soft or unstable ground, mats shall be used under the outrigger pads. All personnel must stay clear of the outriggers when being extended.

5. Make sure that when the boom truck is loading or unloading, the truck's cab is unoccupied.

6. All four tires shall be chocked during lifting operations for boom trucks not equipped with outriggers.

7. All loads being landed or received by personnel shall be controlled by a tag line. Keep hands off suspended loads.

8. Do not operate cranes when wind speeds exceed manufacturer's recommendation for safe operation.

9. Do not leave the controls when the load is suspended.

10. Make sure that no one works, stands, or walks under a suspended boom load and that no one rides on the hook or the load.

11. Do not allow anyone else on the boom truck when it is in use.

12. Keep the loading/unloading areas clear of personnel.

13. Maintain minimum safe working distances from overhead electric lines and cables in accordance to procedure SH-2C2, Mobile Equipment Near Energized Electric Lines.

14. Follow the manufacturer's recommendations for maximum allowable loads and maximum boom lengths. (Remember that the weights of hooks, hook blocks, balls, slings, and all other load handling devices are considered part of the load.)

15. Make sure the boom is secured and lying in a rest before the boom truck is allowed to travel. If a rest is not available, secure the boom to prevent movement.

16. Make sure all brakes and locks are engaged if the unit is going to be left unattended for extended periods of time or if the operator is leaving the immediate area.

17. Load hook shall be equipped with a safety latch or mouse.

18. Boom trucks must be equipped with a functioning audible back-up alarm. The alarm will sound continuously while the truck is backing up.

19. Mechanics shall not be permitted to adjust, oil, lubricate or repair any mechanism on the boom truck while in operation. The boom truck must be shutdown, unless function testing of the truck is being performed after repairs have been made. Any guards removed to perform service must be promptly replaced.

20. A boom truck shall not be used to hoist personnel.

4.1.6 Wire Rope Hazards

Wire rope with one or more of the following defects shall be replaced immediately:

1. When one wire rope in a set of pendant lines requires replacement, the entire set shall be replaced.

2. In standing ropes, more than two broken wires in one lay in areas beyond end connections, or more than one broken wire at the end connection.

3. In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay.

4. Wear of one-third of the original diameter of the outside individual wires caused by abrasion, scrubbing, flattening, or peeling.

5. Kinking, crushing, birdcaging, or any other damage resulting in distortion of the rope structure.

6. Evidence of heat damage from any cause.

7. Reduction from nominal diameter of more than:

   - 1/64 in. for diameters up to and including 5/16 in.
   - 1/32 in. for diameters from 3/8 in. up to and including 1/2 in.
   - 3/64 in. for diameters 9/16 in. to and including 3/4 in.
   - 1/16 in. for diameters from 7/8 in. up to and including 1 in.
   - 3/32 in. for diameters from 1-1/4 in. up to and including 1-1/2 in.

4.1.7 Hook Inspection

The hook inspection program shall coincide with the initial crane inspection.

1. Before the crane is authorized for use, a nondestructive inspection test shall be performed. The most accurate method of inspecting hooks for cracks is by magnetic-particle and dye-penetrant inspection. Hooks with threaded shanks

shall be carefully inspected for wear in the thread area. If the hook shows signs of wear or stress, the hook shall be removed from service. Items to be checked during this annual inspection are listed below:

- Cracks, severe nicks, or gouges.
- Wear not to exceed 10 percent of original sectional dimension.
- A bend or twist not to exceed 10 degrees from the plane of the unbent hook.
- Safety latch engagement damage or any malfunctioning.
- Hook attachment and securing means.
- Measurement of hook throat.

2. Results of this inspection and original measurements, for the purpose of comparison in subsequent annual inspection, shall be kept by the respective maintenance or equipment supervisor.

CAUTION

Any boom truck involved in an incident including, but not limited to, shock loading, two-blocking, the load contacting the boom, the boom contacting a stationary object, a lightning strike, or load/boom truck contact with an electrical source shall be immediately removed from service. An annual inspection of the boom truck shall be performed, and any repairs shall be made in accordance with manufacturer's recommendations prior to returning the boom truck to service.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

Attachment A – Historical Summary of Changes.

Attachment A – Historical Summary of Changes

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Revised by unknown

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Reviewed by Construction Safety Leadership Team
Revised by Bruce Walker

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Reviewed by Construction Safety Leadership Team
Revised by Bruce Walker

Remarks:
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Approved by Will Taylor
Reviewed by Construction Safety Leadership Team
Revised by Bob Fitzgerald

Remarks:
Clarified language regarding annual inspection stickers and operator certification documentation.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2C9

Aerial Lifts and Bucket Trucks

	Rev. 0	**Rev. 1**
Date	12/10/02	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide requirements for operating and using aerial lift work platforms, extendable boom platforms, articulating boom platforms, scissors lifts, and bucket trucks at Engineering and Construction Services (E&CS) construction projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- ANSI A92.2 Current, Vehicle-Mounted Elevating and Rotating Work Platforms.
- 29 CFR 1910.67, Vehicle-Mounted Elevating and Rotating Work Platforms.
- 29 CFR 1926, Subpart K, Electrical.
- SH-2C2, Mobile Equipment Near Energized Electric Lines.
- Aerial Lifts and Bucket Trucks Daily Inspection Form.
- Aerial Lift/Bucket Truck Operator Authorization.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

All personnel who work with aerial lift platforms, extendable boom platforms, articulating boom platforms, scissors lifts, and bucket trucks shall follow all safe work practices established by this procedure, as well as those established by the manufacturer of the equipment.

4.1.1 Inspection

1. Inspection of powered aerial work platforms will be made in accordance with manufacturer's recommendations and company, governing agency inspection requirements, and regulations.

2. A competent person must inspect all aerial lifts prior to their use on site and at least quarterly thereafter. Test lift controls each day to ensure that the controls are in safe working condition.

4.1.2 Operation

1. Personnel shall not be permitted to use or operate lifts or platforms unless they have been trained and licensed by a competent person in the use and operation of such equipment.

2. Powered aerial work platforms being used near electrical distribution or transmission lines shall comply with standards set forth in 29 CFR 1926,

Subpart K and procedure SH-2C2, Mobile Equipment Near Energized Electric Lines.

3. Equipment shall not be moved when the boom is elevated in a working position with workers in the basket/bucket or on the platform unless equipment was manufactured to perform these functions as stated in writing by the manufacturer.

4. Manufacturer's specifications and limitations shall be followed. Do not allow rigging from the platform or boom.

5. Safety harnesses shall be worn by employees working from the basket/bucket with the lanyard attached to the equipment. Under no circumstances shall the lanyard be attached to a pole, the structure, or other equipment. Personnel shall use the manufacture's designated anchorage point.

6. Personnel must work while standing on the platform floor, never on the top rail, midrail, makeshift platform, or toeboard.

7. Personnel shall not tamper with controls and/or bypass safety devices.

8. Mobile and self-propelled lifts, platforms, and extended boom aerial work platforms shall not be used in outside work activities when severe wind conditions exist (winds above 20 mph or manufacturer's recommendation, whichever is the most stringent).

9. Work activities from aerial lifts, bucket trucks, or work platforms in outside areas are prohibited during electrical storms.

10. Outriggers must be used when available with equipment.

11. No alterations may be performed to the equipment unless the manufacturer approves them in writing.

12. All contractors and projects that use aerial lifts and bucket trucks to access any elevated areas shall develop an effective site-specific procedure for dealing with a stuck basket. At a minimum, the procedure includes how the occupants will be removed from the immobilized basket prior to its extrication and how the stuck basket is to be safely released.

4.1.3 Operator Training and Licensing

1. Each employer shall designate a competent person (such as an equipment superintendent) at each site. The competent person shall administer the practical test and a standard test (written) to determine an applicant's/employee's operating ability. Alternate source of service is a competent person from vendors who supply rental equipment.

2. A practical test shall be used to determine an employee's ability to operate each type and model of equipment to be operated.

3. Training will be provided for each operator in compliance with equipment operator training procedures. Training shall be documented.

4. Personnel successfully completing the practical test and standard test shall be issued a license by the competent person.

5. A competent person will monitor all newly licensed personnel for the first month of operation to verify the operator's competency. Retraining will be provided if necessary.

4.1.4 Record Retention

1. A training and testing record for each employee designated as an equipment operator shall be kept on file at the site.

2. Inspection and maintenance of equipment shall be performed and documented in accordance with the manufacturer's standard.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2C10

Pile Driving

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide the minimum requirements for sheet-, soldier-, tube-, timber-, concrete-, auger-, and similar pile-driving activities at Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926.603, Pile driving equipment.
- SH-2A25, Working Over or Near Water.
- SH-2C2, Mobile Equipment Near Energized Electric Lines.
- SH-2C3, Mobile Cranes.
- Hydraulic Crane Inspection.
- Lattice Boom Inspection.
- Mobile Crane Operator Medical Examination.
- Mobile Crane Operator Medical Qualification.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 Equipment Inspection

A qualified inspector shall inspect cranes according to guidelines in procedure SH-2C3, Mobile Cranes. The operator shall inspect and complete a daily inspection report to ensure safe operation of the equipment.

4.1.2 Hoses

Hoses supplying power to a hammer, auger, or vibrator are commonly routed up the crane boom and are subject to separating during operation. Secure each hose approximately 12 in. (30.5 cm) from the coupler to an independent point on the boom or lead. Ensure a powered hose remains secure if separation occurs.

4.1.3 Operator Qualifications

Crane operator shall meet requirements stated in procedure 2.C.3. Only qualified personnel may operate leads, hammers, augers, and vibrators.

4.1.4 Planning

Prior to starting pile-driving activities, a competent person shall conduct a planning and hazard analysis.

4.1.5 Health Hazards

When planning an auger- or pile-driving job, the engineer or designer shall consider analyzing subsurface soil and water for potential contaminants that could present health hazards. The engineer is to ensure that appropriate methods are in place to protect personnel from exposure to any identified health hazards.

4.1.6 Additional Hazards

Special consideration shall be given to any underground physical interference (for example, underground pipe lines or electrical cables), any above-ground piping or electrical cables, the effects of vibration on adjacent facilities, adjacent excavations and trenches, and the effects of noise on personnel.

4.1.7 Permits

Each site/facility shall develop a site-specific permit for pile driving. Items for consideration for permit include vibration, noise, excavation permit, health hazards, disposition of waste materials, securing of supply hose, and hazard analysis.

4.1.8 Anti-Two Block Devices

Cranes used to handle leads for pile driving operations may not be required to have an anti-two block device. The anti-two block device shall be first tested to see if it will function as intended. Often the chain used to suspend the anti-two block device will have to be shortened for this application. If the device will not function, it may be excluded. The crane used for handling leads may not be used for any other purpose unless an anti-two block device is installed. The contractor shall assign a spotter to watch and warn the crane operator if anti-block situation is about to occur.

4.2 Equipment

4.2.1 Overhead Cab Protection

Overhead cab protection shall not interfere with operator's vision. Protection shall be equivalent of 2-in. planking or other solid material of equal strength.

4.2.2 Fixed Leads

Using fixed leads is the preferred method of pile driving. The site/facility manager or designee shall approve any other type lead.

Stop blocks will be provided for the leads to prevent the hammer from being raised against the head block.

A blocking device, capable of safely supporting the weight of the hammer, will be provided for placement in the leads under the hammer at all times while employees are working under the hammer.

Guards will be provided across the top of the head block to prevent the cable from jumping out of the sheaves.

When the leads must be inclined in the driving of batter piles, provisions will be made to stabilize the leads.

Fixed leads will be provided with ladder and rings, or similar attachment points, so that the loft worker may engage the body harness lanyard to the leads.

When leads are provided with the loft platform, they will be protected by standard guardrails.

Steam line controls will consist of two shutoff valves, one of which will be a quick-acting lever-type within easy reach of the hammer operator.

Guys, outriggers, thrustouts, or counterbalances will be provided as necessary to maintain stability of pile driver rigs.

4.3 Work Practices

4.3.1 Fall Protection

Continuous positive fall protection, such as lifelines, rope grabs, and complete guardrails, shall be used when a person is on a vertical lead or an apron. Every effort shall be made to eliminate the need to access the top of a pile. Examples of such efforts include mechanical pile threaders and remote release shackles.

4.3.2 Access to Elevated Work Locations

Ladders and aerial platforms are the preferred means of access to elevated work areas.

4.3.3 Precautions

1. Only personnel essential to the operation are allowed within a radius equal to length of undriven pile.

2. Personnel are not allowed near a turning auger.

3. Noise levels shall be determined and high noise areas posted. Appropriate hearing protection for employees near the operation is required.

4. Personnel are to avoid skin contact with piles coated or treated with chemicals. Refer to the appropriate Material Safety Data Sheet. Use protective barrier creams and protective clothing.

5. Personnel shall use a face shield and other personal protective equipment (PPE) when sawing a treated timber pile.

6. When working over or near a body of water where potential for drowning exists, use personal flotation devices and rescue procedures. See procedure SH-2A25, Working Over or Near Water.

7. Maintain safe minimum working distances near overhead electric lines or cables. See procedure SH-2C2, Mobile Equipment Near Energized Electric Lines.

8. Before beginning work, verify that vibration from pile driving will not damage sensitive equipment such as refractor/lined equipment or DCS equipment.

9. Operators and winch persons will accept signals only from the designated signal person.

10. When piles are being driven in an excavated pit, the walls of the pit shall be sloped to the angle of repose or sheet piled and braced, according to the requirements of 29 CFR 1926.652, Requirements for protective systems.

11. When steel tube piles are being "blown out," employees shall be kept well beyond the range of falling materials.

12. When it is necessary to cut off the tops of driven piles, pile driving operations shall be suspended.

13. When driving jacked piles, all access pits shall be provided with ladders and bulkheaded curbs to prevent material from falling into the pit.

14. When driving treated piles, employees shall wear the necessary PPE and barrier cream.

4.4 Environmental Precautions

4.4.1 Material Handling

Storage, hauling, and disposal of materials (such as spoils and treated pile wastes) shall be in accordance with site/facility and governing agency regulations.

4.4.2 Hydraulic Lines

Hydraulic lines shall be maintained to prevent leakage. If catastrophic failure of a hydraulic system or any leak occurs, the spill/leak shall be cleaned according to site/facility and governing agency regulations.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2C11

Forklift Operations

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide requirements for inspection, operation, and operator qualifications for forklifts on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1910.178(1), Powered industrial trucks.
- 29 CFR 1926.602(c), Lifting and hauling equipment.
- ANSI B56.1 – Current, Safety Standard for Low Lift and High Life Trucks.
- Forklift Inspection Form.
- Forklift Operator Authorization.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

Each contractor shall designate a competent person to manage the contractor's forklift program in accordance with all applicable regulatory requirements and the requirements of this procedure.

4.1.1 Inspection

A qualified inspector shall inspect forklifts prior to their initial use on the site/facility. All forklifts in use shall meet the applicable requirements of design, construction, stability, inspection, testing, maintenance, and operation as defined in ASME B56.1. Forklift operators shall inspect the forklift at the beginning of each shift and complete a daily forklift inspection form equivalent to the one contained in this procedure.

4.1.2 Operator Training and Licensing

1. All operator training and evaluation shall be conducted by persons who have the knowledge, training, and experience to train forklift operators and evaluate their competence.

2. Only trained and competent personnel (except trainees) shall be allowed to operate forklifts.

3. Training shall consist of a combination of formal instruction, practical training, and evaluation of the operator's performance in the workplace. Personnel shall successfully complete a standard written test, a practical test, and demonstrate operations competency. The written test can be given for each type of fork lift, but the function test must be make-and-model specific. A forklift operator license shall be issued by the trainer and shall be in the possession of the operator while operating forklifts.

4. Training program content shall comply with 29 CFR 1910.178(l)(e).

5. An evaluation of each operator's performance shall be conducted at least every 3 years and refresher training conducted if necessary or if indicated by the operator's unsafe operation.

6. The training program and documentation shall be available at the site.

4.1.3 Operation

1. Operate forklifts according to manufacturer's instructions.
2. Passengers are not allowed on forklifts.
3. Do not modify or alter forklift without written authorization from manufacturer.
4. When a forklift is left unattended, place the lift carriage in its lowest position, set the brake, turnoff the engine, and, if on incline, chock the wheels.
5. Maintain minimum safe working distances from overhead live electric lines or cables.
6. Forklifts operated on roadways with automobile traffic shall be equipped with turn signals and brake lights. Operators shall observe applicable traffic regulations, including authorized plant speed limits.
7. The operator shall be required to slow down and sound the horn where vision is obstructed. If the load being carried obstructs the operator's forward view, the operator shall be required to travel with the load trailing.
8. Give pedestrians the right of way.
9. During refueling, stop the engine. Have a fire extinguisher available.
10. Slow down at intersections, corners, ramps, and other danger points.
11. While operating forklifts equipped with a rollover protection structure (ROPS) or a fall object protection structure (FOPS), operators shall use seat belts.
12. Forks shall be placed under the load as far as possible; the mast shall be carefully tilted backward to stabilize the load.
13. No one shall be allowed to stand or pass under the elevated portion of any forklift, whether loaded or empty. In addition, personnel will stand clear of loads in transit or from directly in front of loads being set.
14. When ascending or descending grades in excess of 10 percent, loaded forklifts shall be driven with the load upgrade.
15. When traveling with a load, the forklift shall travel no faster than a person can walk.
16. All loads will be properly secured to prevent their accidental release including, but not limited to, binding loose objects, using pallets, using four-sided containers or skip pans, and securing the load to the mast.

17. Material shall not be rigged from the bottom of the forks or mast (no free rigging). Any lifting under the forks shall be accomplished using a properly designed lifting device approved for use by the manufacturer of the forklift/fork truck.

18. All telescopic boom handles (fork trucks) shall have low-mounted booms that afford 360- visibility from the operator's cab when the boom is in a travel position or when picking/setting a load at or near ground level. The equipment shall be designed so that a person cannot enter the area between the front and rear tires.

4.1.4 Attachments

If attachments are needed, such as fork extensions or approved lifting attachment for below-the-forks lift, use manufacturer-supplied attachments whenever possible.

1. Only use attachments that are engineered and approved by the manufacturer.

2. Modifications and additions, which affect the capacity and safe operation, shall not be performed without manufacturer's prior written approval. Capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly. This restriction includes the practice of directly attaching rigging equipment (slings, shackles, etc.) onto the forks of forklifts for below-the-forks lifts.

3. Use attachments only for their designed and intended purpose.

4. Use manufacturer-supplied fork extensions whenever possible. All exceptions shall be approved by site manager.

4.1.5 Environmental Concerns

Hydraulic lines shall be maintained to prevent leakage. If a spill occurs, follow site/facility or governing-authority regulations.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2C12

Earth-Moving Equipment

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide the minimum requirements for the inspection and operation of earth-moving equipment on Engineering and Construction Services (E&CS) projects. These requirements address dump trucks, front-end loaders, bulldozers, graders, backhoes, and tracked and rubber-tired hydraulic excavators.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926.602, Material handling equipment.
- SH-2A17, Excavation and Trenching.
- SH-2C1, Qualifying Equipment Operators.
- Earth Moving Equipment Inspection.
- Equipment Operators Authorization.
- Excavation and Trenching Permit.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 Equipment Inspection

1. A qualified inspector shall inspect all equipment before its onsite use.
2. Operators shall inspect the equipment prior to each shift. An equipment checklist shall be used to document equipment inspections.

4.1.2 Operator Qualifications

1. Only qualified operators may operate earth-moving equipment.
2. Before an operator uses equipment on the site/facility, the operator shall demonstrate experience operating earth-moving equipment.
3. Additional operator license requirements are found in procedure SH-2C1, Qualifying Equipment Operators.

4.1.3 Permits

All excavations require an excavation permit in accordance with procedure SH-2A17, Excavation and Trenching.

4.1.4 Operation

1. Operate equipment in accordance with local traffic regulations. The contractor should make arrangements to provide, properly train, equip, and position personnel for traffic control where work may interfere with public traffic.

2. Equipment may carry only as many people as there are factory-installed seatbelts.

3. During refueling, engine shall be shutoff and fire extinguisher shall be present.

4. Any equipment operated after dark shall be equipped with factory lighting or approved equivalent.

5. Personnel shall not occupy excavators or buckets during equipment operation.

6. When moving track equipment on paved surfaces, provide protection to prevent paving damage.

7. Seatbelts shall be used at all times during operation of equipment.

8. In large earth moving operations, the contractor shall establish a written man-on-the-ground procedure as part of the site-specific safety plan. At a minimum, the safety plan shall include those actions and safeguards to be implemented to protect personnel who must walk near heavy equipment. All site personnel shall be trained on the safety plan, and training is to be documented.

4.1.5 Hydraulic Lines

Hydraulic lines shall be maintained to prevent leakage. If a spill occurs, the spill shall be cleaned according to site/facility- and governing-agency regulations.

4.1.6 Backhoes

Backhoes shall not be used for operations exceeding the manufacturer's recommendations or capacity of the equipment (for example, using the backhoe boom instead of a crane). If the manufacturer permits the backhoe's use as a crane, the rigging shall meet site requirements and be attached to the bucket according to manufacturer's recommendations and load charts. Radius capacities shall be posted on the backhoe.

4.1.7 Trucks with Dumping Beds

1. If the cab of the dump truck is equipped with vertical and horizontal protection (designed to withstand the impact of material being loaded), all personnel may remain in the cab of the truck during loading of the dump bed with material less than 3 in. in diameter. If the cab has insufficient protection and/or the materials are larger than 3 in. in diameter, all personnel shall leave the truck during loading.

2. The driver and passengers shall all wear required personal protective equipment when they are outside the vehicle.

3. Follow manufacturer's recommendations when dumping a load. Be aware of ground conditions and acceptable slope when operating the dump bed. Dumping operations shall be performed on stable compacted areas.

4. Before and during dumping operations, the operator shall verify overhead clearances and maintain minimum safe-working distances from live electrical lines.

5. The dump bed shall be down and locked before traveling.

4.1.8 Rollover Protection

1. All earth-moving equipment requires rollover protection.

2. All backhoes require rollover protection except a backhoe attachment mounted on a tractor of less than 20 horsepower.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2C13

Drilling Equipment

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide established requirements for safe operation of power-drilling equipment and for soil sampling, test well, and drilled foundations on Engineering and Construction (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926.800, Underground construction.
- Department of Transportation Regulations.
- SH-2C1, Qualifying Equipment Operators.
- Drilling Equipment Inspection Form.
- Excavation and Trenching Permit.
- Equipment Operators Authorization.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 Equipment Inspection

A qualified competent person shall inspect all drilling equipment pre- and post-transportation to the drill site. In addition, a preuse inspection using a written drilling equipment checklist shall be performed prior to its use onsite.

4.1.2 Planning

1. The responsible engineer shall consider subsurface soil and water for potential contaminants and appropriate techniques to protect personnel from exposure of identified hazards. The appropriate Material Safety Data Sheets shall be available at the site prior to start of drilling operations.

2. The responsible engineer and operator shall also survey the area for physical hazards above and below ground. Examples of potential hazards are listed below:

   - Underground pipe.
   - Underground electric cable.
   - Swing radius of equipment.
   - Above-ground power lines.
   - Unidentified backfilled debris.

4.1.3 Permits

All drilling requires an excavation and trenching permit prior to drilling.

4.1.4 Attachments

1. Whenever possible, use manufacturer-supplied attachments.
2. Use only attachments that are engineered and approved for use by the manufacturer.
3. Use attachments only for their designed and intended purpose.

4.1.5 Operations

1. Only properly trained and qualified personnel shall operate drill equipment. See procedure SH-2C1, Qualifying Equipment Operators.
2. Only essential personnel shall work near turning drill.
3. Determine noise levels and post high-noise boundaries.
4. Ensure operator and workers around drilling have proper hearing protection. Ensure that any other personal protective equipment identified by the hazard assessment is available and properly used.
5. Immediately after completion of drilling each hole, excavation shall be barricaded or install hole covers adequate to provide fall protection (minimum 2-in. nominal thickness scaffold grade lumber or equivalent) and labeled HOLE COVER.
6. Maintain access and egress at all times around excavation and drill rig.
7. When workers are required to climb the drill rig, continuous fall protection shall be provided.
8. Maintain cleanup of spoil piles, tools, and equipment around work area.
9. Follow site, local, state, and government regulation in the disposal of spoils.
10. Hydraulic lines shall be maintained to prevent leakage. The contractor shall make provisions to properly respond to any spills or leaks.
11. Mobile drilling rigs shall be provided with mirrors and reverse direction alarms.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2C15

Movement of Oversized Loads

	Rev. 0	**Rev. 1**
Date	06/30/2009	
Reviewed By	Bruce Walker	
Revised By	Construction Safety Leadership Team	
Approved By	Will Taylor	

1.0 PURPOSE AND SCOPE

1.1 Purpose

To ensure the safe movement of oversized loads transported within Engineering and Construction Services (E&CS) project areas.

1.2 Scope

This procedure applies to all oversized loads (as defined by the Construction Services regional manager) transported on E&CS sites along project or plant roadways. All loads transported on public roadways shall conform to the applicable U.S. Department of Transportation and state-mandated requirements.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

oversized load – Any load transported via truck, tractor-trailer, carry-deck, crane, boom truck, multi-axle hydraulic hauler, or similar devices having dimensions that meet the following criteria:

- Exceeds 9 ft in width.
- Exceeds 13.5 ft in height.
- Loads extend beyond the end of any trailer by more than 10 ft.
- Pick-and-carry loads extend beyond the length of the boom or width of the crane.
- Any pick-and-carry lift with overall crane width exceeding 9 ft.
- Any load with the means to come within 2 ft of overhead or adjacent permanent structures along project or plant roadways.
- Any load that requires other-than-typical turning radius along plant roadways and intersections by virtue of length.
- Any load delivered to the project requiring Department of Transportation (State or Federal) permitting as an oversized load.

2.2 References

- 29 CFR 1926, subpart G, Signs, signals and barricades.
- SH-2B6, Traffic Vests.
- Signaling Handbook for Signs and Flags.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 Written Plan

A written plan is required for all oversized loads to be moved onsite. At a minimum, the plan shall include the following information and requirements:

- Proposed haul route with verification (such as soil boring data or compaction tests) the route will support the full weight of the load.
- Measures to be taken to ensure the load will not tip during movement.
- The type and capacity of equipment that will be used to haul the load. Manufacturer's load ratings or charts or engineering load calculations shall be included with the plan. To facilitate the site being able to develop the written plan for onsite travel, the position/person who purchased/delivered engineering procured equipment/material shall provide the site with oversized load information.
- Areas where traffic must be blocked or diverted shall be included in the plan, as well as the plans for placement of detour or closure signs and placement of traffic control personnel.
- Placement and types of escort vehicles.

- Measures used by traffic control personnel to direct or alert oncoming traffic.
- Measures to ensure that traffic control personnel are not struck by oncoming or adjacent traffic.

The plan shall be submitted to E&CS for review and approval prior to the movement of the oversized load.

4.1.2 Warning Devices

High visibility lights, flagging, or equivalent shall be placed on the load, the carrier, and the escort vehicle that are identifiable to oncoming or surrounding traffic at all times in all atmospheric conditions.

4.1.3 High Traffic Times

The movement of oversized loads should be planned to avoid high traffic times.

4.1.4 Traffic Control

Traffic control personnel shall be outfitted with high visibility vests suitable for the weather conditions and trained to perform assigned duties. Traffic control implements such as STOP/SLOW signs, glow lights, flags, or similar items shall be provided. Traffic control activities shall be performed in accordance with procedure SH-2B6, Traffic Vests. (See Signaling Handbook for Signs and Flags.)

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2C16

Equipment in Transit Near Energized Lines

	Rev. 0	**Rev. 1**
Date	3/11/2009	
Reviewed By	Bruce Walker	
Revised By	Construction Safety Leadership Team	
Approved By	Will Taylor	

1.0 PURPOSE AND SCOPE

1.1 Purpose

Provide requirements and guidelines for mobile equipment in transit and while operating near overhead lines and cables on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all mobile equipment in transit and while operating near overhead lines and cables on Engineering and Construction Services (E&CS) projects.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- Procedure SH-2C2, Mobile Equipment Near Energized Electric Lines.
- Power Line Hazard Awareness Permit.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements for Mobile Equipment In Transit Near Electric Lines

The following requirements shall be observed when mobile equipment is in transit near electric lines:

1. Mobile equipment and materials in transit shall maintain clearance distances listed below:

Voltage of electric lines	Minimum clearance
230 kV or less	10 ft
231 kV to 750 kV	16 ft

2. To comply with the above requirements, E&CS has established safe work zones with regards to overhead power lines. These areas (see drawing with attachment A, Sample Equipment-In-Transit Procedure) have been deemed safe, and no permits are required in these areas. Mobile equipment moving from one area to another may need to obtain a permit if equipment cannot proceed underneath established goalpost crossings.

   In the event site conditions prohibit the establishment of safe zones, follow procedure SH-1K, Exceptions.

   In safe work zones, mobile equipment shall be allowed to operate within the footprint of the established area. Should the mobile equipment need to move outside the confines of either area without goal posts, the contractor supervision shall ensure that a JSA/STA is completed for the move. Also, a spotter shall walk ahead of the vehicle and aid the operator in identifying clearance issues.

   The crew foremen, operator, and spotter shall complete the JSA/STA together, identifying control measures for each of the following hazards:

   - Overhead power line locations.
   - Buildings or other obstructions that may pose clearance issues.
   - Vehicular traffic.
   - Pedestrian traffic.

3. Areas with low overhead clearance due to structures or power lines have been marked in yellow and designated HAZARD AREAS(see appendix B, Avoiding Electrical Hazards When Working Near Overhead Lines). Extreme caution shall be taken when traveling through these areas. HAZARD AREAS and DANGER AREAS (see item 4, next) are established by the site assessment team.

   When traveling in plant switchyards and other areas designated by the red DANGER AREA marking, the convoy shall meet all JSA/STA review and spotter requirements, and a member of the Generation management team shall review and sign the completed JSA/STA prior to moving the equipment.

4. Before work begins on a project, a site assessment team involving Transmission, Distribution, Construction, Engineering, and plant personnel is to be established. The purpose of this team is to define the areas of concern, boundaries of the safe work zones, and/or other control measures necessary to eliminate or mitigate the hazards associated with energized power lines.

5. When equipment in transit must be closer than the clearances listed in section 4.1.1 above, a Power Line Hazard Awareness Permit shall be obtained by the contractor performing the work.

6. All project sites shall establish a site-specific procedure to address the issues of equipment and materials around high voltage power lines. See attachment A, Sample Equipment-In-Transit Procedure.

CAUTION

The minimum safe clearance distance from the power line must be maintained unless the hazard has been eliminated or properly controlled with the controlling utility and noted on the Power Line Hazard Awareness Permit.

7. A qualified signalperson (may be the traffic spotter or other designated person) shall ensure that specified clearances are maintained.

8. Areas where there will be no work or passage of equipment under a live overhead line shall:

   - Have a barrier installed to run parallel to the line. The barrier may be fixed post fencing or drums filled with rubble spaced no more than 8 ft apart.

   - If cranes are in use, a line of flagging at a height of 10 ft should supplement the barriers.

- Danger notice stating DANGER - LIVE OVERHEAD LINE shall be spaced at intervals no more than 50 ft.

9. Areas where equipment will pass under a live overhead line (see appendix B, Avoiding Electrical Hazards When Working Near Overhead Lines) shall in addition to the above listed requirement have a goalpost-type structure installed to maintain the safe clearance distances from the lowest conductor. The horizontal distance for the goalpost structure shall use the clearances listed below from the outside conductor on both sides. Goal post installation may not always be possible.

Voltage of overhead lines	**Minimum clearance[1]**
50 kV or less	10 ft
51 kV to 230 kV	16 ft
231 kV to 500 kV	25 ft

10. Storage of equipment or materials underneath overhead power lines is strictly prohibited unless specially agreed precautions are put in place and authorized by the Generation site construction manager.

11. All equipment working around energized lines and not in transit shall follow procedure SH-2C2, Mobile Equipment Near Energized Electric Lines.

4.2 ANSI Requirements and other Protective Measures

Southern Company adheres to ANSI requirements for cran operations, as well as other preventive measures.

4.2.1 ANSI Requirements for Crane Operations

The ANSI requirements for working around power lines are much more specific and inclusive than the federal requirements from OSHA. The ANSI requirements are:

1. A crane must not be used to handle material stored under power lines unless the crane cannot reach the *danger zone,* which is the minimum clearance specified in ASME B30.5 – 1995.

2. Any overhead wire must be considered energized unless the owner or electric utility says it is not.

[1] Clearance for qualified electrical workers may permit closer distances than listed here, and will be defined in the appropriate operating company's procedures.

3. Crane operators must not rely on coverings (insulation) for protection.

4. The preferred safety procedure is to deenergize and ground the lines near the worksite.

5. A sign warning of the hazards of power lines must be posted on the crane.

6. If the crane or load can reach the danger zone, a meeting must be held onsite with the utility to establish safety procedures. Safety procedures must be established before work begins.

7. For load control, nonconductive tag lines shall be used around power lines.

8. A qualified signalperson or watchperson must be appointed to maintain clearance and warn the operator. Warning the operator is his or her sole duty.

4.2.2 Other Preventive Measures

If equipment must be used or transition closer than safe working clearance distance allows, a contractor with an approved Power Line Hazard Awareness Permit has several options. To prevent power line contacts, contractors can:

1. Have the utility deenergize and visibly ground the power lines.

2. Have the utility move power lines beyond the safe working distance.

3. Use barrier protection.

4. Install flagged warning lines to mark horizontal and vertical power line clearance distances.

5. Use an observer.

6. Install protective technologies on the material handling equipment.

4.3 Contact with Energized Lines

CAUTION

After a power line contact, the current flows outward through the ground in a ripple pattern. Areas of high and low electrical potential fields circle the energized equipment like the ripples in a pond after a stone hits the surface. If a worker steps from an area of high electrical potential to an area of low electrical potential, electricity can flow through his or her legs causing injury or death.

If contact with an energized lines occurs, follow these procedures:

1. The crane operator shall remain inside the cab.

2. All other personnel shall keep away from the crane, ropes, and load, because the ground around the machine might be energized.

3. The crane operator shall attempt to remove the crane from contact by moving it in the reverse direction from that which caused the contact.

4. If the crane cannot be moved away from contact, the operator shall remain inside cab until the lines have been deenergized.

5. If the crane operator must leave the equipment because of a more immediate hazard, such as a fire, the operator shall jump clear from the equipment and shuffle his or her feet in small steps.

6. The crew foreman shall secure the area and not allow anyone except emergency rescue personnel go near the energized equipment.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

Attachment A, Sample Equipment-In-Transit Procedure.

Attachment A
Sample Equipment-In-Transit Procedure

Effective immediately, the following procedure will be enforced on the McDonough CT project site.

The procedure applies to all mobile equipment and loads carried by mobile equipment exceeding 14 ft in height, traveling on site roadways.

1. Mobile equipment that fit in this category will be allowed to operate within the confines of the immediate cooling tower project footprint and the contractor laydown areas as outlined in the green SAFE WORK AREAS on the attached drawing.

2. Should the mobile equipment need to move outside the confines of either area, the contractor supervision will ensure that a JSA/STA is completed for the move. Also, a spotter will be required to walk ahead of the vehicle and aid the operator in identifying clearance issues.

   The crew foremen, operator, and spotter will complete the JSA/STA together, identifying control measures for each of the following hazards:

   - Overhead power line locations.
   - Buildings or other obstructions that may pose clearance issues.
   - Vehicular traffic.
   - Pedestrian traffic.

3. Areas with low overhead clearance due to structures or power lines have been marked in yellow and designated HAZARD AREAS. Extreme caution should be taken when traveling through these areas.

4. When traveling in plant switchyards and other areas designated by the red DANGER AREA marking, the convoy shall meet all JSA/STA review and spotter requirements, **and** a member of the Generation management team must also review and sign the completed JSA/STA prior to moving the equipment.

Contractor Sign-Off

Contractor Name	Contractor Site Manager Signature	Date

AVOIDING ELECTRICAL HAZARDS WHEN WORKING NEAR OVERHEAD LINES

At the planning stage and before beginning work near an overhead line, consult your onsite safety professional or Southern Company representative.

THERE ARE TWO GENERAL CASES:

Case 1: SITE WHERE THERE WILL BE NO WORK OR PASSAGE OF EQUIPMENT UNDER A LIVE OVERHEAD LINE

☑ A barrier should run parallel to the line.

☑ This barrier may be fixed post fencing or drums filled with rubble spaced 8 ft apart.

☑ If cranes are in use, a line of flagging at a height of 10 ft should supplement the barriers.(See below for distance from line)

☑ Danger notice stating DANGER – LIVE OVERHEAD LINE should be spaced at intervals.

Case 2: SITE WHERE EQUIPMENT WILL PASS UNDER A LIVE OVERHEAD LINE

In addition to the above, goalposts should be erected as shown with the following dimensions:

Height of goalposts:

Maintain clearance from lowest conductor
- **Up to 230 kV – 10 ft**
- **230 kV to 750 kV - 16 ft**

Distance between drums – 8 ft

Distance between danger notices – 50 ft

Horizontal distance of barrier to outside conductor on line:

• 50 kV or less	10 ft
• 51 kV to 230 kV	16 ft
• 231 kV to 500 kV	25 ft

SOUTHERN COMPANY

In general if work is to be undertaken directly under the line, Generation will insist that the line be disconnected and grounded for the duration of the work.

Generation may permit working under a live line only if special agreed precautions are put in place and these areas are outside established safe work zones and a permit is obtained.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2D1

Occupational Noise Exposure

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Reviewed By	Bruce Walker	Bruce Walker
Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide requirements to protect personnel from occupational noise exposure on Engineering and Construction Services (E&CS) construction projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926.52, Occupational noise exposure.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 REQUIREMENTS

4.1.1 Noise Exposure

1. The E&CS site manager shall make provisions for the testing of sound levels throughout the course of the project. A sound meter that registers dBA slow response (A-scale) shall be available to monitor noise levels of heavy equipment and air compressors, and work processes such as chipping with jackhammers, newly installed operating equipment, and other high-noise producing processes.

2. The E&CS site manager shall ensure that, if personnel are subjected to sound levels onsite exceeding those listed in the table below, Permissible Noise Exposure, exposure shall be controlled using feasible administrative or engineering controls. If such control measures fail to reduce sound levels within the levels of the table, appropriate personal protective equipment (hearing protection) shall be provided and used to reduce sound levels to within the ranges listed in the table.

Permissible Noise Exposure

Duration per day (hours)	Sound Level dBA slow response
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4 or less	115

3. Where noise levels continue to exceed those in the table above for an 8-hour day, an effective hearing conservation program shall be administered for exposed personnel. Contractors shall also be responsible for implementation of a program for their affected employees.

4. When hearing protection is required under this procedure, the hearing protectors shall be selected for effectiveness by a competent person. If the

hearing protectors are those inserted in the ear, a competent person shall check for fit.

5. Signs shall be posted in those areas where personnel exposure may exceed those noise levels listed in the table above to warn of the noise hazard and inform of required hearing protection.

4.1.2 Training

Personnel required to wear hearing protection shall be trained in the proper usage and limitations of those devices.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2D2

Hazard Communication

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide the requirements for the development and implementation of a site-specific hazard communication (HAZCOM) program at Engineering and Construction Services (E&CS) construction projects.

1.2 Scope

This procedure applies to all E&CS Constructions Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1910.1200, subpart Z, Hazard communication.
- 29 CFR 1926.59, subpart D, Hazard communication.
- Generation E&CS Hazard Communication Program.
- Chemical Inventory List.
- MSDS/Product Evaluation Form.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 Written Plan

1. E&CS shall develop, implement, and maintain at the project a written site-specific HAZCOM procedure using the accompanying Southern Company Generation (Generation) E&CS Hazard Communication Program including all site-specific information required in paragraph 3.0, required site-specific information.

2. On small projects in existing facilities, the E&CS regional safety and health coordinator may determine that it is appropriate for employees to work under and comply with the relevant facility's HAZCOM program in lieu of a site-specific E&CS program.

3. Each contractor shall develop, implement, and maintain at the workplace a written site-specific HAZCOM procedure as follows:

   a. Each contractor shall maintain labels and other forms of warning for his or her respective chemicals in the workplace.

   b. Each contractor shall obtain Material Safety Data Sheets (MSDS) and describe how the information will be used, how employees will be trained on the information, and how the MSDS file will be maintained and employees will be provided access to MSDS for their respective chemicals. Each contractor shall supply the E&CS site manager with a copy of the MSDS for all chemicals the contractor plans to bring onto or use at the site for review and approval.

   c. Each contractor shall provide information and training to their employees concerning the HAZCOM procedure and the hazards in the workplace. Training shall be documented and available for review by E&CS personnel.

   d. Each contractor shall maintain a chemical inventory list of his or her chemicals on site. Depending on the scope of the project, E&CS site managers may determine the need to maintain a master list of all chemicals on site. The lists shall reference, as a minimum, chemicals

known to be present in the workplace using an identity that is on the corresponding MSDS.

e. Each contractor shall supply the method used to inform his or her respective employees of the hazards of nonroutine tasks and the hazards associated with chemicals contained in unlabeled pipes and vessels in work areas.

f. The contractor shall make attempts to identify less hazardous materials to perform work operations requiring the use of chemicals or hazardous materials. For example, flammable solvents may be replaced with less hazardous nonflammable varieties to perform equivalent tasks.

g. Each contractor's site-specific HAZCOM procedure shall contain the process by which chemical information is made available to other employers and their employees on multiemployer worksites, including:

- The methods used to ensure MSDS are either stored in a central location or copied and provided to other employer.
- The methods used to notify other employers of any precautionary measures that need to be taken to protect employees during normal operating conditions and in foreseeable emergencies.
- The methods used to inform the other employers of the labeling systems used in the workplace.

4.1.2 Labeling

1. All containers of chemicals in the workplace shall be labeled, tagged, or marked with the following information:

a. The identity of the chemicals contained therein.

b. Appropriate hazard warnings.

NOTE

The diamond symbol (developed by the National Fire Protection Association (NFPA)) provides a limited amount of information and does not satisfy the full requirements of this paragraph. Other types of labeling systems, for example, the HMIS (Hazardous Materials Information System) label is similar to the NFPA diamond; however, there is space on these labels to include the identity of the chemical and a section where target organ

information, special warnings, and personal protective equipment requirements may be listed.

2. The manufacturer's labels and warning symbols shall not be removed or defaced unless a new label with the appropriate information is immediately affixed to the container.

3. Retention of U.S. Department of Transportation hazardous materials markings shall be made in accordance with 29 CFR 1910.1201, Retention of DOT markings, placards, and labels.

4. The site-specific HAZCOM procedure shall specify the labeling system to be used on the project and the procedures will be taken to ensure all site personnel are trained to understand the labeling system.

4.1.3 MSDS File

E&CS shall request and receive a MSDS from the manufacturer or distributor prior to ordering a chemical product, or in the case of contractors, prior to bringing the chemical onsite. The purchasing agent (or individual responsible for ordering a material) or each contractor shall forward a copy of the MSDS to the site manager, or if there is an E&CS Environmental, Health, and Safety (EH&S) professional onsite, the MSDS shall be forwarded to him or her for review.

1. An E&CS EH&S professional or resource shall review the MSDS prior to the purchase of the material or contractors bringing the material onsite. Where assigned to the project, the E&CS EH&S professional shall be the point of contact. When there is not a site E&CS EH&S professional assigned, the appropriate regional E&CS EH&S professional shall be consulted.

   a. When a MSDS arrives onsite, the MSDS shall be reviewed to ensure that it is the most recent issue. The MSDS shall be marked with the date that the sheet was received. A copy of the MSDS shall be maintained in the site master MSDS file.

   b. If the E&CS EH&S resource approves the material, the material shall be ordered. The EH&S resource shall supply the MSDS/Product Evaluation Form to the purchasing agent or contractor stating that the material has been approved, and the EH&S resource or designee shall place the MSDS in a file or binder of approved MSDS. If the approved material is to be used in an existing company facility, a copy of the MSDS shall be forwarded by E&CS to the appropriate operating company's Industrial Hygiene section for inclusion in the 3E online system.

   c. If, based on the information in the MSDS, the E&CS EH&S resource believes the product should not be used on the site, project management or the contractor shall be advised to find an alternative

material. If no suitable alternative is available, the EH&S resource shall provide conditional approval for the material with the understanding that the material will require special training, engineering controls, protective equipment, etc., as appropriate.

d. A request for an MSDS shall also appear on the purchase order for any chemicals other than those excluded by 29 CFR 1926.59(b)(6)(i-xii).

e. Chemical products ordered/received by the project shall not be distributed in the workplace until the site manager, contractor, or EH&S resource has confirmed receipt of the accompanying MSDS.

f. Manufacturers and distributors who fail to supply MSDSs will be notified that they will no longer be considered for chemical product purchases by E&CS.

2. Trade Secret

Manufacturers are allowed to withhold some information concerning the identity of chemicals on the MSDS if that information is classified as a trade secret. However, medical personnel and health care professionals have steps by which they may request the information for emergency or evaluation purposes. If assistance is required due to the trade secret provision being used on an MSDS, contact the E&CS EH&S resource assigned to the project.

4.1.4 Training

All E&CS and contractor personnel shall be provided training on chemicals in their work area at the time of their initial assignment and whenever a new chemical is introduced into their work area. Employees shall be informed of:

1. The requirements of the HAZCOM standard.

2. Any operation in their work area where chemicals are present.

3. The location and availability of the written site-specific HAZCOM program, the chemicals inventory list, and how to obtain a MSDS.

4. Employee training shall include at least the following:

   a. Methods and observations that may be used to detect the presence or release of a chemical in the workplace.

   b. The physical and health hazards of the chemicals in the work area.

c. The measures personnel can take to protect themselves from chemical hazards, including specific procedures implemented to protect from exposure to particular hazardous chemicals.

d. Specific details from the project's written HAZCOM plan, including labeling information, MSDSs, and how to use the appropriate hazard information.

5. The contractor shall ensure that personnel are trained as required by applicable U.S. Department of Transportation hazardous material regulations including, but not limited to, personnel involved in the packaging, loading, shipping, placarding, manifesting, etc., of hazardous materials as defined by the regulations. Documentation of training shall be available for review.

6. All training shall be documented. Contractor's training records shall be kept at the site and made available to E&CS for review upon request.

7. A written examination following the training shall be administered to document that the trainee understood the information provided during the training session.

4.1.5 Nonroutine Tasks

1. Prior to performance of nonroutine tasks (such as chemical cleaning, acid flush, or protective coating applications) involving hazardous chemicals, each contractor shall conduct a written hazard assessment to identify potential risks, exposures, control methods, and personnel training. Each contractor shall supply a copy of this assessment to the E&CS site manager for review. The site manager shall consult with the site E&CS EH&S resource or the regional resource for any comments or additional recommendations before any nonroutine task is undertaken. This consultation is necessary to evaluate and then communicate hazards to all affected site personnel.

2. Nonroutine tasks will vary from project to project; therefore, the details of the hazard assessment to be conducted shall be specified in the site-specific written program. The written program shall also indicate the method of transmitting the information concerning the hazards to all site personnel involved or potentially affected.

4.1.6 Coordination with Other Contractors

1. Arrangements shall be established with contractors on multiemployer sites for the transfer of information concerning chemicals. The details of this arrangement shall be specified in the E&CS site-specific written program.

2. Where E&CS is the controlling contractor on a project, each contractor shall be required to prepare and implement his or her own HAZCOM program that meets all the requirements of 29 CFR 1926.59, Hazard Communication. In addition, a copy of each contractor's chemical inventory and the MSDS for each material or chemical on the inventory shall be submitted to the E&CS site manager providing a centralized location from which a MSDS may be obtained. This requirement, however, in no way substitutes for the contractor's maintenance of a HAZCOM program or MSDS file.

4.1.7 Record Retention

1. MSDS will be treated as medical/exposure records and shall be maintained for the duration of the project plus 30 years. Each contractor shall provide E&CS with information on the location of the long-term retention of his or her records.

2. Each contractor shall maintain the written HAZCOM program, chemical inventory list, MSDS file, and employee training records at the site while he or she has any work in progress at the project.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2D3

Bloodborne Pathogens

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for the protection of personnel from occupational exposures to blood, body fluids, or other potentially infectious materials. All Engineering and Construction Services (E&CS) projects shall practice universal precaution in regards to bloodborne pathogen (BBP) exposure.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1910.1030, Subpart Z, Bloodborne Pathogens.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 Awareness Training

All personnel shall receive bloodborne pathogen awareness training. Particular emphasis shall be that no unauthorized personnel should contact body fluids. The names of designated response and cleanup personnel and methods to contact these groups should be clearly communicated to all site personnel.

4.1.2 First Responder, First-Aid Facility Staff, or Designated Cleaning Crew Personnel

Personnel who have potential for exposure to blood or other body fluids that may result from the performance of their duties (such as first responders, emergency medical technicians (EMTs), paramedics, or nurses) must have more extensive training. This training shall at a minimum include:

- An explanation of the OSHA BBP standard and the location of an accessible copy of the standard.
- A general explanation of the epidemiology and symptoms of bloodborne diseases.
- An explanation of the modes of transmission of bloodborne pathogens.
- An explanation of the E&CS or contractors site-specific exposure control plan and the procedure for obtaining a copy of the written plan.
- An explanation of the appropriate methods for recognizing tasks and procedures that may involve exposure to blood or other body fluids.

- An explanation of the use and limitations of methods that will prevent or reduce exposure including appropriate engineering controls, work practices, and personal protective equipment (PPE).
- Information of types, proper use, location, removal, handling, decontamination, and/or disposal of PPE.
- An explanation of the basis for the selection of PPE.
- The control of sharps and method for disposal of any biohazard waste generated. Also includes all labeling requirements.
- Information on the hepatitis B vaccine.
- Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious material.
- Information on the postexposure followup that will be provided for the employee following an exposure incident.
- An explanation of the signs and labels.
- The training is required initially, and on an annual basis.
- Method to report and OSHA-recordkeeping requirements for needle sticks.

4.1.3 Written Program

Each employer who has personnel with potential for occupational exposure to blood or other bodily fluids shall have a site-specific written BBP program. The written program must be designed to eliminate or minimize employee exposure and must contain, as a minimum, the elements listed below:

- The identification of the personnel who have anticipated or potential exposure to blood or other body fluids.
- The methods of compliance, that is, engineering controls, work practices, including universal precautions, hand washing, waste management, sharps control, PPE, housekeeping, and labeling of trash container.
- The methods of compliance with the requirement for preexposure hepatitis B (see paragraph 2.3, The Methods for Recordkeeping) vaccination series and postexposure evaluation/followup. This shall include the required statement regarding an employee's refusal to take the hepatitis vaccination.

- A description of the information and training program used for bloodborne hazards.

4.1.4 The Methods for Recordkeeping

1. Medical surveillance - Personnel who have potential for exposure to blood or other body fluids that may result from the performance of their duties (such as first responders, EMTs, nurses, or paramedics) must be offered the preexposure hepatitis B vaccination series. Other employees must have the hepatitis B vaccination within 72 hours of a reported BBP exposure incident. All other areas of postexposure followup will be performed after a BBP exposure incident.

2. Training documentation - Available for review at the site.

3. Documentation - Hepatitis B shots or letter of declination signed by employee on file.

4. Sharps disposal and proper biohazard disposal records.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2D4

Lead

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Reviewed By	Bruce Walker	Bruce Walker
Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide requirements for planning lead exposure controls for work activities with potential lead exposure on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

action level – Employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air (30 $\mu g/m^3$) calculated as an 8-hour time-weighted average (TWA).

lead – Metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds.

permissible exposure limit – The employer shall assure that no employee is exposed to lead at concentrations greater than 50 micrograms per cubic meter of air (50 $\mu g/m^3$) averaged over an 8-hour period.

2.2 Reference

- 29 CFR 1910.1025.
- 29 CFR 1926.62.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 General

1. Because potential exposure to lead, particularly lead-based paints, is most closely associated with conditions at an operating facility, the E&CS site manager shall contact the appropriate facility personnel for plant project work to help identify those work activities and/or locations with potential lead exposure. The E&CS site manager shall determine any operating facility requirements applicable to the scope of work and assure their incorporation into the written exposure control plan as outlined in paragraph 4.1.2 below.

2. Lead is a highly regulated material. The E&CS site manager in conjunction with appropriate operating facility personnel and the contractor shall make provisions for strict adherence to all applicable federal, state, and local regulations. Proper contractor licenses, lead worker/supervisor certification, project notification and fee payments to state regulatory agencies, notification to other building occupants, and regulatory compliance inspections are examples of the coordination activities that might need to be addressed.

3. Consideration shall be given to the use of effective engineering controls to eliminate or reduce exposure to inorganic lead to levels that are as low as reasonably achievable. At a minimum, no personnel are to be exposed to lead at concentrations greater than the OSHA-required permissible exposure limit (PEL) of 50 micrograms per cubic meter of air (50 $\mu g/m^3$) averaged over an 8-hour period. In addition, anytime the OSHA action level of 30

micrograms per cubic meter of air (30 µg/m^3) is met or exceeded, the contractor shall implement air monitoring, a medical surveillance program, employee information, and training for his or her affected employees.

4. When feasible engineering controls are not effective for exposure control, personnel will use appropriate personal protective equipment (PPE) and respiratory protection equipment provided by the contractor at no charge to his or her employees.

4.1.2 Written Plan

The E&CS site manager shall ensure that each contractor who has potential lead-disturbing activities develops a written exposure control plan for the specific lead hazards at each site. The written plan must address the following issues as required by OSHA in 29 CFR 1910.1025, Lead, and/or 1926.62, Lead, and any applicable state or local requirements:

- Employee information and training.
- Contaminant-specific hazard communication.
- Task-specific exposure assessment.
- Monitoring observation procedures.
- Engineering and work-practice controls.
- Action-level requirements.
- Establishing regulated areas.
- Respiratory protection.
- Protective work clothing and equipment.
- Housekeeping.
- Hygiene facilities and practices.
- Medical surveillance.
- Medical removal program.
- Recordkeeping and documentation.
- Information from regulatory appendices.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2D5

Arsenic

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Reviewed By	Bruce Walker	Bruce Walker
Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide requirements for planning arsenic controls for work activities with potential arsenic exposure on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

action level – A concentration of inorganic arsenic of 5 micrograms per cubic meter of air (5 µg/m^3) averaged over any 8-hour period.

permissible exposure limit – The employer shall assure that no employee is exposed to inorganic arsenic at concentrations greater than 10 micrograms per cubic meter of air (10 µg/m^3), averaged over any 8-hour period.

2.2 References

- 29 CFR 1910.1018.
- 29 CFR 1926.1118.
- Applicable operating company/facility requirements.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 General

1. Because potential arsenic exposure is most closely associated with conditions at an operating facility, the E&CS site manager shall contact the appropriate facility personnel for plant work to help identify those work activities and/or locations with potential arsenic exposure. The E&CS site manager shall determine any operating facility requirements applicable to the scope of work and assure their incorporation into the written exposure-control plan as outlined in paragraph 4.1.2 below.

2. Consideration shall be given to the use of effective engineering controls to eliminate or reduce exposure to inorganic arsenic to levels that are as low as reasonably achievable. Such activities as acid washes and flushes to reduce exposure potential shall be implemented whenever feasible.

3. At a minimum, no personnel are to be exposed to arsenic at concentrations greater than the OSHA-required permissible exposure limit (PEL) of 10 micrograms per cubic meter of air (10 $\mu g/m^3$) averaged over an 8-hour period. In addition anytime the OSHA-action level of 5 micrograms per cubic meter of air (5 ug/m^3) averaged over an 8-hour period is exceeded, the employer shall implement air monitoring, medical surveillance programs, employee information, and training for their affected employees.

4. When feasible engineering controls are not effective for exposure control, personnel shall use appropriate personal protective equipment (PPE) and respiratory protection equipment provided by the contractor at no charge to his or her employees.

4.1.2 Written Plan

The E&CS site manager shall ensure contractors have a written exposure-control plan for the specific arsenic hazards at each site/facility where the potential for exposure exists. The written plan must address the following issues as required by OSHA in 29 CFR 1910.1018, Inorganic arsenic, and/or 1926.1118, Inorganic arsenic, and any applicable operating plant requirements:

- Employee information and training.
- Process to address OSHA action level requirements (5 $\mu g/m^3$) averaged over an 8-hour period.
- Establishment of regulated areas.
- Contaminant-specific hazard communication.
- Exposure assessment.
- Monitoring observation procedures.
- Engineering and work practice controls.
- Respiratory protection.
- Protective work clothing and equipment.
- Housekeeping.
- Hygiene facilities and practices.
- Medical surveillance.
- Medical removal program.
- Recordkeeping and documentation.
- Information from regulatory appendices.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Safety, and Health Procedures

SH-2D6

Silica

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Reviewed By	Bruce Walker	Bruce Walker
Revised By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide requirements for site-specific exposure control program for silica-producing work activities at Engineering and Construction Services (E&CS) sites.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- OSHA Special Emphasis Program (SEP) for Silicosis.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 General

1. Effective engineering controls shall be used to eliminate or reduce exposure to silica to levels that are as low as reasonably achievable. At a minimum, contractors performing work activities with the potential to produce respirable silica dust shall assure that no personnel are exposed to silica at concentrations greater than the U.S. Occupational Safety and Health Administration (OSHA)-required permissible exposure limit (PEL) established by 29 CFR 1926.55, appendix A, Mineral Dusts. Some examples of potential silica-producing work activities are concrete saw cutting, use of jackhammers to scarify or break concrete, mixing of grout material, and surface preparation by use of sand as the blast medium prior to painting.

2. When feasible engineering controls are not effective to control exposure below the OSHA PEL, contractors will assign appropriate personal protective equipment (PPE) and respiratory protection equipment to their employees with potential for exposure.

4.1.2 Written Plan

1. Contractors must incorporate exposure control methods for specific silica hazards created by their work activities into their site-specific safety and health plan. The measures implemented shall address the following topics, in accordance with the OSHA Special Emphasis Program for Silica Exposure, and limit personnel exposures below the PEL as referenced in 29 CFR 1926.55, appendix A, Mineral Dusts:

   - Employee information and training.
   - Establishment of regulated areas.
   - Contaminant-specific hazard communication.
   - Exposure assessment.
   - Monitoring observation procedures.
   - Engineering and work practice controls.
   - Respiratory protection.

- Protective work clothing and equipment.
- Housekeeping.
- Hygiene facilities and practices.
- Medical surveillance and medical removal program.
- Recordkeeping and documentation.
- Emergency situations.
- Information from regulatory appendices.

2. Civil Field Services shall work in conjunction with the E&CS regional safety coordinator to assess potential silica-producing work activities, such as concrete boring and concrete cutting, and develop exposure control methods as needed.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2D7

Asbestos

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide requirements for planning asbestos controls for work activities with potential asbestos exposure on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

authorized person – Any person authorized by the employer and required by work duties to be present in regulated areas.

building/facility owner – The legal entity, including a lessee, that exercises control over management and record keeping functions relating to a building and/or facility in which activities covered by this standard take place.

employee exposure – Exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.

excursion limit – An airborne concentration of asbestos equal to 1.0 fiber per cubic centimeter of air (1 f/cc) as averaged over a sampling period of 30 minutes as determined by the method prescribed in appendix A of 29 CFR 1910.1001.

fiber – A particulate form of asbestos 5 micrometers or longer, with a length-to-diameter ratio of at least 3 to 1.

homogeneous area – An area of surfacing material or thermal system insulation that is uniform in color and texture.

permissible exposure limit (PELS) – *Time-weighted average limit (TWA):* an airborne concentration of asbestos of 0.1 fiber per cubic centimeter of air as an 8-hour time-weighted average (TWA) as determined by the method prescribed in Appendix A of 29 CFR 1910.1001.

regulated area – An area established by the employer to demarcate areas where airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the permissible exposure limits.

surfacing ACM – Surfacing material which contains more than 1 percent asbestos.

2.2 References

- 29 CFR 1910.1001.
- 29 CFR 1926.1101.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 General

1. Because potential asbestos exposure is most closely associated with conditions at an operating facility, the E&CS site manager shall contact the appropriate facility personnel for plant project work to help identify those work activities and/or locations with potential asbestos exposure. The E&CS site manager shall determine any operating facility requirements applicable to the scope of work and assure their incorporation into the written exposure control plan as outlined in paragraph 4.1.2, Written Plan.

2. Asbestos is a highly regulated material. The E&CS site manager, in conjunction with appropriate operating facility personnel and the abatement contractor, shall make provisions for strict adherence to all applicable federal, state, and local regulations. Proper asbestos contractor licenses, abatement worker/supervisor certification, project notification, and fee payments to state regulatory agencies, notification to other building occupants, and regulatory compliance inspections are examples of the coordination activities that might need to be addressed.

3. Consideration shall be given to the use of effective engineering controls to eliminate or reduce exposure to asbestos to levels that are as low as reasonably achievable. At a minimum, no personnel are to be exposed to asbestos at concentrations greater than the OSHA-required permissible exposure limit (PEL) of 0.1 fiber per cubic centimeter of air as an 8-hour time-weighted average (TWA) or an excursion limit value of 1.0 fiber per cubic centimeter of air (1 f/cc) as averaged over a sampling period of 30 minutes as determined by the method prescribed in appendix A of 29 CFR 1926.1101, Asbestos.

4. When feasible engineering controls are not effective for exposure control, personnel will use appropriate personal protective equipment (PPE) and respiratory protection equipment provided by their employer at no charge to personnel.

5. The E&CS site manager, in conjunction with the E&CS regional safety coordinator, shall ensure that special conditions addressing asbestos abatement activities are included in the contract.

4.1.2 Written Plan

1. The E&CS site manager shall ensure the contractor has a written exposure control plan for the specific asbestos hazards at each site/facility where the potential for exposure exists. The written plan must address the following issues as required by OSHA in 29 CFR 1910.1001, Asbestos, and/or 1926.1101:

   - Employee information and training.
   - Establishment of regulated areas.
   - Contaminant-specific hazard communication.
   - Exposure assessment.
   - Monitoring observation procedures.
   - Engineering and work practice controls.

- Respiratory protection.
- Protective work clothing and equipment.
- Housekeeping.
- Hygiene facilities and practices.
- Waste handling and disposal (generally requires written manifest).
- Medical surveillance and medical removal program.
- Recordkeeping and documentation.
- Emergency situations.
- Information from regulatory appendices.
- Applicable operating facility requirements.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2D8

Abrasive Blasting

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide requirements for safe abrasive blasting operations on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 29 CFR 1926.57(e), Disposal of exhaust materials.
- 29 CFR 1910.94, Ventilation.
- SH-2D4, Lead.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

1. The appropriate E&CS site manager shall ensure that requirements of this procedure are adhered to during all abrasive blasting operations.

2. Any abrasive blasting operation on surfaces that have the potential of being coated with a lead-based paint or primer shall comply with the procedure SH-2D4, Lead.

3. Approved respiratory protection is mandatory in any abrasive blasting operation. Appropriate air-line respirators shall be worn by blasting operators and any other person subject to the same hazards as the operator. Appropriate particulate filter respirators may be approved for persons other than operators for short intermittent and occasional basis only.

4. Operators shall be equipped with heavy canvas or leather hoods, gloves, and aprons.

5. All hose nozzles shall be equipped with an operational pressure release switch (deadman switch) which will automatically cutoff when released or dropped by the operator. These switches shall not be tied down or otherwise bypassed by the operator.

6. All hoses and connections shall be of the type and design for abrasive blasting operations. All couplings shall be positively secured from accidental disconnecting.

7. If air is supplied for breathing from an air compressor, it must supply Grade D breathing air and shall be equipped with:

    a. An alarm to indicate compressor failure and overheating. The sensor must monitor the breathing air temperature, not the temperature of the air compressor's cooling system.

    b. A high-temperature and carbon-monoxide alarm if the compressor is oil lubricated.

    c. An in-line filter system. Filters shall be checked, cleaned, and changed in accordance with the manufacturer's recommendations.

    d. An in-line air reducing safety valve.

    e. A vortex cooling system is recommended for employee comfort.

8. Air compressors shall be so situated as to prevent entry of contaminated air into the system.

9. When compressors are too far away from the abrasive blasting operation to monitor the warning devices and safety features, a means must be devised and approved to adequately warn blasting operators of impending hazards.

10. Warning signs shall be posted around the perimeter of all abrasive blasting operations to warn personnel of hazards.

11. The hose nozzle must be grounded to prevent buildup of static charges.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2D9

Radiological Non-Destructive Testing (NDT)

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 PURPOSE

To provide requirements for personnel radiation protection and compliance with applicable regulatory requirements during nondestructive testing (NDT) operations on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 10 CFR: U.S. Nuclear Regulatory Commission.
- 29 CFR 1910.1200, Hazard Communication.
- 29 CFR 1910.1096, Ionizing Radiation.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

Radioactive materials and other sources of ionizing radiation shall be used in accordance with applicable federal, state, or local laws and regulations and by applicable E&CS site-specific procedures. The exposure of employees to ionizing radiation must be maintained as low as reasonably achievable (ALARA). Where ionizing radiation exposure associated with NDT operations exists, the following requirements shall be complied with:

1. NDT operations shall be performed in accordance with a written site-specific radiation safety program developed by the NDT service provider and submitted to the E&CS site manager for approval.

2. In conformance with specific license conditions or federal, state or local regulations, a local or site radiation safety officer (RSO) shall be appointed and responsible for compliance oversight of NDT operation(s). Conditional with individual qualifications and license requirements, the RSO may be the operating plant RSO designee, the E&CS site environmental, health and safety (EH&S) manager, or a qualified service-provider employee.

3. Personnel conducting radiographic operations shall be trained, qualified, and certified in accordance with the appropriate federal, state, and local regulations.

4. E&CS shall obtain documentation from the service provider that a copy of the contractor's radiation safety training program has been filed with the U.S. Nuclear Regulatory Commission (NRC) for the appropriate state in which the NDT operations are in progress.

5. A qualified radiographer shall be in constant attendance whenever a sealed source is used for radiography.

6. At least two radiographers or a radiographer trainer (instructor) and a radiographer's assistance (trainee) shall perform radiography at temporary field locations (agreement state requirements may apply; refer to individual state licenses).

7. The NDT service provider's qualification and training records shall be maintained on file and available for review by NRC and/or state representatives and E&CS upon request.

8. Personnel performing radiographic operations shall be inspected at intervals to ensure compliance with license requirements and conditions, applicable regulations, and implementation of site-specific radiation safety procedure requirements.

9. E&CS NDT service providers shall use only the sealed sources and radiation projectors designated in the applicable state/NRC or agreement state radioactive materials license.

10. A calibrated and operable survey meter shall be available and used at each site where radiography is performed. A backup survey instrument shall be available at the site. In the event that both survey instruments become inoperable or deviate from calibrated operation, the NDT operation shall cease until replacement instruments are made available.

11. Appropriate and sufficient radiation surveys shall be conducted during NDT operations to ensure personnel radiation exposure is within regulatory limits.

12. Personal dosimetry shall be utilized by all personnel performing NDT. Analysis of personal dosimeters shall be performed by a laboratory that is recognized and accredited to perform said analysis.

13. Administration and management of the personnel dosimetry program shall be the responsibility of the NDT service provider and the assigned RSO.

14. Implementation and management of the personnel dosimetry program shall be consistent with regulatory requirements, and prescribed measurement and analytical procedures.

15. Posting and placarding of NDT work areas shall be in conformance with regulatory requirements and associated radiation exposure rates.

16. Administrative controls shall be utilized to control access of unauthorized personnel into NDT work areas.

17. A documented, physical inventory of licensed radioactive material shall be conducted by the NDT service provider and the RSO. Inventories shall be conducted in accordance with license conditions or quarterly (if sources are stored in approved areas on site), whichever is more frequent.

18. Transportation and shipment of licensed radioactive material shall be accomplished in accordance with license condition(s), NRC, and/or Department of Transportation (DOT) regulations, and/or the site-specific radiation safety procedure. Personnel shipping or preparing for shipment of

radioactive source shall be trained with DOT 49 CFR 172.700. Training shall be completed prior to assignment and every 3 years.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2E1

Temporary Electrical Power

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
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Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide an outline of the requirements necessary to install, maintain, and remove temporary electrical facilities at Engineering and Construction Services (E&CS) projects. Some examples of those facilities are new construction areas, change houses, shacks, and trailers.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- Engineering Standard E5F, Cables Buried Directly in the Ground.
- NEC, Article 230, Services.
- NEC, Article 240, Overcurrent Protection.
- NEC, Article 250, Grounding.
- NEC, Article 590, Temporary Wiring.
- NEC, Article 400, Table 4.
- NEC, Article 500, Hazardous (Classified) Locations.
- NEC, Article 501, Class I Locations.
- NEC, Article 502, Class II Locations.

- NEC, Article 503, Class III Locations.
- NEC, Article 550, Mobile Homes.
- SH-2E3, Ground Fault Protection.
- SH-2E6, Welding and Portable Generators.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 Planning

1. The E&CS site construction manager or his or her designee and the designated E&CS engineer who leads the work shall meet and analyze needs, available power sources, and locations for temporary electrical equipment.

2. The temporary power distribution design including the unit substation should be designed or reviewed by an electrical engineer. This design shall be documented.

3. If the temporary electrical service requirement is large or complex, such as uninterruptible power supply (UPS) systems on temporary construction (TC) administration buildings, E&CS shall supply an appropriate design.

4.1.2 General Temporary Electrical Installations

1. All National Electric Code (NEC) regulations pertaining to permanent wiring also pertain to temporary wiring, except as altered or modified by Article 305 of the NEC.

2. Temporary electrical power and lighting installations shall be permitted during the period of construction, remodeling, maintenance, repair, or demolition of buildings, structures, equipment, or similar activities. The temporary wiring shall be removed immediately upon completion of the construction or the purpose for which the wiring was installed.

3. The following general precautions apply to the use of temporary wiring:

   a. Install temporary wiring so that it is not subjected to physical damage (that is, bury, protect in conduit, suspend overhead, or isolate).

   b. All temporary feed and distribution power cables shall be directly buried. All direct-bury cables shall be clearly identified by placement of 1- by 6-in. treated lumber and red danger tape marked BURIED ELECTRICAL CABLE (or equivalent) at a distance 12 to 18 in. above the buried cable.

   c. Do not use equipment in poor condition for temporary wiring.

   d. Protect flexible cords and cables from accidental damage; avoid sharp corners and projections.

   e. When passing wiring through doorways or other pinch points, provide protection to avoid damage.

   f. When suspending temporary wiring from the building structure, use nonconductive material.

   g. Protect temporary wiring from overcurrent according to the requirements of Article 240 of the NEC.

   h. All underground temporary electrical installations shall be identified on a site plot plan to facilitate future identification for excavation work activities during the construction period.

   i. All cables carrying voltages over 220 V shall be installed in metal conduit or be in interlocked armor cable if run above ground. All runs are to be clearly identified and not constitute a tripping hazard. However, the preferred method is to follow the requirements detailed in paragraph 4.1.2.3.b.

4.1.3 Services

Install electrical services according to the requirements of Article 230 of the NEC.

4.1.4 Feeders

Feeders shall originate in an approved power outlet or panel board. Conductors are permitted within cable assemblies or within multiconductor cord or cable of a type identified in Table 4 of Article 400 of the NEC for hard usage or extra-hard usage. If the feeder is 600-V class, the feeder cable shall be labeled with its circuit voltage at its points of origin and destination and at points along its length in such a way that the label is visible from all viewing locations along its route.

4.1.5 Branch Circuits

All branch circuits shall originate in an approved power outlet or panel board. Conductors are permitted within cable assemblies or within multiconductor cord or cable of a type identified in Table 4 of Article 400 of the NEC for hard usage or extra-hard usage.

4.1.6 Receptacles

1. Use only ground-fault circuit interrupter (GFCI) receptacles. All branch circuits shall contain a separate equipment-grounding conductor, and all receptacles shall be electrically connected to the equipment-grounding conductors.

2. Do not install receptacles on branch circuits that supply temporary lighting.

4.1.7 Ground-Fault Protection for Personnel

1. Ground-fault protection for personnel on construction sites shall be provided by a GFCI program.

2. All 120-V, single-phase, 15-A and 20-A receptacle outlets that are not part of the permanent wiring of the building or structure and that are in use by personnel shall have GFCI protection for personnel.

3. Portable GFCIs are required when using receptacle outlets that are a part of the permanent wiring of a building.

4. For more information on GFCI, see procedure SH-2E3, Ground Fault Protection.

4.1.8 Welding Equipment

For information on temporary wiring of welding equipment, see procedure SH-2E6, Welding and Portable Generators.

4.1.9 Temporary Lighting

Observe the following requirements when wiring for temporary lighting:

1. Use lighting levels sufficient to perform the specific task safely.
2. Protect all lamps used for general illumination from accidental contact or breakage by using a suitable fixture or lamp holder with a guard.
3. Use portable lights that have premolded cords and keep them in good repair.
4. Use nonconductive materials to suspend overhead cords.
5. Provide grounding as required.
6. Ensure that maximum total wattage for a 20-A circuit is 1600 W.
7. Use cable identified for hard usage or extra-hard usage for stringer lighting installations.
8. Do not suspend temporary lights by their electric cords unless cords and lights are designed for this means of suspension.

4.1.10 Hazardous Locations

Install temporary wiring in hazardous locations to meet the classification of the area. For more information on classifications, see NEC Articles 500-503.

4.1.11 Guarding

For temporary wiring over 600 V, provide suitable fencing, barriers, or other effective means to prevent access of anyone other than authorized and qualified personnel.

4.1.12 Construction Trailers and Metal Buildings

Provide grounding for construction trailers according to the requirements of Article 550 of the NEC. Provide grounding for metal buildings according to the requirements of Article 250 of the NEC.

4.1.13 Special Conditions

1. When using temporary feeds to permanent equipment and facilities, take care to control back feeds, dual feeds, and similar situations. Attach appropriate caution and warning signs to both the equipment and cables.

2. Upon completion of the job, remove any temporary underground cables. If the cables cannot be removed, the cables shall be recorded on permanent site maps.

4.1.14 Labeling

Identify and label all disconnect switches. State the circuit voltage source and the equipment being serviced. Label all receptacles on temporary racks with the circuit voltage present and the circuit number.

4.1.15 Marking

In areas where disconnect switch racks, distribution panels, and motor control centers (MCCs) are located, mark the floor with yellow caution paint 3 ft (1 m) in front of the equipment, or install a permanent barricade to prevent personnel from blocking access to the operating handles. For short-term installations, use yellow safety tape instead of paint.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2E2

Electrical Testing and Startup

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

NOTE

For work that involves plant-controlled equipment, SCG-SH-0200, Southern Company Generation Clearance Procedure, shall be the guiding document to ensure personnel and equipment safety.

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide the requirements necessary to perform electrical testing and startup of electrical or electrically operated equipment and facilities on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References/Additional Resources

- SH-2E4, Energizing Electrical Equipment.
- Startup procedure SU-5, Tagging and Clearances https://ecs.southernco.com/sites/ecsprocedures/Shared%20Documents/SU-5.pdf.
- SCG-SH-0200, Generation Clearance Procedure http://powergeneration.southernco.com/depts/engineering/gen-safety-health/clearance-Procedures.html.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure

4.0 PROCEDURE

4.1 Requirements

1. After initial construction tasks have been accomplished, testing and startup requires frequently energizing and deenergizing of equipment. These changing conditions can present hazards, such as process releases, rotating equipment, and stored energy. An electrical testing and startup plan shall be developed to address potential hazards in addition to the shock, flashburn, and equipment damage associated with electrical work.

2. Testing and startup responsibilities shall be clearly defined by the E&CS project manager as soon as possible after the job task/scope of work has been defined so that:

   a) A testing and startup team can be identified, properly trained, authorized, and available to perform testing and startup activities, and

   b) An electrical testing and startup plan can be written and implemented.

4.1.1 Testing and Startup Team

1. The testing and startup team shall understand what can happen when a circuit is initially energized. A limited number of personnel shall be authorized to energize and deenergize circuits as necessary to test and startup the system. All pertinent drawings (single lines, schematics, loops, P&IDs) should be available. Energizing the equipment shall be accomplished in accordance with procedure SH-2E4, Energizing Electrical Equipment.

2. If troubleshooting is necessary due to problems identified during testing, qualified personnel shall accomplish troubleshooting.

3. The testing and startup team shall coordinate all design changes with the originating designer and/or engineer. All changes to design drawings shall be documented and should be returned to the originating designer and/or engineer for drawing revision.

4. Preferably, testing work should be performed while the equipment and circuits are deenergized. If it becomes necessary to troubleshoot energized circuits to determine corrections needed for proper operation, qualified persons on the testing team shall perform the troubleshooting.

4.1.2 Testing and Startup Plan

The testing and startup team shall prepare an electrical testing and startup plan to cover all electrical testing and startup activities:

1. The plan shall identify appropriate coordination with existing facility personnel and procedures.

2. The plan shall identify the person who has responsibility to coordinate mechanical and other testing and startup teams.

3. The plan shall identify the person who is responsible for authorization of electrically hazardous work.

4. The plan shall identify the mechanism to be used to determine the status of testing and startup. An example of this mechanism is marked drawings.

5. Each task shall be analyzed in a way that safe conditions are assured.

4.1.3 General Precautions

1. To the extent possible, testing shall be accomplished with the system deenergized.

2. Personnel shall remove all rings, watches, and other jewelry. Rings that cannot be removed shall be covered with electrical tape for electrical and physical protection.

3. Personnel shall wear clothing and personal protective equipment appropriate to the job.

4. Hand tracing of wiring without electrically isolating the starter or other electrical equipment shall be avoided.

NOTE

Test before touching.

5. Unknown circuits in wiring have caused fatalities. Extreme caution shall be taken when working on them.

6. Persons performing testing and startup work shall not be placed under time constraints and shall be prepared for unexpected events. Extended work hours should be evaluated for safety implications.

7. All unauthorized or unnecessary personnel shall exit the affected area before energizing the equipment.

8. Deviation from planned activities shall be approved by the team leader and communicated to all appropriate parties before implementing the change.

9. All circuits and equipment rated 480 V and above should be insulation-resistance tested before being energized if required in the testing and startup plan.

10. Before touching uninsulated conducting parts, personnel shall confirm the absence of voltage by using an approved meter.

11. The appropriate clearance, hazardous energy control, or lockout/tag-out procedure shall be identified and followed.

12. Safety grounds shall be constructed and installed.

13. A procedure to control temporary jumpers shall be established. Some examples of how to accomplish this control are tagging the jumpers with red ribbon or keeping a written log of jumpers installed.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2E3

Ground Fault Protection

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
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Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide requirements for using ground-fault circuit interrupters (GFCIs) and some manufacturers' recommendations on Engineering and Constructions Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

None.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 How GFCIs Work

Under normal conditions, the current in an electrical branch circuit flows equally between the hot (supply) and neutral (return) conductors. The GFCI has a sensing element that monitors the current of both conductors. If the GFCI senses a current difference between the hot and neutral conductors of as much as 5 mA, it will trip, opening the circuit in a fraction of a second protecting the user of a defective tool, device, or extension cord from shock.

4.1.2 Required Use

1. GFCIs shall be used on all extension cords and portable electric tools. Deviations, including substitution of an assured grounding program in lieu of 100-percent GFCI protection, may be authorized only by the E&CS site manager with concurrence from the environmental, health, and safety (EH&S) resource.

2. Portable electric lighting used in confined spaces shall operate at 12 V maximum or 120 V if protected by a GFCI. Low-voltage (12 V) lighting is recommended because of the possibility of the GFCI tripping and leaving the entrants unable to see.

3. Electric tools shall not be permitted on the same circuit as lighting where 120-V GFCI-protected lighting is used, for the same reason as stated in number 2 above.

4. All portable GFCIs are to be placed at the power source and not at the end use location.

4.1.3 Type and Proper Use of GFCIs

GFCIs should only be used on ac circuits. GFCI devices do not function properly on dc circuits.

1. Class A GFCIs:

   - Are accepted as personal protection by OSHA in temporary wiring circuits.

- Should be plugged in as close to the circuit source as possible.
- Should be tested using the built-in test button before each use.
- Do not afford protection in the event of an open circuit neutral condition.

CAUTION
Some Class A GFCIs have an automatic reset feature and are not approved for use on E&CS projects.

CAUTION
A GRCI breaker in a panel board does not afford protection in the event of a reverse polarity circuit condition.

NOTE

Class A GFCI receptacles and breakers in permanently wired systems that have been tested for open circuit neutral and reverse polarity are acceptable as personal protection and afford excellent shock protection.

2. Class B GFCIs are not to be used for personal protection. They are intended for use as equipment protection only.

3. Use an assured grounding program in lieu of GFCIs for magnetic base drills. The hazard created by the GFCI tripping can be greater than the shock hazard. When used in this fashion, a tag is required at the power source stating MAGNETIC DRILL IN USE – DO NOT REMOVE. The drill must be tethered to prevent falling in the event of power loss.

4.1.4 Testing

1. All GFCIs have a test button that proves the internal contacts will mechanically trip. The test button shall be operated each time the GFCI is used. Other testing should be done per the manufacturer's recommendation and documented.

2. Field-fabricated portable GFCI units shall be 100-percent tested for open circuit neutral and reverse polarity.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2E4

Energizing Electrical Equipment

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the minimum planning and review requirements for safely energizing electrical equipment on Engineering and Construction Services (E&CS) projects. This procedure applies to equipment that has been tested (checked out) and is ready to be energized.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- Planning Outline for Energizing Electrical Equipment.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

The E&CS site manager shall ensure the following steps are taken prior to energizing the electrical equipment:

1. Analyze the diagrams, drawings, and field conditions to evaluate the possibilities of creating a backfeed to equipment other than the equipment being energized and to find out if temporary feeds have been installed.

2. Verify the accuracy of the drawings and the absence of temporary feeds with the facility electrical representative who knows if the equipment has been modified. Any drawings found to be inaccurate shall be marked for updating and submitted to engineering for correction.

3. If the equipment was previously energized, determine the reason it was deenergized, and verify that the equipment is ready to be reenergized.

4. Check the operating voltage and energy levels of the equipment or system being energized to classify the work and to determine the types of voltage testers and personal protective equipment (PPE) that are required to energize the system safely. Refer to NFPA 70E for applicable PPE requirements.

5. Determine who will perform each of the following activities:
   - Throwing switches.
   - Voltage testing.
   - High-potential or Megger® testing.
   - Phasing.
   - Phase rotation.

6. Notify all personnel affected.

7. Determine the test method to assure the system is clear.

8. Inspect the equipment visually to verify conditions and to ensure that appropriate labeling has been installed.

4.1.1 Energizing Equipment or Feeders Over 600 V and 600-V Class Distribution Equipment

The E&CS representative responsible for the work and appropriate contractor personnel including electrical craft and facility electrical representatives shall hold a planning meeting prior to energizing any equipment over 600 V or any 600-V class

distribution equipment. The purpose of the meeting is to establish a common understanding of the scope of work and associated hazards.

4.1.2 Energizing Utilization Equipment That Is 600 V or Less But Over 125 V-to-Ground

1. The E&CS representative responsible for the work and appropriate contractor personnel including electrical craft and facility electrical representatives shall hold a planning meeting prior to energizing any equipment that is 600 V or less but over 125 V-to-ground. This equipment includes motor control centers (MCC), 600-V class distribution panels, 480-V motors, 480-V disconnects, the line side of power and lighting panels, and any other equipment that has a 480-V primary feed.

2. The meeting can cover more than one piece of equipment, such as a package or a turnover system. The purpose of the meeting is to establish a common understanding of the scope of work and associated hazards.

4.1.3 Energizing Utilization Equipment That Is 125 V-to-Ground and Below

The E&CS representative in charge of the work, appropriate contractor personnel, and the site/facility electrical representative shall meet prior to energizing any equipment that is 125 V-to-ground or below, such as the breakers in power and lighting panels and 250-V class disconnect switches and related equipment. The meeting can cover work on several breakers in one panel or an entire turnover system. The purpose of the meeting is to establish a common understanding of the scope of work and associated hazards.

4.2 Using the Planning Outline

When any electrical equipment is energized, the E&CS representative in charge of the work should use the Planning Outline for Energizing Electrical Equipment form to help determine the scope of work, potential hazards, and appropriate safety precautions.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedure

SH-2E5

Deenergizing Electrical Equipment

	Rev. 0	**Rev. 1**
Date	7/11/2008	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

NOTE

For work that involves plant-controlled equipment, SCG-SH-0200, Southern Company Generation Clearance Procedure, shall be the guiding document to ensure personnel and equipment safety.

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the minimum planning and review requirements for safely deenergizing electrical equipment on Engineering and Construction Services (E&CS) projects. The procedure applies to equipment that has been permanently or temporarily energized.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- Startup procedure SU-5, Tagging and Clearances https://ecs.southernco.com/sites/ecsprocedures/Shared%20Documents/SU-5.pdf.
- SCG-SH-0200, Generation Clearance Procedure http://powergeneration.southernco.com/depts/engineering/gen-safety-health/clearance-Procedures.html.
- Planning Outline for Deenergizing Electrical Equipment.
- NFPA 70E-2009

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure

4.0 PROCEDURE

4.1 Requirements

The E&CS site manager shall ensure the following steps are taken prior to deenergizing any electrical equipment:

1. Analyze the diagrams and drawings to determine the possible location of any temporary feeds, backfeeds, alternate feeds, or other external sources or power and control voltages.

2. Verify the accuracy of the drawings and the presence of feeds with the facility electrical representative.

3. Check the operating voltage and energy levels of the equipment or system being deenergized to classify the work and to determine the types of voltage testers and personal protective equipment (PPE) that are required to deenergize the system safely. Refer to NFPA 70E for applicable PPE requirements.

4. Determine who will perform each of the following activities:
   - Throwing switches.
   - Voltage testing.
   - Grounding.

5. Determine the level of grounding required (discharge or safety).

6. Identify the requirements for re-verifications at each work shift, including safety grounds and tests for voltage at the point of work.

7. Identify the points where tests for voltage shall be made and the types of testers to be used. A test for voltage is required at each point of work, and no work may be started until all points have been checked for the absence of voltage.

8. Inspect the equipment visually to verify existing conditions and appropriate labeling.

4.1.1 Deenergizing Equipment or Feeders Over 600 V and 600-V Class Distribution Equipment

1. Planning Meeting

   a. The E&CS representative responsible for the work, appropriate contractor personnel including electrical craft, and facility electrical representatives shall hold a planning meeting prior to deenergizing any equipment over 600 V or any 600-V class distribution equipment. The purpose of the meeting is to determine a scope of work and to complete the Planning Outline for Deenergizing Electrical Equipment.

   b. The planning outline requires the written approval of the area engineer (if applicable), the electrical superintendent, and the appropriate site/facility electrical representative.

2. Installing Safety Grounds

   a. Installing or removing safety grounds is potentially very dangerous and may be classified as hazardous work, depending on conditions.

   b. Personnel who install or remove safety grounds shall be qualified electricians.

   c. Safety grounds shall be installed on the following equipment and feeders before personnel come into contact with them:

      - Feeders and equipment over 600 V.
      - Switch gear and unit substation buses.
      - 600-V class feeders from substations.
      - All overhead electrical lines on both sides of the point of work.

4.1.2 Deenergizing Utilization Equipment of 600 V or Less with More than One Supply Source

1. Deenergizing utilization equipment of 600 V or less that has more than one supply source can be particularly hazardous because of the presence of backfeeds, alternate feeds, or external sources of power. The E&CS representative responsible for the work, appropriate contractor personnel, including electrical craft, and facility electrical representatives shall hold a meeting prior to deenergizing any of the equipment. The facility electrical representative should be the person with the most knowledge about a particular

system. The purpose of the meeting is to determine the scope of work and to complete the Planning Outline for Deenergizing Electrical Equipment.

2. The planning outline requires the verbal or written approval of the facility engineer and E&CS electrical representative. The complexity of the deenergizing task determines whether the approval shall be in writing.

4.1.3 Deenergizing Utilization Equipment of 600 Volts or less with a Single Supply Source

The E&CS representative responsible for the work, appropriate contractor personnel including electrical craft, and facility electrical representatives shall hold a meeting prior to deenergizing any of the equipment. The purpose of the meeting is to determine the scope of work and to complete the Planning Outline for Deenergizing Electrical Equipment. After deenergizing and prior to starting any work on the equipment, test all points of work for the absence of voltage.

4.2 Using the Planning Outline

When any electrical equipment is deenergized, the E&CS representative in charge of the work shall use the Planning Outline for Deenergizing Electrical Equipment form to review the scope of work, potential hazards, and appropriate safety precautions with the people who will do the work. All work shall be performed in the manner described in the planning outline. If the work cannot be performed according to the planning outline, the workers shall stop and initiate a new planning process.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager-E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2E6

Welding and Portable Generators

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides a safe method for using electric welding machines, welding, and small 120/240-V portable generators at Engineering and Construction Services (E&CS) projects. This procedure also addresses the electrical hazards associated with electric welding and small portable generators as well as the electrical safety training requirements for welders.

This procedure does not cover portable generators supplying voltages greater than 120/240-V. Generators supplying voltages other than 120/240 V are considered to be separately derived sources and require installation according to applicable over-current protection (fuses or circuit breakers) and grounding requirements of the National Electrical Code articles 240 and 250.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- NEC Article 630.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 Electrical Hazards and Training Requirements

1. The electrical hazards associated with electric welding and electric welding machines are:

   - Shock from both the welding machine incoming power and the welding voltages.

   - Burn from flash at the welding machine incoming power cable and connections.

2. Electrical shock to welders can be avoided by using proper welding techniques and personal protective equipment (PPE). Training welders in the electrical hazards of welding and electric welding machines is a requirement of 29 CFR 1910 and 1926.

3. Welder training, awareness, and the proper use of PPE can also prevent flash burn.

4.1.2 Welding Machine Installation

A qualified person shall:

1. Install and inspect all electrically connected welding machine power sources at each new installation to ensure that the integrity of the conductor and its terminations are adequate.

2. On an annual basis, inspect welding machines that are fixed installations. This inspection shall address the:

   - Insulation integrity of the supply-side conductors.

   - Adequacy of the supply-side conductor terminations.

   - Proper over-current protection for the welding machine.

- Adequacy of the equipment grounding conductor.
- Indications of weather or water damage.

3. Ensure that each electric welding machine is supplied from a properly sized switch with properly sized over-current protection and cable. (NEC Article 630.)

4. The power supply conductors are either four-conductor cords (with ground wire included within the cord) or three-conductor cords (with an external ground wire) and the ground conductor is adequately connected to a good ground.

4.1.3 Welders

Welders shall perform the following activities:

1. Inspect welding leads prior to use to ensure that the insulation is not damaged and that the conductor is not exposed. Repair or discard damaged leads.

   NOTE

   It is not permissible to repair by splice or tape damage that is within 10 ft of the end of a lead; however, the lead may be cut and reterminated to the connector.

2. Connect welding leads to the welding machine by a male plug. Ensure that the female portion of the connector is the energized part of the set.

3. Make sure welding lead connection points on the welding machine have guards to avoid accidental contact with exposed terminals.

4. Two leads shall be connected at the work location whenever there is the potential for the return path of the welding current to pass through delicate equipment such as turbines, generators, other rotating equipment, instrumentation, or controls. Do not use building steel or pipelines as the return path for the welding current. When welding to building steel or pipelines, connect the return lead to the same steel part where welding is to proceed.

5. Turn off the welding machine while pulling leads to a new location and in some cases until the welder is in position to make a weld. In cases where the welder shall lie/lean on a grounded surface to perform a welding task, another person should start the machine when the welder is ready to strike an arc and begin the task.

6. Do not support welding leads with tie wire. This practice damages the welding lead insulation. Support leads with nonconductive materials or insulated wire. Install welding leads so that they are not potential tripping hazards.

7. Eliminate the possibility of partially exposing a connection while pulling the leads. Male and female connectors of welding leads may need to be taped or otherwise restrained from separating. Welding leads should not be tied in a knot.

8. Inspect electrode holders (rod holders) for cracked or broken insulated covers. Discard or repair insulation if found defective.

9. Remove the rod from the holder when unattended.

10. Do not weld on material or equipment suspended by a metallic support mechanism (choker, chainfall, and load line) unless it is insulated to ensure that the return path of welding current does not pass through the rigging. This practice is prohibited because of the possibility of damage to the choker or the load line. When such an operation is required, the support shall include an insulating element to eliminate the possibility of welding current flowing through the support.

NOTE

Pipelines and equipment containing flammable or combustible materials shall not be a part of the welding path.

4.1.4 Various Type Welding Machines Requirements

1. Portable Welding Machines

   a. A driven ground rod or case ground to building steel is not required for mechanically driven welding machines.

   b. When a portable welding machine includes a receptacle for convenience power, the receptacle shall be guarded with a ground fault circuit interrupter (GFCI) if the voltage is alternating current. Many older machines have receptacles equipped with reset buttons that are not ground fault circuit interrupters; in this case, portables GFCIs shall be used. If the voltage is direct current, the receptacle should be disabled and not be used.

2. Multiarc Welding Machines (this type welder is not to be confused with 6/8 pack rectifier-type machines. They normally consist of one welding output source, either 500 or 1000 A, connected to multiple grid units).

a. Do not use multiarc welding machines to supply welding power of different polarity from the same power source. Connect each power source to supply only single-polarity welding. Modify each unit as needed to provide a method for connecting the welding return cable to the unit source.

b. Use a different type of connector for each conductor function of multiarc welding machines. For instance, the work lead should use a connector that cannot be inserted into a return lead connector. It shall be impossible to connect either the work lead or the return lead into the conductors supplying the resistor unit.

3. Dual-Polarity Welding

a. To ensure that a person cannot contact both polarities at the same time, keep the exposed electrode holders of different polarities at least 10 ft (3 m) from each other and from the work, or otherwise separate the electrode holders from each other and from the work by a physical barrier.

b. Identify reverse-polarity welding machines and welding leads by color code. (The reverse-polarity color code is normally red. The straight-polarity color code is normally yellow.) The welding return lead should be unmarked.

4. High-Frequency Welding Machines

a. The potential for electrical shock is greater with high-frequency welding that with direct-current welding.

b. Both the work and return welding leads from high-frequency welding machines shall be as short as possible to prevent possible radio frequency interference with electronic equipment.

4.1.5 Portable Generators

1. A driven ground rod or case ground to building steel is not required for portable generators.

2. The 120-V convenience receptacle of a portable generator shall be guarded by a GFCI when used to supply power to electric hand tools.

NOTE

Not all manufactured portable generators will function properly with GFCIs unless they are modified by installing a jumper from the neutral winding (at the terminal junction point) to the generator case. A simple test can be conducted to determine if a GFCI will

operate properly. Using an approved-type voltage test meter, test with the generator running, between the hot side of the receptacle to the generator case; if the reading is 0, modification is required.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2E7

Working On or Near Electrical Services and/or Equipment

	Rev. 0	**Rev. 1**
Date	3/11/2009	
Revised By	Bruce Walker	
Reviewed By	Construction Safety Leadership Team	
Approved By	Will Taylor	

NOTE

For work that involves plant-controlled equipment, SCG-SH-0200, Southern Company Generation Clearance Procedure, shall be the guiding document to ensure personnel and equipment safety.

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for working on or near electrical equipment and services that cannot be placed in an electrically safe working condition in accordance with the appropriate clearance, hazardous energy control, or lock-out/tag-out procedure, including grounding, at Engineering and Constructions Services (E&CS) projects. This procedure provides requirements for minimum approach distances, planning, authorization, personal protective equipment (PPE), and training.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- Startup procedure SU-5, Tagging and Clearances https://ecs.southernco.com/sites/ecsprocedures/Shared%20Documents/SU-5.pdf.
- SCG-SH-0200, Generation Clearance Procedure http://powergeneration.southernco.com/depts/engineering/gen-safety-health/clearance-Procedures.html.
- NFPA 70E-2009.
- 29 CFR 1910, Occupational safety and health standards.

- 29 CFR 1926, Safety and health regulations for construction.
- Energized Electrical Work Permit.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 General

4.2 Electrical Hazards

The four types of hazards associated with work on or near energized electrical equipment are:

- Shock and burn due to contact or flashover.
- Electrical flash burn from arc.
- Blast injury resulting from electrical arcs.
- Upset or shutdown of an operating area.

4.3 Electrically Hazardous Tasks

1. Potential electrically hazardous tasks shall be analyzed for two primary hazards: flash hazard and shock hazard. These hazards are identified by using minimum approach distances for qualified and nonqualified personnel based on voltage levels. Performing work inside these minimum approach distances requires special training, planning, procedures, and PPE.

2. When a task is identified as a potential electrically hazardous task, every effort shall be made to have the equipment placed in an electrically safe working condition in accordance with the appropriate clearance, hazardous energy control, or lock-out/tag-out procedure prior to performing the work.

3. When the electrical service or equipment cannot be placed in an electrically safe working condition, all requirements of this procedure shall be met.

4.4 Electrically Nonhazardous Tasks

CAUTION

Shorting or grounding of low voltage circuits may result in equipment damage, process upset, shutdowns, electrical burns, or explosions due to electric arcs.

Electrically nonhazardous tasks must be carefully planned. Tasks are classified as electrically nonhazardous and do not require special protective equipment if they involve the following:

- Equipment is placed in an electrically safe working condition in accordance with:
  - Appropriate clearance.
  - Hazardous energy control.
  - Lock-out/tag-out procedures, including grounding.
  - Involving voltages below 50 V.

Appropriate precautions shall be taken if the task involves any moving machinery parts, other hazardous objects, or fall hazards.

NOTE

At low voltages, shock may cause a jerk reaction.

4.5 Training Requirements

1. Employees shall be trained in safety-related work practices, safety procedures, emergency procedures, and other requirements associated with safety of their respective job assignments.

2. To be considered qualified personnel to perform electrically hazardous tasks, workers shall also be trained and competent in all of the following areas:

- The skills and techniques necessary to distinguish exposed live parts from other parts of electrical equipment.
- The skills and techniques necessary to determine the nominal voltages of exposed live parts.
- The minimum approach distances specified in this procedure corresponding to the voltages to which the qualified employee will be exposed.
- The proper use of special precautionary techniques, PPE, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electric equipment.
- Hazards associated with electrical arc and flame.

4.6 Emergency Preparedness

When personnel are performing electrically hazardous tasks, a sufficient number of personnel who are trained in CPR and first aid shall be available to ensure that an injured worker could be reached by trained personnel within 4 minutes.

4.7 Minimum Approach Distances for Nonqualified Personnel

The following minimum approach distances for nonqualified personnel shall be adhered to by all personnel who have not been specifically qualified and authorized to perform electrical work. No nonqualified worker shall approach or take any conductive object closer than the distances prescribed in this paragraph:

- 10 ft for all voltages up to 50 kV.
- 16 ft for all voltages between 51 kV and 230 kV.
- 25 ft for all voltages above 230 kV.

If work must be performed that requires personnel or conductive objects to be within these minimum approach distances, it shall be performed by qualified personnel.

4.8 Minimum Approach Distances for Qualified Personnel

The following minimum approach distances for qualified personnel shall be adhered to by all personnel who have been specifically qualified and authorized to perform electrical work. No worker shall approach or take any conductive object closer than distances prescribed in this section unless all requirements in paragraph 4.9, Performing Electrically Hazardous Tasks, are met.

Nominal Voltage in kV Phase to Phase	Minimum Approach Distance for Phase to Ground Exposure	Minimum Approach Distance for Phase to Phase Exposure
1.0 or less	Avoid contact	Avoid contact
1.1 to 15.0	2 ft 1 in. (25 in.)	2 ft 2 in. (26 in.)
15.1 to 36.0	2 ft 4 in. (28 in.)	2 ft 7 in. (31 in.)
36.1 to 46.0	2 ft 7 in. (31 in.)	2 ft 10 in. (34 in.)
46.1 to 72.5	3 ft 0 in. (36 in.)	3 ft 6 in. (42 in.)
72.6 to 121	3 ft 2 in. (38 in.)	4 ft 3 in. (51 in.)
230	5 ft 3 in. (63 in.)	7 ft 6 in. (90 in.)
500	11 ft 3 in. (135 in.)	18 ft 1 in. (217 in.)

4.9 Performing Electrically Hazardous Tasks

1. The E&CS site manager or his or her designee shall permit electrically hazardous tasks described in this paragraph only after careful planning and authorization. Depending on the scope and nature of the work, this process may require consultation with operating company personnel and/or an environmental, health, and safety resource; and may require a formal written work plan. Work shall be stopped and reevaluated if it cannot be executed as planned or if conditions change.

2. Only qualified personnel shall be permitted to work on or near exposed equipment, or work in areas containing unguarded, uninsulated energized equipment operating at 50 V or more. Equipment is considered and treated as energized unless it is locked out or tagged out, checked for absence of voltage, and when required, grounded. Qualified personnel must maintain at least the distances listed in the minimum approach table (paragraph 4.8, Minimum Approach Distances for Qualified Personnel), when approaching or taking a conductive object near exposed energized parts, unless one of the following conditions is met:

   - The worker is insulated from the energized part (the proper use of insulating gloves is considered insulation of the worker only with regard to the energized part being serviced).

   - The energized part is insulated from the worker and from any other conductive object at a different potential.

3. Qualified personnel insulated from energized parts through the use of insulating gloves must use insulating sleeves as well unless both of the following conditions are met:

   - Exposed/energized parts that are not being serviced are insulated from the worker.

   - Such insulation is placed from a position that does not expose the worker's upper arm to contact with other energized parts.

4. Qualified personnel shall be positioned in such a way that a slip or shock will not bring them in contact with exposed, uninsulated parts energized to a different potential than the worker's. The following conditions are required when making connections:

   - Qualified personnel connecting deenergized equipment to an energized circuit by means of a conducting wire shall first attach the wire to the deenergized part.

   - Qualified personnel disconnecting equipment from an energized circuit by means of a conducting wire shall remove the source end first.

   - When connecting or disconnecting equipment from energized circuits, keep loose conductors away from exposed/energized parts.

5. Qualified personnel working within reaching distance of exposed, energized parts shall remove any exposed conductive articles such as keys, watch chains, rings, wrist watches, bands, or jewelry, unless such articles do not increase the hazards associated with contact to the energized parts.

6. Qualified personnel shall be warned against wearing any clothing that could increase the extent of an injury due to exposure to flames or electric arcs.

7. Tools and gloves that are properly rated for worker exposure to terminals energized at more than 300 V or with exposed parts at more than 50 V shall be used during fuse installation and removal. During installation of expulsion-type fuses with terminals energized at more than 300 V, qualified personnel shall also wear hardhats, proper eye protection, use proper voltage-rated tools, and remain clear of the exhaust path of fuse barrels. The requirements of this section regarding the hazards of exposed live parts also apply when work is performed near covered (noninsulated) wires. Non-current-carrying metal parts of equipment or devices, such as transformer cases and circuit breaker housings, shall be treated as energized at the highest voltages to which they are exposed, unless inspection of the installation by qualified personnel reveal that these parts are grounded before work is performed. Devices used to open circuits under load shall be designed to interrupt the circuit involved.

4.10 Job Briefings

Job briefings shall be conducted by the appropriate manager or supervisor prior to beginning the electrically hazardous task, at the beginning of each shift, and for each significant daily job change. These briefings can take the form of a short discussion of the job, unless a more extensive discussion is necessitated by particular hazards of the job that may be unfamiliar to the workers. Job briefings shall cover, at a minimum, the following aspects of the job:

- Hazards associated with the job.
- Work procedures involved.
- Special precautions.
- Energy source controls.
- PPE requirements.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-2E8

Hazardous Energy Control

	Rev. 0	**Rev. 1**
Date	1/9/2009	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the requirements necessary to control hazardous energy during construction activities on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- Startup procedure SU-5, Tagging and Clearances.
- SCG-SH-0200, Generation Clearance Procedure.
- 29 CFR 1926.

3.0 RESPONSIBILITIES

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

NOTE

For work that involves plant-controlled equipment, SCG-SH-0200, Southern Company Generation Clearance Procedure, shall be the guiding document to ensure personnel and equipment safety.

4.1 REQUIREMENTS

1. Each contractor involved in construction activities where the control of hazardous energy may be required shall have a written "Hazardous Energy Control Procedure" that meets the requirements of 29 CFR 1926.417. This procedure shall be submitted for approval to the E&CS Site Construction Manager or his/her designee and shall be the controlling document for all work on contractor controlled equipment. This includes temporary equipment utilized during construction and permanent plant equipment while under the control of the contractor.

2. In the event that Southern Company personnel are required to perform activities under the control of a contractor's Hazardous Energy Control Procedure, the Southern Company person(s) shall receive appropriate training by the contractor on their Hazardous Energy Control Procedure.

3. When newly installed equipment becomes turned-over to Southern Company for testing and start-up activities SCG-SH-0200, Southern Company Generation Clearance Procedure replaces and takes precedence over the contractor's Hazardous Energy Control Procedure

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager-E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-3

Fire Protection and Prevention

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides the minimum requirements for fire-protection and -prevention systems and practices on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

approved – Equipment listed or approved by a nationally recognized testing laboratory. Examples are Factory Mutual Engineering Corporation or Underwriters Laboratories, Inc.; or Federal Agencies, the Bureau of Mines, or U.S. Coast Guard.

closed container – A container sealed by means of a lid or other device in which neither liquid nor vapor will escape at ordinary temperatures.

combustible liquids – A liquid capable of a chemical process that involves oxidation sufficient to produce light or heat.

combustion – A chemical process that involves oxidation sufficient to produce light or heat.

fire brigade – An organized group of employees knowledgeable, trained, and skilled in the safe evacuation of employees during emergencies and assisting in firefighting operations.

fire resistance – Materials resistant to fire for a specified period time and under conditions of standard heat intensity. The material shall not fail structurally nor permit the side opposite the fire to become hotter than a specified temperature.

flammable – Capable of being easily ignited, burning intensely, or having a rapid rate of flame spread.

flammable liquids – A liquid with a flash point below 100 °F and a vapor pressure not exceeding 40 lb per square in. (absolute) at 100 °F.

flash point – The temperature at which the liquid gives off vapor sufficient to form an ignitable mixture with the air near the surface of the liquid or within the vessel used.

liquefied petroleum gases, LPG and LP gas – Material composed predominately of any of the following hydrocarbons, or mixtures of them such as propane, propylene, butane (normal butane or isobutane), and butylenes.

portable tanks – A closed container having a liquid capacity more than 60 U. S. gal, not intended for fixed installation.

safety can – An approved closed container, of not more than 5 gal capacity, having a flash-arresting screen, spring-closing lid and spout cover, and designed to safely relieve internal pressure when subjected to fire exposure.

vapor density – The weight of vapor or gas compared to an equal volume of air.

vapor pressure – The pressure, measured in lb per square in. (absolute), exerted by volatile liquid.

2.2 References

- SH-2D2, Hazard Communication.
- 29 CFR 1926, subpart F.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Fire Protection

4.1.1 General

The E&CS site manager shall ensure that an approved fire-protection program meeting the requirements of this procedure is followed throughout all phases of construction and demolition work. There shall be no delay in providing the necessary equipment as fire hazards occur.

1. Access to available firefighting equipment shall be maintained at all times.

2. Firefighting equipment shall be inspected monthly and maintained in operating condition.

3. Defective equipment shall be immediately replaced.

4. Firefighting equipment shall be conspicuously located and not obstructed from view in the workplace. Fire extinguishers shall be located on all self-propelled equipment.

5. Material storage areas shall be equipped with fire extinguishers adequate for their size, construction, and the material stored therein.

6. Welding, cutting, grinding, and burning shall not be done within 25 ft of any flammable material storage area. A fire extinguisher shall be provided within 25 ft of any welding, cutting, grinding, burning, and open-flame operation.

7. Flammable materials shall be stored at least 25 ft from the working area.

8. Approved safety containers shall be used when handling and transporting fuel, gas, and other flammables.

9. Only approved solvents are to be used for cleaning purposes. All hazardous materials, including flammable and combustible liquids, are required to be reviewed and approved by the site environmental, health, and safety (EH&S) resource prior to purchase or delivery to the site in accordance with SH-2D2, Hazard Communication. Nonflammable or less flammable alternatives shall be substituted for flammable liquids where feasible.

10. The telephone number of the nearest organized firefighting group is to be displayed at the jobsite telephones.

11. Where and when required or necessary, the E&CS site manager shall provide a trained and equipped firefighting organization (fire brigade) to assure adequate protection.

12. Depending on the size, scope, and location of the project, the E&CS site manager and EH&S coordinator may determine the need for formal prefire planning in conjunction with the site fire brigade and local fire department.

4.1.2 Fire Extinguishing Equipment

1. Fires are classified as Class A, B, C, D, or Special, depending upon the types of materials involved. These classifications are defined as follows:

   A Class A - Fires in ordinary combustible materials such as wood, cloth, paper, trash, rubber, and plastic.

   B Class B - Fires in flammable liquid, oil, grease, tar, oil-base paint, lacquer, and flammable gas.

   C Class C - Fires involving energized electrical equipment or systems, resulting in the extinguishing media conduction electricity. (When electrical equipment or systems are deenergized, extinguishers for Class A or B fires can be used safely.)

   D Class D - Fires involving combustible metals such as magnesium, titanium, zirconium, lithium, potassium, and sodium. Specialized techniques, extinguishing agents, and extinguishing equipment have been developed to control and extinguish fires of this type. Generally, do not use normal extinguishing agents on metal fires. In such fires, there is the danger of increasing the intensity of the fire because of a chemical reaction between some extinguishing agents and the burning metal.

   E Special - Fires that involve certain combustible metals or reactive chemicals require, in some cases, special extinguishing agents or techniques.

2. Extinguisher Classifications and Ratings

   A All types of extinguishers are not equally effective against all classifications of fires. Therefore, extinguishers are rated according to the classification and size of the fires against which they are effective. Extinguisher ratings are found on the extinguisher label. A rating consists of a letter indicating the classification of fire on which the extinguisher is effective and a rating number indicating the relative extinguishing effectiveness. The significance of the rating number varies with the classification of fire for which the extinguisher is rated. The following rating criteria are used:

1) For extinguishers rated for Class A fires, the rating number indicates relative effectiveness: the higher the number, the more effective the extinguisher. The minimum recommended rating for extinguishers rated for Class A fires is 2A.

2) For extinguishers rated for Class B fires, the rating number represents the average size (in square ft) of the fire the extinguisher could put out.

3) No number is used for extinguishers rated for Class C fires, because Class C fires are essentially either Class A or B fires involving energized electrical wiring and equipment.

3. Hazard Classifications

A The materials in a building or area present hazards of varying potential. These hazards are classified as follows:

1) Light or low hazard - A room or area where, considering the amount of combustible material or flammable liquids present, fires of small size should be anticipated (for example, change trailers, toilet trailers, and general storage).

2) Ordinary or moderate hazard - A location where, considering the amount of combustibles or flammable liquids present, fires of moderate size should be anticipated (for example, temporary construction offices and most shops).

3) Extra or high hazard - A location where, considering the amount of combustibles or flammable liquids present, fires of severe magnitude should be anticipated (for example, carpenter shops and storage areas for flammable liquids and lumber).

4. All fire extinguishers shall be UL listed.

5. Building and Occupancy Protection

A Requirements for fire extinguisher protection are divided into two categories: building protection and occupancy hazard protection. Provide for extinguishing equipment to protect both the building structure (if it is combustible) and the occupancy hazards inside it.

1) Building protection - For building protection, provide fire extinguishers rated for Class A fires or greater, as required by applicable building codes.

2) Occupancy protection - For protection against occupancy hazards, provide fire extinguishers rated for Class A, B, C, or other fire potential as appropriate. Requirements may vary from section to section of a single building. Determine the occupancy hazards, as

well as the proper ratings of necessary fire extinguishers, of each room or section. Table F-1 in 29 CFR 1926.150 may be used as a guide for selecting the appropriate portable fire extinguishers.

6. Extinguisher Placement

A Placement - Place extinguishers in conspicuous locations, along normal paths of travel, and near exits. If the extinguishers are not readily visible, use wall markings, signs, or lights to identify their locations.

B Accessibility - Extinguishers shall be readily accessible. Keep the space in front of and below extinguishers clear at all times. The floor area beneath extinguishers may be marked as a reminder to keep the area clear.

C Supports - Hang extinguishers on hangers, brackets, or other equipment furnished by the manufacturer, or place them on shelves. If an extinguisher weighs less than 40 lb (18.1 kg), the top of the extinguisher shall not be more than 5 ft (1.5 m) above the floor. If it weighs more than 40 lb (18.1 kg), it shall not be more than 3.5 ft (1.1 m) above the floor. The clearance between the bottom of the extinguisher and the floor shall never be less than 4 in. (10.2 cm).

7. Inspection

A Properly trained personnel shall inspect extinguishers at least monthly. The monthly inspection shall include the following items at a minimum:

1) Location (Is the extinguisher in its designated place?).

2) Rating (Is it adequate for the occupancy hazards in the area?).

3) Access (Is it unobstructed?).

4) Visibility (Is it conspicuous? Are wall markings, signs, or lights in place to direct people to its location?).

5) Operating instructions on the nameplate (Are the instructions legible? Do they face outward?).

6) Seals (Are the seals unbroken?).

7) Tamper indicators (Are the tamper indicators intact?).

8) Fullness (Can the fullness be determined by reading the gauge indicator or by weighing or hefting the extinguisher?).

9) Physical condition (Is the extinguisher free from corrosion, leaks, and clogs?).

B Attach inspection tags to each extinguisher indicating the dates of purchase, inspection, testing, and recharging, as well as the initials of the inspector. In addition to the tag, a colored tape may be used to indicate that an extinguisher has been inspected.

8. Testing and Maintenance

A Establish periodic testing programs to ensure that extinguishers are in proper operating condition. Only properly trained personnel, preferably fire extinguisher vendors shall maintain extinguishers.

B At the conclusion of testing or maintenance work, attach a tag to the extinguisher showing the date and the signature of the person who performed the service.

9. Testing Intervals

A Annually - Each year, recharge foam extinguishers and weigh others according to the manufacturers' instructions. Inspect the body, hose, and nozzle of the extinguisher, and examine the dry powder.

NOTE

Testing is not necessary for stored pressure units unless a loss of pressure or other conditions indicate need; however, units mounted in vehicles or otherwise subject to mechanical packing shall have their powder examined.

B Every 5 years - Every 5 years, test the pressure parts of all extinguishers except Halon 1301 extinguishers; dry-chemical extinguishers with braised-brass, mild steel, or aluminum shells; and dry-powder extinguishers for metal fires.

C Every 6 years - Every 6 years, empty dry-chemical, stored-pressure extinguishers and examine working parts for operability.

D Every 12 years - Every 12 years, test the pressure parts of Halon 1301 extinguishers; dry-chemical extinguishers with braised-brass, mild steel, and aluminum shells; and dry-powder extinguishers for metal fires.

4.1.3 Water Supply

A temporary or permanent water supply (sufficient volume, duration, and pressure) required to properly operate the firefighting equipment shall be made available as soon as combustible materials accumulate.

1. Where underground water mains are to be provided, they shall be installed, completed, and made available for use as soon as practicable.

2. Fire Hose and Connections

A One hundred ft, or less, of 1.5 in. hose, with a nozzle capable of discharging water at 25 gal or more per minute, may be substituted for a fire extinguisher rated not more than 2A 20BC in the designated area, provided the hose line can reach all points in the area.

B If fire hose connections are not compatible with local firefighting equipment, adapters or equivalent shall be provided, to permit connections.

C During demolition involving combustible materials, charged hose lines supplied by hydrants, water trucks with pumps or equivalent shall be made available.

3. Fixed Firefighting Equipment

A. Sprinkler Protection

1) If the facility being constructed includes the installation of automatic sprinkler protection, the installation of sprinklers shall closely follow the construction and be placed into service as soon as practicable.

2) During demolition or alterations, existing automatic sprinkler installations shall be retained in service as long as reasonable. Only authorized persons shall permit the operation of sprinkler control valves. Modification of sprinkler systems to permit alterations or additional demolition shall be expedited so that the automatic protection may be returned to service as quickly as possible. Sprinkler control valves shall be checked daily, at close of work, to ascertain that the protection is in service.

B. Standpipes

1) In all structures requiring standpipes or where standpipes exist in structures being altered, they shall be maintained to always be ready for fire-protection use. Conspicuously marked standpipes shall be provided with connections on the outside of the structure (at the street level). There shall be at least one standard hose outlet at each floor.

C. Fire Alarm Devices

1) An alarm system, for example, telephone system, siren, etc., shall be established to alert employees on the site and the local fire department of an emergency.

2) The alarm code and reporting instructions shall be conspicuously posted at phones and at all employee entrances.

D. Fire Cutoffs

1) Firewalls and exit stairways required for the completed buildings shall be given construction priority. Fire doors, with automatic closing devices, shall be hung on openings as soon as practicable.

2) Fire cutoffs shall be retained in buildings undergoing alterations or demolition until operations necessitate their removal.

4. Maintenance, inspection, and testing of installed fixed firefighting equipment shall be in accordance with NFPA Codes, Title 29 CFR 1910.158 (Stand Pipe and Hose Systems), Title 29 CFR 1910.159 (Automatic Sprinkler Systems), and any applicable manufacturer recommendations.

4.2 Fire Prevention

4.2.1 Ignition Hazards

1. Electrical wiring and equipment for light, heat, or power purposes shall be properly installed.

2. Internal combustion powered equipment shall be located with the exhausts positioned away from combustible materials. When the exhausts are piped outside the building under construction, a clearance of at least 6 in. shall be maintained between piping and combustible material.

3. Smoking is prohibited at or in vicinity of operations that constitute a fire hazard, areas shall be conspicuously posted: NO SMOKING OR OPEN FLAME.

4. Portable, battery-powered lighting equipment, used in connection with the storage, handling, or use of flammable gases or liquids shall be approved for the hazardous locations.

5. The nozzle of air, inert gas, and steam lines or holes, used in the cleaning or ventilation of tanks and vessels containing hazardous concentrations of flammable gases or vapors, shall be bonded to the tank or vessel shell. Bonding devices shall not be attached or detached while in hazardous concentrations of flammable gases or vapors.

4.2.2 Temporary Buildings

1. Temporary buildings shall not be erected where the location adversely affects any means of employee exit.

2. Temporary buildings located within another building or structure shall be of noncombustible construction or combustible construction having a fire-resistance rating of not less than 1 hour.

3. Temporary buildings located other than inside another building and not used for the storage, handling, or use of flammable or combustible liquids, flammable gases, explosives, or blasting agents, or similar hazardous occupancies shall be located at a distance of not less than 10 ft from another building or structure. Groups of temporary buildings, not exceeding 2,000 square ft in aggregate, shall, for the purpose of this section, be considered a single temporary building.

4.2.3 Open Yard Storage

1. Combustible materials shall be stored with regard to the stability of piles and in no case higher than 10 ft.

2. Driveways between and around combustible storage piles shall be at least 15 ft wide and maintained free of accumulations of rubbish, equipment, or other articles or materials. Driveways shall be spaced to produce a maximum grid system unit of 50 ft by 150 ft.

3. The entire storage site shall be kept free from accumulations of unnecessary, combustible materials. Weeds and grass shall be maintained, and procedures shall be established for periodic cleanup of the entire area.

4. The method of piling combustible materials shall be solid and in orderly, regular piles. No combustible material shall be stored outdoors within 10 ft of a building or structure.

5. Portable fire-extinguishing equipment, suitable for the fire hazard involved, shall be provided at convenient, conspicuously accessible locations in the yard area. Portable fire extinguishers, rated not less than 2A 20BC, shall be placed to assure maximum travel distance to the nearest unit shall not exceed 100 ft.

4.2.4 Indoor Storage

1. Storage shall not obstruct, or adversely affect, means of exit.

2. Materials shall be stored, handled, and piled with regard to their fire characteristics.

3. Noncompatible materials, which may create a fire hazard, shall be segregated by a barrier having a fire resistance of at least 1 hour.

4. Materials shall be piled to minimize the spread of fire internally and to permit convenient access for firefighting. Stable piling shall be maintained at all times.

Aisle space shall be maintained to safely accommodate the widest vehicle used within the building for firefighting purposes.

5. Clearance of at least 36 in. shall be maintained between the top level of the stored material and the sprinkler deflectors.

6. Clearance shall be maintained around lights and heating units to prevent ignition of combustible materials.

7. A clearance of 24 in. shall be maintained around the fire doors path of travel, unless a barricade is provided, in which case no clearance is needed. Material shall not be stored within 36 in. of a fire door.

4.3 Flammable and Combustible Liquids

4.3.1 General Requirements

1. Only approved containers and portable tanks shall be used for storage and handling of flammable and combustible liquids. Approved metal safety cans shall be used for the handling and use of flammable liquids in quantities greater than 1 gal. This requirement shall not apply to those flammable liquid materials that are highly viscous (extremely hard to pour), which may be used and handled in original shipping containers. For quantities of 1 gal or less, only the original container or approved metal safety cans shall be used for storage, use, and handling of flammable liquids.

2. Flammable or combustible liquids shall not be stored in areas used for exits, stairways, or normally used for the safe passage of employees.

3. Methods to be employed for the storage, handling, and use of flammable liquids shall be included in the site-specific safety and health plan submitted by the contractor.

4.3.2 Indoor Storage of Flammable and Combustible Liquids

1. No more than 25 gal of flammable or combustible liquids shall be stored in a room outside of an approved storage cabinet.

2. Quantities of flammable and combustible liquid in excess of 25 gal shall be stored in an acceptable or approved cabinet meeting the following requirements.

   A. Acceptable wooden storage cabinets shall be constructed in the following manner, or equivalent: The bottom, sides, and top shall be constructed of an exterior grade plywood at least 1 in. in thickness which shall not break down or delaminate under standard fire test conditions. Joints shall be

rabbeted and shall be fastened in two directions with flathead wood screws. When more than one door is used, there shall be a rabbeted overlap of not less than 1 in. Steel hinges shall be mounted in such a manner as to not lose their holding capacity due to loosening or burning out of the screws when subjected to fire. Such cabinets shall be painted inside and out with fire-retardant paint.

B. Approved metal storage cabinets are acceptable.

C. Cabinets shall be labeled in conspicuous lettering, FLAMMABLE - NO FIRE OR SPARK PRODUCING MATERIALS.

D. Storage cabinets shall not be located in stairways or at building exit points.

3. Any one storage cabinet shall not store more than 60 gal of flammable or 120 gal of combustible liquids. A single storage area may contain no more than three such cabinets. Quantities in excess of this limit shall be stored in an inside storage room.

4. Inside storage rooms shall be constructed to meet the required fire-resistive rating for their use.

A. Where an automatic extinguishing system is provided, the system shall be designed and installed in an approved manner. Openings to other rooms or building shall be provided with noncombustible liquid-tight raised sills or ramps at least 4 in. below the surrounding floor. Openings shall be provided with approved self-closing fire doors. The room shall be liquid-tight where the walls join the floor. A permissible alternate to the sill or ramp is an open-grated trench inside of the room, which drains to a safe location. Where other portions of the building or other buildings are exposed, windows shall be protected per the standard for fire doors and windows, NFPA No. 80, for class E and F openings. Wood of at least 1-in. nominal thickness may be used for shelving, racks, dunnage, scuff boards, floor overlay, and similar installations.

B. Materials that will react with water and create a fire hazard shall not be stored in the same room with flammable or combustible liquids.

C. Storage in inside storage rooms shall comply with Exhibit 12.2 (Table F-2 of 29 CFR 1926.152).

D. Electrical wiring and equipment located in inside storage rooms shall be approved for Class 1, Division 1, Hazardous location in accordance with the National Electrical Code.

E. Inside storage rooms shall be provided with gravity or a mechanical exhausting system. The system shall commence not more than 12 in. above the floor and be designed to provide for a complete change of air

within the room at least 6 times per hour. If a mechanical exhausting system is used, a switch located outside of the storage room door shall control it. The same switch shall operate the ventilating equipment and any lighting fixtures. Where gravity ventilation is provided, the fresh air intake, as well as the exhausting outlet from the room, shall be on the exterior of the building in which the room is located.

F. In every inside storage room there shall be maintained one clear aisle, at least 3 ft wide. Containers over 30-gal capacity shall not be stacked one upon the other.

G. Flammable and combustible liquids, in excess of that permitted in inside storage rooms, shall be stored outside of the building in accordance with 12.5 C.

4.3.3 Storage Outside Buildings

1. Storage of containers (not more than 60 gal each) shall not exceed 1,100 gal in any one pile or area. Piles or groups of containers shall be separated by a 5-ft clearance. Piles or groups of containers shall not be nearer than 20 ft to a building.

2. A 12-ft wide access way to permit approach of fire control shall be maintained within 200 ft of each pile of containers.

3. The storage area shall be graded in a manner to divert possible spills away from buildings/other exposures, or be surrounded by a curb/earthen dike tall enough to impound the total gal of liquids stored within the earthen dike. When curbs or dikes are used, provisions shall be made for draining off accumulations of ground or rainwater, or spills of flammable or combustible liquids. Drains shall terminate at a safe location and shall be accessible to operation under fire conditions.

4. Outdoor Portable Tank Storage

   A Portable tanks shall not be nearer than 20 ft from any building. A 5-ft clear area having a combined capacity in excess of 2,200 gal shall separate two or more portable tanks, grouped together.

   B A 12-ft wide access way to permit approach of fire control apparatus shall be maintained within 200 ft of each portable tank.

5. Storage areas shall be kept free of weeds, debris, and other combustible material not necessary to the storage.

6. Portable tanks, not exceeding 660 gal, shall be provided with emergency venting and other devices, as required by Chapter III and IV of NFPA 30, The Flammable and Combustible Liquids Code.

7. Portable tanks, in excess of 660 gal, shall have emergency venting and other devices (required by Chapters II and III of the Flammable and Combustible Liquids Code, NFPA 30).

8. Flammable liquids will not be stored in direct sunlight or in any area where there is the potential for radiant heating.

4.3.4 Fire Control for Flammable or Combustible Liquids Storage

1. At least one portable fire extinguisher, having a rating of not less than 2A 20BC, shall be located outside of, but not more than 10 ft from the door opening into any room used for storage of more than 60 gal of flammable or combustible liquids.

2. At least one portable fire extinguisher having a rating of no less than 2A 20BC shall be located no less than 25 ft, no more than 75 ft, from any flammable-liquid storage area located outside.

3. When sprinklers are provided, they shall be installed in accordance with the Standard for the Installation of Sprinkler System, NFPA 13.

4. At least one portable fire extinguisher having a rating of not less than 2A 20BC shall be provided on tank trucks or other vehicles used for transporting and/or dispensing of flammable or combustible liquids.

4.3.5 Dispensing Liquids

1. Areas in which flammable or combustible liquids are transferred at one time, in quantities greater than 5 gal from one tank or container to another tank or container shall be separated from other operations by 25 ft distance or by construction having a fire resistance of at least 1 hour. Drainage or other means shall be provided to control spills. Adequate natural or mechanical ventilation shall be provided to maintain the concentration of flammable vapor at or below 10 percent of the lower flammable limit.

2. Transfer of flammable liquids from one container to another shall be done only when containers are electrically interconnected (bonded).

3. Flammable or combustible liquids shall be drained from or transferred into vessels, containers, or tanks within a building or outside only through a closed piping system; from safety cans, by means of a device drawing through the top; or from a container, or portable tanks, by gravity or pump, through an approved self-closing valve. Transferring by means of air pressure on the container of portable tanks is prohibited.

4. The dispensing units shall be protected against collision damage.

5. Dispensing devices and nozzles for flammable liquids shall be of an approved type.

4.3.6 Handling Liquids at Point of Final Use

1. Flammable liquids shall be kept in closed containers when not actually in use.

2. Leakage or spillage of flammable or combustible liquids shall be disposed of promptly and safely.

3. Flammable liquids may be used only where there are no open flames or other sources of ignition within 50 ft of the operation, unless conditions warrant greater clearance.

4.3.7 Service and Refueling Areas

1. Flammable or combustible liquids shall be stored in approved closed containers, in storage tanks located above ground, or in above-ground portable tanks.

2. The tank truck shall comply with the requirements covered in the Standard for Tank Vehicles for Flammable and Combustible Liquids, NFPA No. 385-1966.

3. The dispensing hose shall be of an approved type.

4. The dispensing nozzle shall be an approved automatic closing type without a latch-open device.

5. Clearly identified and easily accessible switch(es) shall be provided at a location remote from the dispensing devices to shut off the power to all dispensing devices in the event of an emergency.

6. Heating equipment of an approved type may be installed in the lubrication or service area where there is no dispensing or transferring of flammable liquids, provided the bottom of the heating unit is at least 18 in. above the floor and is protected from physical damage.

7. Heating equipment installed in lubrication or service areas, where flammable liquids are dispensed, shall be of any approved type for gauges, and shall be installed at least 8 ft above the floor.

8. There shall be no smoking or open flames in the areas used for fueling, servicing fuel systems for internal combustion engines, receiving or dispensing of flammable or combustible liquids.

9. Conspicuous and legible signs prohibiting smoking shall be posted.

10. The motors of equipment being fueled shall be shut off during the fueling operation.

11. Each service or fueling area shall be provided with at least one fire extinguisher having a rating of not less than 2A 20BC located so that an extinguisher shall be within 75 ft of each pump, dispenser, underground fill pipe opening, and lubrication or service area.

4.4 Liquid Petroleum Gas (LP Gas)

4.4.1 Equipment and Systems

1. Each system shall have containers, valves, connectors, manifold valve assemblies, and regulators of an approved type for use with LP gas.

2. Cylinders shall meet the Department of Transportation identification specification requirements.

3. Welding on LP gas containers is prohibited.

4. Valves, fittings, and accessories connected directly to the container, including primary shutoff valves, shall have a rated working pressure of at least 250 psig and shall be of material and design suitable for LP gas service.

5. Connections to containers, except safety relief connections, liquid level gauging devices, and plugged openings, shall have shutoff valves located as close to the container as practicable.

6. Containers and vaporizers shall be provided with one or more approved safety relief valve or device. These valves shall be arranged to afford free vent to the outer air with discharge not less than 5 ft horizontally away from any opening into a building below such discharge.

7. Shutoff valves shall not be installed between the safety relief device and the container, or the equipment or piping to which the safety relief device is connected, except that a shutoff valve may be used where the arrangement of this valve is the type that full required capacity flow through the safety relief device is always afforded.

8. Container safety relief devices and regulator relief vents shall be located not less than 5 ft in any direction from an air opening into sealed combustion system appliances or mechanical ventilation air intakes.

4.4.2 Dispensing

1. Filling of fuel containers for trucks or motor vehicles from bulk storage containers shall be performed not less than 10 ft from the nearest masonry-walled building, or not less than 25 ft from the nearest building or other construction and, in any event, not less than 25 ft from any building opening.

2. Filling of portable containers or containers mounted on skids from storage containers shall be performed not less than 50 ft from the nearest building.

4.4.3 Requirements for Appliances

1. LP gas-consuming appliances shall be of the approved type.

2. Any appliance that was originally manufactured for operation with a gaseous fuel other than LP gas, and is in good condition, may be used with LP gas only after it is properly converted, adapted, and tested for performance with LP gas before the appliance is placed into use.

4.4.4 Containers and Regulating Equipment Installed Outside of Buildings or Structures

Containers shall be upright upon firm foundations or otherwise firmly secured. A flexible connection or special fitting shall guard against the possible effect of settling on the outlet piping.

4.4.5 Containers and Equipment Used Inside of Building or Structures

1. When operational requirements make use of portable containers necessary and their location outside of building or structures is impracticable, containers and equipment shall be permitted to be used inside of buildings or structures in accordance with paragraphs 2 through 11 below.

2. “Containers in Use” means connected for use.

3. Systems utilizing containers having a water capacity greater than 2½ lb (nominal 1-lb LP gas capacity) shall be equipped with excess flow valves. Such excess flow valves shall be either integral with the container valves or in the connections to the container valve outlets.

4. Regulators shall be either directly connected to the container valves or to manifold connected to the container valves. The regulator shall be suitable for use with LP gas. Manifold pressure regulator inlets shall be designed for at least 250-psig service pressure.

5. Valves on containers having water capacity greater than 50 lb (nominal 20-lb LP gas capacity) shall be protected from damage while in use or storage.

6. Aluminum piping or tubing shall not be used.

7. Hoses shall be designed for a working pressure of at least 250 psig. Design, construction, and performance of hose and hose connections shall have their suitability determined by listing a nationally recognized testing agency. The hose length shall be long enough to permit compliance with spacing provisions of paragraphs 1 through 13 herein without kinking or straining, or causing hose to be so close to a burner as to be damaged by heat.

8. Portable heaters shall be equipped with an approved automatic device to shut off the flow of gas to the main burner, and pilot if used, in the event of flame failure. Such heaters, having output of above 50,000 BTU per hour, shall be equipped with either a pilot, which must be lighted and proved before the main burner can be turned on, or an electrical ignition system.

NOTE

The provisions of this subparagraph do not apply to portable heaters under 7,500 BTU per hour input when used with containers having a maximum water capacity of 2½ lb.

9. Container valves, connectors, regulators, manifolds, piping, and tubing shall not be used as structural supports for heaters.

10. Containers, regulating equipment, manifolds, piping, and tubing shall be located to minimize exposure to high temperatures and physical damage.

11. Containers having a water capacity greater than 2½ lb (nominal 1-lb LP gas capacity) connected for use shall stand on a firm and substantially level surface and, when necessary, shall be secured in an upright position.

12. The maximum water capacity of individual containers shall be 245 lb (nominal 100-lb LP gas capacity).

13. Temporary heaters (other than integral heater-container units) shall be located at least 6 ft from any LP gas container. This shall not prohibit the use of heaters specifically designed for attachment to the container or to a supporting standard, provided they are designed and installed to prevent direct or radiant heat application from the heater onto the containers. Blower and radiant-type heaters shall not be directed toward any LP gas container within 20 ft.

14. When two or more heater-container units, of either the integral or nonintegral type, are located in an unpartitioned area on the same floor, the container(s) of each unit shall be separated from the container(s) of any other unit by at least 20 ft.

15. When heaters are connected to containers for use in an unpartitioned area on the same floor, the total water capacity of containers, manifold together for connection to a heater(s), shall not be greater than 735 lb (nominal 300-lb LP gas capacity). Such manifolds shall be separated by at least 20 ft.

16. Storage of containers in reserve shall be maintained in accordance with paragraphs 10 and 11.

4.4.6 Multiple Container Systems

1. Valves in the assembly of multiple container systems shall be arranged to allow replacement of containers to be made without shutting off the flow of gas in the system. This provision is not to be construed as requiring an automatic changeover device.

2. Heaters shall be equipped with an approved regulator in the supply line between the fuel cylinder and the heater unit. Cylinder connectors shall be provided with an excess flow valve to minimize the flow of gas in the event the fuel line becomes ruptured.

3. Regulators and low-pressure relief devices shall be rigidly attached to the cylinder valves, cylinders, supporting standards, the building walls, or otherwise rigidly secured, and shall be installed or protected from the elements.

4.4.7 Storage of LPG Containers

1. Storage of LP gas within buildings is prohibited.

2. Storage outside of buildings, for containers awaiting use, shall be located away from the nearest building or group of buildings, in accordance with the following:

   A. 0 ft for 500 lbs or less.

   B. 10 ft for 501 to 6,000 lb.

   C. 20 ft for 6,001 to 10,000 lb.

   D. 25 ft for over 10,000 lb.

3. Containers shall be in a suitable ventilated enclosure or otherwise protected against tampering.

4. Storage locations shall be provided with at least one approved portable fire extinguisher having a rating of not less than 2A 20BC.

4.5 Temporary Heating Devices

The E&CS site manager shall approve all temporary heating devices used onsite. Open flame burn barrels, burning scrap wood piles, etc., are prohibited.

4.5.1 Ventilation

1. Fresh air shall be supplied in sufficient quantities to maintain the health and safety of employees. Where natural means of fresh air supply are inadequate, mechanical ventilation shall be provided.

2. Heaters used in confined spaces require special care be taken to provide sufficient ventilation in order to ensure proper combustion, maintain the health and safety of workmen, and limit temperature rise in the area.

4.5.2 Clearance and Mounting

1. Temporary heating devices shall be installed to provide clearance to combustible materials not less than the amount shown in the following table.

2. Temporary heating devices, which are listed for installation with lesser clearance than specified in the table, must be installed in accordance with the manufacturer's specifications.

3. MINIMUM CLEARANCE (in.)

Heating Appliances	Sides	Rear	Chimney Connector
Room heater, circulating type	12	12	18
Room heater, radiant type	36	36	18

4. Heaters not suitable for use on wood floors shall not be set directly upon them or other combustible materials. When such heaters are used, they shall rest on suitable heat-insulating material or at least 1-in. concrete, or equivalent. The insulating material shall extend beyond the heater 2 ft or more in all directions.

5. Heaters used near combustible tarpaulins, canvas, or similar coverings shall be located at least 10 ft from the coverings. The coverings shall be securely fastened to prevent ignition or upsetting of the heater due to wind action on the covering or other material.

4.5.3 Stability

Heaters, when in use, shall be set horizontally level, unless otherwise permitted by the manufacturer's instructions.

4.5.4 Solid-Fuel Salamanders

Solid-fuel salamanders are prohibited.

4.5.5 Oil-Fired Salamanders

1. Flammable liquid-fired heaters shall be equipped with a primary safety control to stop the flow of fuel in the event of flame failure. Barometric or gravity oil feed shall not be considered a primary safety control.

2. Heaters designed for barometric or gravity oil feed shall be used only with integral tanks.

3. Heaters specifically designed and approved for use with separate supply tanks may be directly connected for gravity feed, or an automatic pump, from a supply tank.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager-E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Policies

SH-4A

Environmental Vision and Policy

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE

This policy ensures all Engineering and Construction Services (E&CS) employees and contractors understand the Southern Company Environmental Vision and Policy as stated below.

2.0 VISION

We affirm the importance of protecting the environment and making wise use of our natural resources. We will set and achieve environmental goals that are in concert with other goals needed to further the well-being of society.

3.0 POLICY

It is the policy of Southern Company to conduct its business in a manner that protects the environment by:

- Meeting or surpassing all environmental laws, regulations, and permit requirements and verifying this commitment through environmental auditing.
- Seeking to ensure that environmental laws, regulations, and permit requirements are based on sound science and cost-effective technology.
- Pursuing opportunities to enhance the quality of the environment.
- Promoting public and employee understanding of environmental issues and the company's environmental activities.
- Establishing company and organizational goals and implementation plans.
- Ensuring that employees are aware of their individual roles and responsibility in implementation of this environmental policy.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-4B

Spill Prevention, Control, and Countermeasures Plans

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements related to the prevention of any discharge of oil, fuels, or chemicals from an Engineering and Construction Services (E&CS) construction project into navigable waters or adjoining shorelines.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- EPA Section Chief
  Oil Planning and Response Section
  U.S. Environmental Protection Agency
  E-mail: ospills@epa.gov

- 40 CFR 112, Oil pollution prevention.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

E&CS shall consult with the appropriate operating company's environmental affairs department to determine if a spill prevention, control, and countermeasures (SPCC) plan or addendum to an existing plan is needed. If so, the appropriate operating company's environmental affairs department will lead the development of the plan or addendum.

1. A SPCC plan must be prepared by all site/facilities that meet the following criteria:

   - The facility is non-transportation related and,
   - The facility has an aggregate storage capacity greater than 1,320 gal or a total underground storage capacity greater than 42,000 gal and,
   - There is a reasonable expectation of a discharge to navigable waters or adjoining shorelines.

2. The regulations require the SPCC plan be written by the owner or operator of the facility or their authorized environmental consultant, engineer, or scientist. E&CS under special circumstances might require contractors to produce a SPCC plan.

3. E&CS site management shall:

   - Ensure compliance with the SPCC plan.
   - Ensure precautions are taken to minimize the likelihood of spills.
   - Ensure appropriate personnel are trained in the requirements of the site's SPCC plan.
   - Ensure a spill response plan is in place and appropriate cleanup materials are available.

4.1.1 Spill Response for Small-Scale Spills

All projects shall consult with the appropriate operating company's environmental affairs department to help develop a site-specific plan for the quick response and cleanup of small-scale spills. At a minimum, the plan shall address:

- Storage of bulk containers of oils, fuels, and chemicals.
- Identification of potential spills and hazards produced.

- A spill-response team.
- Selection, storage, and transportation of cleanup materials.
- Disposal of contaminated materials.

The project spill response plan shall be evaluated annually or if a failure in the system occurs.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-4C

Storm-Water Management

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for storm-water discharges from Engineering and Construction Services (E&CS) construction projects in accordance with permit requirements issued by the U.S. Environmental Protection Agency, state, local, and appropriate governing agencies. These requirements apply to all land-disturbance activities (LDA). This procedure also applies to dedicated portable concrete and/or asphalt plants located on or adjacent to a construction site/facility.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- 40 CFR 122, U.S. EPA Administered Permit Programs: The National Pollutant Discharge Elimination System (NPDES).
- "Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices", U.S. EPA, 1992.
- U.S. EPA: NPDES Permits Office, Washington, D.C., (202) 260-9541.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

E&CS shall consult with the appropriate operating company's environmental affairs department during the engineering phase of every construction project that has the potential for land-disturbing activities and develop a site-specific storm-water management program.

The site-specific storm-water management program shall incorporate:

1. Erosion and sedimentation control (E&SC) plans for land-disturbing activities of less than 1 acre.

2. NPDES (National Pollutant Discharge Elimination System) general permit and erosion, sediment, and pollution control plans (ES&PCP) for:

   - Land-disturbing activities of greater than 1 acre, or
   - Land-disturbing activities of less than 1 acre that are a part of a larger overall development that is more than 1 acre, or
   - Linear projects (25 times longer than its width) that disturb greater than 1 total acre.

3. Comprehensive monitoring program (CMP).

E&CS project management shall ensure that all requirements contained in the site-specific storm-water management program are implemented.

4.2 Erosion and Sedimentation Control Plans for LDA of Less Than One Acre

E&CS shall consult with the appropriate operating company's environmental affairs department and develop erosion and sedimentation control plans that are incorporated into engineering designs and project specifications.

The erosion and sedimentation control plans may include requirements such as:

1. Stripping of vegetation, regarding and other development activities shall be conducted in such a manner to minimize erosion.

2. Minimize disturbed areas and duration of exposure.

3. Use temporary vegetation or mulching to protect exposed critical areas.

4. Install permanent vegetation and structural erosion-control measures.

5. Use debris basins, sediment basins, silt traps or similar measures to trap sediment in run-off water until the disturbed area is stabilized.

6. Use bridges and culverts to convey grading equipment across flowing streams.

7. Adjacent to any state waters, retain an undisturbed natural vegetation buffer of 25 ft measured from the stream banks.

4.3 NPDES General Permit for LDA of Greater Than One Acre

1. Each state has jurisdiction over the NPDES general permit for storm-water discharges associated with construction activities that disturb more than 1 acre of land. Compliance will incorporate sound conservation and engineering practices to minimize erosion and sediment deposits into the waters of the state. This general permit does not address storm water discharges from industrial activities or discharges from point sources that are subject to an existing NPDES permit.

2. E&CS is responsible for ensuring that all required erosion, sediment, and pollution control plans (ES&PCP), permits, notice of intents (NOI), inspections, sampling, reporting, recordkeeping, notice of terminations (NOT), etc., are complied with based on specific state and local requirements for the extent of land disturbing activities. Contractors may be asked to assist with one or more of these requirements.

4.4 Erosion, Sediment, and Pollution Control Plans (ES&PCP)

1. E&CS shall consult with the appropriate operating company's environmental affairs department and develop a site-specific erosion, sediment, and pollution control plan (ES&PCP) as required by the NPDES general permit and state or local regulations.

2. The ES&PCP shall be prepared according to the specific requirements listed in the NPDES general permit.

4.5 Comprehensive Monitoring Program (CMP)

E&CS shall consult with the appropriate operating company's environmental affairs department and develop a site-specific comprehensive monitoring program (CMP) that establishes procedures to collect and analyze storm water runoff turbidity samples from

the receiving stream(s) or from individual storm water outfalls. The program shall be prepared before any LDA.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-4D

Air Programs Management

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements to address the control of air emissions on Engineering and Construction Services (E&CS) construction projects in accordance with applicable air-related environmental regulatory requirements.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

None.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

E&CS shall consult with the appropriate operating company's environmental affairs department during the engineering phase of every construction project that has the potential for air-related regulatory requirements to develop a site-specific air program management plan. At a minimum, the plan shall address the following issues:

- Preconstruction air permits.
- Open burning.
- Asbestos/demolition.
- Fugitive emissions.
- U.S. Federal Aviation Administration (FAA) requirements.

4.2 Preconstruction Air Permits

At the earliest possible stage of a proposed project, a determination must be made as to whether or not a preconstruction air permit will be required. If required, an application for a preconstruction permit must be submitted to the regulatory agencies. Construction cannot begin until this permit is issued from the agency. This process normally requires several months. Examples of projects that have required preconstruction air permits are the new combined cycle generating units and the SCRs that are being installed at coal-fired units.

E&CS is responsible for ensuring that all required preconstruction air permits are obtained prior to the commencement of any construction activity and for compliance with permit requirements.

4.3 Open Burning

State and local agencies restrict open burning and may require permits prior to the burning of materials from the clearing of land for construction. In very limited circumstances, open burning may be allowed. During some periods of the year, opening burning may be completely banned. When open burning is allowed, the use of a wind curtain or other restrictions may apply.

E&CS is responsible for ensuring that all required open-burning permits are obtained prior to the burning of construction clearing materials and for compliance with permit requirements.

4.4 Asbestos/Demolition

State and local agencies require notification 10 working days prior to the demolition of structures that may be located on property that will be used in construction. If asbestos is present in a structure, notification and removal will be required in strict accordance with regulations. Proper training and certification is required for all persons that sample and determine asbestos content. Contractors that remove and dispose of asbestos-containing material must be certified and trained.

E&CS is responsible for ensuring that all demolition and asbestos removal is conducted as required by appropriate regulations.

4.5 Fugitive Emissions

Any air-borne material transported beyond the property line of the construction site would be considered fugitive emissions. State and local agencies regulate fugitive emissions. The most common source of fugitive emissions from a construction site is dust from traffic. Reasonable measures such as wetting the roads must be taken to minimize fugitive emissions.

E&CS is responsible for ensuring compliance with all fugitive emissions regulations.

4.6 FAA Requirements

The FAA regulates the use of equipment and structures that exceed specified heights. Notification to FAA is required and an aeronautical study must be conducted prior to the erection of the equipment or construction of these structures. This study may require several weeks to complete.

E&CS is responsible for ensuring compliance with all FAA requirements.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-4E

Waste Management

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements regarding the proper identification, handling, storage, and disposal/recycling of hazardous and nonhazardous waste on Engineering and Construction Services (E&CS) construction projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

None.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

1. E&CS shall not cause or allow to be released any hazardous wastes or toxic substances and/or any other waste, pollution, noxious gases or substances, or any other substances in violation of applicable federal, state, or local laws, rules, and regulations in connection with the construction activities.

2. E&CS shall consult with the appropriate operating company's environmental affairs department during the engineering phase and prior to construction to develop a site-specific waste management plan. The plan shall address requirements for the proper identification, handling, storage, and disposal/recycling of nonhazardous and hazardous waste generated from construction activities.

4.2 Nonhazardous Solid Waste

1. State and local agencies have certain control over the management, disposal, and/or recycling of all nonhazardous solid waste and excess materials that are either brought onsite or generated as a result of construction activities. The site-specific waste management plan shall describe how to handle and dispose of this waste stream during construction.

2. Contractors are responsible for the management and timely disposal and/or recycling of all nonhazardous waste and excess materials that the contractor brought onsite or generated as a result of their construction activities; unless otherwise specified in the contract.

3. Contractors shall supply and maintain appropriate numbers and sizes of nonhazardous waste containers. Containers shall be kept covered. The locations of bulk solid waste containers (such as rolloffs or dumpsters) shall be approved in advance by E&CS site management.

4. E&CS is responsible for ensuring compliance with the site-specific waste management plan.

4.3 Hazardous Waste

1. Federal and state regulations cover the generation, handling, storage, and disposal of any hazardous waste generated at a facility. Furthermore, if the project is located at an existing facility, any waste generated onsite is counted as being generated for the entire facility and may not be separated. No hazardous or potentially harmful waste generated by contractors shall be allowed to enter the [normal waste streams - red] of either E&CS or the operating company.

Specific project contract documents shall specify the party (company or contractor) that is responsible for hazardous waste management. Additionally, the operating company will provide acceptable vendors to handle any waste stream generated requiring disposal.

2. When Southern Company Generation is responsible for hazardous waste disposal, the contractor is responsible to properly package the hazardous waste in accordance with applicable laws, rules, and regulations.

3. When the contractor is responsible for hazardous waste disposal, the contractor shall package and dispose of the waste as directed by Generation.

4. Hazardous or potentially harmful waste materials shall not be mixed with nonhazardous waste materials.

5. Appropriate hazardous waste storage areas shall be established and maintained as needed.

6. Hazardous and potentially harmful wastes shall be placed in proper containers, properly labeled, and stored in the hazardous waste storage area. Filled containers shall be removed from the project and properly disposed of in a timely manner with required documentation and record keeping.

7. E&CS is responsible for ensuring compliance with the site-specific waste management plan.

4.4 Used Oil and Petroleum Products

State and local agencies have regulations regarding the management of used oil and other petroleum products, as well as oily waste and debris generated. Appropriate storage areas, acceptable collection devices, and timely removal from the site of these materials must be adhered to. Additionally, spill prevention, control, and countermeasure (SPCC) requirements must be met.

E&CS is responsible for ensuring that all oil products and oily waste generated are handled and disposed of properly in accordance with the site-specific waste management plan.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-4F

Environmental Assessment and Remediation

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for the safe performance of environmental assessment and remediation operations for Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

- SH-2C13, Drilling Equipment.
- SH-2A17, Excavation and Trenching.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 General Requirements

1. Prior to beginning any environmental assessment or remediation project, the E&CS site manager shall confer with environmental, health, and safety (EH&S) and:

   a. Perform a preliminary site evaluation to identify specific site hazards and determine the appropriate safety and health controls needed to protect employees from the identified hazards.

   b. Prepare a written site-specific health and safety plan for the project.

   c. Prepare a site-specific comprehensive work plan for the project.

2. All work shall be performed in compliance with the site-specific health and safety plan and applicable procedures in this manual.

3. All drilling and excavation work shall be performed in compliance with procedure SH-2C13, Drilling Equipment, and procedure SH-2A17, Excavation and Trenching.

4.2 Training Requirements

Numerous training requirements specific to environmental assessment and remediation operations must be met. These requirements are in addition to other EH&S training needs. E&CS shall ensure all involved employees have met the training requirements. Training requirements include:

1. The remediation project supervisor shall have successfully completed an approved (40) hour hazardous waste operations course and shall have a minimum of (3) days supervised field experience, plus an additional (8) hours of specialized training.

2. All general site employees shall have successfully completed an approved (40) hour hazardous waste operations course and shall have a minimum of (3) days of supervised field experience.

3. All employees who are onsite only occasionally for a specific limited task and are unlikely to be exposed to hazardous substances over permissible exposure limits, and all employees who are onsite regularly but work in areas that have been determined not to have the potential for exposure over permissible exposure limits shall have successfully completed an approved (24) hour hazardous waste operations course and shall have a minimum of (1) day of supervised field experience.

4. All employees shall successfully complete an approved (8) hour hazardous waste operations refresher course annually.

5. All employees shall receive appropriate training on the site-specific health and safety plan.

6. Job briefings with all personnel involved shall be conducted and documented at the beginning of each shift and for each significant daily job change. At a minimum, the following aspects of the job shall be covered during job briefings:

   - Hazards associated with the job.
   - Work procedures involved.
   - Special precautions.
   - Hazardous energy controls.
   - Personal protective equipment requirement.

4.3 Assessment and Remediation In Energized Substations / Switchyards

1. When environmental assessment or remediation work is performed in energized or potentially energized substations or switchyards, all personnel involved shall receive comprehensive substation safety training prior to beginning operations and shall adhere to these additional requirements.

2. All assessment and remediation work shall be coordinated with the appropriate operating company's transmission maintenance supervision to ensure compliance with operating requirements and request assistance of a transmission maintenance employee while planning and performing any drilling or excavation operations. A review of substation drawings and survey of the site shall be conducted with the operating company's transmission maintenance assistance during the project planning phase to identify any known underground cables, conduit, pipes, or other structures.

3. An operating company's transmission maintenance representative shall be present at all times when excavations are being made that can damage the existing grounding grid or that are in close proximity to structures or underground cables to ensure the safety of personnel and equipment.

4. The appropriate operating company's transmission maintenance center shall be notified prior to each daily entrance to the substation. During this notification, a request for an R switch shall be made to ensure that switches will not automatically reclose if tripped.

5. Equipment and vehicles shall be driven into substations using extreme caution. Equipment shall be parked away from structures whenever practical. Flagmen shall be deployed whenever vehicles or equipment with an obstructed view to the rear must be backed into or out of position.

6. Wheel chocks shall be placed on the downhill side of all equipment that is parked on a slope.

7. All personnel performing remediation activities while the substation is energized shall wear approved rubber boots or shoe covers.

8. All equipment that can reach into or potentially be placed within the minimum approach distance of an energized overhead conductor, substation buss, or equipment, and all drilling or excavating equipment shall be grounded to the existing grounding grid using a 4/0 grounding cable with clamps attached at each end. The grounding cable shall be clamped to the frame or to a stirrup or stud that is welded to the frame of the equipment and then attached to the grounding grid.

9. No personnel or equipment shall be placed within the below-listed minimum approach distances of energized conductors unless expressly authorized and supervised by a representative of the operating company's transmission maintenance center to follow minimum approach distances for qualified electricians.

   - 10 ft for voltages up to 50 kV.
   - 10 ft plus (4 in. per 10 kV over 50 kV.

   Examples: 115 kV = 12 ft 2 in.; 230 kV = 16 ft; 500 kV = 25 ft.

10. When conditions require drilling or excavating in areas where there is the potential for accidental contact with underground utilities, all personnel performing manual digging operations shall wear approved low-voltage insulating gloves in addition to rubber boots or overshoes.

11. If the existing grounding grid or underground cables are damaged, employees and equipment shall be kept clear of them until they are assessed by an authorized transmission maintenance employee and determined to be safe.

12. All long-handled tools, such as shovels and rakes, shall be equipped with fiberglass handles whenever possible and shall be carried below shoulder level with handles in the horizontal position.

4.4 Underground Storage Tank Removal

1. E&CS site managers and supervisors shall confer with EH&S prior to performing operations to remove underground storage tanks (UST).

2. Removal of USTs shall be performed in compliance with the appropriate operating company's EH&S procedure or guideline and applicable procedures in this manual.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-4G

Herbicides and Pesticides

	Rev. 0	**Rev. 1**
Date	12/10/2002	3/11/2009
Revised By	Bruce Walker	Bruce Walker
Reviewed By	Construction Safety Leadership Team	Construction Safety Leadership Team
Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements related to the application of herbicides and pesticides at Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References/Additional Resources

None.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

E&CS site management shall consult with environmental, health, and safety (EH&S) and/or the appropriate operating company's environmental affairs department to determine approved products prior to allowing herbicides or pesticides to be brought onto or applied on the project. E&CS site managers shall ensure that all project applications of herbicides and pesticides comply with appropriate regulations and appropriate company procedures.

4.2 Herbicide and Pesticide Usage

Federal and state regulations mandate herbicides and pesticides be handled and applied only by authorized personnel with verifiable training, certification, and/or licensing as required by federal, state, or local regulations for the particular substance to be used. There are requirements to protect adjacent and surrounding areas and personnel from potential airborne concentrations, overspray, and/or runoff. Also containers and excess product shall be properly stored and/or promptly removed from the project upon completion of the application.

E&CS, in conjunction with the appropriate operating company department, is responsible for ensuring that all required usage and handling requirements are adhered to per the regulations.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-5A

Safe Work Practices in Offices

	Rev. 0	**Rev. 1**
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Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides requirements for safely working in offices on Engineering and Construction Services (E&CS) projects.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

None.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

4.1 Requirements

4.1.1 General

1. Sit properly in chairs at all times. Do not tilt back in straight chairs or lean to the extreme in swivel chairs. Do not overreach while seated.

2. Do not engage in any horseplay, fighting, or other acts that could endanger personnel.

3. Use ladders or other safe supports to reach material on high shelves or similar locations. Do not use boxes, crates, chairs, or similar items to gain access to high shelves.

4. Use the handles provided on file cabinets, drawers, doors, and other closing items to prevent fingers being caught in pinch points.

5. Move large boxes or bundles of supplies with a handtruck, or unpack and deliver in smaller parcels. Serious strains often result from improper handling of boxes and bundles of office supplies, ledgers, portable filing cases, and office machines. Do not carry so many articles that your view is obstructed. When in doubt, it is much better to make several trips. Always use good lifting technique:

    a. Plan ahead, lift and test the load, and do not hurry.

    b. Ask for help if you decide the load is too heavy or awkward.

    c. Establish firm footing by keeping your feet approximately shoulder-width apart and by pointing your toes out. Separating your feet will give a solid base of support.

    d. Bend at your knees, not at your waist.

    e. Tighten your stomach muscles.

    f. Lift with your legs (strongest muscles in the body) and not your back.

    g. Keep the load close to your body.

    h. Avoid twisting your body, and always attempt to keep your toes pointed in the direction you want to move.

6. Do not run in the building except in extreme emergencies.

7. While walking in corridors, keep to the right and avoid reading documents.

8. While ascending or descending stairs, use handrails, keep to the right and ascend or descend one step at a time. When required to carry items up or down stairs, ensure one hand is free at all times to grip handrail.

4.1.2 Office Machines, Equipment, and Tools

1. Heavy objects shall be placed far enough away from edges of tables or desks so they will not fall or be knocked off accidentally.

2. Machines shall be turned off and unplugged prior to any service or repair.

3. When not in use, paper cutters shall have the blade in the down and locked position.

4. Paper shredders shall be used by trained personnel only. The shredder shall be unplugged prior to the removal of jammed material.

5. Scissors and other sharp instruments shall be properly stored to prevent accidental injury. Do not store loose razor blades and unprotected Exacto knives in desk drawers.

6. If refrigerators are provided, they shall be cleaned on a weekly basis.

4.1.3 File Cabinets

1. Drawers shall not be overloaded. Load cabinets from the bottom to the top and arrange the contents so that the load is evenly distributed.

2. To prevent cabinets from tipping over, only one drawer shall be open at a time.

3. File drawers shall not be left open and unattended.

4.1.4 Passageways/Aisles

1. A minimum width of 3 ft shall be established for aisles. Obstructions such as wastebaskets, telephone and electrical cords, low tables, and office equipment must be kept where they do not present tripping hazards.

2. Doors shall not open into travel paths. Always open doors slowly to avoid striking anyone on the other side.

4.1.5 Electrical

1. Clear access to circuit breaker panels shall be maintained at all times.

2. Circuit breakers shall be clearly labeled as to function.

3. Do not unplug electrical cords by pulling on the cord.

4. Electric cords shall not be routed across aisles or passageways unless the cords are covered.

4.1.6 Materials Storage

1. Secure storage racks or shelves to walls or other substantial supports unless they are designed to be freestanding under load.

2. Material stored on the top of racks or shelves shall be a minimum of 18 in. from the ceiling, light fixtures, light bulbs, and sprinkler heads.

4.1.7 Temporary Construction Facilities

Trailers and other temporary structures used as field offices, to house personnel, or for storage shall be anchored with rods and cables or by steel straps to ground anchors. The anchor system shall be designed to withstand winds and must meet applicable state or local standards for anchoring mobile trailer homes. Office areas are exempt from hardhat and safety-glasses regulations unless personnel are performing tasks for which they are required. Safe means of access/egress such as nonskid ramps and suitable stairs with adequate landings shall be provided.

4.2 Fire Safety Requirements

Each office is responsible for developing and implementing processes to address fire-safety requirements set forth in this procedure. All personnel must be instructed and required to follow basic office fire-safety principles set forth for their area. No office space shall be occupied without a fire-safety review.

4.2.1 Fire Safety Requirements for Building Exits

The following fire-safety features are required for exits:

1. An exit must be provided from every floor and every building.

2. Exit stairways shall not be used for storage or for any other activity that compromises their use as an exit (for example, used as electric cable

raceways or as pathways for heating, air conditioning, or ventilation system ducts).

3. Doors in exits shall swing in the direction of exit travel.

4. Doors shall not be locked, chained, or barred shut.

5. Doors shall be arranged to be readily opened from the side from which egress is made when the building is occupied. Latches or other fastening devices shall be provided with a knob, handle, panic bar, or other simple releasing device.

6. Every exit shall be marked by a sign readily visible from any direction of access to the exit. Access to exits shall be marked by readily visible signs in all cases where the exit or the way to reach it is not immediately visible to occupants.

4.2.2 Extinguishing Systems and Equipment

Fire extinguishers shall be strategically located with no more than 75 ft (25 m) travel distance from any point to an extinguisher. They shall be well maintained, have unobstructed access, and their location shall be clearly marked by signs readily visible from any direction. Multipurpose dry chemical (ABC) extinguishers are required; however, the number, size, type, and location of extinguishers should meet the specific fire-protection needs of various areas of offices.

4.2.3 Temporary Buildings, Outbuildings, and Office Trailers

Temporary buildings, outbuildings, and office trailers that are classified as office occupancy space shall have fire safety plans. They shall conform to the requirements of national, state, and local codes and site codes and regulations, as well as the requirements of this procedure.

1. Exits - Two means of exit are required when the building size, shape, and/or equipment or furniture layout causes the possibility of a fire cutting off the single means of exit and trapping personnel.

2. Flammability of Materials - Give special consideration to the flammability of construction materials and/or furnishings and their placement with regard to the heating system and other heat-producing equipment. For example, curtains and furniture should not be placed close to wall-mounted and wall-recessed electric heaters.

4.2.4 Fire Prevention Practices

1. Do not store flammable or combustible paints, thinners, and maintenance materials in general office areas. Provide approved flammable liquid storage cabinets in maintenance storage areas for these items.

2. Do not store combustible materials in rooms or closets used for electrical controls, or telephone wiring or switching.

3. All electrical equipment shall be UL approved by an accredited testing agency and should be inspected before first use and periodically thereafter.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Southern Company Generation

Engineering and Construction Services

Environmental, Health, and Safety Procedures

SH-5B

Travel Safety

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Approved By	Don Gaddy	Will Taylor

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides guidelines for safe travel and lodging for Engineering and Construction Services (E&CS) personnel on company business.

1.2 Scope

This procedure applies to all E&CS Construction Services personnel and all others under their supervision.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

None.

2.2 References

None.

3.0 RESPONSIBILITY

3.1 Construction Site Manager

The E&CS construction site manager is responsible for implementing and ensuring compliance with this procedure.

3.2 Contractors

Contractors working on E&CS construction projects are responsible for complying with the requirements established by this procedure.

4.0 PROCEDURE

Text in blue represents Southern Company requirements.

4.1 Requirements

4.1.1 General

Protecting yourself involves more than just physical self-defense skills; it also involves knowing how to avoid trouble.

1. Be aware of what is going on around you.

2. Do not walk alone at night unless absolutely necessary.

3. Use well-lighted streets and pathways.

4. Park as close to your destination as possible. Try to park in a well-lighted area.

5. When leaving your vehicle, lock all doors and lock valuables in the trunk or out of sight.

6. If possible, avoid parking next to vans. Assailants sometimes hide inside or underneath vans.

7. Personal vehicles used for company business shall meet the general requirements of this procedure. Motorcycles are prohibited for company travel purposes. Personnel operating vehicles must have a valid driver's license and have liability insurance consistent with the appropriate operating company's requirements and state laws. The company assumes no responsibility for losses or damages to private vehicles or to the contents thereof.

8. If your vehicle becomes disabled, pull well off to the side of the road, turn on your emergency flashers, and raise the hood (the universal sign of distress). If you have a cell phone call and request assistance. Stay in the vehicle with the doors locked. Wait for police or a tow truck. If a stranger stops to offer help, ask them to summon police. Do not accept a ride from a stranger, and do not start out on foot. Do not pick up hitchhikers. Never pick up motorists whose vehicles are disabled; use your cell phone to call for assistance.

9. Cell phone use shall comply with applicable state and local regulations.

For additional programs on personal safety, local police departments are usually willing to be guest speakers and to provide information about local programs.

4.2 Automobile Safety

Automobile safety applies to rental, company-owned or -leased vehicles, and personal vehicles used on company business.

1. Drive in a safe and courteous manner, using defensive driving techniques. Personnel who drive company-owned or -leased vehicles should attend a defensive driving course.

2. Do not drive unless you are alert, rested, and free of medication or other substances that might affect your judgment or driving skills.

3. Obey all traffic signs, laws, rules, and regulations.

4. Wear restraints at all times, whether you are a driver or a passenger. The driver shall not move the vehicle until all passengers are properly secured.

5. Before operating the vehicle, make sure it is mechanically sound and properly equipped with safety restraints. Verify condition and operation of safety belts, lights and turn signals, mirrors, horn, spare tire, jack, door locks, tires, brakes, and wipers. Ensure a fire extinguisher is available on those vehicles where required.

6. If an accident occurs, report or call local law enforcement and the rental agency, if applicable. Subsequent to the accident, call your supervisor as soon as possible and report the accident to your E&CS safety coordinator or the E&CS safety manager.

Listed below are additional reporting requirements for motor vehicle accidents involving motor vehicles owned by operating companies, accidents involving fatalities, serious accidents, and rental vehicles. This information may also be found at the Southern Company Generation Safety and Health intranet site at http://powergeneration.southernco.com/depts/engineering/safety-health-gen/E-CS_Accident_Illness_Reporting.html#SCS%20Motor%20Vehicle%20Accident%20Reporting.

4.2.1 Requirements for SCS Employees Working in Alabama

1. Report the accident to your supervisor. If the accident involves fatalities or serious injuries, a report must be called into SCS Risk Management (205-257-6510).

2. Contact APC Risk Services if the vehicle is owned by APC. For accidents in the southern part of the state, call 334-206-4601. Call 205-716-4601 for accidents in the northern part of the state.

3. Complete a copy of the SCS Vehicle Accident Report form and send copies to SCS Safety and Health-West, c/o APC Safety and Health (7th Avenue Annex, APC CHQ) and to SCS Risk Management (15N-8367, APC CHQ, Birmingham).

4. If the accident occurs at a Southern Nuclear operated facility, a copy of the report must also be forwarded to Southern Nuclear Safety and Health (Bin B018, Building 40, Inverness, Birmingham).

5. Notify the rental agency of any accident in a rental vehicle and complete any forms required by the rental company and notify SCS Risk Management.

6. For accidents involving a vehicle rented using a VISA Corporate Card, notify VISA at 1-800-VISA-911.

7. Notify your insurance carrier if the accident involves your personal vehicle.

NOTE

The State of Alabama requires an SR13 form be submitted to the state on any vehicle accident involving personal injury or property damage exceeding $250. It is the driver's responsibility to complete and submit this form.

4.2.2 Requirements for SCS Employees Working in Florida

1. Report the accident to Gulf Power Company's Security Department at 904-444-6156.

2. Report the accident to your supervisor. If the accident involves fatalities or serious injuries, a report must be called into SCS Risk Management (404-506-0701).

3. Complete a copy of the Gulf Power Vehicle Safety Report form (Form No. 300336) and send copies to Gulf Power Corporate Safety, and SCS Safety and Health-West, c/o APC Safety and Health (7th Avenue Annex, APC CHQ).

4. If the accident involves a rental vehicle, notify the rental company of the accident and complete any forms as required by the rental company.

5. For accidents involving a vehicle rented using a VISA Corporate Card, notify VISA at 1-800-VISA-911.

6. Notify your insurance carrier if the accident involves your personal vehicle.

4.2.3 Requirements for SCS Employees Working in Georgia

1. Report the accident to your supervisor and immediately to Worker's Compensation (404-526-3600) in accordance with the Worker's Compensation Handbook. If the accident involves serious injuries or fatalities, a report must be called in to SCS Risk Management (404-506-0701).

2. Contact GPC Risk Management if the vehicle is owned by GPC.

3. Complete a copy of the SCS Vehicle Accident Report form and send copies to SCS Safety and Health-East (Bin 10170, Building 333, Atlanta), and also to SCS Risk Management (Bin 920, 270 Peachtree, Atlanta).

4. If the accident occurs at a Southern Nuclear operated facility, a copy of the report must also be forwarded to Southern Nuclear Safety and Health (Bin B018, Building 40, Inverness, Birmingham).

5. Notify the rental agency of any accident in a rental vehicle and complete any forms as required by the rental company, and notify SCS Risk Management.

6. For accidents involving a vehicle rented using a corporate VISA card, notify VISA at 1-800-VISA-911.

7. Notify your insurance carrier if the accident involves your personal vehicle.

4.2.4 Requirements for SCS Employees Working in Mississippi

1. Report the accident to your supervisor. If the accident involves fatalities or serious injuries, a report must be called into SCS Risk Management (404-506-0701) and MPC Risk Management (8-794-4311).

   NOTE:
   Weekends and after normal business hours, MPC Risk Management can be contacted by entering pager number 1-800-999-6710 with I.D. number 9991963.

2. Complete a copy of the MPC Vehicle Accident Report form and send copies to MPC Risk Management (Corporate Training Center), SCS Safety and Health-West c/o APC Safety and Health (7th Avenue Annex, APC CHQ) and to SCS Risk Management (Bin 920, 270 Peachtree, Atlanta).

3. If the vehicle is a rental, notify the rental car company of the accident and complete any forms as required by the rental company.

4. Notify your Corporate VISA card representative at 1-800-VISA-911 if a corporate card was used to rent the vehicle.

5. If the accident involves a personal vehicle, notify your insurance carrier.

NOTE:

The State of Mississippi requires a form be submitted to the state on any vehicle accident involving personal injury or property damage exceeding $250. It is the driver's responsibility to complete and submit this form.

4.3 Hotel and Motel Safety

1. Select reputable accommodations.

2. After checking in to the hotel or motel, familiarize yourself with the safety and emergency procedures applicable to the establishment. Learn escape routes ahead of time. Heavy smoke may make finding these difficult during an emergency.

3. When you retire for the evening, use reasonable precautions in case of fire or evacuation.

5.0 KEY CONTACT

For questions about the content and implementation of this procedure, contact the manager–E&CS Safety and Health – Construction.

6.0 QUALITY RECORDS

None.

7.0 ATTACHMENTS

None.

Accident/Incident - an unintended occurrence that either caused or may have caused personal injury, property damage, or interference with the execution of the project.

Accumulation areas - locations where containers are stationed for the collection of a waste.

Accumulation point - an area onsite at which hazardous waste can be accumulated for up to 90 days without a permit. At an accumulation point, any amount of hazardous waste can be collected and stored providing no container remains in the accumulation point storage over 90 days. If hazardous waste is added to a container at the accumulation point, the 90 day limit for the container begins as soon as the waste is first added to the container.

Acetylene - acetylene is an unstable gas when compressed above 15 psig. Acetylene cylinders are filled with a porous material and saturated with liquid acetone. Acetylene, when pumped into the cylinder, dissolves in the acetone and is held in a stable condition. If the acetylene cylinder is stored or used in the horizontal position, the acetone may leak out, leaving an explosive mixture of acetylene. For this reason, all acetylene cylinders must be stored and used in the vertical position.

ACGIH - American Conference of Government Industrial Hygienists - A governmental group of industrial hygienists who sponsor testing of a variety of substances to determine at what levels people can safely work. This organization is devoted to the administrative and technical aspects of occupational and environmental health. Each year, ACGIH publishes the Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices.

Action level - the level set by OSHA in substance specific standards that trigger certain requirements, typically training and medical surveillance.

Adequate ventilation - ventilation (natural or mechanical) that maintains contaminant levels below OSHA action levels (if such levels exist). If action levels do not exist, a value of one-half the TLV or PEL, whichever is lower, will be substituted.

Administrative controls - control measures requiring human actions to implement such as job rotation, work assignment, time periods away from the hazard, or training in specific work practices to reduce the exposure.

Anchorage point - a secure point of attachment for lifelines, lanyards, or deceleration devices. The anchorage shall be capable of withstanding the forces specified in this procedure.

Approved - (a) approved by the authority having jurisdiction; (b) Tested and listed as satisfactory jointly by the Mine Safety and Health Administration (MSHA) of the U. S. Department of Labor and the National Institute for Occupational Safety and Health (NIOSH) of the U. S. Department of Health and Human Services.

Arc welding - a form of electrical welding using either coated or uncoated rods.

Area Supervisor - supervisory person directly responsible for a specific location or activity.

Asbestos - includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.

Asbestos-containing material (ACM) - any material containing more than 1 percent asbestos.

Asphyxiant - a gas whose primary or most acute health effect is asphyxiation (suffocation). There are two classes of asphyxiants; 1) Simple, such as nitrogen or methane, which act by replacing oxygen; 2) Chemical, such as carbon monoxide, which act by preventing oxygen uptake at the cellular level.

Assistant Secretary - the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

Attendant - an individual stationed outside of a confined space assigned to monitor the confined space entry process and perform all of the attendant's duties.

Audiogram - a chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.

Audiologist - a professional, specializing in the study and rehabilitation of hearing, who is certified by the American Speech-Language-Hearing Association or licensed by a state board of examiners or agency having authority.

Barricade - a sign, a barrier, orange traffic cones, highly visible tape, painted ground markings, etc. Barricades are used to signify warning, caution, or danger, and to prevent or restrict access to the area. Barricades may be permanent or temporary barricades, flexible or rigid (standard guardrail system).

Baseline audiogram - the audiogram against which future audiograms are compared.

Blast area - area in which explosive loading and blasting operations are being conducted.

Blaster - person or persons authorized to use explosives for blasting purposes.

Blasting agent - any material or mixture, consisting of a fuel and oxidizer, intended for blasting, not otherwise classified as an explosive, and in which none of the ingredients are classified as an explosive, provided that the finished product, as mixed and packaged for use or shipment, cannot be detonated by means of a No. 8 test blasting cap when unconfined.

Blasting cap - a metallic tube closed at one end, containing a charge of one or more detonating compounds, and designed for and capable of detonation from the sparks or flame from a safety fuse inserted and crimped into the open end.

Boom truck - any vehicle used to transport personnel and materials with a crane attached for material handling purposes.

Buoyant work vest - will not keep an unconscious person's face out of the water.

Breathing zone - imaginary globe of 2-foot radius surrounding the head.

Calibration (for atmospheric monitoring equipment) - a process by which one documents that the atmospheric monitoring equipment is working properly and giving accurate readings. The process involves zeroing the instrument and a span check.

Carcinogen - a substance or agent producing or inciting cancer. These substances are listed by the National Toxicology Program (NTP) in its Annual Report on Carcinogens, the International Agency for Research on Cancer (IARC) in its Monographs, and by the Occupational Safety and Health Administration in 29 CFR Part 1926 Subpart Z, Toxic and Hazardous Substances.

Catastrophe - a fatality, hospitalization of three (3) or more employees, material or equipment damage exceeding $10,000.00, or significant fires.

Ceiling concentration - the concentration of an airborne substance that shall not be exceeded.

Certified Industrial Hygienist (CIH) - one certified in the practice of industrial hygiene by the American Board of Industrial Hygiene.

CFR - Code of Federal Regulations.

Clamshell - a crane that has a clamshell assembly. The boom and hoist is used to raise and lower a clamshell bucket.

Chemical - any element, chemical compound or mixture of elements and/or compounds. Examples include: cleaning compounds, lubricants, paints, fuels, welding rods, and base metals.

Christmas treeing - the hoisting of multiple loads suspended below the hook.

Combustible liquid - liquid having a flash point at or above 140ºF (60ºC).

Combustible material - liquids, solids, or gases that are relatively difficult to ignite (140ºF or more) and that burn relatively slowly (such as paper, wood, etc.).

Combustion - a chemical process that involves oxidation sufficient to produce light or heat.

Compressed gas cylinder - containers approved for the storage, transport, and use of various chemicals under high-pressure conditions.

Competent person - one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. The individual must knowledgeable in the requirements in the OSHA standards. Both training and/or experience are factors of consideration for competent person designation.

Confined space - a space that: 1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and 2) Has limited or restricted means for entry or exit (for example, tanks, silos, vessels, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and 3) Is not designed for continuous human occupancy.

Confined space, permit-required - a confined space that has one or more of the following characteristics: 1) Contains or has a potential to contain a hazardous atmosphere; 2) Contains a material that has the potential for engulfing an entrant; 3) 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 4) Contains any other serious safety or health hazard.

Consumer products - any product or hazardous substance meeting the definition of the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 11261 et seq.) respectively, where the employer can show that it is used in the workplace for the purpose intended by the chemical manufacturer or importer of the product, and the use results in a duration and frequency of exposure which is not greater than the range of exposures that could reasonably be experienced by consumers when used for the purpose intended.

Controlling contractor (steel erection) - the designated entity during steel erection responsible certify concrete strength, determine protection from falling objects method utilized, notify steel erector of anchor bolt repair/modification, provide access for movement, and assume control of fall protection systems steel erector is directed to leave after erection activities are complete.

Control zone - the area between the warning line and the unprotected sides and edges of a building/structure floor or roof surface.

Controlled decking zone - the restricted area during steel erection where a leading edge work activity of laying deck is performed.

Crisis - is defined as anything that can endanger the life of an employee, fall under close government or media scrutiny, significantly interfere with normal business operations, jeopardize a firm's positive image, or threaten a firm's financial or legal condition.

Specific examples are:

- Major accident.
- Employee death through accident.
- Serious injury to an employee.
- Structure or plant failure.
- Loss of and/or damage to property above $10,000.
- Act of God; i.e., hurricane, tornado.
- Explosion or fire.
- Labor dispute--strike, walk-off, etc.
- Improper acts by an employee, for example, major theft or felony.
- Condition that endangers the life of our employees or the public, for example, major chemical leak.
- Violation of a code, law, environmental act, or regulation.

Criterion sound level - a sound level of 90 decibels.

Cumulative trauma disorder (CTD) - a disorder of a musculoskeletal or nervous system component caused or aggravated by repeated and/or forceful movements of the same musculoskeletal system.

Dead-man switch - power tool control switch that requires the constant pressure of the operator to maintain energy to the tool.

Deceleration device - any mechanism, such as a rope grab, rip-stitch lanyard, or automatic self-retracting lifeline, which serves to dissipate more energy during fall arrest than a standard line or strap webbing lanyard.

Decibel (dB) - unit of measurement of sound level.

Dedicated portable concrete/asphalt plant - a portable plant that is located on or next to a construction site and provides product only to that site.

Detonating cord - a flexible cord containing a center core of high explosives which when detonated will have sufficient strength to detonate other cap-sensitive explosives with which it is in contact.

Detonator - blasting caps, electric blasting caps, delay electric blasting caps, and non-electric delay blasting caps.

Director - the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

Disturbance - activities such as clearing, grading, and/or excavations that affect the site's drainage characteristics or runoff coefficient.

Dragline - a crane that has a dragline fairlead assembly. The boom and hoist is used to raise and lower an excavator bucket. The dragline fairlead assembly is used to drag the bucket to fill it. It can be hoisted and contents dumped in another location.

E&CS - Engineering and Construction Services.

EH&S - Environmental, Health, and Safety.

EHSP (Environmental Health & Safety Plan) - site-specific written plan to guide implementation of the health and safety processes at the project.

Electric blasting cap - a blasting cap designed for and capable of detonation by means of an electric current.

Electric blasting circuitry:

Bus wire - an expendable wire used in parallel or series in parallel circuits to which are connected the leg wires of electric blasting caps.

Connecting wire - an insulated expendable wire used between electric blasting caps and the leading wires or between the bus wire and the leading wires.

Leading wire - an insulated wire used between the electric power source and the electric blasting cap circuit.

Permanent blasting wire - a permanently mounted insulated leading wire used between the electric power source and the electric blasting cap circuit.

Employee exposure - the exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

Employer's first report of injury - (a) A state-specific form obtainable from the project's insurance company, (b) A state specific form developed for the use of reporting an occupational

injury/illness to the state or insurance company. The forms are obtainable from the project's insurance company.

Enclosed space(s) - A space of less than 10,000 cubic feet per welder with a ceiling height of less than 16 feet.

End-of-service-life indicator (ESLI) - a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

Engulfment - a liquid or solid closing over an employees head or body.

Engineering controls - methods of controlling personnel exposures by modifying the source or reducing the quantity of contaminants released into the work environment.

Entrapment - a person becoming trapped because of the configuration of the confined space, for example a hopper.

Entrant - the employees who have been trained and authorized to enter a particular confined space.

Entry supervisor - the supervisor who is responsible for ensuring that all training requirements have been completed and all safety precautions are implemented.

EPA - federal and/or state Environmental Protection Agency, where applicable.

EPA identification number - a registration number issued by the EPA to generators, transporters, and disposal facilities. Generators of waste oil are not required to obtain an EPA identification number.

Erosion, sediment, and pollution control plans (ES&PCP) - a written plan developed by a licensed professional by the appropriate state under the specific requirements of the NPDES General Permit for the control measures to be utilized during construction activities.

Excavation - penetration of the ground surface (either natural rock/soils or manmade materials) by any means or method.

Explosives - (1) any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion, that is, with substantially instantaneous release of gas and heat, unless such compound, mixture, or device is otherwise specifically classified by the U.S. Department of Transportation; (2) all material which is classified as Class A, Class B, and Class C explosives by the U.S. Department of Transportation.

Exposure assessment - air sampling performed in the breathing zone of the affected employee, utilizing a properly calibrated air sampling pump connected via flexible tubing to the proper sampling media.

Facepiece - that portion of a respirator that covers the wearer's nose and mouth in a half-mask facepiece or that covers the nose, mouth, and eyes in a full facepiece. It is designed to make a gas-tight or particle-tight fit with the face and includes the headbands, exhalation valve(s), inhalation valve(s) and connections for an air-purifying device or respirable air source, or both.

Facility manager - also known as operating plant manager.

Fall-arrest system - a full body harness and lanyard, which is attached to a horizontal or vertical lifeline, which is properly secured, to an anchorage(s).

Fall-restraint system - an approved device and any necessary components that function together to restrain an employee in such a manner as to prevent that employee from falling to a lower level. When standard guardrails are selected, compliance with applicable sections governing their construction and use shall constitute approval.

Federal Register – a publication of U.S. government documents officially promulgated under the law, documents whose validity depends upon such publication. It is published on each day following a government working day. It is in effect, the daily supplement to the *Code of Federal Regulations (CFR).*

Filter or air purifying element - a media component used in respirators to remove solid or liquid particles from the inspired air.

Final stabilization -

- All soil disturbing activities have been completed; and
- A uniform perennial vegetative cover with a density of 70 percent of the cover for unpaved areas is established; or
- Permanent stabilization, for example riprap or geotextiles, has been installed.

Fire brigade - an organized group of employees knowledgeable, trained, and skilled in the safe evacuation of employees during emergencies and assisting in firefighting operations.

Fire resistance - materials resistant to fire for a specified period of time and under conditions of standard heat intensity. The material shall not fail structurally nor permit the side opposite the fire to become hotter than a specified temperature.

First aid - any one-time treatment and any followup visit for the purpose of observation or minor injuries, which do not ordinarily require medical care. First aid can be from a doctor or registered nurse.

First-aid log - a continuing log of all injuries/illnesses reported to supervision.

Fit factor - a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

Fit test - the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

Fixed scaffolds - includes the following: tubular welded frame scaffolds, bracket scaffolds, tube and coupler (Tube-lox) scaffolds, wood-pole scaffolds, and trestle scaffolds.

Flame-resistant material - (a) a material that burns slowly or is self-extinguishing after the external source of ignition is removed; (b) a material that is treated by incorporating chemical compounds into a textile fiber during manufacturing, or by chemically treating a textile fiber or fabric during processing or subsequent use to reduce the item's flammability.

Flammable - capable of being easily ignited, burning intensely, or having a rapid rate of flame spread.

Flammable liquid - liquid having a flash point below 100 °F and a vapor pressure not exceeding 40 pounds per square inch (absolute) at 140 °F.

Flammable material - liquids, solids, or gases that are capable of being easily ignited, (at less than 140°F) burning intensely, or having a rapid rate of flame spread (usually dusts, fine powders, or substances that ignite spontaneously at low temperatures).

Flash point - the temperature at which the liquid gives off vapor sufficient to form an ignitable mixture with the air near the surface of the liquid or within the vessel used.

Fly ash - finely divided particles of ash entrained in flue gases arising from the combustion of fuel.

Fume - airborne particles formed by the condensation of solid particles from the gaseous state.

Foot candle - a unit of illumination. It is the illumination at a point on a surface that is one foot from, and perpendicular to, a uniform point source of one candle.

Full-body harness - a configuration of connected straps to distribute a fall arresting force over at least the thighs, shoulders, and pelvis, with provisions for attaching a lanyard, lifeline, or deceleration device.

Gas - a state of matter in which the material has very low density and viscosity, can expand and contract greatly in response to changes in temperature and pressure, easily diffuses into other gases, and readily and uniformly distributes itself throughout any container.

Guardrail system - temporary fall prevention measures consisting of a handrail 42 in. (plus or minus 3 in.) above the walking surface, a midrail halfway between (with no more than a 19 in. opening above or below), and toeboards or screens. The guardrail system shall be designed to support 200 pounds of force in either the downward or outward directions.

General ventilation - a ventilation system that adds or removes air in an attempt to dilute the concentration of a contaminant.

GFCI (ground fault circuit interrupter) - a device, either permanently or temporarily, installed in an electrical system to provide protection to personnel from electrical shock. It measures flow of electrical current, senses decrease in milliamps, and trips to cease current flow.

Hazard assessment - the process of evaluating a confined space to determine what safety precautions are required for safe entry. The hazard assessment is documented on the Safe Work Permit/Confined Space Entry Permit.

Hazardous atmosphere - (a) an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is escape unaided), injury or acute illness; (b) an atmosphere which exposes employees to a risk of death, incapacitation, injury, or acute illness. It may be caused by one or more of the following conditions:

- An atmospheric oxygen concentration below 19.5 percent (an oxygen - deficient atmosphere) or above 23.5 percent (an oxygen-enriched atmosphere) by volume.
- A flammable gas, vapor, or mist in excess of 10 percent of its lower explosive limit (LEL).
- A hydrogen sulfide gas concentration above 10 parts per million.
- A carbon monoxide gas concentration above 35 parts per million.
- An airborne combustible dust at a concentration that obscures vision at a distance of 5 feet or less.
- Presence of any acutely hazardous substance in an atmospheric concentration above the permissible exposure limits (PEL) published in Subpart D of 29 CFR 1926.55. If a contaminant is not published in Subpart D, consult Material Safety Data Sheets, or other authoritative sources.
- Any atmospheric condition recognized as immediately dangerous to life or health (IDLH) as specified by the U.S. National Institute of Occupational Safety and Health (NIOSH).

Hazardous chemical - any chemical, which is a physical hazard or a health, hazard.

Hertz (Hz) - unit of measurement of frequency, numerically equal to cycles per second.

High-efficiency particulate air (HEPA) filter - A filter capable of trapping and retaining at least 99.97 percent of monodispersed particles of 0.3 microns in diameter.

High-velocity guns - Stud or fastener velocity exceeds 300 fps at 6.5 ft from muzzle.

Highway - any public street or road.

Horizontal lifeline - a rail, wire rope, or synthetic rope that is installed in a horizontal plane between two anchorage points and used for attachment of a worker's lanyard or lifeline device while moving horizontally.

Hose assembly - the hose with a suitable end coupling attached, at each end of the hose, in accordance with the manufacture's specifications.

Hydrostatic testing - the use of pressurized liquid, generally water, to test function and /or integrity of mechanical systems such tanks, vessels, and pipes.

Immediately dangerous to life or health (IDLH) - any atmosphere that poses an immediate hazard to life or produces immediate irreversible debilitating effects on health.

IAQ - indoor air quality.

Industrial hygienist - a professional qualified by education, training, and experience to anticipate, recognize, evaluate, and develop controls for occupational health hazards.

Inert gas - a gas that does not normally combine chemically with the base metal or filler metal. Used as weld gas shield (Argon0 or purging agent (Nitrogen). Can displace oxygen in a confined space.

Inhabited building - a building regularly occupied in whole or in part as a habitation for human beings, or any church, schoolhouse, railroad station, store, or other structure where people are accustomed to assemble, except any building or structure occupied in connection with the manufacture, transportation, storage, or use of explosives.

Injury/illness - any condition that is reported to supervision that causes damage, pain or discomfort to the physical well being of an employee.

Inorganic arsenic - copper aceto-arsenite and all inorganic compounds containing arsenic except arsine, measured as arsenic (As).

Input substitution - replacing the raw materials of product to use nonhazardous or less hazardous substances.

Ionizing - capable of causing atoms or groups of atoms to become electrically charged through gain or loss of one or more electrons.

Ionizing radiation - alpha particles, gamma rays, X-rays, neutrons, high-speed electrons, high-speed protons, and other atomic particles capable of producing ions. The term ionizing radiation does not include sound or radio waves, microwaves, or visible, infrared or (nonactinic) ultraviolet light (>180nm). For purposes of this standard, the term radiation is equivalent to the term ionizing radiation.

Ionizing radiation machine - equipment designed to produce ionizing radiation such as accelerators and industrial X-ray machines as well as equipment which may produce ionizing radiation secondary to another primary design purpose such as certain high voltage (>10 kV) radar or microwave tubes, electron microscopes, and ion implanters.

JPSA (job planning and safety analysis) - the process by which a work group reviews a work task, assesses the hazards, and formulates measures to minimize the hazards before the task begins.

Lanyard - a flexible line of webbing, rope, or cable used to secure a harness to a lifeline or an anchorage point usually 2, 4, or 6 ft long.

Laser - the acronym for light amplification by stimulated emission of radiation. A device that produces an intense, coherent, directional beam of light by stimulating electronic or molecular transitions to lower energy levels.

Lead - metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds.

Life jackets, U.S. Coast Guard approved or equivalent - will keep an unconscious person face out of the water.

Lifeline - a vertical line from a fixed anchorage or between two horizontal anchorage points, independent of walking or working surfaces, to which a lanyard or device is secured. Lifeline as referred to in this text is one which is part of a fall protection system used as back-up for an elevated worker.

Liquefied petroleum gases (LPG and LP gas) - material composed predominately of any of the following hydrocarbons, or mixtures of them such as propane, propylene, butane (normal butane or isobutane), and butylenes.

Local exhaust ventilation - a ventilation system that captures or contains contaminants at their source before they escape into the work area then exhausts them away from the work area. A typical system for welding operations consists of freely movable hoods placed as close to the welder or burner as practical to remove fumes and smoke at the source without having them pass through the worker's breathing zone.

Lost workday case (LWDC) - an injury/illness requiring an employee to miss the next scheduled or subsequently scheduled full workdays following exposure to a job related incident. The emphasis is to be placed on the employee's ability to work.

Low velocity, high inertia guns - stud or fastener velocity does not exceed 300 FPS at 6.5 ft from muzzle.

Lower explosion limit (LEL) - the lowest percentage of a flammable gas or vapor in the air required for ignition of the mixture. Also known as lower flammable limit (LFL).

Magazine - any building or structure, other than explosives manufacturing building, used for the storage of explosives.

Maintenance - the performance of adjustments or procedures specified by the manufacturer and performed by a qualified employee.

Makeup air - clean, tempered outdoor air supplied to a workspace to replace air removed by exhaust ventilation or by some industrial process.

Maximum use concentration (MUC) of filter, cartridge, or canister - the maximum concentration of a contaminant for which an air-purifying filter, cartridge, or canister is approved for use.

Mechanical ventilation - ventilation that consists of either general mechanical ventilation systems or local exhaust systems.

Medical pathology - a disorder or disease.

Medical surveillance - the examination of a worker's health relating to the potential hazards associated with chemicals and contaminants.

Medical treatment - any treatment, other than first aid treatment, administered to injured or ill employees for a job-related condition. Essentially, medical treatment involves the provision of medical or surgical care for injuries or illnesses that are not minor in nature.

Metal fume fever - a flu-like condition caused by inhaling heated metal fumes such as zinc from galvanized parts.

Misfire - an explosive charge that failed to detonate.

Motor vehicle - any self-propelled vehicle, truck, tractor, semitrailer, or full-trailer truck used for the transportation of freight over public highways.

MSDS (Material Safety Data Sheet) - a document required by the Hazard Communication Standard by which information concerning the hazards of materials and chemicals is supplied to employees who may come into contact with those materials. The content of the MSDS is specified in section (g) (2) of 29 CFR 1926.59.

National Electrical Code (NEC) - incorporated by reference into the OSHA standards to govern both permanent and temporary electrical installation.

Negative pressure respirator - a respirator in which the air pressure inside the respirator-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.

Near miss (or hit) - an unintended occurrence that may have caused personal injury, property damage, and/or interference with the execution of the project. The lessons learned from the investigation of a near miss (or hit) are just as invaluable as those from actual injury and their reporting by personnel is highly encouraged.

NFPA (National Fire Protection Association) - publishes the national Fire Codes aimed to promote and improve fire protection and prevention.

NIOSH (National Institute for Occupational Safety and Health) - a federal agency that conducts research on health and safety concerns, tests and certifies respirators, and trains occupational health and safety professionals.

NOI - Notice of Intent for Storm Water Discharges - associated with industrial activity under the NPDES General Permit.

Noise dose - the ratio, expressed as a percentage, of (1) the time integral, over a stated time or event, of the 0.6 power of the measured SLOW exponential time-averaged, squared A-weighted sound pressure and (2) the product of the criterion duration (8 hours) and the 0.6 power of the squared sound pressure corresponding to the criterion sound level (90 dB).

Noise dosimeter - an instrument that integrates a function of sound pressure over a period of time in such a manner that it directly indicates a noise dose.

Nonelectric delay blasting cap - a blasting cap with an integral delay element in conjunction with and capable of being detonated by an impulse or signal from miniaturized detonating cord.

NOT - notice of termination of coverage under the NPDES: General Permit for Storm Water Discharges Associated with Industrial Activity.

Nozzle - a device with one or more orifices through which media discharges from the system. The nozzle restricts the area of flow of the media, accelerating it to the required velocity and shaping it to the required flow pattern. Nozzles are commonly referred to as bits, tips, or orifices.

NPDES - National Pollutant Discharge Elimination System.

Occupational injury - any injury such as a cut, fracture, sprain, amputation, etc., which results from a work incident or from an exposure involving a single incident, or one time exposure, in the work environment.

Occupational illness - any abnormal condition or disorder other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. It includes acute and chronic illnesses or diseases, which may be caused by inhalation, absorption, ingestion, or direct contact. Some examples are cramps, dermatitis, and nausea.

Odor threshold limit - the lowest concentration of a contaminant in air that can be detected by the olfactory sense (sense of smell).

Office/facilities - office space, trailers, or structures, both permanent and temporary used to conduct or deliver business and services.

Office management - persons responsible for office safety performance at the site. Office management includes but is not limited to the office manager, site manager, safety representative, and facilities manager.

Office occupancy - the use of a building or structure or any portion thereof for the transaction of business or professional services.

Operator - a person who has been trained and has demonstrated the knowledge, skill, and experience to assemble, operate, and/or maintain equipment, cranes, and/or motorized machines.

Operator trainee - a person not qualified, because of lack of knowledge, skill, and/or experience, to perform as an operator without supervision (often referred to as an Apprentice or an Oiler).

OSHA - the Occupational Safety and Health Administration. A division within the U.S. Department of Labor charged with implementing the provisions of the Occupational Safety and Health Act of 1970.

OSHA 300 log - a log of specific injuries/illnesses that OSHA requires E&CS and contractors to maintain for their respective employees.

Otolaryngologist (ENT) - a physician specializing in diagnosis and treatment of disorders of the ear, nose, and throat.

Oxygen - oxygen itself is not flammable, but the presence of pure oxygen accelerates the combustion reaction. Oil and grease, in the presence of oxygen, become highly explosive. Oxygen must not be allowed to contact petroleum- based substances.

Oxygen deficiency - the concentration of oxygen, by volume, below which atmosphere supplying respiratory protection must be provided. It exists in atmospheres where the percentage of oxygen, by volume, is less than 19.5 percent.

PACM - presumed asbestos containing material.

Particle - a small discrete mass of solid or liquid matter.

Particulate - a particle of solid or liquid matter.

PEL (permissible exposure limit) - limit established by *OSHA* concerning the airborne concentration of a contaminant to which an employee may be exposed legally during the work shift or some portion of that shift.

Permanent barricades - are fixed, painted structures or barriers such as gates, chains, concrete firewalls, or toe-walls. They are intended to convey a permanent warning or caution regarding entering the area. They shall indicate if specific authorization, control measures, and/or protective equipment are required.

Permissible exposure limit (PEL) - (a) the limit set by OSHA which triggers certain requirements in addition to those required by exceeding the action level; (b) OSHA's legally established time-weighted average (TWA) concentration of a contaminant that shall not be exceeded.

Pneumatic testing - the use of pressurized air to test the function and/or integrity of mechanical systems such as pipes, tanks, and vessels.

Pollution - any hazardous substance emitted, discharged, or placed into the environment that adversely impacts human health or the environment and originates from operational processes.

Pollution prevention - any practice which reduces pollution. It stresses source reduction, (for example input substitution, process modernization, product reformulation, and improved operation and maintenance), but also includes reuse, recycling, and treatment.

Potable water - water that meets the quality standards prescribed in the U.S. Public Health Service Drinking Water Standards, published in 42 CFR Part 72, or water that is approved for drinking purposes by the state or local authority having jurisdiction.

PPE - personal protective equipment.

ppm - parts per million.

Pressure gauge - devices designed to provide either internal or discharge pressures of systems and or operating equipment.

Pressure relief valve - valve that is normally held in the closed position by a mechanical device, such as a spring. It is designed to open when the pressure in the system exceeds a set value.

Presumed asbestos-containing material - thermal system insulation and surfacing material found in buildings constructed no later than 1980.

Primary blasting - the blasting operation by which the original rock formation is dislodged from its natural location.

Primer - a cartridge or container of explosives into which a detonator or detonating cord is inserted or attached.

Qualified worker - has training and experience in recognition and avoidance of work place hazards and the skills to perform task for which they are hired and assigned.

Qualified person - means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

Radioactive materials - materials of natural or synthetic origin which spontaneously emit ionizing radiation. This definition includes such materials in all forms, concentrations, and quantities above natural background level whether or not the materials are subject to licensing, registration

or other permitting, are exempt or excepted under statutory codes, and whether or not the material is contained, diluted, sealed, enriched or depleted.

Railway - any steam, electric, diesel, diesel-electric, or other railroad or railway, which carries passengers or freight, for hire.

Recycling - the series of activities, including collection, separation, and processing, by which products or their materials are recovered from the solid waste stream. These materials are for use in the form of raw materials in the manufacture of products.

Representative exposure - measurements of an employee's noise dose or 8-hour time-weighted average sound level that the employers deem to be representative of the exposures of other employees in the workplace.

Reportable incidents - catastrophes, OSHA-recordable injuries of all levels, property loss exceeding $10,000.00, and reportable quantity spills of chemicals.

Resistance - opposition to the flow of air, as through a canister, cartridge, particulate filter, orifice, valve, or hose.

Respirator - a device worn over the mouth or nose for protecting the respiratory tract.

Restraint line - a line from a fixed anchorage or between two anchorage points to which an employee is secured in such a way as to prevent the worker from falling.

Restricted workday case (RWDC) - an employee, as a result of a job-related injury/illness, is physically or mentally unable to perform all or any part of his/her normal assignment during all or part of the work day or shift. The emphasis is to be placed on the employee's ability to work.

RCRA - Resource Conservation and Recovery Act.

Roll-out - unintentional disengagement of a snap hook caused by the gate being depressed under torque or contact while twisting or turning.

Rope grab - a fall-arresting device that is designed to move up or down a lifeline suspended from a fixed overhead or horizontal anchorage point, or lifeline, to which the harness is attached. In the event of a fall, the rope grab locks onto the lifeline rope through compression to arrest the fall. The use of a rope grab device is restricted for fall restraint applications.

RQ - reportable quantity.

Safety can - an approved closed container, of not more than 5 gallons capacity, having a flash-arresting screen, spring-closing lid and spout cover and designed to safely relieve internal pressure when subjected to fire exposure.

Safety fuse - a flexible cord containing an internal burning medium by which fire is conveyed at a continuous and uniform rate for the purpose of firing blasting caps.

Safety monitor system - a system of fall restraint used in conjunction with a warning line system only, where a competent person as defined above under *Competent Person*, having no additional duties, monitors the proximity of workers to the fall hazard when working between the warning line and the unprotected sides and edges, including the leading edge of a low-pitched roof or walking/working surface.

Salamander - A portable, open-kettle type of heating device commonly used to cure concrete and masonry work.

Satellite accumulation area (SAA) - an area at or near the point of generation that is under the control of the operator of the process generating the waste. No more that 55 gallons of hazardous waste or 1 quart of acutely hazardous waste can be accumulated at a SAA.

SCS - Southern Company Services.

Secondary blasting - the reduction of oversize material by the use of explosives to the dimension required for handling, including mud capping and blockholing.

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

Service life - the period of time that a respirator provides adequate protection to the wearer-for example, the period of time that an air-purifying device is effective for removing a harmful substance from inspired air.

Shall - means mandatory.

Shock-absorbing lanyard - a flexible line of webbing, cable, or rope used to secure a body belt or harness to a lifeline or anchorage point that has an integral shock absorber or deceleration device.

Short-term exposure limit (STEL) - the limit set by OSHA where an employee can be exposed above the PEL for a short time, usually 15 minutes.

Should - means highly recommended. Under regulatory standards failure to follow should recommendations may lead to a citation issued under general duty clauses.

Side shield - rigid device attached to the side of safety glasses to afford protection from objects entering the wearer's eyes from the sides.

Site/facility manager - individual with overall responsibility for all aspects of the safe execution of the project.

Silicosis - a disease of the lungs caused by the inhalation of silica dust.

Site - everything within company-owned or company-occupied property boundaries including building, building grounds, and parking lots.

Sorbent - a material which is contained in a cartridge or canister and which removes toxic gases and vapors from inspired air.

Sound level - ten (10) times the common logarithm of the ratio of the square of the measured A-weighted sound pressure to the square of the standard reference pressure of 20 micropascals, Unit: decibels (dB). For use with this instruction, SLOW time response, in accordance with ANSI S1.4-1971 (R1976), is required.

Sound-level meter - an instrument for the measurement of sound level.

Source reduction - any practice which reduces the amount of toxic chemical usage or pollution prior to recycling, treatment, and disposal. Source reduction is a "front-end" technique that prevents toxic chemical use and the creation of pollutants in the first place. It eliminates the need for end-of-pipe treatment. Source reduction techniques include input substitution, product reformulation, process modification, in-process recovery/recycling, improved operations and maintenance of equipment and chemicals, and increased control of the purchasing, storage, management, and use of chemicals.

Sources of ionizing radiation - sources include x-ray apparatus, radioactive materials or devices, and incidental sources such as ion implanters, electron microscopes, electron probes, E-beam pattern generators, etc.

Spill prevention, control, and countermeasures plan (SPCC) - a written site plan to prevent the discharge of oil, fuel, or chemicals into navigable waters or adjoining shorelines.

Span check - a portion of the calibration procedure during which a gas mixture of known composition is passed over the sensors of the instrument and the instrument readings are verified. This is a distinct function within the calibration mode of most atmospheric monitoring instruments.

Storm-water pollution prevention plan (the plan) - a written document that describes both:

- The sources of the pollution to storm water.
- The measures that will be implemented to reduce pollutants in storm water.

Surfacing material - material that is sprayed, troweled-on, or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).

Suspended scaffolds - includes the following: two-point suspended scaffolds, multilevel suspended scaffolds, floats, needle-beam scaffolds, boatswain's chair, and electric hoist platforms.

Tarpaulin - material, usually waterproof canvas or other materials, used to isolate equipment, processes, and combustible materials from spark and fire damage.

Thermal system insulation (TSI) - ACM applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat loss or gain.

Thermal system insulation ACM - thermal system insulation that contains more than 1 percent asbestos.

Time-weighted average - the average concentration of a contaminant in air during a specific time period.

TLV - Threshold limit values (and Biological Exposure Indices) are guidelines developed by the ACGIH to assist in the control of health hazards. The TLVs refer to airborne concentrations of substances and, it is believed, represent conditions under which nearly all workers may be repeatedly exposed, day after day, without adverse effect.

Temporary barricades - are generally erected for a specific purpose and intended for quick and easy removal. Examples are colored tape, a sign, sawhorses, safety cones.

Threshold limit value (TLV) - a value designated by the American Conference of Governmental Industrial Hygienists to serve as a guideline to assist in the control of health hazards.

Time-weighted average sound level - that sound level, which if constant over an 8-hour exposure, would result in the same noise dose as is measured.

Toxic chemical - all hazardous substances covered under the federal Comprehensive Environmental Response and Compensation Liability Act (the "Superfund" law). In most instances, hazardous substances that are on the federal Toxic Release Inventory (under

Section 313 of the federal Emergency Planning and Community Right to Know Act) should be targeted first, unless risks or other circumstances dictate otherwise.

Toxic-use reduction - in-plant changes in production processes or raw materials that reduce, avoid, or eliminate the use of toxic or hazardous substances, so as to reduce risks to the health of workers, consumers, or the environment without shifting risks between workers, consumers, or parts of the environment.

Tower crane - a crane configured with a vertical tower section designed to maximize reach.

Type A fire extinguisher - used for extinguishing combustible solids, such as paper or wood.

Type B fire extinguisher - used for extinguishing flammable and combustible liquids.

Type C fire extinguisher - used for extinguishing electrical fires.

Type D fire extinguisher- used for extinguishing combustible metals.

Ultraviolet flash burn - an ultraviolet burn to the eyes caused by exposure to electric welding and burning.

UST - underground storage tank.

Universal precaution - a theory in Bloodborne Pathogen Protocols whereby caregivers assume and use safe practices as if all persons have potential to transmit infection disease through bodily fluid sources.

Vapor density - the weight of vapor or gas compared to an equal volume of air.

Vapor pressure - the pressure, measured in pounds per square inch (absolute), exerted by volatile liquid.

Vapors - the gaseous form of substances that are normally in the solid or liquid state (at room temperature).

Vertical lifeline - an independent lifeline secured to an upper anchorage for the purpose of attaching a lanyard or a fall protection device. This line must be at least a ¾-in. manila rope or a ½-in. nylon rope.

Vulcanization - the process of combining rubber (natural, synthetic, or latex) with sulfur and accelerators in the presence of zinc oxide under heat and usually pressure in order to change the material permanently, from a thermoplastic to a thermosetting composition, or from a plastic

to an elastic condition. Strength, elasticity, and abrasion resistance also are improved. Proper method for splicing electrical cables.

Waste minimization - preventing or decreasing the amount of waste being generated through waste prevention, recycling, or purchasing recycled and environmentally preferable products.

Waste oil - Waste oil ("natural" oil fractions including lubricating oil, hydraulic oil, diesel fuel, etc.) which is not contaminated with cutting oil, PCBs, CFCs, or halogenated solvents at any detectable level.

Waste-oil solid wastes - materials that contained or have become contaminated with waste oil from which the oil has been properly drained or removed to the greatest extent possible so that no visible signs of free-flowing oil remain. These materials include contaminated drying agent, discarded containers (55-gallon drums, 1-qt. bottles), oil filters, and hydraulic hoses.

Waste stream - a waste that originates from one or more sources (for example, from a production process, service activity, equipment decommissioning, etc.). A stream is comprised of compatible materials that may be commingled for treatment, storage, or disposal purposes.

Whip lock - a short length of wire or cable looped over each end of two hoses that are connected by a coupling. A whip lock or whip check is designed to stop the ends of the hose from whipping around if the coupling becomes accidentally disconnected.

Working area - the area within the barriers set up to provide warning and restrict access.

Welding curtain - a screen used for welding grinding operations to protect personnel and property from flash burns and sparks.

Zero calibration - a portion of the calibration procedure during which the meter response is observed in clean room air or while administering bottled zero grade air.

Incident Notification Form

1. Project name: _____

2. Type incident (Check all that apply):

   __ Injury __ Fire

   __ Regulatory Inspection __ Crane incident

   __ Property damage __ Vehicle accident

   __ Impact to plant operations

   __ Other: _____

3. Incident date:_____ Time: _____

4. Employer/contractor name: _____

5. Name of injured employee: _____

   Occupation: _____

6. Brief description of incident and results:

7. Description of injury: _____

8. Current status of injured employee: _____

Project Name:

SAFETY STATISTICS

JANUARY 2003

	Current Month					Year To Date					Project To Date				
	Work	Recordables		Lost Time Inj		Work	Recordables		Lost Time Inj		Work	Recordables		Lost Time Inj	
Employer	Hours	No.	Inc Rate	No.	Inc Rate	Hours	No.	Inc Rate	No.	Inc Rate	Hours	No.	Inc Rate	No.	Inc Rate
SCS - Staff			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!			#DIV/0!		#DIV/0!
Total Project	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**

FEBRUARY 2003

	Current Month					Year To Date					Project To Date				
	Work	Recordables		Lost Time Inj		Work	Recordables		Lost Time Inj		Work	Recordables		Lost Time Inj	
Employer	Hours	No.	Inc Rate	No.	Inc Rate	Hours	No.	Inc Rate	No.	Inc Rate	Hours	No.	Inc Rate	No.	Inc Rate
SCS - Staff			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
Total Project	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**

MARCH 2003

Employer	Current Month					Year To Date					Project To Date				
	Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj	
		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate
SCS - Staff			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
Total Project	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**

APRIL 2003

Employer	Current Month					Year To Date					Project To Date				
	Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj	
		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
Total Project	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**

MAY 2003

Employer	Current Month					Year To Date					Project To Date				
	Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj	
		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate
SCS - Staff			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
Total Project	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**

JUNE 2003

Employer	Current Month					Year To Date					Project To Date				
	Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj	
		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate
SCS - Staff			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
Total Project	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**

JULY 2003

Employer	Current Month					Year To Date					Project To Date				
	Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj	
		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate
SCS - Staff			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
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			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
Total Project	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**

AUGUST 2003

Employer	Current Month					Year To Date					Project To Date				
	Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj	
		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate
SCS - Staff			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
Total Project	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**

SEPTEMBER 2003

	Current Month					Year To Date					Project To Date				
	Work	Recordables		Lost Time Inj		Work	Recordables		Lost Time Inj		Work	Recordables		Lost Time Inj	
Employer	Hours	No.	Inc Rate	No.	Inc Rate	Hours	No.	Inc Rate	No.	Inc Rate	Hours	No.	Inc Rate	No.	Inc Rate
SCS - Staff			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
Total Project	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**

OCTOBER 2003

Employer	Current Month					Year To Date					Project To Date				
	Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj	
		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate
SCS - Staff			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
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			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
Total Project	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**

NOVEMBER 2003

Employer	Current Month					Year To Date					Project To Date				
	Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj	
		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate
SCS - Staff			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
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			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
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			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
Total Project	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**

DECEMBER 2003

Employer	Current Month					Year To Date					Project To Date				
	Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj		Work Hours	Recordables		Lost Time Inj	
		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate		No.	Inc Rate	No.	Inc Rate
SCS - Staff			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
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			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
			#DIV/0!		#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!
Total Project	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**	**0**	**0**	**#DIV/0!**	**0**	**#DIV/0!**

UNIT 5 SCR/BDC PROJECT
INJURY LOG

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
2	**Company**	**Craft**	**Exp**	**Date of Hire**	**Date of Injury**	**Injury Classification**	**D.O.P. Days on Project**	**First Aid**	**Medical**	**Recordable**	**Lost Time**	**Fatality**	**Other**	**Injury**	**What Happened**	**Body Part**	**Name**
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	

UNIT 5 SCR/BDC PROJECT
INJURY LOG

	R	S	T	U	V	W	X	Y
2	**SS#**	**Age**	**Sex**	**Day of Week**	**Time**	**Area**	**Foreman**	**Super**
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								

SOUTHERN COMPANY
Energy to Serve Your World

Contractor Safety Qualification Questionnaire

Contractor's Name: _____
Address: _____
Contact Name & Phone: _____

1. List your firm's Interstate Experience Modification Rate (EMR) for the 3 most recent years, and attach written verification from your insurance company.

Year:	EMR:
_____	_____
_____	_____
_____	_____

2. Use your last 3-year's OSHA 200 log (OSHA 300 beginning in 2002) to fill in the number of injuries and illnesses:

Number of lost workday (days away) cases:	Yr:_____ #_____
	Yr:_____ #_____
	Yr:_____ #_____
Number of job transfer or restriction cases:	Yr:_____ #_____
	Yr:_____ #_____
	Yr:_____ #_____
Number of other recordable cases:	Yr:_____ #_____
	Yr:_____ #_____
	Yr:_____ #_____
Number of fatalities:	Yr:_____ #_____
	Yr:_____ #_____
	Yr:_____ #_____

3. Employee hours worked the last 3 years. (Do not include any nonwork time, even though paid).

Yr:_____
Yr:_____
Yr:_____

4. What is your Company's SIC code and description?

SIC code _____

Description _____

SOUTHERN COMPANY
Energy to Serve Your World

5. Provide your company's OSHA citation history for the past 5 years. Include the following information for each citation:

   a) Location
   b) Date
   c) Type inspection
   d) Standard cited
   e) Violation type
   f) Current status

6. Are accident reports (OSHA 301) and report summaries sent to the following? How often?

	No	Yes	Monthly	Quarterly	Annually
Field superintendent	___	___	_____	_____	_____
Vice president of construction	___	___	_____	_____	_____
President of firm	___	___	_____	_____	_____

7. Do you hold site safety meetings for field supervisors? Yes____ No____

   How often? Weekly_____ Biweekly_____ Monthly_____ Less often, as needed_____

8. Do you conduct project safety inspections? Yes_____ No_____

   If so, who conducts this inspection (title)? _____

   How often are they conducted? _____

9. Are accident records and accident summaries kept? If so, how often are they reported?

	No	Yes	Monthly	Quarterly	Annually
Accidents totaled for the entire company	___	___	_____	_____	_____
Accidents totaled by project	___	___	_____	_____	_____
Subtotaled by superintendent	___	___	_____	_____	_____

SOUTHERN COMPANY
Energy to Serve Your World

Subtotaled by foreman	___	___	___	___	___

10. How are the costs of individual accidents kept? How often are they reported?

	No	Yes	Monthly	Quarterly	Annually
Costs totaled for entire company	___	___	___	___	___
Cost totaled by project	___	___	___	___	___
Subtotaled by superintendent	___	___	___	___	___
Subtotaled by foreman	___	___	___	___	___

11. Do you have a written safety program? Yes____ No____

If yes, submit a copy of your written safety program.

12. Do you have an orientation program for new hires? Yes____ No____

If so, check the following topics that are included in the orientation program:

___Head protection
___Eye protection
___Hearing protection
___Respiratory protection
___Fall protection & fall arrest equipment
___Scaffolding
___Perimeter guarding
___Housekeeping
___Fire protection
___First-aid facilities
___Emergency procedures
___Trenching and excavation
___Signs, barricade, flagging
___Electrical safety
___Rigging and crane safety
___Confined spaces
___Hazard communications
___Ladders
___Heat stress
___Manual lifting
___Hand protection
___Lockout/tagout
___Job safety analysis

13. Do you have a training program for newly hired or promoted supervision? Yes____ No____

If so, does it include instruction on the following?

	Yes	No
A. Safe work practices	___	___
B. Safety supervision	___	___

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C. Toolbox meetings	___	___
D. Emergency procedures	___	___
E. First-aid procedures	___	___
F. Accident investigation	___	___
G. Fire protection and prevention	___	___
H. New worker orientation	___	___

14. Do you hold craft "toolbox" safety meetings? Yes____ No____

    How often? Weekly_____ Bi-weekly_____ Monthly_____ Less often, as needed_____

    Who conducts it? _____

15. How is supervision held accountable for safety?

16. What is the competency level of your corporate and project safety professionals?

17. List the safety subjects for which your site management team will meet the requirements of an OSHA-designated competent person.

Print name: _____ Title: _____

Signature: _____ Date: _____

Contractor Safety, Health and Environmental Orientation Checklist

Attachment III-1
Southern Company Generation and Energy Marketing

Company Representative(s) shall review with the Contractor's site management all site-specific and Contract-specific safety, health and environmental requirements that are applicable to the Contractor's scope of work as defined in the written contract. It is the Contractor's responsibility to convey this information to all of the Contractor's employees and subcontractors. Contractor site management must acknowledge receipt and understanding of the safety, health and environmental requirements by signing this checklist. Contractor site management must also submit written documentation that all employees and subcontractors have received an equivalent safety and health orientation prior to work activity.

This Checklist shall be used to assure basic safety, health and environmental issues are covered. Any additional project-specific issues should be added in the space provided. *Check each item that is discussed with the Contractor's representative. If the item is not checked, then that item is not applicable to the work being performed*

1. Personal Protection Equipment

- ☐ Head Protection
- ☐ Eye and Face Protection
- ☐ Foot Protection
- ☐ Hand Protection
- ☐ Traffic Vests
- ☐ Respiratory Protection
- ☐ Basic Work Clothing

2. General Safety

- ☐ Housekeeping
- ☐ Sanitation
- ☐ Illumination
- ☐ Materials Storage and Handling
- ☐ Signs and Barricades
- ☐ Ladders
- ☐ Scaffolds
- ☐ Manlifts – Use and Training
- ☐ Fall Protection – 100% above 6'
- ☐ Steel Erection
- ☐ Rigging and Lift Plans
- ☐ Crane Suspended Work Platforms
- ☐ Chain & Lever Hoists & Jacks
- ☐ Power Tools
- ☐ Grinders – Pedestal, Bench and Portable
- ☐ Hazardous Energy Control (Lockout/Tagout) and Clearance Procedures
- ☐ Excavation and Trenching
- ☐ Blasting Operations
- ☐ Confined Space Entry
- ☐ Welding, Cutting, Heating
- ☐ Compressed Gas Cylinders
- ☐ Transporting Personnel
- ☐ Working Over or Near Water
- ☐ Demolition Operations
- ☐ Atmospheric Monitoring

3. Major Equipment

- ☐ Mobile Cranes
- ☐ Forklift Operations
- ☐ Earth Moving Equipment
- ☐ Aerial lifts and Bucket Trucks
- ☐ Elevators
- ☐ Overhead Cranes
- ☐ Mobile Equipment Near Electric and Process Lines
- ☐ Vehicles, Carts and Gators

4. Occupational Health

- ☐ Hearing Conservation
- ☐ Hazard Communication Program
- ☐ Bloodborne Pathogens
- ☐ Lead Paint Abatement
- ☐ Inorganic Arsenic
- ☐ Silica
- ☐ Asbestos
- ☐ Abrasive Blasting
- ☐ Industrial Radiography
- ☐ Material Safety Data Sheets

5. Electrical Safety

- ☐ Temporary Wiring
- ☐ Ground Fault Circuit Interrupter (GFCI)
- ☐ Welding and Portable Generators
- ☐ Work On or Near Energized Electrical Circuits

6. Fire Protection and Prevention

- ☐ General Requirements
- ☐ Fire Extinguishers
- ☐ Fire Watch
- ☐ Flammable/Combustible Material Storage
- ☐ Hot Work Permits

7. Environmental Protection

- ☐ Spill Prevention, Control and Countermeasures Plans (SPCC)
- ☐ Storm Water Management
- ☐ Used Oil and Petroleum Products
- ☐ Hazardous Waste
- ☐ Non-Hazardous Waste
- ☐ Herbicides and Pesticides
- ☐ Water Discharges
- ☐ Air Emissions
- ☐ Chemical Approval and Inventory

8. Emergency Procedures and Alarms

- ☐ Fire
- ☐ Chemical Release
- ☐ Spill
- ☐ Injuries/illnesses
- ☐ Weather Related
- ☐ Security

9. Miscellaneous Issues

- ☐ Eating in the Plant
- ☐ First Aid/Medical Facilities
- ☐ Reporting Occupational Injuries, Illnesses and Incidents
- ☐ Smoking
- ☐ Job Safety Analysis
- ☐ Site Hazards
- ☐ Non-English Speaking Employees
- ☐ Safety Violations
- ☐ Corrective Actions
- ☐ Regulatory Agency Visits
- ☐ Use of Company Tools/Equipment

10. General Compliance Issues

- ☐ Equal Employment Opportunity
- ☐ Work Place Free of Harassment
- ☐ Work Place Threats and Violence
- ☐ Drugs and Alcohol

11. Other Safety, Health and Environmental Issues

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

I have received a review of the Site-Specific and Contract-Specific Compliance and Safety, Health and Environmental requirements checked above. I understand these Company expectations and I will convey these requirements to all my company's employees and all of our subcontractors.

_____

Contractor Site Manager Date

_____

Company Representative Date

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SAFETY NONCONFORMANCE REPORT (SNCR)

PLANT	REPORTED BY	DATE	SNCR NUMBER	PRIORITY

CONTRACTOR	CONTRACT NUMBER	PROJECT

Description of nonconformance (include exact location, detailed description of physical circumstances, hardhat sticker color(s) and number(s), and actions of contractor personnel, etc.)

Contractor description of corrective action taken (include changes made to physical facilities and procedures, disciplinary actions, etc.)

CONTRACTOR DESIGNEE	DATE
SOUTHERN COMPANY ACCEPTANCE BY	DATE

COMMENTS

SOUTHERN COMPANY GENERATION
CONTRACTOR PERFORMANCE EVALUATION

Plant:

Project:

Contractor		**Subcontractors** (if any)	Recommended	
Contract number			Yes	No*
Job superintendent				
Completion date				
Estimated				
Actual				
Price				
Original				
Final				
Do you recommend that the contractor be considered for future work?				

Description	Excellent		Good		*Fair		*Poor
Overall management of work							
Quality of work							
Construction method and techniques							
Ability to man job							
Labor relations							
Worker attitudes							
Supervision – quality							
Supervision – quantity							
Home office support							
Control of subcontractors							
Cooperation with other contractors and A/Es							
Communications with owner							
Compliance with contract specifications							
Attitude with correcting errors							
Responsiveness to owner's requests							
Equipment availability							
Tool supply							
Invoicing methods							
Job cleanliness and orderliness							
Cost control							
Scheduling control							
Quality control							
Safety program							
Compliance with contract safety requirements							

-Give specific details in Comments box.

Description (con.)	Excellent		Good		*Fair		*Poor
Regarding safety issues, overall degree of cooperation and responsiveness							
Environmental stewardship							

Incident and Injury Experience			
No. labors worked		No. of recordable cases*	
No. of lost time accidents*		No. of significant events*	

Schedule		**Cost**	
Ahead of schedule		Less than estimated	
On schedule		As estimated	
Longer than schedule		Over estimate	
Substantially longer than schedule		Substantially over estimate	

Extras	Yes	No	Reasonable requests:	Excessive requests*:

Comments

*Give specific details in Comments box.

Prepared by: _____

Job title: _____

Plant: _____

Date: _____

Procedure Deviation Request

Date: _____

Project Name: _____

Duration of Request: _____

Requestor/Company: _____

Standard:

Reason for Request: _____
_____
_____
_____
_____

Justification: _____
_____
_____
_____
_____

Measures to be implemented to ensure safety: _____
_____
_____
_____
_____
_____

Requestor Signature

Site Manager: _____

Management: _____

Southern Company

Site Manager: _____ **Site Safety:** _____

Regional Mgr.: _____ **Regional Safety:** _____

SOUTHERN COMPANY SERVICES
Engineering and Construction Services

EH&S – Program Improvement and Error Correction Form

Please consider these EH&S program Improvement suggestion(s) for the following section(s):

Procedure name and number: _____

Section number: _____

Page number: _____ of _____

Subsection number: _____

Paragraph number: _____

EH&S program improvement recommendation (please cite reference as applicable):

_____
_____
_____
_____

A typographical, administrative, or technical error(s) was/were found in the following section(s):

Procedure name and number: _____

Section number: _____

Page number: _____ of _____

Subsection number: _____

Paragraph number: _____

Error:

_____
_____
_____
_____

Recommended correction (please cite references as applicable):

_____
_____
_____
_____

Improvement/correction submitted by:

Name: _____

Phone: _____

Email: _____

Date: _____

Please submit the completed form electronically to Don Gaddy at DAGaddy@southernco.com .

For Office Use Only

Improvement/correction tracking number: _____

Job Planning and Safety Analysis

Job Title/Crew:_____ Date:_____
Supervisor Contact: _____ Unit/Location: _____

Description of Job/Activities:

_____
_____
_____

How often is this task performed? _____ Daily _____ Weekly _____ Monthly_____ Other

Permits required:

____ Hot Work ____ Confined Space Entry ____ Excavation

____ Critical Lift ____ Crane Suspended Personnel Platform

Tools/Equipment Necessary:

_____
_____

Training Necessary:

_____
_____

Job Steps	Potential Hazards	Control Measures

Each employee involved in the job shall review, sign, and date this analysis before beginning work:

Has the JPSA Checklist been completed and reviewed with the work crew? ____ yes _____ no

Work crew signatures:

Name	Date

JPSA CHECKLIST

General Safety

____ First aid
____ Evacuation procedure
____ Hazard communication
____ Nearest safety shower/eyewash
____ Access/egress
____ Material storage
____ Equipment inspection
____ Signs, signals, barricades
____ Weather
____ Nearest fire extinguisher
____ Housekeeping

Welding/Burning

____ Systems drained
____ Water hose
____ Flash-back arrestors
____ Fire watch
____ Welding screens in place
____ Welding leads in good condition

Ladders and Scaffolds

____ Ladder inspection
____ Proper footing
____ Tie-off rope
____ Hoist rope
____ Handrails
____ Midrails
____ Toeboards
____ Scaffold tags
____ Work deck

Permits

____ Hot work/flame
____ Critical lift
____ Crane-suspended platform
____ Confined space
____ Excavation

Excavation

____ Competent person onsite
____ Daily inspect. documented
____ Soil class. documented
____ Entry permit required
____ Shored/sloped properly
____ Access/egress

Steel Erection/Material Hoisting

____ Rigging
____ Taglines
____ Floor requirements
____ Lifting plan
____ Xmas treeing
____ Erection plan
____ 2-bolt rule
____ Fall protection
____ Slings inspected

Electrical

____ GFCI
____ Pre-use inspection
____ Lockout/tagout
____ Try start/stop switch
____ Disconnected (if required)
____ Properly grounded

Material Handling

____ Proper body position
____ Proper lifting methods
____ Lifting devices needed
____ Adequate personnel
____ Forklift
____ Tag line
____ Load chart
____ Crane setup
____ Chainfall
____ Proper rigging
____ Equipment inspection

Tools

____ Proper tool for job
____ Tool used properly

Fire protection

____ Combustible mat'l removed
____ Spark containment
____ Fire extinguisher
____ Trained fire watch
____ Fire blanket

Personal Protective Equipment

____ Fall arrest equip.
____ Shin guards/chaps
____ Toe guards
____ Face shield
____ Hearing protection
____ Kevlar sleeves
____ Dielectric gloves
____ Nitrile gloves
____ Cotton gloves
____ Leather gloves
____ Kevlar gloves
____ Antivibration gloves
____ Tyvec coveralls
____ Chemical suit
____ Molten suit
____ Full-face respirator
____ ½-mask respirator
____ Airline respirator
____ SCBA
____ Personal floatation device

Hazards Identified

____ Chemical/thermal burns
____ Radiation sources
____ Insects/snakes
____ Particles in eyes
____ Heat stress
____ Cold temperatures
____ Elevated work
____ Slip/trip/fall
____ Overhead work
____ Inhalation of haz. substances/chemicals
____ Noise
____ Inadeq. lighting
____ Electrocution
____ Spills
____ Abrasions/cuts/pinchpoints
____ Falling objects

Recommended First Aid Facility Supply List

Equipment and Instruments	
1 each	Blood pressure monitor with X-large cuff
1 each	Stethoscope
1 each	Digital thermometer with extra covers
1 each	Magnifying lamp
1 each	Optivisor
1 each	Nail drill
1 each	8-in. medic scissors
1 each	Forceps tweezers
1 each	Splinter removal kit
1 each	Pen lights
1 each	Wool blanket
1 each	Ring cutter
1 each	Wash basin
1 each	Waste receptacle
1 each	Emesis basin (disposable)
Consumable Supplies	
1 box	Exam gloves (L/XL)
1 box	Sterile cotton tip applicators
1 box	Sterile Telfa nonstick pad bandages, 2x3 in.
1 box	Sterile Telfa nonstick pad bandages, 4x4 in.
1 box	Sterile gauze wrap, 4 in.
1 package	Sterile bulk trauma dressing
1 box each	Coban dressing, 2-, 3-, and 4-in.
3 each	Elastic bandages (Ace-type), 2- and 4-in.
1 box	Coverlet knuckle bandages
1 box	Coverlet 1-in. bandage strips
1 box	Alcohol prep pads
1 box	Cotton balls
6 each	Chemical ice packs
1 each	Adhesive tape, 1- and 3-in.
1 each	Betadine scrub solution
1 each	Hydrogen peroxide

Recommended First Aid Facility Supply List	
1 each	Antibiotic ointment
1 box	Ibuprofen tablets
1 box	Aspirin tablets
1 box	Acetaminophen tablets
1 tube	Hydrocortisone ointment
12 each	Sterile eyewash solution (4-oz squirt tip bottle)
1 each	Sterile buffered solution (16-oz bottle)
3 each	Red biohazard waste bags
3 each	CPR masks (disposable)
1 each	Bloodborne pathogen spill response kit
1 each	Analgesic muscle rub (1 tube)
1 each	Burn gel (4-oz bottle)

Miscellaneous Items	
	Folding cot and mattress with disposable pillow and sheets
	* Long and short spine immobilization board
	* Glucometer (blood sugar monitor)
	* Medical oxygen delivery system
	* Ambu resuscitation bag
	* Assorted sizes of cervical collars
* Depends upon the qualifications of the onsite medical personnel with Corporate Safety review.	

LINE BREAKING PERMIT

Contractor _____

LINE BREAKING PERMIT

Foreman:_____ Craft:_____

Date Required:_____ Time:_____

Location:_____

_____

Specify Line:_____

Contents:_____

*Chemical MSDS reviewed Yes ( ) No ( )

NOTE: ALL OPEN ENDED PIPES LEFT ON LOCATION MUST IMMEDIATELY BE BLANKED OR CAPPED.

Line Preparation:

Line flushed	Yes ( )	No ( )
Flushing agent:	Water	( )
	Air	( )
	Nitrogen	( )
Other (Specify)	_____	( )

Special Protective Equipment Required

SCBA	( )	Valves locked out	( )
Respirator	( )	Pneumatics locked out	( )
Rubber boots	( )	Electrical locked out	( )
Face shield	( )	Materials decontamination	( )
Monogoggles	( )	Special waste handling	( )
Rubber gloves	( )		
Chem. suit	( )	Hot work permit	( )
Other_____	( )	Red barricade area	( )

*MSDS Attached Yes ( ) No ( )

EMPLOYEES INVOLVED WITH LINE BREAK

I understand the job requirements and potential hazard of work described on this permit.

1._____ Badge No._____

2._____ Badge No._____

3._____ Badge No._____

Instructions to employees:

_____

_____

ATMOSPHERIC TEST

	Maximum Allowed	Test Results	Instrument Used	Cal. Date
1. Flammability	0%			
2. Hydrogen sulfide	10 ppm			
3. Chlorine	0.5 ppm			
4. Oxygen	<19.5% >23.0%			
5. Chlorine dioxide	0.1 ppm			
6. Sulfur dioxide	2 ppm			
7. Mercaptan	0.5 ppm			
8. Carbon monoxide	35 ppm			
9. Other				
10. Ultrasonic test results ***Required for Hot Tap***				

PERMIT TO BE POSTED AT WORK LOCATION.
RETURN TO SAFETY OFFICE UPON COMPLETION OF JOB.

APPROVED BY

	Contractor Foreman	_____	Date_____
	Contractor Safety Rep.	_____	Date_____
	Contractor Craft Supt.	_____	Date_____
	E&CS Mechanical Rep.	_____	Date_____
Required for Hot Tap	E&CS Safety Rep.	_____	Date_____
Required for Hot Tap	E&CS QA/QC Rep.	_____	Date_____
Final Approval	Contractor Site Manager	_____	Date_____

Rigging and Lifting Plan

For Critical Lifts and Crane Suspended Personnel Platform Lifts

Location: _____ Date of lift: _____

Load description: _____

Does this lift involve lifting personnel? ☐ yes ☐ no

Lift description:

A. WEIGHT

1. Weight Empty (load or basket) _____ lbs
2. Weight of Headache Ball or block _____ lbs
3. Weight of Lifting Bar _____ lbs
4. Weight of Slings & Shackles _____ lbs
5. Weight of Jib _____ lbs
6. Weight of Headache Ball on Jib _____ lbs
7. Weight of Cable (Load Fall) _____ lbs
8. Allowance for Unaccounted Material in Equipment (10% of weight) _____ lbs
9. No. of people lifted x 250 _____ lbs
10. Other _____ _____ lbs

Total Weight _____ lbs

Source of Load Weight:

_____

(Name Plate, Drawings, Calculated)

Weights Verified By:

_____

B. JIB

Erected ☐ Stored ☐

1. Is Jib to be used? ☐ Yes ☐ No
2. Length of Jib _____
3. Angle of Jib _____
4. Rated Capacity of Jib (From Chart)\

C. CRANE PLACEMENT

1. Any Deviation from Smooth Solid Foundation in the Area?

   _____
   _____
   _____

2. Electrical Hazards in Area?

   _____
   _____
   _____

3. Obstacles or Obstructions to Lift or Swing?

   _____
   _____
   _____

4. Swing Direction and Degree (Boom Swing)?

   _____
   _____

D. CABLE

1. Number of Parts of Cable _____
2. Size of Cable: _____

E. SIZING OF SLINGS

1. Sling Selection
   a. Type of Arrangement _____
   b. Number of Slings in Hook-up _____
   c. Sling Length _____
   d. Rated Capacity of Sling
2. Shackle Selection
   a. Capacity (tons) _____
   b. Shackle attached to load by: _____
   c. Number of shackles _____

Rigging and Lifting Plan

For Critical Lifts and Crane Suspended Personnel Platform Lifts

F. CRANE

1. Type of Crane _____
2. Crane Capacity _____ Tons
3. Lift Arrangement
   a. Max Distance-Center of Load to center pin of crane _____ ft.
   b. Length of Boom _____ ft.
   c. Angle of Boom at pick-up _____ degrees
   d. Angle of Boom at set _____ degrees
   e. Rated capacity of crane under most severe lifting conditions (From Chart)
      1. Over Rear _____ lbs
      2. Over Front _____ lbs
      3. Over Side _____ lbs
4. From chart – Rated capacity of the crane for the Lift
5. Max. Load on Crane _____ lbs.
6. Lift is of Crane's Rated Capacity _____

G. PRE-LIFT CHECKLIST

	YES	NO
1. Matting Acceptable	☐	☐
2. Outriggers fully extended	☐	☐
3. Crane in good condition	☐	☐
4. Swing Room	☐	☐
5. Head Room Checked	☐	☐
6. Max. Counterweights used	☐	☐
7. Tag line used	☐	☐
8. Experienced Operator	☐	☐
9. Experienced Flagman (Designated)	☐	☐
10. Experienced Rigger	☐	☐
11. Load Chart in Crane	☐	☐

12. Wind Conditions: _____
13. Crane Inspected By:: _____
14. Functional Test of Crane By: _____

SPECIAL INSTRUCTIONS OR RESTRICTIONS FOR CRANE, RIGGING, LIFT, ETC. _____

_____

_____

DIAGRAM CRANE AND LOAD PLACEMENT	DIAGRAM RIGGINGS CONFIGURE

_____ _____ _____ _____

SIGNATURE OF JOB SUPERVISOR DATE SIGNATURE RIGGING SUPV. DATE

P.E. stamp and signature here (when required):

Authorization for the Use of a Suspended Personnel Hoisting Platform

The managers and supervisors indicated on the attached lift plan have determined that it is necessary to use a Suspended Personnel Hoisting Platform. A pre-lift meeting was held on _____ (date) to discuss the safe execution of a personnel lift at _____ (location) for _____ (task requiring the lift).

This meeting was attended by the undersigned.

Site Manager: _____

Rigging Superintendent: _____

Operator: _____

Signal person: _____

Person(s) to be lifted: _____

_____

Others: _____

_____

Lift Weight Summary

_____	_____	_____
Test lift weight	Actual lift weight	Crane capacity at further most point of lift

Date: _____ Time: _____ Project #: _____

Based upon the evaluation of alternate methods, _____(company name) has determined that it is necessary to us a personnel-hoisting platform for the task described above. The evaluation, a formal lift plan, and the record of a pre-lift meeting have been provided.

Authorization for the use of the Suspended Personnel Hoisting Platform is hereby granted provided that the Site Manager ensures that the lift plan and all Federal, State, local, and client requirements are met.

EH&S review: _____

Site Manager: _____

Evaluation of Alternate Lifting Methods

Justification for the Use of a Suspended Personnel Hoisting Platform

Prior to using a suspended personnel hoisting platform, E&CS and OSHA regulations requires that all other methods be evaluated. If an alternate method is available and feasible, without regard to time and/or costs, then that method shall be used. If no other method is available and feasible, then a lifting plan must be developed and submitted (along with this evaluation) to the contractor's site manager and EH&S resource for authorization of the use of the suspended personnel hoisting platform.

Evaluate each of the methods listed below. If the method can not be used, explain why:

Ladders:

_____

_____

Scaffolds:

_____

_____

Boom Lift(s):

_____

_____

Vertical (Scissor) Lift(s):

_____

_____

Other (s):

_____

_____

Monthly Sling/Choker Inspection Form

Date _____

Name of Inspector _____

Name of Project _____

Check if satisfactory or x if unsatisfactory

Sling/Choker #	**Wire Rope**	No Damaged Wires	No Burn Marks	No Corrosion	Fittings not damaged	No Bird Caging	**Synthetic**	No "Red" Threads Showing	No Burn or Chemical Marks	Label is Readable	Fittings not damaged	No Heat Damage	**Chain**	No Corrosion	Links not Worn or Cracked	Label Readable	No Heat Damage	**Inspection Results:**	PASS	FAIL-destroy sling/choker	**Comments (note corrective actions and initial)**

CHAIN FALL & COME-A-LONG INSPECTION

DATE: _____ Competent Person Inspection By:_____

Equip. #	Description	Frd. Rev.	Sfty. Lts.	Hks.	Fr. Whl.	Chn.	Rt. Cap.	Ld. Tst.	Cond.	Remarks

Grinder Inspection (Bench & Portable)

Date _____

Name of Inspector _____

Name of Project _____

Place a check for satisfactory or x for unsatisfactory

Bench Grinders	Guards in place	RPMs of wheel/grinder	Power source in good	Other	**Bench Grinder**	Stand is firmly attached	Guards are in place	Tool rest/wheel have 1/8	RPMs of wheel/grinder	Area protection provided	**Inspection Results:**	In good condition	Removed from Service	**Comments (note corrective actions and initial)**
Grinder I.D. #														

Form 2.A.15

Excavation and Trenching Permit
(OSHA Section 29 CFR Part 1926.650)

Date: _____ Time: _____ Expiration Date: _____

Job description/location/work order number (Be specific.)

Have the individuals assigned to this task been trained in excavation safety? _____

Before Trenching and Excavating

[ ] Soil Classification
- [ ] Type C
- [ ] Type B
- [ ] Type A
- [ ] Stable

_____ Distance in feet to utilities, buildings, footings or pilings
_____ Distance in feet to sources of vibrations
_____ Have the owners of utilities been notified, if applicable?
_____ Has the ground been disturbed previously?
_____ List the allowable slope.

Indicate if the items below are: necessary, adequate, and/or available.

	Necessary	Adequate	Available
Personal protective equipment(be specific)	_____	_____	_____
Shoring material	_____	_____	_____
Signs, barricades	_____	_____	_____
Machinery	_____	_____	_____

List known obstructions:
_____ electrical _____ telephone _____ water _____ sewer _____ steam
_____ alarm _____ drain _____ process _____ footings _____ pilings
_____ concrete encasement _____ other (specify) _____

Excavation method: **[ ] Backhoe** **[ ] Hand dig** **[ ] Ditchwitch** **Other (specify):** _____

Precautions to be taken: _____ **de-energize lines** _____ **ground tools** _____ **insulate equipment operator**

Trenching and Excavating Checklist

Size of the excavation: Depth _____ Width _____ Length _ ____
Are ground conditions changing (particularly after rainfall)? _____
Is there a concern for the development of a hazardous atmosphere? _____ ____
Ensure that the shoring and/or sloping remains adequate as excavation progresses.
What method shall be used for entry and exit: stairway ___ ladder ___ ramp ___
Has there been a change in vehicular and machinery operation patterns? ___ _____
Is water removal equipment needed____ available ____ and operable_____
Are portable trench boxes or trench shields adequate? _____
Hazardous atmosphere potential?_____ If yes see Confined Space Entry Procedure.

Protective system used for excavation:
- [ ] Sloping
- [ ] Shoring

Indicate the shoring method used and applicable appendix.
- [ ] App. C - Timber shoring
- [ ] App. E - Alternatives to timber shoring
- [ ] App. F - Selection of protective systems
- [ ] Pre-designed shoring

Note: Protection for excavations greater than 20 feet deep (shoring, benching, sloping designs) shall be developed by a registered professional engineer.

Signatures and Dates

	Excavation Competent Person	**Client Representative (if applicable)**	**Job Supervisor**	**EH&S Professional**	**Registered Professional Engineer (if applicable)**
Signature					
Date					
	Electrical Superintendent	**Pipe Superintendent**	**Equipment Superintendent**	**Field Engineer**	**Other:** _____ _____
Signature					
Date					

Note: Each individual signing above is entitled to a copy of this permit, if desired.

TRENCHING AND EXCAVATION
DAILY CHECKLIST

Project Location:_____
Excavation Location or Number:_____**Date:**_____

Excavation Purpose:_____
_____

INITIAL

Have Utility companies been notified by the "One Call"?	Y	N	N/A
Is the Excavation less than 5 feet deep?	Y	N	
Are there other construction activities near the excavation operation?	Y	N	
Are there any utility lines near the excavation?	Y	N	
Has the soil been classified (Type A____, B,___or C ___)?	Y	N	
Are there any trees, boulders, or other objects near the excavation?	Y	N	
Can the trench be classified as a Confined Space?	Y	N	
Are all excavation entrants trained?	Y	N	

Comments, precautions, or corrective actions taken:_____
_____
_____

DAILY

Is 1.5 to 1 sloping of the trench walls being utilized?	Y	N
Is there a layered soil condition present?	Y	N
Have all open trenches/excavations been inspected?	Y	N
Is a trench box____ or shoring____ in use?	Y	N
Are spoil piles located at least 2 feet away from the edge of trench?	Y	N
Are there tension cracks along the sides of the trench?	Y	N
Has water accumulated in the trench or seeping from the walls?	Y	N
Has any soil sloughed off or caved in since yesterday?	Y	N
Are there any potential sources of air contaminants?	Y	N
Is appropriate access provided at the proper intervals?	Y	N

Comments, precautions, or corrective actions taken::_____
_____
_____
_____

Inspected by:_____

_____ Project

Open Flame/Hot Work Permit

Permit Issued for
Date _____
Shift _____

This permit must be filled out and signed before any hot work can be performed to the job specified below. This includes , but is not limited to welding, cutting, grinding, brazing, soldering, any use of a torch, any spark or flame producing activity. HWP's are required for all work in the boiler areas and within 50 feet around the boiler perimeter, all switchyards, cooling towers (within 50 feet) and in other hazardous areas as stated in Section 3.

Section 1 General *(Foreman complete)*

Date Foremen Name

Contractor Craft

Location

Nature of job

____ Can this work be done in another location or in a safer manner ?
____ Is this Hot Work Permit being issued for multiple crews? If yes, List foremen's names
_____ _____
_____ _____

____ Is this work being conducted in a confined space? If yes, additional req... may apply. Check with your safety representative.

Section 2 Required Precautions Checklist *(Foreman complete)*

____ Do you have available sprinklers, hoses, extinguishers needed and in working order?
____ Hot work equipment is in good working order

Requirements for within 25 feet of work

____ Flammable and combustible liquids, gases, combustible matl's, oil and grease soaked or containing mat'ls are removed.
____ Explosive atmospheres are removed or safely contained. *Use comments section to explain*.
____ Explosive gas sources are secured and protected.
____ Equipment is protected from damage.
____ Provisions have been taken to contain sparks, slag.
____ All equipment, material, flammables which cannot be removed are protected from damage and sources of ignition.
____ Fire resistant blankets are placed to contain sparks, slag.
____ Tanks, vessels containing flammable or explosive liquids or gases are isolated, purged and lock-out, tag-out is complete.
____ Proper fire extinguisher is present
____ If penetrating a wall , check blind side

Section 3 Permit Determination *(Foremen complete)*

A permit and Fire Watch is required if any of the following conditions exist. Check all that apply.

____ Inside any building
____ In the boiler area and within 50' in all directions
____ Between and within 50' of the cooling towers
____ In all switchyards

And within 35 feet of the following conditions
____ Flammable liquids in open or temporary containers
____ Tanks or vessels containing explosive or combustible liquids or gases.
____ Potential for explosive atmosphere (gas monitor req....)
____ Sensitive equipment or flammable mat'l which cannot be protected

Other
____ Work in any confined space

Fire extinguisher equipment required. No permit req..
____ Wood, accumulations of dust, grass, other combustibles
____ Fab areas outside designated locations

Fire watch shall survey for ____ 30 min. _____ Other
Following completion of work

Foreman signature _____

Section 4 Fire Watch Checklist initial each item

Survey
____ Review checklists in sections 1 & 2. Are all items as stated?
____ Are any hazardous conditions present which are not addressed? _____

Fire Watch duties
____ Remain in work area while hot work is taking place
____ Monitor work area for time specified in Section 2 following completion of work .

Time hot work started _____ Time finished _____
Note problems or comments
_____
_____

Fire Watch Name (print) _____
Fire Watch Signature _____
Signature verifies completion of safe job and post work survey.

Section 5 Review and Approval - Southern Company Representative

Additional notes or req.

Name _____
Signature _____
Date _____

Emergency Call #_____

Form 2.A.21.001

Vehicle Inspection Form

Company Name: _____

Make: _____ **Model:** _____ **Unit No:** _____ **Week Ending:** _____

	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Engine Oil							
Lubrication							
Starting System							
Instruments (speedometer & temperature gauge)							
Cooling System (Radiator)							
Air System							
Glass							
Mirrors (Rear-view & left outside)							
Defroster							
Brakes							
Steering System							
Tires							
Headlights							
Tail lights							
Brake lights							
Horn							
Windshield Wipers							
Fire Extinguisher							
Seat belts							
Back-up alarm							
Condition of vehicle body							
Other:							
Initials of Inspector							

These items are to be checked prior to each shift's use. Report ALL items in need of repair to the mechanics at the time of inspection. Return the completed sheet to the Equipment Superintendent at the end of the week.

To be completed by the mechanic:

Date reported	Repairs Made:	Date Repaired

Signature of the Equipment Superintendent: _____

Form 2.A.24.001

BARRICADE TAG

COMPANY NAME: _____

LOCATION: _____

DATE: _____

DESCRIPTION OF HAZARD(S):

_____

HAZARD LEVEL

☐ DO NOT ENTER

☐ ENTER ONLY WITH AUTHORIZATION OF THE SUPERVISOR WHOSE NAME APPEARS BELOW AND AFTER MEETING THE PRECAUTIONS LISTED.

☐ ENTER WITH CAUTION

PRECAUTIONS/COMMENTS:

_____

_____

_____

ISSUED BY:

_____

SUPERVISOR

Ladder Inspection Form

Date _____

Name of Inspector _____

Name of Project _____

Place a check for satisfactory or x for unsatisfactory

Ladder I.D. #	Loose steps/rungs	Loose nails, bolts	Damage/worn side rails	Broken, split rungs	No slip resistant rungs	**Step ladders** (additional):	Wobbly	Damaged braces	**Extension Ladders**	Non-skid feet missing	Extension hooks damaged	**Inspection Results:**	In good condition	Removed from Service	**Comments (note corrective actions and initial)**

Form 2.A.6

This scaffold has been inspected and approved for use on date(s) as indicated below:

Date Inspected	Signed by Competent Person	Date Inspected	Signed by Competent Person

(BACK OF GREEN & YELLOW TAGS)

Form 2.A.7.001 (green)
Form 2.A.7.002 (yellow)
Form 2.A.7.003 (red)

SCAFFOLDING INSPECTION CHECKLIST

Questions are based on 1926.451: a (capacity), subpart b (platform construction), subpart c (criteria for supported scaffolds), subpart e (access), subpart f (use), subpart g (fall protection), subpart h (falling object protection) 1926.452: subpart b (tube and coupler scaffolds), subpart c (fabricated frame scaffolds), subpart w (mobile scaffolds) and the Non Mandatory Appendices. The number following the question tells you where to look for the OSHA regulation pertaining to the question.

1926.451 General Requirements	**YES**	**NO**
Has the scaffold been constructed and loaded in accordance with the design of a qualified person with a safety factor of 4 to 1 ? (a 1 and a 6)	☐	☐
Has the scaffold platform been fully planked with less than 1 " between planks or between planks and the uprights? (b 1 i)	☐	☐
Where the employer can demonstrate the necessity, is the gap between the last plank and the uprights less than 9 1/2 inches (b 1 ii)	☐	☐
Are all platforms at least 18 inches wide? (b 2)	☐	☐
Are platforms that are less than 18 inches protected by guardrail systems or will all employees have personal fall arrest systems? (b 2 ii)	☐	☐
Are open sides of scaffold less than 14 inches from the face of the work? (b 3)	☐	☐
Where open sides of scaffolds are more than14 inches will fall protection systems be used by all employees? (b 3)	☐	☐
For scaffolds that will be used for lathing and plastering is the platform less than 18 inches from the face of the work? (b 3 ii)	☐	☐
Are all platform units cleated, restrained by hooks or equivalent means, or extending over the center line of their supports by at least 6 inches? (b 4)	☐	☐
Are platforms of 10 feet or less extending over their end supports no more than 12 inches? (b 5 i)	☐	☐
Where platforms of 10 feet or less extend more than 12 inches have guardrails been installed to block access to the overhang? (b 5 i)	☐	☐
Are platforms of 10 feet or more extending over their end supports no more than 18 inches? (b 5 ii)	☐	☐
Where platforms of 10 feet or more extend more than 18 inches have guardrails been installed to block access to the overhang? (b 5 i)	☐	☐
Are abutted planks resting on separate support surfaces? (b 6)	☐	☐
Where planks are overlapped are they lapped over the supports? (b7)	☐	☐
Are planks overlapped at least 12 inches, nailed together or otherwise secured? (b7)	☐	☐

SCAFFOLDING INSPECTION CHECKLIST

	YES	NO
Are planks that rest on the bearer at other than a 90-degree angle laid first? (b 8)	☐	☐
Are the top and bottom surfaces of the plank visible and free from paint and other opaque finishes? (b 9)	☐	☐
If scaffold components of different manufacturers are used, do they fit together without force and has a competent person determined that they are safe for use? (b 1 0)	☐	☐
Has the use of dissimilar metals (if any) been evaluated by a competent person? (b 1 1)	☐	☐
THE FOLLOWING QUESTIONS ARE FROM SUBPART C 1926.451 (c)	☐	☐
Does the scaffold conform to the 4 to 1 base to height ratio requirement? (c 1 I)	☐	☐
Scaffolds that do not meet the 4 to l base to height ratio must be secured to the structure by use of ties (to include ties, guying, bracing or equivalent means) as follows:	☐	☐
Has the tie been installed at a horizontal member that supports the inner and outer legs? (c 1 i)	☐	☐
Has the first vertical tie been installed at a height less than 4 times the minimum base dimension? (c 1 ii)	☐	☐
Have vertical ties been repeated every 20 feet or less for scaffolds that are 3 feet or less in width? (c 1 ii)	☐	☐
Have vertical ties been repeated every 26 feet or less for scaffolds wider than 3 feet? (c 1 ii)	☐	☐
Is the vertical distance from the top tie to the top of the scaffold less than the 4 to 1 minimum base dimension? (c 1 ii)	☐	☐
Are ties installed at each end of the scaffold and at horizontal distances not to exceed 30 feet? (c 1 ii)	☐	☐
Where eccentric loads are imposed have ties been installed to counteract these loads? (c 1 iii)	☐	☐
Are scaffolds erected on adequate firm footings? (c 2)	☐	☐
Are footings capable of supporting 4 times the intended load without settling? (c 2)	☐	☐
Is scaffold plumb and braced to prevent swaying or displacement? (c 3)	☐	☐
THE FOLLOWING QUESTIONS APPLYTO ACCESS FROM 1926.451(e)		
Has safe access been provided for all scaffold platforms that are more than 2 feet above or below the point of access? (e 1)	☐	☐

SCAFFOLDING INSPECTION CHECKLIST

	YES	NO
Have cross braces been prohibited as a means of access? (e 1)	☐	☐
Are ladders positioned so as not to tip the scaffold? (e 2 i)	☐	☐
Is the bottom rung less than 24 inches above the supporting surface? (e 2 ii)	☐	☐
Are rest platforms installed every 35 feet vertically? (e 2 iii)	☐	☐
THE FOLLOWING APPLIES TO HOOK ON AND ATTACHABLE LADDERS		
Are the ladders specifically designed for use with the type of scaffold used? (f 1)	☐	☐
Do the ladders have a minimum rung length of 11 1/2 inches? (e 2 v)	☐	☐
If used do portable ladders (i.e. extension or free-standing) meet the specific requirements of 1926 Subpart X?	☐	☐
Are the rung spacing uniform and no more than 16 3/4 inches between rungs? (e 6 iv)	☐	☐
THE FOLLOWING APPLIESTO LADDER RUNGS BUILT INTO THE FRAME		
Integral prefabricated scaffold access frames shall conform to the following:		
Was the frame designed and built to be used as an access ladder? (e 6 i)	☐	☐
Are the rungs at least 8 inches in length? (e 6 ii)	☐	☐
Are rungs uniformly spaced within each frame section? (e 6 iv)	☐	☐
Are rest platforms provided every 35 feet? (e 6 v)	☐	☐
Is the distance between the rungs less than 16 3/4 inches? (e 6 vi)	☐	☐
Do rungs and steps of ladders line up vertically between the rest decks? (e 7)	☐	☐
Is direct access from other structures prohibited when that distance is more than 24 inches vertically or 14 inches horizontally? (e 8)	☐	☐
THE FOLLOWING APPLIESTO SCAFFOLD USE FROM 1926.451(F)		
Are scaffolds and components loaded beyond their rated capacities? (f 1)	☐	☐
Is the use of shore or lean to scaffolds prohibited? (f 2)	☐	☐

SCAFFOLDING INSPECTION CHECKLIST

	YES	NO
Has any damaged part of the scaffold been repaired, replaced or removed as required? (f 4)	☐	☐
Do scaffolds and any conductive material handled on them observe the proper clearances from power lines? (f 6) REFER TO DISTANCES AS SHOWN IN 1925.451 (F) (6)	☐	☐
Have slippery conditions been removed? (f 8)	☐	☐
If storms or high winds are present has a competent person been consulted and wind screens or personal fall arrest used? (f 12)	☐	☐
Are tools, material, and debris removed from scaffold to prevent an accumulation? (f 13)	☐	☐
Have provisions to prevent platforms from deflecting more than 1/60th of the pan been made? (f 16)	☐	☐
THE FOLLOWING APPLIESTO FALL PROTECTION 1926.451 (g)		
Have applicable provisions been made to comply with 1926.451 section (g).	☐	☐
Guardrail systems used to comply with section (g) shall conform as follows:		
Are guardrails and mid-rails installed on all open sides and open ends of the platform? (g 4 i)	☐	☐
Are guardrails installed at 36 to 45 inches in height? (g 4 ii)	☐	☐
When mesh or screens are installed do they extend from the top of the guardrail to the platform? (g 4 v)	☐	☐
Does the entire guardrail system meet the strength requirements as stated in 1926.451 (g) (4)(vii, viii, and ix)	☐	☐
THE FOLLOWING APPLIESTO FALLING OBJECT PROTECTION 1926.451 (h)		
Have falling object hazards been eliminated according to 1926.451 (h)	☐	☐
Have toeboards been installed to prevent falling objects? (h 2 ii)	☐	☐
Where required, have screens been installed to protect employees from falling objects? (h 2 iii)	☐	☐
Are toeboards at least 3 1/2 inches in height? (h 4 ii)	☐	☐
THE FOLLOWING APPLIESTOTUBE AND COUPLER SCAFFOLDS 1926.452 (b)		
Is "X" bracing installed on the ends of the scaffold and every third set of posts horizontally and every fourth runner vertical? (b 2)	☐	☐

SCAFFOLDING INSPECTION CHECKLIST

	YES	NO
Are ties installed at the bearer level? (b 2	☐	☐
Is longitudinal bracing installed at a 45-degree angle on both faces of the scaffold? (b 3)	☐	☐
Does the longitudinal bracing extend from the first (left hand) post to the extreme top of the scaffold? (b 3)	☐	☐
If the scaffold is longer than five posts, is a new line of bracing begun at every fifth post? (b 3)	☐	☐
Is bracing installed as close as is possible to the node point? (b 3)	☐	☐
Are the bearers attached to both posts and does the inboard coupler rest on the runner coupler? (b 5)	☐	☐
If bearers are attached to the runners is the bearer as close as is possible to the posts? (b 5)	☐	☐
Do the ends of the bearer tube have full contact within the clamp? (b 6)	☐	☐
Are runners installed on the inside and outside of the scaffold at level heights? (b7)	☐	☐
If outside runners are left out, are there mid-rails and guardrails above and below the point where the runner would have been? (b 7)	☐	☐
Are runners interlocked and coupled to each post? (b 8)	☐	☐
Are the bottom runners as close to the base as possible? (b 8)	☐	☐
Do light and medium-duty scaffolds have posts, runners, bearers and braces of 2" O.D. steel tubing? Appendix A table (b) (Note: need exception to site rules)	☐	☐
Are posts on light-duty scaffolds spaced no more than 4' apart by 1O' along the length of the scaffold? Appendix A table (b) (Note: need exception to site rules)	☐	☐
Are posts on medium-duty scaffolds spaced no more than 4' apart by 7' along the length of the scaffold? Appendix A table (b) (Note: need exception to site rules)	☐	☐
Is the maximum vertical runner spacing of 6'6"? Appendix A table (b)	☐	☐
If the maximum number of planked levels, working levels, or height exceed those shown in table b are drawings done by a registered professional engineer? Appendix A(2) table (b)	☐	☐
1926.452 (c) Fabricated frame scaffolds		
Are frames secured by braces, which secure the vertical members laterally? (c 2)	☐	☐
Do the braces automatically square and align the frames? (c 2)	☐	☐
Are all brace connections secured? (c 2)	☐	☐

SCAFFOLDING INSPECTION CHECKLIST

	YES	NO
Are frames joined together by coupling pins or equivalent means? (c 3)	☐	☐
Where uplift may occur are the frames locked together? (c 4)	☐	☐
Has the use of side brackets and their impact on the overall scaffold been fully evaluated? (b 5 i, ii, and iii)	☐	☐
Have scaffolds over 125 feet in height been constructed and loaded according to design of a registered professional engineer? (b 6)	☐	☐
1926.452 (w) mobile scaffolds		
Are frames secured by braces which secure the vertical members laterally? (w 1)	☐	☐
Do the braces automatically square and align the frames? (w 1)	☐	☐
Are all brace connections secured? (w 1)	☐	☐
Do scaffolds constructed of tube and clamp meet the requirements of that type of scaffold? (w 1 i)	☐	☐
Do scaffolds constructed of frame scaffolding meet the requirements of that type of scaffold? (w 1 ii)	☐	☐
Are casters locked during use? (w 2)	☐	☐
Is the manual force used to move the scaffold applied as close to the base as possible? (w 3)	☐	☐
Are scaffolds stabilized to prevent tipping during movement? (w 5)	☐	☐
Are casters pinned into the frames or adjustment screws? (w 9)	☐	☐

PPE ASSESSMENT FORM

Instructions: Use this form as a guide to help you identify the hazards in work areas. Once you've completed the form, you are ready to select the appropriate PPE.

Area:_____ Job Classification:_____

Assessor:_____ Date:_____

HEAD HAZARDS: Tasks that can create potential head hazards include: Working below other workers who are using tools and materials which could fall, working on energized electrical equipment, working with chemicals, and working under machinery or processes which might cause materials or objects to fall.

Circle the appropriate box for each hazard:

Burn	Yes	No	Description of hazards:_____
Chemical Splash	Yes	No	_____
Electrical Shock	Yes	No	_____
Impact	Yes	No	_____

EYE HAZARDS: Tasks that can create potential eye hazards include: Working with acids and chemicals, chipping, grinding, furnace operations. Sanding, welding, and woodworking.

Check the appropriate box for each hazard:

Chemicals	Yes	No	Description of hazards:_____
Dust	Yes	No	_____
Heat	Yes	No	_____
Impact	Yes	No	_____
Light/Radiation	Yes	No	_____

HAND HAZARDS: Tasks that can create potential hand hazards include: cutting material, working with chemicals and working with hot objects, manual material handling.

Check the appropriate box for each hazard:

Burns	Yes	No	Description of hazards:_____
Chemical Exposure	Yes	No	_____
Cuts/Abrasion	Yes	No	_____
Puncture	Yes	No	_____

FOOT HAZARDS: Tasks that can create potential foot hazards include: Carrying or handling materials that could be dropped, performing manual material handling and working with chemicals.

Check the appropriate box for each hazard:

Chemical Exposure	Yes	No	Description of hazards:_____
Compression	Yes	No	_____
Impact	Yes	No	_____
Puncture	Yes	No	_____

Guidelines for Selecting Personal Protective Equipment (PPE)

Note: *PPE alone should not be relied on to provide protection against hazards, but should be used in conjunction with guards, engineering controls and sound manufacturing practices.*

1. Familiarize yourself with the potential hazards in the area and the types of PPE that are available

2. Consider the hazards associated with the environment (impact velocities, masses, projectable shape, radiation intensities)

3. Select PPE that ensures a greater level of protection than the minimum required to protect workers from the hazards.

4. Fit the worker with the PPE and give instructions on its use and care. It is very important that workers be made aware of all warning labels for and limitation of their PPE.

Based on the hazard assessment for _____, the
(Job Classification)
following PPE is required:

EYE HAZARD	JOB	PPE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

HEAD HAZARD	JOB	PPE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

FOOT HAZARD	JOB	PPE

HAND HAZARD	JOB	PPE

OTHER	JOB	PPE

Approved: _____
Site Manager

EQUIPMENT OPERATOR AUTHORIZATION	
Name	
Social Security No.	**Expiration Date**
Project Name	**Company**
Physical Exam Date (Required Annually) —Crane Only—	

The bearer is authorized to operate this equipment				
Manufacturer	**Model**	**Type**	**Capacity**	**Examiner's Signature**

Restrictions: Must wear corrective lenses ☐ Yes ☐ No
Other Restrictions (list):

Form 2.C.1

FORKLIFT OPERATOR AUTHORIZATION			
Name			
Social Security No.		**Company**	
Project No.	**Location**		
Issue Date			

The bearer is authorized to operate this equipment				
Manufacturer	**Model**	**Type**	**Capacity**	**Examiner's Signature**
Restrictions: Must wear corrective lenses ☐ Yes ☐ No Other Restrictions (list):				

Form 2.C.11.001

Forklift Inspection Form

Make: _____ Model: _____ Serial No: _____ Week Ending: _____

Place a check where satisfactory and an x for unsatisfactory. Item inspected:	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Forks							
Hoist chains & cylinder							
Brakes - Drum							
Brakes - Carrier							
Brakes - Emergency							
Tires							
Hydraulic System							
Mirrors (Rear-view)							
Exhaust System							
Operator's controls							
Fire extinguisher							
Headlights (if used inside or at night)							
Back-up alarm							
Horn							
Seat belt							
Other(specifiy):							
Initials of Inspector							

These items shall be checked prior to each shift's use. Report ALL items in need of repair to the equipment superintendent at the time of inspection. Return the completed sheet to the Equipment Superintendent at the end of the week.

To be completed by the mechanic:

Date reported	Repairs Made:	Date Repaired

Signature of the Equipment Superintendent: _____

Earth Moving Equipment Inspection

Check equipment to be inspected: *Dump Truck*_____ *Front-end Loader*_____
*Backhoe*_____ *Bulldozer*_____ *Motor Grader*_____
*Other:*_____

Equipment Identification:_____

ITEMS	CONDITION			REMARKS
	Sat	Unsat	n/a	
1. Access & Egress				
2. Backup Alarms				
3. Body				
4. Brakes				
5. Clutch				
6. Control & Levers Labeled				
7. Cotter Pins/Hardened Pins				
8. Cover				
9. Data Nameplate				
10. Frame				
11. Fuel & Gas Systems				
12. Glass				
13. Guards				
14. Horn				
15. Hydraulic System (no leaks)				
16. Lights				
17. Lugs				
18. Muffler & Exhaust Pipe				
19. Muffler Guards				
20. Outriggers				
21. Parking Brakes				
22. Platform Decking				
23. Rear View Mirror				
24. Seat Belts				
25. Side Mirrors (Both)				
26. Steering Mechanism				
27. Tracks, Tires, Wheels				
28. Turn Signals				
29. Windshield Wipers				

.

_____ _____
Inspected By Date

Deficiencies noted above were corrected. Signed_____ Date_____

DRILLING EQUIPMENT INSPECTION

Equipment Identification:_____

ITEMS	CONDITION Sat	Unsat	n/a	REMARKS or REPAIRS
1. Access & Egress				
2. Backup Alarms				
3. Body				
4. Brakes				
5. Clutch				
6. Control & Levers Labeled				
7. Cotter Pins/Hardened Pins				
8. Cover				
9. Data Nameplate				
10. Frame				
11. Fuel & Gas Systems				
12. Glass				
13. Guards				
14. Horn*				
15. Hydraulic System (no leaks)				
16. Lights				
17. Lugs				
18. Muffler & Exhaust Pipe				
19. Muffler Guards				
20. Outriggers				
21. Parking Brakes				
22. Platform Decking				
23. Rear View Mirror				
24. Seat Belts				
25. Side Mirrors (Both)				
26. Steering Mechanism				
27. Tracks, Tires, Wheels				
28. Turn Signals				
29. Windshield Wipers				

Comments:_____

_____

Inspected By: _____ Date: _____

Form 2.C.13.001

POWER LINE HAZARDS AWARENESS PERMIT

Today's Date_____ Job Number_____

Contractor Name			
Job Address			
Telephone Number		**Fax Number**	

Emergency Contact Number	

Survey

Before beginning any task, you must first survey your work area to find power lines in the area of work or travel.

Identify

After finding all of the power lines involved in task, identify the activities you'll be doing that may put you or your workers at risk. Mark one or more of the following:

[ ] Cranes (mobile or truck mounted)
[ ] Drilling rigs
[ ] Backhoes/Excavators
[ ] Long-handled tools
[ ] Other tools/high reaching equipment
[ ] Concrete pumper
[ ] Aerial lifts
[ ] Dump trucks
[ ] Ladders
[ ] Material Handling & Storage
[ ] Scaffolding
[ ] Other_____

Eliminate or Control

After identifying the power lines involved and high-risk activities for the task, determine how to eliminate or control the risk of electrocution (a successful determination is often reached only after consultation with the utility). Mark one or more of the following:

[ ] Move the activity
[ ] Change the activity
[ ] Have the utility de-energize line
[ ] Have the utility move the line
[ ] Use a protective technology (list):_____
[ ] Use barrier protection
[ ] Use an observer
[ ] Use warning lines with flags
[ ] Use non-conductive tools

Completed by_____Date_____

Approved by_____Date_____

Mobile Equipment/Boom Truck
Overhead Line Permit

Location of work to be performed. _____

Line Designation. _____

Voltage of line?_____ Number of Lines in service? YES NO

Is line or lines de-energized? YES NO Is line LO/TO-T? YES NO

Are safety grounds attached? YES NO Is barricade erected? YES NO

Will there be an electrical stand-by? YES NO

Name of electrical stand-by. _____

PPE required:

Authorizing Engineer

_____

Site/Facility EH&S

_____

Electrical Superintendent

_____

Site/Facility Manager

_____

HYDRAULIC CRANE INSPECTION

Owner _____
Make _____
Model _____
Serial Number _____

ITEMS			CONDITION			REMARKS
			sat	unsat	n/a	
OPERATOR STATION	Anti-Two-Block System		☐	☐	☐	
	Boom Angle Indicator		☐	☐	☐	
	Cab Door Latches		☐	☐	☐	
	Cab Glass		☐	☐	☐	
	Computer		☐	☐	☐	
	Durable Load Chart		☐	☐	☐	
	Fire Extinguisher		☐	☐	☐	
	Level Indicator		☐	☐	☐	
	Operating Control Labels		☐	☐	☐	
	Parking Brake		☐	☐	☐	
	Seat Belt		☐	☐	☐	
	Signal Horn		☐	☐	☐	
	Swing Brake		☐	☐	☐	
BOOM	Boom Alignment		☐	☐	☐	
	Guards		☐	☐	☐	
	Hydraulic Cylinders		☐	☐	☐	
	Mounting Pins		☐	☐	☐	
	Sheaves		☐	☐	☐	
	Wear Pads		☐	☐	☐	
JIB	Connecting Pins		☐	☐	☐	
	Cords and Lacings		☐	☐	☐	
	Guards		☐	☐	☐	
	Jib Stop		☐	☐	☐	
	Pin Keepers		☐	☐	☐	
	Sheave		☐	☐	☐	
LATTIC BOOM EXTENSION	Connecting Pins		☐	☐	☐	
	Cords and Lacings		☐	☐	☐	
	Guards		☐	☐	☐	
	Jib Stop		☐	☐	☐	
	Pin Keepers		☐	☐	☐	
	Sheaves		☐	☐	☐	
MAIN HOIST	Leakage		☐	☐	☐	
	Mounting/Alignment		☐	☐	☐	
	Wire Rope Spooling		☐	☐	☐	
	WIRE ROPE	Condition	☐	☐	☐	
		Correct Size	☐	☐	☐	
		Dead Ended Property	☐	☐	☐	
	MAIN LOAD BLOCK	Capacity/Weight Label	☐	☐	☐	
		Guards	☐	☐	☐	
		Hook	☐	☐	☐	
		Safety Latch	☐	☐	☐	
		Sheaves	☐	☐	☐	

Form 2.C.3.001

HYDRAULIC CRANE INSPECTION

ITEMS			CONDITION			REMARKS
			sat	unsat	n/a	
AUXILIARY HOIST	Leakage		☐	☐	☐	
	Mounting/Alignment		☐	☐	☐	
	Wire Rope Spooling		☐	☐	☐	
	AUXILIARY LOAD BLOCK/BALL	Capacity/Weight Label	☐	☐	☐	
		Guards	☐	☐	☐	
		Hook	☐	☐	☐	
		Safety Latch	☐	☐	☐	
		Sheaves	☐	☐	☐	
	WIRE ROPE	Condition	☐	☐	☐	
		Correct Size	☐	☐	☐	
		Dead Ended Properly	☐	☐	☐	
ENGINE	Drive Belts		☐	☐	☐	
	Exhaust		☐	☐	☐	
	Linkage		☐	☐	☐	
CARRIER	Proper Operation		☐	☐	☐	
	Air Leaks		☐	☐	☐	
	Backup Alarm		☐	☐	☐	
	Frame		☐	☐	☐	
	Oil Leaks		☐	☐	☐	
	Outriggers and Pads		☐	☐	☐	
	Rotation Bearing and Mounting Bolts		☐	☐	☐	
	Tires		☐	☐	☐	
MISC. ITEMS	Connecting Pins		☐	☐	☐	
	Cords and Lacings		☐	☐	☐	
	Guards		☐	☐	☐	
	Jib Stop		☐	☐	☐	

The following actions were taken on remarks or deficiencies noted above:

Corrected by:_____ Date:_____

_____ _____

Inspected By Date

Form 2.C.3.001

LATTICE BOOM CRANE INSPECTION

Owner _____

Make _____

Model _____

Serial Number _____

	ITEMS		CONDITION sat	unsat	n/a	REMARKS
OPERATOR STATION	Anti-Two-Block System					
	Boom Angle Indicator					
	Cab Door Latches					
	Cab Glass					
	Computer					
	Durable Load Chart					
	Level Indicator					
	Operating Control Labels					
	Parking Brake					
	Seat Belt					
	Signal Horn					
	Fire Extinguisher					
	Swing Brake					
BOOM	Connecting Pins					
	Cords and Lacings					
	Guards					
	Sheaves					
JIB	Connecting Pins					
	Cords and Lacings					
	Guards					
	Jib Stop					
	Pin Keepers					
	Sheaves					
BOOM HOIST ASSEMBLY	Gantry					
	Inner Bail Sheaves					
	Outer Bail Sheaves					
	PAWL	Boom Limit Switch				
		Boom Stops				
		Guards				
		Reeving				
	WIRE ROPE	Condition				
		Correct Size				
		Dead Ended Property				
MAIN HOIST	Guards					
	Leaks					
	Mounting					
	Pawl/Dog					
	Wire Rope Spooling					
	MAIN LOAD BLOCK	Capacity/Weight label				
		Guards				
		Hook				
		Safety Latch				
		Sheaves				

Continued on back

LATTICE BOOM CRANE INSPECTION

		ITEMS	CONDITION sat	unsat	n/a	REMARKS
	WIRE ROPE	Condition	✔			
		Correct Size				
		Dead Ended Properly				
AUXILIARY HOIST		Guards				
		Leaks				
		Mounting				
		Pawl/Dog				
		Wire Rope Spooling				
	AUXILIARY LOAD BLOCK/BALL	Capacity/Weight Label				
		Guards				
		Hook				
		Safety Latch				
		Sheaves				
	WIRE ROPE	Condition				
		Correct Size				
		Dead Ended Properly				
ENGINE		Drive Belts				
		Exhaust				
		Linkage				
		Proper Operation				
CARRIER		Air Leaks				
		Back-up Alarm				
		Frame				
		Oil Leaks				
		Outriggers and Pads				
		Rotation Bearing and Mounting Bolts				
		Tires				
CRAWLER ASSEMBLY		Chains and Sprockets				
		Drive Assembly				
		House/Hook Roller				
		Mounting Bolts				
		Rollers				
		Rotating Bearing				
		Track and Pins				
COUNTER WEIGHTS		Condition				
		Correct Size				
		Mountings				
MISC. ITEMS		Access to Carrier Cab				
		Access to Operator Station				
		Electrical Warning Signs				
		Hydraulic Hoses				
		Hydraulic Pumps				
		Operator's Manual in the Operator Station				

Inspected by

Date

Mobile Crane Operator Medical Examination

Date of Examination_____
Name_____Social Security Number_____
Date of Birth_____Height_____Weight (Pounds)_____

Health History

Yes	No		Yes	No	
____	____	Diabetes	____	____	Lung Disorders(Asthma, Tuberculosis, Shortness of Breath)
____	____	Muscular Disease	____	____	Cardiovascular Disease(Rheumatic Fever, Scarlet Fever, Diphtheria)
____	____	Mental Disorder	____	____	Nervous System Disorders (Dizziness, Epilepsy, Syphillis)
____	____	Arthritis	____	____	Currently Under a Physicians Care
____	____	Kidney Disease	____	____	Suffering from Any Other Disease
____	____	Liver Disorder	____	____	Permanent Impairment from Illness, Disease, or Injury
____	____	Serious Injury			

General

General Appearance and Development: _____Good_____Fair_____Poor

Hearing: Right Ear_____Left Ear_____Disease or Injury_____

Blood Pressure: _____

Pulse:_____

Abdomen: Scars_____Abnormal Masses_____Tenderness_____

Reflexes: Accommodation: Right_____Left_____

Knee Jerks: Right____Normal____Increased_____Absent Left:____Normal____Increased____Absent

Remarks:_____

Extremities: Upper_____ Lower_____ Spine_____

Eyes: For Distance:Right:20/_____ Left20/_____Without Corrective Lenses___With Corrective Lenses, if worn___

Evidence of Disease or Injury: Right_____ Left_____ Color Tests (Jaegers J1):_____

Horizontal Field of Vision: Right_____ Left_____

Rhomberg _____Pupillary _____ Light: Right_____ Left_____

Remarks:

_____

Name of Examining Doctor (Please Print) Signature Check Here if operator Has Not Passed This Examination____

_____

Address of Examining Physician

Mobile Crane Operator Medical Qualification

Instructions to Examining Physician

1. Send this Medical Qualification form (2.C.3.004) to the site manager's designee, who is responsible for verifying that mobile crane operators meet minimum operator qualifications.

2. If an employee does not wish to have his/her Medical Examination form released to the person at the site responsible for qualifying mobile crane operators, this form may be released in its place.

Name_____

Social Security Number_____

Location_____

I examined the above on (date)_____and find the person (qualified) (not qualified) medically to operate mobile crane based on the findings in the Mobile Crane Operator Medical Examination.

Signed _____ M.D.

TOWER CRANE INSPECTION

Owner _____

Make _____

Model _____

Serial Number _____

	ITEMS	CONDITION sat	unsat	n/a	REMARKS
OPERATOR STATION	Anti-Two-Block System				
	Cab Door Latches				
	Cab Glass				
	Computer				
	Durable Load Chart				
	Fire Extinguisher				
	Level Indicator				
	Operating Control Labels				
	Signal Horn				
	Swing Brake				
BOOM	Connecting Pins				
	Cords and Lacings				
	Guards				
	Pin Keepers				
	Sheaves				
JIB	Stop				
	Connecting Pins				
	Cords and Lacings				
	Guards				
	Pin Keepers				
	Sheaves				
	Brake				
	Frictions				
	Gantry				
	Inner Bail Sheaves				
	Outer Bail Sheaves				
	PAWL: Boom Limit Switch				
	PAWL: Boom Stops				
	PAWL: Guards				
	PAWL: Reeving				
	WIRE ROPE: Condition				
	WIRE ROPE: Correct Size				
	WIRE ROPE: Dead Ended Property				
HOIST	Brakes				
	Frictions				
	Guards				
	Pawl/Dog				
	Wire Rope Spooling				

Continued on back

TOWER CRANE INSPECTION

		ITEMS	CONDITION sat	unsat	n/a	REMARKS
MAIN HOIST	MAIN LOAD BLOCK	Capacity/Weight Label				
		Guards				
		Hook				
		Safety Latch				
		Sheaves				
	WIRE ROPE	Condition				
		Correct Size				
		Dead Ended Properly				
ENGINE		Drive Belts				
		Exhaust				
		Linkage				
		Proper Operation				
COUNTER WEIGHTS		Condition				
		Correct Size				
		Mountings				
MISC. ITEMS		Access to Carrier Cab				
		Access to Operator Station				
		Electrical Warning Signs				
		Operator's Manual in the				
		Operator Station				

The following actions were taken on remarks or deficiencies noted above:

- ☐
- ☐
- ☐
- ☐
- ☐
- ☐

Corrected by: _____ Date:_____

_____ _____

Inspected By Date

Form 2.C.4.001

Tower Crane Operator Medical Examination

Date of Examination_____
Name_____Social Security Number_____
Date of Birth_____Height_____Weight (Pounds)_____

Health History

Yes	No		Yes	No	
____	____	Diabetes	____	____	Lung Disorders (Asthma, Tuberculosis, Shortness of Breath)
____	____	Muscular Disease	____	____	Cardiovascular Disease (Rheumatic Fever, Scarlet Fever, Diphtheria
____	____	Mental Disorder	____	____	Nervous System Disorders (Dizziness, Epilepsy, Syphillis)
____	____	Arthritis	____	____	Currently Under a Physicians Care
____	____	Kidney Disease	____	____	Suffering from Any Other Disease
____	____	Liver Disorder	____	____	Permanent Impairment from Illness, Disease, or Injury
____	____	Serious Injury			

General

General Appearance and Development: _____Good_____Fair_____Poor

Hearing: Right Ear_____Left Ear_____Disease or Injury_____

Blood Pressure: _____

Pulse:_____

Abdomen: Scars_____Abnormal Masses_____Tenderness_____

Reflexes: Accommodation: Right_____Left_____

Knee Jerks: Right____Normal____Increased_____Absent Left:____Normal_____Increased_____Absent

Remarks:_____

Extremities: Upper_____ Lower_____ Spine_____

Eyes: For Distance:Right:20/_____ Left20/_____Without Corrective Lenses___With Corrective Lenses, if worn___

Evidence of Disease or Injury: Right_____ Left_____ Color Tests (Jaegers J1):_____

Horizontal Field of Vision: Right_____ Left_____

Rhomberg _____Pupillary _____ Light: Right_____ Left_____

Remarks:

_____

Name of Examining Doctor (Please Print) Signature Check Here if operator Has Not Passed This Examination____

_____

Address of Examining Physician

Form 2.C.4.002

Tower Crane Operator Medical Qualification

Instructions to Examining Physician

1. Send this Medical Qualification form to the site manager's designee, who is responsible for verifying that Tower Crane Operators meet minimum operator qualifications.

2. If an employee does not wish to have his/her Medical Examination form released to the person at the site responsible for qualifying Tower Crane Operators, this form may be released in its place.

Name_____

Social Security Number_____

Location_____

I examined the above on (date)_____and find the person (qualified) (not qualified) medically to operate Tower Cranes based on the findings in the Tower Crane Operator Medical Examination.

Signed _____ M.D.

Dragline/Clamshell Operator Medical Examination

Date of Examination_____
Name_____Social Security Number_____
Date of Birth_____Height_____Weight (Pounds)_____

Health History

Yes	No		Yes	No	
____	____	Diabetes	____	____	Lung Disorders(Asthma, Tuberculosis, Shortness of Breath)
____	____	Muscular Disease	____	____	Cardiovascular Disease(Rheumatic Fever, Scarlet Fever, Diphtheria)
____	____	Mental Disorder	____	____	Nervous System Disorders (Dizziness, Epilepsy, Syphillis)
____	____	Arthritis	____	____	Currently Under a Physicians Care
____	____	Kidney Disease	____	____	Suffering from Any Other Disease
____	____	Liver Disorder	____	____	Permanent Impairment from Illness, Disease, or Injury
____	____	Serious Injury			

General

General Appearance and Development: _____Good_____Fair_____Poor

Hearing: Right Ear_____Left Ear_____Disease or Injury_____

Blood Pressure: _____

Pulse:_____

Abdomen: Scars_____Abnormal Masses_____Tenderness_____

Reflexes: Accommodation: Right_____Left_____

Knee Jerks: Right____Normal____Increased_____Absent Left:____Normal_____Increased_____Absent

Remarks:_____

Extremities: Upper_____ Lower_____ Spine_____

Eyes: For Distance:Right:20/_____ Left20/_____Without Corrective Lenses___With Corrective Lenses, if worn___

Evidence of Disease or Injury: Right_____ Left_____ Color Tests (Jaegers J1):_____

Horizontal Field of Vision: Right_____ Left_____

Rhomberg _____Pupillary _____ Light: Right_____ Left_____

Remarks:

_____

Name of Examining Doctor (Please Print) Signature Check Here if operator Has Not Passed This Examination____

_____

Address of Examining Physician

Dragline/Clamshell Operator Medical Qualification

Instructions to Examining Physician

1. Send this Medical Qualification form to the site manager's designee, who is responsible for verifying that dragline/clamshell operators meet minimum operator qualifications.

2. If an employee does not wish to have his/her Medical Examination form released to the person at the site responsible for qualifying dragline/clamshell operators, this form may be released in its place.

Name_____

Social Security Number_____

Location_____

I examined the above on (date)_____and find the person (qualified) (not qualified) medically to operate dragline/clamshell based on the findings in the Dragline/Clamshell Operator Medical Examination.

Signed _____ M.D.

BOOM TRUCK OPERATOR AUTHORIZATION	
Name	
Social Security No.	**Expiration Date**
Project Name	**Company**
Physical Exam Date (Required Annually)	

The bearer is authorized to operate this equipment				
Manufacturer	**Model**	**Type**	**Capacity**	**Examiner's Signature**

Restrictions: Must wear corrective lenses ☐ Yes ☐ No
Other Restrictions (list):

Form 2.C.8.001

BOOM TRUCK INSPECTION

Owner _____

Make _____

Model _____

Serial Number _____

	ITEMS	CONDITION sat	unsat	n/a	REMARKS
OPERATOR STATION	1. Anti-Two-Block System				
	2. Boom Angle Indicator				
	3. Durable Load Chart				
	4. Level Indicator				
	5. Operating Control Labels				
	6. Fire Extinguisher				
	7. Swing Brake				
BOOM	1. Guards				
	2. Sheaves				
	3. Wear Pads				
	4. Hydraulic Cylinders				
	5. Mounting Pins				
	6. Boom Alignment				
JIB	1. Pendants				
	2. Sheaves				
WIRE ROPE	1. Condition				
	2. Correct Size				
	3. Dead Ended Properly				
LOAD BLOCK	1. Capacity/Weight Label				
	2. Guards				
	3. Hook				
	4. Safety Latch				
	5. Sheaves				
HOIST	1. Mounting/Alignment				
	2. Wire Rope Spooling				
	3. Leakage				
ENGINE	1. Drive Belts				
	2. Exhaust				
	3. Proper Operation				
TRUCK CARRIER	1. Air Leaks				
	2. Backup Alarm				
	3. Frame				
	4. Oil Leaks				
	5. Outriggers and Pads				
	6. Rotation Bearing and Mounting Bolts				
	7. Tires				
	8. Parking Brake				
	9. Glass				
	10. Seat Belt				
	11. Horn				

Continued on back

BOOM TRUCK INSPECTION

	ITEMS	CONDITION sat	unsat	n/a	REMARKS
MISC. ITEMS	1. Electrical Warning Signs				
	2. Access to Operator Station				
	3. Access to Carrier Cab				
	4. Operator's Manual in the Operator Station				

The following actions were taken on remarks or deficiencies noted above:

Corrected by:_____ Date: _____

_____ _____

Inspected By Date

Form 2.C.8.002

Boom Truck Operator Medical Examination

Date of Examination_____
Name_____Social Security Number_____
Date of Birth_____Height_____Weight (Pounds)_____

Health History

Yes	No		Yes	No	
____	____	Diabetes	____	____	Lung Disorders(Asthma, Tuberculosis, Shortness of Breath)
____	____	Muscular Disease	____	____	Cardiovascular Disease(Rheumatic Fever, Scarlet Fever, Diphtheria)
____	____	Mental Disorder	____	____	Nervous System Disorders (Dizziness, Epilepsy, Syphillis)
____	____	Arthritis	____	____	Currently Under a Physicians Care
____	____	Kidney Disease	____	____	Suffering from Any Other Disease
____	____	Liver Disorder	____	____	Permanent Impairment from Illness, Disease, or Injury
____	____	Serious Injury			

General

General Appearance and Development: _____Good_____Fair_____Poor

Hearing: Right Ear_____Left Ear_____Disease or Injury_____

Blood Pressure: _____

Pulse:_____

Abdomen: Scars_____Abnormal Masses_____Tenderness_____

Reflexes: Accommodation: Right_____Left_____

Knee Jerks: Right____Normal____Increased_____Absent Left:____Normal_____Increased_____Absent

Remarks:_____

Extremities: Upper_____ Lower_____ Spine_____

Eyes: For Distance:Right:20/_____ Left20/_____Without Corrective Lenses___With Corrective Lenses, if worn___

Evidence of Disease or Injury: Right_____ Left_____ Color Tests (Jaegers J1):_____

Horizontal Field of Vision: Right_____ Left_____

Rhomberg _____Pupillary _____ Light: Right_____ Left_____

Remarks:

_____

Name of Examining Doctor (Please Print) Signature Check Here if operator Has Not Passed This Examination____

_____

Address of Examining Physician

Form 2.C.8.003

Boom Truck Operator Medical Qualification

Instructions to Examining Physician

1. Send this Medical Qualification form (2.C.8.004) to the site manager's designee, who is responsible for verifying that mobile crane operators meet minimum operator qualifications.

2. If an employee does not wish to have his/her Medical Examination form released to the person at the site responsible for qualifying mobile crane operators, this form may be released in its place.

Name_____

Social Security Number_____

Location_____

I examined the above on (date)_____and find the person (qualified) (not qualified) medically to operate Boom Trucks based on the findings in the Boom Truck Operator Medical Examination.

Signed _____ M.D.

AERIAL LIFT/BUCKET TRUCK OPERATOR AUTHORIZATION

Name	
Social Security No.	**Company**
Project No.	**Location**
Issue Date	

The bearer is authorized to operate this equipment

Manufacturer	Model	Type	Capacity	Examiner's Signature

Restrictions: Must wear corrective lenses ☐ Yes ☐ No
Other Restrictions (list):

Form 2.C.9.001

AERIAL LIFT/BUCKET TRUCK OPERATOR AUTHORIZATION

Name	
Social Security No.	**Company**
Project No.	**Location**
Issue Date	

The bearer is authorized to operate this equipment

Manufacturer	Model	Type	Capacity	Examiner's Signature

Restrictions: Must wear corrective lenses ☐ Yes ☐ No
Other Restrictions (list):

Form 2.C.9.001

Aerial Lifts and Bucket Trucks
Daily Inspection Form

Equipment identification number: _____

Items	Sat	Unsat	N/A	Remarks
Brakes				
Controls Labeled				
Emergency Controls				
Fuel System				
Guards				
Handrails				
Hydraulic System (no leaks)				
Load Charts or Labels				
Muffler and Exhaust				
Operating Controls				
Outriggers				
Tires and Wheels				
Travel Alarms				

Comments and corrective actions taken on above noted deficiencies:

Inspected by

_____

Date

_____

Signature

_____

MSDS/Product Evaluation Form

Project Name: _____
Project Number:_____

Trade name for product under review:
_____

Manufacturer's name, address, and phone number:
_____
_____
_____

Date MSDS was received from the purchasing agent/contractor
_____

Check the appropriate response:

☐ **YES -** The information contained in the MSDS for this product has been reviewed by the ES&H professional and the product has been approved for order.

☐ **NO -** Based upon the hazard information contained in the MSDS, it is not recommended that this material be used on this project if an alternative material is available.

☐ **CONDITIONAL APPROVAL -** The MSDS review of this product indicates that special precautions will be required in order to use this product on this site. The purchase and use of this material will be approved, provided arrangements are made to meet the following requirements:

Storage:_____
_____

Ventilation:_____
_____

Training:_____
_____

Personal protective equipment:_____

Other: _____

Reviewed by: _____ Date Reviewed: _____

Southern Company Generation & Energy Marketing

Engineering & Construction Services

Hazard Communication Program

1.0 PURPOSE

This hazard communication program has been developed for compliance with the federal Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29CRF 1926.59 & 29CFR 1910.1200) and to ensure that the employees of E&CS are effectively informed of the potential and existing chemical hazards. This program applies to all chemicals that are known to be present in the workplace in such a manner that employees may be exposed under normal conditions or in a foreseeable emergency. In general, a hazardous chemical or product is any material that can create a physical hazard (i.e. combustible, flammable, explosive) or health hazard (e.g. irritant, toxin, etc.). This document does not apply to hazardous waste, consumer products brought on-site by personnel for personal use (e.g. shaving cream, hair spray, etc.) or consumer products whose use will not exceed the frequency and duration experienced by a consumer under normal conditions.

1.1 GENERAL PROGRAM INFORMATION

The purpose of this hazard communication program is to effectively inform our employees of all potential or existing chemical hazards and of the necessary precautions to take relative to working with or around hazardous chemicals.

This program contains provisions for:

- developing and maintaining a written hazard communication program for the workplace;
- labeling of containers of chemicals in the workplace
- distribution of material safety data sheets to employees;
- development and implementation of employee training programs regarding hazards of chemicals and protective measures;
- providing a list of the hazardous chemicals known to be present on site;
- methods used to inform employees of the hazards of non-routine tasks, and the hazards associated with chemicals contained in unlabeled pipes; and
- provisions for informing contractors of hazard communication requirements.

1.2 WRITTEN SITE-SPECIFIC PROGRAM

E&CS is required to develop, implement and maintain at each workplace a written hazard communication program containing site-specific information that is readily available to employees, their representatives and regulatory inspectors upon their request. This document, along with a completed Appendix I - Required Site-Specific Information-Hazard Communication, may serve as each site's written hazard communication program. If a site chooses to provide their own written program, it must contain the provisions presented above in the General Program Information section to be considered complete and in compliance with 29 CFR 1910.1200. In addition, the written program must clearly state who is responsible for the overall site coordination, as well as who is responsible for any of the specific elements.

The written program must be an accurate representation of what is actually in place. Therefore, it must be updated whenever changes are made. The site-specific information should be kept current, and as a matter of good practice, the overall program should be reviewed periodically.

1.3 LABELING AND OTHER FORMS OF WARNING

Chemical manufacturers, importers, and distributors must provide labels, tags, or other markings for containers of hazardous chemicals. Containers of hazardous chemicals must be inspected upon receipt and if an appropriate label is not present, the chemical must not be accepted. The information must include at least the following:

- Name of the hazardous product as it appears on the MSDS;
- Appropriate hazard warning, as found on the chemical product's MSDS or the original container label, including reference to the applicable target organ (e.g., eye irritant, corrosive to lungs and mucous membranes, etc.); and
- Name and address of the manufacturer, distributor or other responsible party.

If OSHA regulates the hazardous chemical in a substance specific health standard, i.e. asbestos, arsenic, PCB's, the label used will be in accordance with the requirements of that standard.

In certain situations involving individual stationary process containers, the label may be replaced by a sign, placard, process sheet, batch ticket or other means to convey the identity of the hazardous chemical and the appropriate hazard warnings. If these other forms of warning are used, they will be readily accessible to employees in their work area during each work shift.

All containers of hazardous chemicals will be properly labeled at all times. No labels on original containers will be altered or defaced in any manner. If labels are removed, defaced or illegible, the container must be immediately marked with the required information.

Any container into which a hazardous chemical is transferred, must be labeled with the identity and hazard warnings. The only exception for this rule is for containers where small amounts of a chemical are transferred for immediate use by the person doing the transfer. A typical example of this exception is the transfer of a few milliliters of a chemical into a container for use in another location when transferred, transported, and fully used by one individual during the workshift.

When needed, chemical product labels can be manually created or generated electronically using a computer system. Labeling software packages are readily available as well as some customized labels for a specific chemical. Another important consideration with regard to labeling is that the label on a container must contain the same chemical or product name as is indicated on the product's MSDS contained in the ChemRTK System. Site-specific labeling systems should be described in Appendix I of this guideline.

The label may take any form so long as it is legible and contains the identity of the hazardous chemical and "appropriate hazard warnings." There is no requirement to re-label chemicals that are properly labeled by the manufacturer or distributor when they are received. However, if chemicals are received that are not labeled appropriately E&CS assumes the responsibility to label the container. The only chemicals generally excluded from the labeling requirement are:

- pesticides regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (must be labeled in accord with FIFRA);
- any chemical substance or mixture defined in the Toxic Substances Control Act that are subject to labeling requirements of that Act;
- foods, drugs, or cosmetics regulated by the FDA (must be labeled per FDA regulations);
- consumer products regulated by the Consumer Products Safety Commission and used in the same manner as "normal consumer use"; and,
- agricultural or vegetable seed covered under the labeling regulations of the Department of Agriculture.

Laboratory chemicals are also exempted from labeling requirements so long as labels that are on the original containers are not removed or defaced and remain completely legible (only applies to lab chemicals stored and/or used in the laboratory).

1.4 ACCESS TO CHEMICAL HAZARD INFORMATION (MSDSs)

Product information is found on Material Safety Data Sheets (MSDSs) which can be viewed or downloaded from Chem-RTK. The MSDSs are scanned copies of the original MSDSs received from the manufacturer. Employees must be able to access Chem-RTK during all working hours (shift work) and/or emergencies, or have access to hard copies of MSDSs for each product found on the facility inventory.

MSDSs must contain the following information.

- The identity as it appears on the label, the chemical constitutes and common names of each hazardous ingredient in the product Physical and chemical characteristics (e.g., vapor pressure, flash point, etc.)
- Physical hazards including the potential for fire, explosion, and reactivity
- Health hazards, including signs and symptoms of exposure and any medical conditions generally recognized as being aggravated by exposure to the product
- Primary routes of entry into the body (inhalation, skin absorption, etc.)
- OSHA Permissible Exposure Limits (PELs), ACGIH Threshold Limit Values (TLVs), and any other exposure limit recommended by the chemical manufacturer
- Whether the hazardous chemical is a carcinogen or potential carcinogen by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC), or OSHA standards
- Safe handling and use precautions, including hygienic practices, protective measures during repair and maintenance of contaminated equipment, and cleanup of spills and leaks
- Control measures (e.g., engineering controls, work practices, personal protective equipment, etc.)
- Emergency and first aid procedures
- Date of MSDS preparation or, if revised, the last date of revision
- Name, address and telephone number of the responsible party who can provide additional information on the product and appropriate emergency procedures, if necessary

MSDSs must be provided to employees, their representatives and/or regulatory inspectors upon their request.

1.5 WORKPLACE CHEMICAL INVENTORY

A list of hazardous chemicals known to be present that are, or may be, stored or used on site must be available at all Company Locations. There must be consideration for chemicals that may not be present at a given time but that are stored or used at some point in time. The list must be by product name as it appears on the MSDS. Inventory verification must be done periodically to ensure that it remains current.

Chemical and chemical product lists are available from the Chemical Right To Know system (Chem-RTK). Chem-RTK is located in WebIcons under SES Corporate Applications. Employees have unrestricted ability to see MSDS, product, vendor, and spill information. See Appendix I to review this site's specific procedures for obtaining a workplace chemical inventory list.

1.6 EMPLOYEE INFORMATION AND TRAINING

The training element of the Hazard Communication Program is the key to an effective program at E&CS facilities.

A. **Who To Train:** Train company employees who maybe exposed to hazardous chemicals or chemical products due to normal or non-routine task or from a foreseeable emergency.

   NOTE: Training is not required for workers who have only incidental exposure to hazardous products. For example, training is not required for office workers whose job responsibilities do not routinely expose them to hazardous products. If the office worker is routinely required to perform jobs that may expose them to hazardous products, training is required.

B. **Frequency:** Employees must be provided with effective information and training on hazardous chemicals in their work area. Employees must receive initial training prior to potential exposure to hazardous chemicals. If a new hazard is introduced into the workplace or non-routine tasks are to be performed, workers must receive training on the new hazards or job tasks. Document the completion of training.

The Southern Company recommends that hazard communication training be performed on at least an annual basis to ensure that employees understand the hazard communication program.

C. **Content:** Information and training may be designed to cover categories of hazards (e.g. flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and MSDSs. Training must include the following:

- Any operations in their work area where hazardous chemicals are present
- The location and availability of the written hazard communication program, including the required list of hazardous chemicals, and the required MSDSs
- Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area
- The physical and health hazards of the chemicals in the work area
- The measures employees can take to protect themselves from the hazards, such as appropriate work practices, emergency procedures, and personal protective equipment (PPE) used
- The details of the hazard communication program including an explanation of the labeling system and MSDSs, and how employees can obtain and use the appropriate hazard information.

D. If video tapes are used to satisfy portions of the training program, the following areas must be covered:

- **Company Employees at Fossil, Hydro and Nuclear Facilities:** Train on HazCom Basics, Acid and Caustic Agents, Cleaning Agents, Compressed Gases, Flammable Liquids, Halogenated Solvents, Paints, Dusts.
- **Company Employees not at Fossil, Hydro or Nuclear Facilities:** Train on HazCom Basics and any other general category which covers the chemical products to which they can be exposed.

1.7 NON-ROUTINE TASKS

Employees must be properly informed of the potential hazards that may be associated with performing non-routine tasks. Non-routine tasks are those which employees may perform so infrequently that they are unaware of or may have forgotten the hazards involved with using the chemicals or chemical products required for the task.

Non-routine tasks must be identified in the site-specific hazard communication plan. In addition, the means by which employees will be informed of the potential hazards from the chemical or chemical products must also be explained in the site-specific plan. The training may be conducted in a job briefing, toolbox session, etc.

1.8 UNLABELED PIPES

If the site has piping containing hazardous chemicals, labeling or color coding for content identification is recommended. If color-coding is used, a description of the color-coding scheme must be presented in the site-specific hazard communication plan. Regardless of the labeling or color-coding, the hazards associated with chemicals contained in the pipes must still be communicated to employees.

1.9 CONTRACTOR / VENDOR COORDINATION

All contractors working on E&CS projects are notified, through the contract, of hazardous chemicals to which contractor employees may be exposed. Each contractor is advised that they are expected to be familiar with and in compliance with all federal, state and local occupational safety and health laws, regulations, and standards.

To ensure that E&CS operations do not expose the contractor's employees to known safety and health hazards, a list of all hazardous materials and chemicals that the contractor's employees may be exposed will be furnished to the contractor when the contract is awarded. Upon request, the MSDS for the relevant hazardous products supplied by E&CS to the contractor will be provided to that contractor.

Likewise, all contractors are required to furnish E&CS with a listing of all chemicals they plan to bring on site, as well as copies of MSDSs for these chemicals if they are not currently held by E&CS. E&CS must inform the contractor of

the location of the site's written Hazard Communication Program and precautionary measures to protect themselves while on the job and in the event of an emergency (e.g. alarms, evacuation routes, etc.).

The full extent of the Company's and the contractor's obligations are spelled out in the standard form contract. If they are not, the "Contractor / Vendor Coordination" agreement (Attachment 1) to this guideline may be completed prior to a contractor commencing work at an E&CS facility.

1.10 STATE AND OTHER JURISDICTIONAL REQUIREMENTS

E&CS Site Managers shall determine if there are any, state, or other jurisdictional hazard communication requirements that affect their locations. If requirements do exist, and if they are more restrictive than these guidelines, they shall be incorporated into the site-specific hazard communication program.

2.0 REFERENCES

29 CFR 1910.1200, HAZARD COMMUNICATION

3.0 REQUIRED SITE-SPECIFIC INFORMATION

Location: _____

Revision Date: _____

A. Program Element Responsibilities

	The following individuals have program responsibilities for specific program elements:	
Responsibility	***Name***	***Contact Numbers***
This individual is responsible for all the listed activities:		
Overall site coordination:		
Review and updates of site-specific information (Appendix I):		
Product labeling:		
MSDS maintenance, availability, and acquisition:		
Providing information and training; recordkeeping of training:		
Maintaining up-to-date list of hazardous chemicals (inventory):		
Information/Training for non-routine tasks:		
Contractor coordination:		

B. Material Safety Data Sheets

1. ☐ MSDSs for this site are maintained electronically on Chem-RTK

   Note: If your site uses the Chem-RTK system, the following information applies

   The Chemical Right To Know System (Chem-RTK) was developed to ensure that the latest MSDS would be accessible at all applicable Company locations. The MSDS is provided by the chemical manufacturer or importer with the initial shipment, and with the first shipment after a MSDS has been updated. Chem-RTK allows each site to have immediate access to the MSDS and for the review and entry of products at all Southern Company facilities prior to their use.

   Once an MSDS is accessed, a copy may be printed for an employee to carry back to their assigned work location. If an employee is unable to locate an MSDS for a particular chemical or chemical product, he/she must access the Approvals icon of Chem-RTK and request approval prior to testing, using, or purchasing the product. **NO CHEMICAL OR CHEMICAL PRODUCT WILL BE USED IN THE WORKPLACE UNLESS AN MSDS HAS BEEN OBTAINED AND ADDED TO THE SITE WORKPLACE INVENTORY**.

   The Chem-RTK system is located in WebIcons under SES Corporate Applications. Employees have unrestricted ability to see MSDS, product, vendor, and spill information.

   Chem-RTK procedures for viewing or printing an MSDS:

   - Select company name from pull-down list
   - Click the "Products" icon
   - Enter the product's name or enter the first few characters to bring up a products list
     Note: use % as a "wildcard" character (e.g., "%solvent" will list all products containing the word "solvent" at any position within the name.)
   - Select the desired product from the product list and click the "select" button
   - Click the view MSDS icon to display MSDS on screen
   - Click the print MSDS icon to print a hard copy of the MSDS

2. ☐ MSDSs for this site are maintained as hardcopies.

   Describe how MSDSs can be obtained at this site. (e.g. where the hard copies are located, etc.):

C. In-house labeling

If applicable, describe the procedures and systems used at this site for in-house labeling of chemical products.

D. List of Hazardous Chemicals

1. ☐ The list of hazardous chemicals (workplace inventory) is maintained electronically using Chem-RTK.

   Note: When Chem-RTK is used to generate a workplace inventory, the following information applies

Chem-RTK procedures for viewing or printing a chemical products inventory list:

- Select company name from pull-down list
- Click the "Facilities" icon
- Select facility name from list
- Click "Inventory" button
- Click the "All Products" button to view the product inventory list
- Click the "Print" button to print the facility's product inventory list (prints to workstation's default printer)
- To view or print product-specific information, scroll to product of interest and click on product name
- Click the "View Product" button to view details, or to view or print product's MSDS

2. ☐ The lists of hazardous chemicals for this location are maintained as hardcopies in the following location:

3. Additional Site Specific Procedures

E. Information and Training

1. The following site-specific hazard communications training is provided to employees at this site:

2. Training records for this facility are maintained electronically in SHIPS

F. Non-routine Tasks

1. The following non-routine tasks may be performed at this site:
   NOTE: include information about the hazards associated with these tasks
   (e.g. hazardous chemical products required)

2. Describe the method used to inform employees and applicable contractor employees of the hazards associated with the non-routine tasks:

G. Unlabeled Piping

1. This site ☐ does / ☐ does not have pipes containing hazardous chemicals.

2. This site ☐ does / ☐ does not use a color coding scheme to label pipes containing hazardous materials.

3. If applicable, the following is a description of this site's color-coding scheme for piping containing hazardous chemicals:

4. For areas where hazardous chemicals are transferred in **unlabeled pipes**, workers must contact appropriate personnel to determine:

   - The chemicals in the pipes;
   - The potential hazards, and;
   - Safety precautions to be taken.

ATTACHMENT 1
HAZARD COMMUNICATION
CONTRACTOR/VENDOR COORDINATION
(Company owned facilities)

1. As part of the contractual arrangement between any outside Contractor and the Company, the Contractor, prior to commencing any work pursuant to the contract, **may** supply the Company with a complete and accurate list of all chemical substances to be used by the contractor in the course of performing work on any part of the Company's premises, and a complete and accurate list of any chemical substances which will or may be brought onto any part of Company premises.

2. The Contractor will make available, upon request, a copy of its current Hazard Communication Plan and the MSDS for any product listed by the Contractor for any and all work to be performed on Company premises. The Contractor will provide the Company, upon request, with any and all updates or changes to this Hazard Communication Plan and as they become available. The Contractor will be responsible for the training of its personnel concerning chemical substances used by the Contractor or brought onto the Company premises by the Contractor, and will also be responsible for training any Company employees who may have access to or may be exposed to any of these chemical substance for which these employees have not had previous training.

3. The Contractor warrants that he will comply with all OSHA Hazard Communication regulations and that he will assist and support the Company in its compliance with OSHA Hazard Communication regulations.

4. The Contractor will comply with all requirements for the labeling of any containers of chemical substances.

5. The Company reserves the right to refuse to allow the Contractor to bring any substance onto Company premises, and likewise may require the Contractor to remove any chemical or substance from Company premises.

6. This letter will be kept on file with the facility's written Hazard Communication Plan.

Contractor's Name: _____ Represented by: _____
(Signature)

Company Representative: _____ Date: _____
(Signature)

Company: _____
Location: _____

Chemical Inventory Report

MSDS #	Product Name	Quantity	Hazardous		MSDS Date
			Yes	No	

Form 2.D.2.002

SOUTHERN COMPANY
Energy to Serve Your World

Planning Outline for Energizing Electrical Equipment

Scope of work: _____

_____

_____

Date to be performed: _____

Contingency plan if the job runs past normal hours: _____

_____

_____

Specify the equipment that is currently energized. _____

_____

What equipment will be energized after the work takes place? _____

_____

_____

What clearance/lockout-tagout is required at the completion of the defined scope of work?

_____

_____

Will energizing the equipment change the clearance/lockout-tagout requirements for other personnel?

☐ YES ☐ NO ☐ N/A

Who will perform the following activities?

- throwing switches: _____
- high potential/Megger® testing: _____
- voltage testing: _____

What personal protective equipment will be required?

Shock protection: _____

_____

Flash protection: _____

What conditions would stop this work? _____

_____

	Yes	No	N/A
Has all testing been completed and have test sheets been reviewed?	☐	☐	☐
Have the single-line drawings been reviewed, and are they accessible at the point of work?	☐	☐	☐
Has the need for standby personnel or barricading of equipment to be energized been discussed?	☐	☐	☐
Has the downstream clearance/lockout/tagout been verified?	☐	☐	☐
Have all personnel in the area been notified?	☐	☐	☐
Has a visual inspection been made?	☐	☐	☐
Is the proper labeling in place?	☐	☐	☐
Have all ground clusters been removed and accounted for?	☐	☐	☐
Are all doors closed and properly latched?	☐	☐	☐
Are all covers installed and all holes properly covered?	☐	☐	☐
Has the removal or isolation of temporary feeds/connections been verified?	☐	☐	☐

SPECIAL CONSIDERATIONS

_____

_____

_____

_____

_____

_____ _____
Contractor Electrical Representative Date

_____ _____
E&CS Electrical Representative Date

_____ _____
Plant Electrical Representative Date

SOUTHERN COMPANY
Energy to Serve Your World

Planning Outline for Deenergizing Electrical Equipment

Scope of Work: _____

_____

Date to be performed: _____

Duration of the work: _____

Contingency plan if the job runs past normal hours: _____

_____

What will not be deenergized? _____

_____

Method of clearance: _____

(List clearance points on the reverse side of this checklist.)

What clearance is required at the completion of the defined scope of work? _____

_____

Reverification requirements (Clearance, grounds, test for voltage): _____

_____

Will deenergizing the equipment change the lockout requirements for other personnel? Yes No N/A

Who will perform the following activities?

- throwing switches: _____
- voltage testing:_____

  (List points for voltage testing on the reverse side of this checklist.)
- installing grounds: _____

  (List points for ground installation on the reverse side of this checklist.)

What personal protective equipment will be required? _____

What conditions would stop this work? _____

	Yes	No	N/A
Have the single-line drawings been reviewed, and are they accessible at the point of work?			
Has the need for standby personnel or barricading of equipment to be deenergized been discussed?			
Are there any back feeds, alternate feeds, or temporary feeds present?			

Please note any special considerations on the reverse side of this checklist.

CLEARANCE LIST	VOLTAGE TEST POINTS	GROUND INSTALLATION POINTS

SPECIAL CONSIDERATIONS

_____

Contractor Electrical Representative _____ Date _____

E&CS Electrical Representative _____ Date _____

Facility Electrical Representative _____ Date _____

Energized Electrical Work Permit

Part 1: To be completed by the requestor

1. Description of circuit/equipment/job location: _____

2. Description of work to be done: _____

3. Justification of why circuit/equipment cannot be deenergized or the work deferred until the next scheduled outage:

_____

_____

Requestor/Title:_____ Date:_____

Part 2: To be completed by the requestor **Check when complete**

1. Detailed job description procedure to be used in performing the above detailed work: ☐

_____

2. Description of the safe work practices to be employed: ☐

_____

3. Results of the shock hazard analysis: ☐

_____

4. Determination of shock protection boundaries: ☐

_____

5. Results of the flash hazard analysis: ☐

_____

6. Determination of the flash protection boundary: ☐

_____

7. Necessary personal protective equipment to safely perform the assigned task: ☐

_____

8. Means employed to restrict the access of unqualified persons from the work area: ☐

_____

9. Evidence of completion of a job planning safety analysis: ☐

_____

10. Do you agree the above work can be done safely? To be answered by electrically qualified persons performing work

_____ ☐ Yes ☐ No _____ ☐ Yes ☐ No

_____ ☐ Yes ☐ No _____ ☐ Yes ☐ No

Contractor Electrical Representative	Date	E&CS Electrical Representative	Date
Contractor Safety Representative	Date	E&CS Safety Representative	Date
Contractor Corporate Safety	Date	Plant Electrical Representative	Date

Forms - E&CS Construction EH&S Procedures

Aerial Lift/Bucket Truck Operator Authorization
Aerial Lifts and Bucket Trucks Daily Inspection Form
Authorization for the Use of a Suspended Personnel Hoisting Platform

Barricade Tag
Boom Truck Inspection
Boom Truck Operator Authorization
Boom Truck Operator Medical Examination
Boom Truck Operator Medical Qualification

Chain Fall & Come-A-Long Inspection
Chemical Inventory Report
Completed Scaffold Tag (Green)

Do Not Use Scaffold Tag (Red)
Dragline/Clamshell Operator Medical Examination
Dragline/Clamshell Operator Medical Qualification
Drilling Equipment Inspection

E&HS – Program Improvement and Error Correction Form
Earth-Moving Equipment Inspection
Equipment Operator Authorization
Evaluation of Alternate Lifting Methods: Justification for the Use of a Suspended Personnel Hoisting Platform
Excavation and Trenching Permit

Forklift Inspection Form
Forklift Operator Authorization

Grinder Inspection (Bench & Portable)

Hydraulic Crane Inspection

Incident Notification Form

Ladder Inspection Form
Lattice Boom Crane Inspection

Mobile Crane Operator Medical Examination
Mobile Crane Operator Medical Qualification
Mobile Equipment/Boom Truck Overhead Line Permit
Modified Scaffold Tag (Yellow)
Monthly Project Safety Statistics Report

Monthly Sling/Choker Inspection Form

Open Flame/Hot Work Permit

PPE Assessment

Rigging and Lifting Plan for Critical Lifts and Crane-Suspended Personnel Platform Lifts

Scaffolding Inspection Checklist
Scaffold Inspection Tags
SCGEM E&CS Hazard Communication Program

Tower Crane Inspection
Tower Crane Operator Medical Examination
Tower Crane Operator Medical Qualification
Trenching and Excavation Daily Checklist

Vehicle Inspection Form

Plant [name]
[name] Project
Fall Protection Program

SAMPLE

Issued [date]

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SAMPLE

1.0 PURPOSE AND SCOPE

The purpose of this fall protection program is to establish guidelines to protect all employees on Engineering and Construction Services (E&CS) projects engaged in outdoor or indoor work activities that expose them to potential falls from elevations.

The scope of this fall protection program includes all employees or agents of [company name], in particular those employees engaged in work activities that expose them to falls from heights of 6 ft or more.

2.0 GOAL

The goal of this fall protection program is to prevent the occurrence of falls from elevations of 6 ft or higher. This goal shall be accomplished through effective education, engineering and administrative controls, the use of fall protection systems, and enforcement of the program. This fall protection program will be continually improved upon to prevent all falls from occurring.

3.0 DEFINITIONS

anchor point - a secure point of attachment for lifelines, lanyards, or deceleration devices. An anchor point must be capable of supporting at least 5,000 lb (3,600 lb if engineered/certified by a qualified person) per person and must be independent of any anchorage being used to support or suspend platforms.

authorized person - a person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or job site (building maintenance, roof repair, and so forth).

competent person - a person capable of identifying existing and predictable hazards in the surroundings or working conditions that are hazardous or dangerous to employees. A person who has the authority to take prompt corrective action to eliminate such hazards.

connector - a device used to couple (connect) parts of the personal fall arrest system.

deceleration device - any mechanism, such as a rope grab, rip-stitch lanyard, a specially woven lanyard, tearing or deforming lanyard, or automatic self-retracting lifeline/lanyard, that serves to dissipate a substantial amount of energy during a fall arrest.

deceleration distance - the additional vertical distance a falling employee travels excluding lifeline elongation and free-fall distance, before stopping, from the point at which the deceleration device begins to operate. The deceleration distance is measured as the distance between the location of an employee's body harness attachment point at the moment of activation of the

SAMPLE

deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.

free fall - the act of falling before a personal fall arrest system begins to apply force to arrest the fall.

free-fall distance - the vertical displacement of the fall arrest attachment point on the employee's body harness between the onset of the fall and just before the system begins to apply force to arrest the fall. Free fall distance must not exceed 6 ft. **This distance excludes deceleration distance and lifeline/lanyard elongation distance.**

full body harness - webbing/straps secured about an employee's body in a manner that will distribute the fall arrest forces over the thighs, pelvis, waist, chest, and shoulders. A full body harness will include a means for attaching it to other components of a personal fall arrest system, preferably at the shoulders.

guardrail system - a barrier erected to prevent employees from falling to lower levels. This system includes a toeboard, midrail, and toprail able to withstand 200 lb of force applied in any direction.

lanyard - a flexible line of rope or strap that has self-locking snaphook connectors at each end for connecting to body harnesses, deceleration devices, and anchor points.

leading edge - the edge of a floor, roof, or other walking/working surface, that changes location as additional floor, roof, and so forth, is placed or constructed. A leading edge is considered an unprotected side or edge when not under active construction.

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

low slope roof - a roof having a slope of less than or equal to 4-in-12 (vertical to horizontal). A roof with approximately a 19.5-degree slope or less.

personal fall arrest system - a system used to arrest (catch) an employee in a fall from a working level. It consists of an anchorage location, connectors, a body harness, and may include a lanyard, deceleration device, lifeline, or any combination of these items.

qualified person - an individual, who by possession of a recognized degree, certificate, or professional standing or who by extensive knowledge, training, and experience has successfully demonstrated his or her ability to solve or resolve problems relating to the subject matter, work, or project.

rope grab - a deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest the fall of an employee.

roof work - the hoisting, storage, installation, repair, and removal of materials or equipment on the roof.

SAMPLE

safety monitoring system - a safety system in which a competent person is responsible for recognizing and warning employees of fall hazards. All other fall protection systems must be deemed not feasible (through a feasibility study/review) to select/use a safety monitoring system. The use of this system is specifically **PROHIBITED** on Southern Company Generation (Generation) construction projects.

snaphook - a connector comprised of a hook-shaped member with a closed keeper that can be opened to permit the hook to receive an object and when released, automatically closes to retain the object. Snaphooks must be self-closing with a self-locking keeper that remains closed and locked until unlocked and pressed open for connection or disconnection, thus preventing the opportunity for the object to roll out of the snaphook.

steep slope roof - a roof having a slope greater than 4-in-12 (vertical to horizontal). A roof with a slope greater than 19.5 degrees.

toeboard - a low protective barrier that will prevent the fall of materials and equipment to lower levels, usually 4 in. or greater in height.

total fall distance - the maximum vertical change in distance from the bottom of an individual's feet at the onset of a fall to the position of the feet after the fall is arrested. The total fall distance includes the free-fall distance and the deceleration distance. Total fall distance = total length of shock absorbing lanyard + height of the person + location distance of the D-ring from the work surface or platform.

unprotected sides and edges - any side or edge of a walking or working surface (for example, floor, roof, ramp, or runway) where there is no guardrail at least 39 in. high.

warning line system - a barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, that designates an area in which work can be conducted without the use of guardrails, personal fall arrest systems, or safety nets to protect employees in the area. A warning line system shall be used on any roof greater than 50 ft wide and in conjunction with a safety monitor only where the other forms of fall protection have been deemed infeasible to use. The use of this system is specifically **PROHIBITED** on Generation construction projects.

4.0 TYPES OF FALL PROTECTION SYSTEMS

1. An articulating manlift provided with a restraint system and full body harness to an anchor point below the waist (preferably at the floor level).
2. Guardrail with a toeboard, midrail, and toprail.
3. Personal fall arrest systems:
   - Anchor points (rated at 5,000 lb per person).
   - Full body harness.
   - Restraint line or lanyard.

SAMPLE

- Retractable lanyard.
- Rope grabs.
- Connectors (self-locking snaphooks).

4. Engineered lifelines.
5. Warning lines.
6. Safety nets.
7. Safety monitor systems are specifically prohibited on the Plant [plant name] [project name].

Appropriate fall protection will be determined based on the task (job) to be performed.

5.0 FALL PROTECTION LOCATIONS

Fall protection is required when a worker has the potential to fall 6 ft or more. [construction company name] has identified the following places concerning fall protection:

- All flat and low-sloped roof locations, when within 6 ft of the roof edge or during roof repair/maintenance (4:12 pitch or less).
- All exterior and interior equipment platforms, catwalks, antennas/towers, and similar features.
- All exterior and interior fixed ladders above 20 ft.
- All mezzanine and balcony edges.
- All open excavations or pits.
- All tasks requiring use of the articulating manlifts and scissor lifts.
- All tasks requiring employees to lean outside the vertical rails of ladders (for example, painting, stairwell light bulb replacement, or bolt up).
- Scaffolding erection 6 ft in height or greater.
- Steel erection 6 ft in height of greater.
- Mezzanine/catwalk areas. When an employee must step outside the catwalk, additional fall protection (that is, 6-ft lanyard to full body harness, self-retracting lanyard, or rope grab system) shall be used.

SAMPLE

6.0 FALL PROTECTION GUIDELINES – OPTIONS

6.1 Engineering Controls

Engineering controls should always be the first option for fall protection when possible (for example, use a telescoping arm when changing a light bulb or relocate valves at ground level to avoid sending workers to heights to change them) or using mechanical equipment in extremely hazardous areas.

6.2 Guardrails

On all projects, guardrails made from steel, wood, and wire rope only shall be acceptable. All guardrail systems shall comply with the current U.S. Occupational Safety and Health Administration (OSHA) standards (that is, contain a 42-in. high toprail, a midrail, and a toeboard that can withstand 200 lb of force in any direction). These guardrails shall be placed in the following areas if necessary or feasible based on job location or requirements:

- On all open-sided floors.
- Around all open excavations or pits.
- On leading edges of roofs or mezzanines.

6.3 Personal Fall Protection Systems

All employees on any project who are required to wear a personal fall arrest or restraint system shall follow these guidelines:

- A full body harness shall be used *at all times*.
- Only shock-absorbing lanyards or retractable lanyards are to be used so as to keep impact forces at a minimum on the body.
- Only nylon rope or nylon straps with locking snaphooks are to be used for restraints. *Large "pelican"- or "rebar"-type snaphooks are prohibited*.
- All lanyards shall have self-locking snaphooks.
- Before each use, the employee shall inspect all personal fall arrest equipment. Any harness showing deterioration, bends, damage, impacts, and/or excessive wear shall be removed from service.

The maximum free-fall distance shall not exceed 6 ft. Consideration must be given to the total fall distance. The following factors can affect total fall distance:

SAMPLE

- Length of connecting means (that is, lanyard, carabiners, snaphooks, and so forth).
- Position and height of anchorage relative to work platform/area (above the person's head whenever possible).
- Position of attachment and D-ring slide on the full body harness.
- Deployment of shock absorber (maximum 32 in.).
- Movement in the lifeline.
- Initial position of worker before free fall occurs (that is, whether the person will be sitting, standing, and so forth).

6.4 Calculating Total Fall Distance

Always allow a minimum of 6 ft of clearance above the ground, equipment, and so forth, at the end of the fall from the fall arrest point.

6.5 Engineered Lifeline

Lifeline systems shall be designed and approved by an engineer or qualified person.

Lifeline systems shall be engineered to have appropriate anchorages, strength of line designed to hold [X] number of individuals connected to it, line strength to aid in the arrest of a fall, and durability to hold a fallen employee(s) suspended until a rescue can occur.

7.0 INSPECTION OF FALL PROTECTION SYSTEMS

The following criteria shall be used to maintain all equipment in good working condition:

7.1 Full Body Harnesses

1. Before each use, inspect each full body harness:

    - Closely examine all of the nylon webbing to ensure there are no burn marks, which could weaken the material.
    - Verify there are no torn, frayed, or broken fibers, pulled stitches, or frayed edges anywhere on the harness.
    - Examine the D-ring for excessive wear, pits, deterioration, or cracks.
    - Verify that buckles are not deformed, cracked, and that they operate correctly.
    - Check to see that each grommet (if present) is secure and not deformed from abuse or a fall.

SAMPLE

- The harness should never have additional punched holes.
- All rivets should be tight and not deformed.
- Check tongue/straps for excessive wear from repeated buckling.

2. A competent person shall complete a monthly inspection of all harnesses and documentation will be maintained (see appendix A, Full Body Harness Inspection Checklist).
3. To protect harnesses from damage, they shall be stored hanging in an enclosed cabinet or placed in a fall protection gang box.
4. All harnesses involved in a fall shall be destroyed.

7.2 Lanyards/Shock-Absorbing Lanyards

1. Before each use, inspect each lanyard/shock-absorbing lanyard:

   - Check lanyard material for cuts, burns, abrasions, kinks, knots, broken stitches, and excessive wear.
   - Inspect the snaphooks for distortions in the hook, locks, and eye.
   - Check carabiner for excessive wear, distortion, and lock operation.
   - Ensure that all locking mechanisms seat and lock properly.
   - Once locked, the locking mechanism should prevent the hook from opening.
   - Visually inspect the shock absorber for any signs of damage, paying close attention to where the shock absorber attaches to the lanyard.
   - Verify that points where the lanyard attaches to the snaphooks are free of defects.

2. A competent person shall complete a monthly inspection of all lanyards and documentation will be maintained (see appendix B, Lanyard Inspection Checklist).
3. To protect lanyards from damage, they shall be stored hanging in an enclosed cabinet or placed in a fall protection gang box.
4. All lanyards involved in a fall shall be destroyed.

7.3 Snaphooks

1. Before each use, inspect all snaphooks:

   - Inspect each snaphook for any distortions of the hook or eye.
   - Verify there are no cracks or pitted surfaces.
   - Verify that the keeper latch is not bent, distorted, or obstructed.
   - Verify that the keeper latch seats into the nose without binding.
   - Verify that the keeper spring securely closes the keeper latch.

SAMPLE

- Test the locking mechanism to verify that the keeper latch locks properly.

2. A competent person shall complete an annual inspection of all snaphooks and documentation will be maintained (see appendix C, Snaphooks/ Carabiners Inspection Checklist).
3. All snaphooks involved in a fall shall be destroyed.
4. *Large "pelican"- or "rebar"-style snaphooks are prohibited for fall arrest.*

7.4 Self-Retracting Lanyards/Lifelines

1. Before each use, inspect self-retracting lanyards/lifelines:
   - Visually inspect the body to ensure there is no physical damage.
   - Make sure all nuts and rivets are tight.
   - Make sure the entire length of the nylon strap/wire rope is free from any cuts, burns, abrasions, kinks, knots, broken stitches/strands, or excessive wear.
   - Verify that the lanyard retracts freely.
   - Test the unit by pulling sharply on the lanyard/lifeline to verify that the locking mechanism is operating correctly.
   - If the manufacturer requires, make certain the retractable lanyard is returned to the manufacturer for scheduled annual inspections.
2. A competent person shall conduct a monthly inspection of all self-retracting lanyards/lifelines, and documentation will be maintained (see appendix D, Self-Retracting Lanyard/Lifeline Inspection Checklist).
3. Service self-retracting lanyards/lifelines per manufacturer specifications (usually 1 to 2 years).
4. Inspect for proper function after every fall.

7.5 Tie-Off Adapters/Anchorages

1. Inspect tie-off adapters/anchorages for integrity and attachment to a solid surface.
2. A competent person shall complete an annual inspection of all tie-offs and anchorages, and documentation shall be maintained.
3. All tie-offs and anchorages shall be destroyed after a fall.

7.6 Articulating Manlift/Scissor Lift

1. Inspect the articulating manlift /scissor lift before each use.
2. Inspect/service per manufacturer guidelines. Manlift, scissors lifts, and safety nets shall be inspected at the beginning of each shift in use. Structural integrity of the manlift basket shall be checked per the same schedule.

SAMPLE

3. A competent person shall complete an annual inspection of the manlift basket, and documentation shall be maintained.

7.7 Horizontal Lifelines

1. Inspect horizontal lifelines before each use for structural integrity of line and anchors.
2. Horizontal lifelines shall be inspected at the beginning of each shift and after any circumstance bringing the integrity of the system into question (fall, damage, relocation, and so forth).
3. A competent person shall complete a monthly inspection.

7.8 Guardrails

1. Temporary guardrail systems shall be visually inspected by a competent person.
2. Temporary guardrail systems shall have a complete structural inspection by a competent person weekly.
3. Permanent guardrail systems shall have a complete structural inspection by a competent person annually. In addition, a competent person shall inspect permanent guardrail systems based on conditions/controls present.

8.0 STORAGE AND MAINTENANCE OF FALL PROTECTION EQUIPMENT

1. Never store personal fall arrest equipment in the bottom of a toolbox, on the ground, or outdoors exposed to the elements (such as sun, rain, or snow).
2. Hang equipment in a manner that retains its shape in a cool, dry location.
3. Always follow manufacturer recommendations for inspections.
4. Clean with a mild nonabrasive soap, and hang to dry. Never force dry or use strong detergents in cleaning.
5. Never store equipment near excessive heat, chemicals, moisture, or sunlight.
6. Never store in an area with exposures to fumes or corrosive elements.
7. Avoid dirt or other types of build-up on equipment.
8. Never use this equipment for any purpose other than personal fall arrest.
9. After any piece of fall protection equipment is involved in a fall, remove equipment from service immediately.

9.0 TRAINING

Document the attendance of all trainees (see appendix E, Safety Training Record).

SAMPLE

All employees engaged in fall protection will be trained and have the knowledge to:

1. Recognize the fall hazards of/on their job sites.
2. Understand the hazards associated with working near fall hazards.
3. Work safely in hazardous areas by using appropriate fall protection measures.
4. Understand and follow all components of this fall protection program.
5. Identify and understand the enforceable OSHA and ANSI standards as well as the site-specific requirements that pertain to fall protection.

10.0 ENFORCEMENT

1. All employees are subject to discipline.
2. Documentation of any violations will be kept in the employee's personnel file.

11.0 RESCUE PROCEDURES

11.1 Rescue Methods/Options of Fallen Personnel

In the unlikely event that a fall arrest occurs onsite, personnel using an articulating manlift, man basket, or ladders where feasible shall rescue all employees. Alternate rescue would be through the local and emergency services.

11.2 Communication Issues

In the event of a fall, the following people shall be notified as soon as possible.

1. Rescue personnel (that is, the site's Emergency Response Team).
2. Manager/supervisor.
3. Safety manager
4. Fire department and emergency medical services, if necessary.

At the beginning of any work activity where fall protection is an issue, rescue plans shall be *identified and discussed with all employees*. The general foreman and foreman with the help of the Safety Department shall develop the rescue plan(s).

All employees involved in a fall arrest or fall shall be sent immediately for a medical evaluation to determine the extent of injuries, if any.

12.0 FALL INVESTIGATION

SAMPLE

All fall investigations shall be conducted by the supervision of those involved, [company name] project management, and E&CS Safety and Health – Construction.

The following documentation shall be completed as part of the fall investigation:

1. Interviews with staff and witnesses.
2. Employee injury/accident report.
3. Supervisor injury/accident report.
4. Investigation report addressing the root causes and corrective actions of the incident.

13.0 PROGRAM EVALUATION

This fall protection program shall be evaluated periodically to determine its effectiveness. The following criteria shall be used to evaluate its performance:

1. Accident reports.
2. Number of accidents.
3. Management/staff compliance with program components.
4. Periodic onsite audits.
5. Staff feedback and interviews.

14.0 ATTACHMENTS

- Appendix A, Full Body Harness Inspection Checklist.
- Appendix B, Lanyard Inspection Checklist.
- Appendix C, Snaphooks/Carabiners Inspection Checklist.
- Appendix D, Self-Retracting Lanyard/Lifeline Inspection Checklist.
- Appendix E, Safety Training Record.

SAMPLE

Appendix A – Full Body Harness Inspection Checklist

Harness Model/Name:	_____		
Serial Number:	_____	Lot Number:	_____
Date of Manufacture:	_____	Date of Purchase:	_____
Comments:			

General Factors	Accepted/Rejected	Supportive Details/Comments
1. **Hardware:** Includes D-rings, buckles, keepers, and back pads. Inspect for damage, distortion, sharp edges, burrs, cracks, and corrosion.	Accepted Rejected	
2. **Webbing:** Inspect for cuts, burns, tears, abrasions, frays, excessive soiling, and discoloration.	Accepted Rejected	
3. **Stitching:** Inspect for pulled or cut stitches.	Accepted Rejected	
4. **Labels:** Inspect, making certain all labels are securely held in place and are legible.	Accepted Rejected	
5. Other:	Accepted Rejected	
6. Other:	Accepted Rejected	
Overall Disposition	Accepted Rejected	**Inspected By:** **Date Inspected:**

SAMPLE

Appendix B – Lanyard Inspection Checklist

Lanyard Model/Name:	_____		
Serial Number:	_____	Lot Number:	_____
Date of Manufacture:	_____	Date of Purchase:	_____
Comments:			

General Factors	Accepted/ Rejected	Supportive Details/Comments
1. **Hardware:** Includes snaphooks, carabiners, adjusters, keepers, thimbles, and D-rings. Inspect for damage, distortion, sharp edges, burrs, cracks, corrosion, and proper operation.	Accepted Rejected	
2. **Webbing:** Inspect for cuts, burns, tears, abrasions, frays, excessive soiling, and discoloration.	Accepted Rejected	
3. **Stitching:** Inspect for pulled or cut stitches	Accepted Rejected	
4. **Synthetic Rope:** Inspect for pulled or cut yarns, burns, abrasions, knots, excessive soiling, and discoloration.	Accepted Rejected	
5. **Energy Absorbing Component:** Inspect for elongation, tears, and excessive soiling.	Accepted Rejected	
6. **Labels:** Inspect, making certain all labels are securely held in place and are legible.	Accepted Rejected	
Overall Disposition	Accepted Rejected	**Inspected By:** **Date Inspected:**

SAMPLE

Appendix C – Snaphooks/Carabiners Inspection Checklist

Hook/Carabiner Model/Name	_____		
Serial Number:	_____	Lot Number	_____
Date of Manufacture:	_____	Date of Purchase:	_____
Comments:			

General Factors	Accepted/Rejected	Supportive Details/Comments
1. **Physical Damage:** Inspect for cracks, sharp edges, burrs, deformities, and locking operations.	Accepted Rejected	
2. **Excessive Corrosion:** Inspect for corrosion, which affects the operation and/or the strength.	Accepted Rejected	
3. **Markings:** Inspect and make certain marking(s) are legible.	Accepted Rejected	
4. Other:	Accepted Rejected	
5. Other:	Accepted Rejected	
6. Other:	Accepted Rejected	
Overall Disposition:	Accepted Rejected	**Inspected By:** **Date Inspected:**

SAMPLE

Appendix D – Self-Retracting Lanyard/Lifeline Inspection Checklist

Self-Retracting Lanyard/Lifeline Model/Name: _____

Serial Number: _____ Lot Number: _____

Date of Manufacture: _____ Date of Purchase: _____

Department/Location: _____

Comments:

General Factors	Accepted/Rejected	Supportive Details/Comments
1. **Impact Indicator:** Inspect indicator for activation (rupture of red stitching, elongated indicator, etc.).	Accepted Rejected	
2. **Screws/Fasteners:** Inspect for damage and make certain all screws and fasteners are tight.	Accepted Rejected	
3. **Housing:** Inspect for distortion, cracks, and other damage. Inspect anchoring loop for distortion or damage.	Accepted Rejected	
4. **Lanyard/Lifeline:** Inspect for cuts, burns, tears, abrasion, frays, excessive soiling, and discoloration. (See impact indicator section.)	Accepted Rejected	
5. **Locking Action:** Inspect for proper lock-up of brake mechanism.	Accepted Rejected	
6. **Retraction/Extension:** Inspect spring tension by pulling lanyard out fully and allowing to retract fully (lifeline must be taut with no slack).	Accepted Rejected	
7. **Hooks/Carabiners:** Inspect for physical damage, corrosion, proper orientation, and markings.	Accepted Rejected	
8. **Labels:** Inspect, making certain all labels are securely held in place and are legible.	Accepted Rejected	
Overall Disposition:	Accepted Rejected	**Inspected By:** **Date Inspected:**

SAMPLE

Appendix E – Safety Training Record

Training Topic: _____
Instructor Name: _____
Date of Training: _____

Employee Name	Bureau/Location

SAMPLE

[Add operating company name here]

PLANT [NAME] SITE-SPECFIC STEEL ERECTION PLAN AND CHECKLIST

SAMPLE

Issued [DATE]

SIGNATURES

Completed by: _____ Date: _____
[John Doe – Company Name] Safety Manager

Reviewed by: _____ Date: _____
[Tom Jones – Company Name] Project Manager

SAMPLE

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ATTACHMENTS

- Attachment A, Crane Operator List.
- Attachment B, JHAs and JSAs.
- Attachment C, Sketch of Scrubber Area.
- Attachment D, Sketch of Large Crane Placement.

SAMPLE

PREFACE

This plan states ways [company name] will manage exposure to the risk of injury or death to workers during steel construction for [project name] at Plant [name].

The primary risks to the health and safety of workers involved in steel erection work are falls from heights, falling objects, or collapse of the structure due to inadequate or improper erection sequencing. Risk management, vital in the control of workplace health and safety, is a logical and systematic approach that can result in a reduction in the incidence of injury and illness.

The control measures contained in this plan shall be followed in order to address these risks and shall be implemented in priority order, known as the "'hierarchy of control."

The primary task of this plan is to determine whether the risk can be eliminated. Where eliminating a risk is not possible, a less hazardous method shall be used. If substituting a less hazardous method is not possible, consideration should be given to each of the other controls:

- Isolation/engineering controls.
- Administrative controls.
- The use of personal protective equipment (PPE).

These methods shall be considered in turn, starting with substitution and working down to the use of PPE, until a control or combination of controls is identified that can achieve the required reduction in risk.

The planning of work has been developed in accordance with the drawings, and specifications and the requirements of 29 CFR 1926, subpart R, Steel Erection, and but also the additional requirements laid out in E&CS Construction Environmental, Health, and Safety (EH&S) Policies and Procedures Manual, procedure SH-2A9, Steel Erection.

SAMPLE

PROJECT IDENTIFICATION AND INFORMATION

[COMPANY NAME[

[Plant Name] Steel Erection Plan and Checklist

Project Name: __xxxx xxxxxx xxxxxxxxxxxxxxxxxxxxxx_____

Project Number: _1234567_____ Date: __mm/dd/yyyy____

Erector: __[Company Name]_____

Project Engineer: _John Doe_____

Competent Person: __XXXXXXXXX/[Title] _____

Crane Operator: _[can be attached as a list as appendix A, Crane Operator List]__

Qualified Rigger: ___XXXXX XXXXXXX/[Title] _____

_____

SAMPLE

1.0 SCOPE

This plan will cover preoutage, outage, and the remainder of steel erection for the [project name; example: FGD Desulphurization Project, Units 3 and 4] at Plant [name] located in [city, state]. The attached JHAs and JSAs are also part of this plan.

2.0 AFFECTED AREAS

- The duct laydown/fab yard is located south of Unit(s) [No(s).] The 21,000 and 4100 cranes will be moved from this area to the roadway located south of ID fans [No(s).] Material for the job will be transported by tractor/trailer from the south or east laydown areas where it will be staged until needed. Steelwork is also located in the east laydown located across railroad in the limestone storage area, as well as the south end of the craft parking lot. The materials contained in these areas are for utility bridge, ball mill areas, duct, structural steel duct support, and the remainder of the miscellaneous steel work for the FGD project. These components will be installed in the scrubber project area as noted in the attached drawing. The transportation of these materials will be coordinated with Southern Company Generation (Generation) during the weekly contractor's meeting to minimize impact to other contractors and plant operations.

- Units [No(s).] ID fans, and roadway south of fans. Steel and stair towers will be moved from staging area and into place using 21,000 crane.

2.1 Footings, Piers, Walls, and Anchor Bolts

1. Has concrete reached 75 percent of sufficient strength?	☑Yes	☐No
2. Proof of strength:		
• ASTM test method result.	☑Yes	☐No
• Engineer verification.	☐Yes	☑No
3. Were anchor bolts repaired, replaced, or modified?	☐Yes	☑No
4. Was erector notified in writing?	☑Yes	☐No

As project progresses and additional areas are released, all pertinent documentation will be requested from Southern Company before steel erection activities may begin.

2.2 Notification of Commencement of Steel Erection

Was written notification given to the steel erector?	☑Yes	☐No

SAMPLE

2.3 Site Layout

1. Has controlling contractor provided adequate access to site? ☑Yes ☐No
2. Is laydown area firm, properly graded, well drained, and accessible? ☑Yes ☐No

Laydown and fabrication areas will be maintained by _[company name]__.

2.4 Equipment

To include 21000 crawler, 4100 crawler, 90T Terex, 165 demag, 100T Terex, air compressors, truck and floats, aerial lifts, personnel suspended platforms, and forklifts. Other equipment may be used or substituted; revisions will be made as needed. The Manitowoc 21000 will initially be located on the north side of Units [No(s).] stack between the ID fans; 165 demag on the south side of Units [No(s).] stack between precipitators; Manitowoc 4100 will be used in fabrication and laydown areas to support fabrication and loading operations.

Will critical lifts be performed?	☑Yes	☐No
Are lift permits attached for critical lifts?	☐Yes	☑No

Every effort will be made to submit critical lift plans 15 days prior to the lift according to Generation requirements for their review and concurrence.

3.0 TRAINING CERTIFICATION/DOCUMENTATION

1. Are all personnel properly trained for performing steel erection activities including this plan?	☑Yes	☐No
2. Are all personnel properly trained for the use of fall protection system?	☑Yes	☐No
3. Documentation of training available upon request?	☑Yes	☐No
4. Will fall protection systems be designed by a qualified person?	☑Yes	☐No
5. Is a competent person onsite at all times?	☑Yes	☐No

List of qualified and competent persons:

- Qualified person for site erection plan: ___John Doe
- Qualified person for fall protection system design: John Doe
- Qualified rigger: __XXXXXX/ IW General Foreman____
- Crane operator: __See appendix A, Crane Operator List__
- Crane inspector: __Operator Foreman XXXXXX_____
- Fall protection competent person: ___Safety Sam_____

SAMPLE

4.0 HAZARDOUS NONROUTINE TASKS

1. Are job safety analyses (JSA) performed on all nonroutine hazardous tasks?	☑Yes	☐No
2. JSAs attached?	☑Yes	☐No
3. Is any asbestos-containing materials involved?	☐Yes	☑No
4. Do any lead contamination issues exist?	☐Yes	☑No

CAUTION

During construction, if any asbestos or lead issues are encountered, Generation management shall be notified immediately, and an appropriately trained contractor shall be used to remediate any contamination.

5.0 SEQUENCE OF STEEL ERECTION ACTIVITY

An in-depth sequence of events for the preoutage and outage has been initially provided below. Additional sequences for steel erection will be discussed with client in the weekly contractor's meeting before work begins. The sequence of events will be provided in the project schedule updates transmitted to Southern Company Generation. This method is the most efficient way due to the dynamic nature of construction and the necessary coordination activities among client, contractors, and startup personnel. The project schedule is a living document that will guide all these activities among the different parties involved.

5.1 Structural Steel Preoutage

5.1.1 Modify Steel Base/Cover Plates (ID Fan) **[mm/dd/yyyy] to [mm/dd/yyyy]**

Installation of strap plates and base plates will occur. We will also be grinding paint from the edges of the pieces in order to obtain a proper weld. This activity was a change that is documented as Field Change Notice 001. Also, due to a piece size bust on the base plates and strap plates, Field Change Notice 002 was submitted. FCN 002 includes Evans construction cutting concrete from around the piers, to be replaced after the strap plates are installed. It also includes machining of base plates in order to account for the translation and rotation of some of the columns off their center.

5.1.2 Install Support Steel

a. Column Extensions **[mm/dd/yyyy] to [mm/dd/yyyy]**

Install column extensions on columns.

b. Beef up Support Steel Beams (ID Fan) **[mm/dd/yyyy] to [mm/dd/yyyy]**

SAMPLE

Install WTs and beam stiffeners from FH line to FK line and from F3.9 to F7. Remove old diagonal bracing and install new bracing. One piece will be removed at a time and then replaced with a new diagonal.

c. Erect Skid Air Platform **[mm/dd/yyyy] to [mm/dd/yyyy]**

The platform located at the 778-ft elevation will be erected to serve as a platform for the seal air skid and hydraulic skid for service to the Unit [No.] damper. This work will also include installation of the grating and handrails.

d. Set Columns on Extended steel **[mm/dd/yyyy] to [mm/dd/yyyy]**

Angle clips will be installed on the FK line for the new support steel. Cover plates and five column extensions on FL and FM lines will be installed.

e. Erect Elevation 811 Damper Support **[mm/dd/yyyy] to [mm/dd/yyyy]**

The 811-ft elevation damper support steel will be installed. Some of this support steel will be installed preoutage and some outage as indicated in the provided drawings.

f. Tie-in Steel Elevation 811 to Columns **[mm/dd/yyyy] to [mm/dd/yyyy]**

Installation of three columns on the FL line and two columns on the FM line will take place. The beams and bracing will be installed parallel with this action in order to provide support. Also the beams and bracing between the new columns and the existing steel north of the FL line will be installed during FL column installation.

g. Erect E1 Columns **[mm/dd/yyyy] to [mm/dd/yyyy]**

Columns at E1, F1/EJ will be installed. This activity will be paralleled with actions 2i, Erect E2 Columns, and 2j, Erect E1-E2 Bracing.

h. Stair Tower at Damper **[mm/dd/yyyy] to [mm/dd/yyyy]**

The stair tower will be prefabricated in the east laydown yard between [date] and [date], then transported by a gold-hopper and lifted into place using the 21000. (We may have to stick-build the stair tower depending on lifting angles and obstructions in a lifting path of the prefabricated stair tower.)

i. Erect E2 Columns **[mm/dd/yyyy] to [mm/dd/yyyy]**

Columns at E2, FM/EJ will be installed. This activity will be paralleled with actions 2g, Erect E1 Columns, and 2j, Erect E1-E2 bracing.

j. Erect E1-E2 Bracing **[mm/dd/yyyy] to [mm/dd/yyyy]**

SAMPLE

Beams and bracing will be installed in parallel with this activity up to the first splice. Then beams and bracing will be installed up to the top of steel. This activity will parallel with actions 2g, Erect E1 Columns, and 2i, Erect E2 Columns.

k. Stair Tower E2 **[mm/dd/yyyy] to [mm/dd/yyyy]**

Stair-tower at E2 will be installed piece by piece. (The stringers will be left out from the ground up to the first elevation of steel in order for the crane and steel to pass through.) After the E1-E2 columns, beams, and bracing have been installed, the stringers will be added to the stair tower. This activity will occur between **[mm/dd/yyyy] and [mm/dd/yyyy]**.

l. Erect E2-F Line Truss **[mm/dd/yyyy] to [mm/dd/yyyy]**

The truss section will be prefabricated in two sections. The first to be installed will be line F6.9 to E1. After it is installed, line F5 to E1 will be installed. Finally, the platforms from the E2 line to the diverter damper stair tower will be installed.

5.2 Unit [No(s).] Steel Erection

5.2.1 Install Support Steel

a. Unit [No(s).] FGD support steel

Structural and miscellaneous steel erection will start on the west end tying into the unit [No.] outage steel. It will then be erected toward the east to the booster fans. The columns, beams, and braces will be erected with the use of various cranes depending on the accessibility of equipment. The truss sections over the Unit [No.] precipitator will be erected in sections due to its configuration. A critical lift plan will be developed for the stair tower on the south side of the damper and any other critical lifts that might occur.

b. Utility bridge

The utility bridge will be preassembled in the laydown yard and hauled to its location for erection. This activity will consist of bents and truss sections with a few braces added after the bents are stood and trusses set. Lift plans will be submitted as required. The truss sections over the roads will be left out until all the large loads are transported to the absorber and stack area. The utility bridge passes over both new and existing equipment. Swing paths will be coordinated so that only a minimal amount of loads will be passed over such equipment.

c. Ball mill structure

The steel will be erected in individual pieces except for isolated sections that will be preassembled. Special precautions will be taken for the new plant equipment in this area.

SAMPLE

d. Unit [No.] booster fan steel

The steel will be erected in individual pieces except for isolated sections that will be preassembled. Special precautions will be taken for the new plant equipment in this area.

e. Unit [No.] absorber support steel

The steel will be erected in individual pieces except for isolated sections that will be preassembled. Special precautions will be taken for the new plant equipment in this area. Coordination with Generation and other subcontractors will be of high importance for this structure. Access for personnel, cranes, and material will be preplanned and discussed with all parties prior to start of work.

f. Gypsum dewatering structure

The steel will be erected in individual pieces except for isolated sections that will be preassembled. Special precautions will be taken for the new plant equipment in this area.

g. Unit [No.] outage

Similar to the work performed for Unit [No.]. The cover plates will be added to the existing steel and bracing changed out. During the outage, the existing steel will be removed and new steel added for the new duct and damper support. Existing plant equipment consists of Unit [No.] precipitator and fans. Overhead work in these areas will be barricaded off, and any closure of plant access will be coordinated with Generation.

h. Unit [No.] absorber steel

The steel will be erected in individual pieces except for isolated sections that will be preassembled. Special precautions will be taken for the new plant equipment in this area. Coordination with Generation and other subcontractors will be of high importance for this structure. Access for personnel, canes, and material will be preplanned and discussed with all parties prior to start of work.

i. Unit [No.] booster fan steel

The steel will be erected in individual pieces except for isolated sections that will be preassembled. Special precautions will be taken for the new plant equipment in this area.

6.0 CONTROLS TO PREVENT FALLS FROM HEIGHTS

The control measures to prevent death or injury from a fall will be in place before work commences. Persons carrying out steel erection work at a height of 6 ft or more may be exposed to the risk of death or injury from falling. Several control measures are available in these circumstances, and more than one control measure

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may be necessary. Ground level prefabrication will also be considered as a fall prevention strategy. To reduce the need to work at heights, some alternative means of erection are:

- Construct as much of the steelwork as possible at ground level or from erected floor slabs or decks in the structure. This alternative has been taken into consideration during the planning of the work.

- Where possible, a lifting sling or device will be used to release from floor level by the use of long slings, remote release shackles, or other suitable devices.

- The use of fall-arrest harnesses is not the preferred control measure for persons working on steel construction as a harness does not actually prevent a fall from occurring. Wherever possible and practicable, the use of methods that reduce the risk of a person falling (for example, perimeter guardrail or aerial work platforms) will be selected.

Control measures that may prevent the risk of death or injury from falls from heights include:

- Work platforms.
- Fall prevention systems.
- Fall arrest systems.
- Edge protection systems.
- Fall protection covers.

6.1 Fabricated Work Platforms

These platforms can be used in many locations as they can be designed to fit a variety of beam and column configurations. A work platform will be secured against uplift or displacement to a structure and installed with edge protection systems. The area of the platform will be of a size and strength to carry the tools, materials, and persons required to work from it.

6.2 Aerial Work Platforms (AWPs)

An elevating work platform is a telescoping, scissor, or articulating device or any combination thereof used to position personnel, equipment, and materials at work locations, and to provide a working area for persons elevated by and working from the platform.

AWPs include scissor lifts, boom lifts, and truck-mounted AWPs (travel towers). AWPs are primarily designed so that a person can work at an elevated position, on a structure from within the confines of the AWP platform or basket.

AWPs are regularly used for steel construction. They provide an efficient access system and are preferable to other methods that involve the use of fall-arrest

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systems, because they reduce the risk of a fall occurring. Both boom lifts and scissor lifts are used in steel erection.

AWPs are used as access for workers to help position steelwork as it is being lifted by a crane. They are also used by workers when installing and tightening bolts.

AWPs are not specifically designed for a person to move from the platform to gain access onto another elevated surface, although they are sometimes used in this application instead of other more conventional forms of access, such as scaffold stair access towers.

In some situations, AWPs may not be suitable for providing access/egress onto a roof or structure due to factors such as the following.

- The number of workers required to access the roof/structure may be in excess of what an AWP could safely transport in case of an emergency evacuation from the roof/structure.
- The platform of the AWP can move as the person gets in and out with the potential for the person to fall through the gap when the platform is beside the roof/structure.
- The AWP can be removed from the access area while persons are located at height leaving them stranded.
- The stability of the unit relies on firm and level ground, which is not the case on some construction sites due to environmental conditions.

In comparison with stair access, an AWP is not available for access at all times because it takes time to raise and lower persons. This issue becomes a greater problem when more workers are required to work on the roof or structure. When an AWP has been selected to provide access for workers onto a roof/structure, the system of access will include the following factors to ensure safe access:

- The AWP should not be used for any other purpose and should not be driven away from the building.
- The area around the AWP should be free of vehicular traffic.
- The ground condition should be suitable for the use of the AWP.
- The AWP should not be used near live electrical power lines.
- All operators of AWPs should be competent and have documented training.
- A competent person should be available at ground level to lower the platform in case of malfunction. However, in this situation, all personnel will be removed with the use of another AWP before using ground controls.
- When the AWP platform is raised so that it is next to the roof/structure edge, the gap between the landing and the platform should not exceed 4 in. The preferred method will be to land the platform/basket on structure if possible.

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- The platform should be secured against sideways movement as necessary (that is, the platform should not move as workers get on and off, which may be more of an issue with smaller AWPs). When securing the platform, use a restraint system that does not snag on the building when the platform is lowered.

Safe access and egress should be provided by either the use of a safety harness by workers, or a system that will prevent a worker entering or leaving the AWP from falling off or through the structure. The latter at a minimum will require the use of a double lanyard system.

All persons in boom-type and scissor-type AWPs shall wear a full body harness and a double energy-absorber-type lanyard attached to an anchorage point in the basket of the AWP.

In some situations, AWPs may be used to lift lighter steelwork (for example, purlins, girts, and bridging), where the AWP **manufacturer states that this is an acceptable practice.**

The following points should be noted when lifting steelwork with an AWP.

- Total load on the AWP including workers and materials must not exceed the rated capacity, sometimes referred to as safe working load (SWL), of the platform.
- Steelwork must not be loaded so that it will damage the AWP in any way or become imbalanced.
- Where an AWP is used to lift steel components, the steelwork should not be loaded onto the AWP guardrails, which may damage the guardrails or allow the steelwork to roll off the platform.
- The AWP must never be used to force the steelwork into place. Such action places excessive load on the unit.
- The working surface for the AWP must be level, firm, have clear access, and no stepup or stepdown from placement area.
- AWPs used for steel erection must be adequate for the intended use and the effects of wind loading must be considered.
- Workers in boom-type and scissor-type AWPs must use full body harness with a double energy-absorber-type lanyard attached to an anchorage point in the basket of the AWP.

6.3 Temporary Work Platforms

Temporary work platforms (angle wings) will be fitted to members at ground level before erection or lifted into position following the erection of steelwork.

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6.4 Crane-Suspended Work Platforms

- The use of a crane or other similar hoisting equipment to hoist personnel is prohibited, unless the use of other means would be more hazardous or is not possible because of structural design or worksite conditions.
- The [Company Name] project manager and EH&S manager shall determine that there is not a safe alternative method to perform the needed work such as ladders, scaffold, and aerial lifts.
- After determining that a crane-suspended personnel platform is the only safe method of accomplishing the job, the following Generation forms shall be completed and transmitted to Generation for their review and concurrence:

  ☑ Evaluation of Alternate Lifting Methods.
  ☑ Rigging and Lift Plan.
  ☑ Authorization for the Use of a Suspended Personnel Platform.
  ☑ Appropriate daily crane inspection report (before making lift).

All the procedures of Southern Company Generation E&CS Construction Environmental, Health, and Safety (EH&S) Policies and Procedures Manual, specifically procedure SH-2A11, Crane-Suspended Work Platforms, shall be adhered to at all times. In the event of a conflict between owner, state, Federal, or local regulations, the most stringent will be followed.

6.5 Fall Prevention Systems

Personal fall prevention systems that prevent a person from falling are preferred over systems that arrest a person when the person has fallen. An example of a fall prevention system is a travel restraint device where a person is tethered to an anchorage point to restrain the person from reaching an unprotected edge. The anchorage points shall be capable of supporting the intended load.

6.6 Fall Arrest Systems

A fall arrest system is designed to arrest the fall of a person and consists of a full fall arrest harness connected to a lanyard assembly and attached to a fall arrest static line or an anchorage point where there is a risk of free fall. The use of fall arrest harnesses is not the preferred control measure for persons working on steel erection as these do not actually prevent a fall from occurring. Wherever possible and practicable, a method will be selected which reduces the risk of a person falling (for example, perimeter guardrail or AWPs).

The use of a fall arrest harness system has limitations:

- Because individual fall arrest anchorages require a capacity of at least 5,000 lbs, locating or designing anchorage points that will have adequate capacity to resist fall-arrest loads can be difficult. .

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- Locating fall arrest anchorages points on beams during steel erection is not ideal because the beam is usually the highest part of the structure. As anchorage points generally cannot be located directly above head height, the distance a person falls will be greater.
- Most manufacturers of fall arrest inertia reels state that the reel is to be located directly above head height, with the user working in a small arc below the device, which can rarely be achieved on steelwork.
- In the event of a fall, the fall arrest line can sometimes come in contact with an edge and may fail in some situations.
- The system requires substantial clearance distances below the working surface to ensure that the worker does not hit the ground or other obstruction prior to the fall being arrested.
- The system requires high levels of training and supervision to ensure its safe use. It will also require the active participation and cooperation of users to operate effectively.
- Ropes and lanyards can become entangled and snagged on obstructions, which can be a particular problem when a number of workers are on the work area.
- It can be difficult to have an effective rescue procedure to ensure users are rescued before injury occurs without putting others at risk. Persons suspended in harnesses after falling can lose consciousness or suffer modified cardiac rhythm if not rescued promptly.
- Even when a system is set up correctly, a person falling may be injured. The system does not prevent a fall from occurring; rather, it prevents the user, should he or she fall, from colliding with the ground or an obstruction underneath. The user may still receive some injury as a result of the fall due to factors such as:
  - Swinging into an obstruction prior to the fall being arrested.
  - Falling in an unusual manner (for example, sideways) so that the fall-arrest force is not transmitted to the body in the best possible manner.
  - The harness not operating as designed because the user is in an irregular shape (for example, obese).

Fall protection may be provided by the use of fall arrest harnesses where other control measures cannot be used. Fall arrest harnesses, lanyards, and static lines provide a degree of fall protection, provided the following points are taken into account:

- All persons who may be exposed to the risk of falling, such as riggers, should be properly trained and supervised in the use of the equipment.
- All persons who may be exposed to the risk of falling, such as riggers using fall protection such as a fall arrest harness, should not work in isolation.
- A lanyard assembly should be as short as possible to minimize the pendulum effect should a person fall

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- The fall arrest anchorage point should be located so that the lanyard can be attached before the user moves into a position where he or she would be at risk from a fall. Anchorage points should have a force capacity of 5,000 lb.
- Traveling anchorages should also be located so that the lanyard can be attached to a traveling anchorage before the user moves into position.
- The components of a fall arrest system should be compatible. The use of noncompatible components could lead to ineffective equipment that presents a risk of the user being injured from a fall.

6.7 Edge Protective Systems

Temporary periphery guardrails when installed shall be used for the smallest possible time period only. Proper planning shall include the timely delivery and installation of the permanent guardrail system, if applicable.

6.8 Fall Protection Covers

All holes and openings, other than lift shafts and stairwells, will be protected to prevent persons falling. A fall protection cover is a protective structure placed over a hole or opening to prevent a person from falling through the hole or opening. A fall protection cover should be capable of supporting the impact of a person falling onto it. Covers shall be made of ¾-in. plywood or equivalent if one dimension of the opening is 18 in. or less, otherwise, 2-in. lumber or doubled ¾-in. plywood or equivalent is required. Covers shall be marked with the words HOLE COVER legible and clearly visible.

Where a fall protection cover is used on an opening, it should be secured against movement and should not be used as a working platform.

6.9 Emergency Recovery

An emergency recovery system shall be in place to quickly retrieve a fallen worker whenever a fall arrest harness is used. Persons with responsibilities should ensure that adequate training and supervision are provided to allow effective recovery when required.

Research indicates that persons wearing a fall arrest harness can lose consciousness or suffer modified cardiac rhythm in 2 to 12 minutes after a fall. The methods listed below will be used to accomplish emergency rescue by [Company Name] employees. In addition, these methods may also be supplemented by local EMS and Plant [name] Emergency Rescue Team.

☑ Self-rescue
☑ Personnel basket
☑ Hoist
☐ Others_____
☑ Emergency response team
☑ Stair tower
☑ Aerial lift

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6.10 Falling Objects

Work activities such as working at heights and lifting loads over work areas are likely to produce falling objects. Work shall not commence until controls are put in place to prevent the risk of injury to workers and other persons from falling objects.

Control measures that shall be used to prevent falling objects and resultant injuries in steel construction are:

- Tool lanyards.
- Securing the load.
- Containment sheeting.
- Toeboards.
- Exclusion zones.
- Debris nets.

6.11 Tool Lanyards

A tool lanyard is a short rope or webbing used to secure tools and equipment to an anchorage point to reduce the risk of injury from a failing object. The tool lanyard may be attached to an anchorage point such as the person using the tool or around a column or beam.

A lanyard should be made from material such as synthetic fiber, natural fiber, or steel rope or webbing that will maintain the required strength and resistance to abrasion under harsh conditions. Consideration should be given to the length of rope or webbing used to secure a tool, especially if the tool is to be used near the edge of a working platform and if other persons are working below. For example, a tool lanyard attached at the wrist should have a length no longer than 24 in. This length will ensure that if the tool is dropped, the lanyard would not allow the tool to hit a person working below. The length of the lanyard should also be kept to a minimum to reduce the risk of the line snagging as the worker moves about.

For example, a rigger who is erecting steel may secure working tools to his or her body by a lanyard to prevent a person below from being hit by a dropped tool.

6.12 Securing the Load

Steelwork will be stored onsite in such a way that it cannot fall on workers or cause damage to equipment or plant property. Where steelwork is stacked, the stacks should be stable, and safe access will be available when workers are required to sling a load.

Where steelwork is strapped together, caution shall be exercised when releasing the strapping. The strapping may whip back and cause an injury, or the bundle can fall apart and injure workers.

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Before lifting any steelwork, the qualified rigger will sling the load to be lifted and attach tag lines to the ends of the load. Crane operators and riggers will give audible warning with crane horn and portable air horns before lifting loads near persons.

When transferring lifts from a horizontal to a vertical position, care will be taken to avoid unrestrained movement of the lower end. The use of lifting beams may be necessary during lifting and positioning of some members to ensure member stability.

6.13 Containment Sheeting

If containment sheeting is used, it will be fixed to the perimeter of the structure or working surface to prevent a person or objects, such as building materials, from falling into an area accessed by persons at or near the workplace. The working surface/structure will be sheeted with one or more of the following materials:

- Timber or plywood.
- Metal or synthetic sheets.
- Metal or synthetic mesh.

Where containment sheeting is used, the sheeting will extend to a height that will prevent falling objects. When selecting containment sheeting, the following factors will be considered:

- Whether the sheeting is capable of supporting the loads to be imposed on it.
- Whether the sheeting is capable of containing materials and equipment, such as nuts, bolts, and tools.
- The likely forces that will be imposed on the structure from wind effects.

6.14 Toeboards

A toeboard is a vertical barrier that will be used to prevent the fall or displacement of tools or materials. Toeboards where necessary will be used to prevent objects falling into an area accessed by persons at or near a workplace. Toeboards may be constructed with timber or metal and will be securely fixed to the work surface and extended a nominal minimum of 4 in. above the work surface. The height of the toeboard should increase as the size and height of the materials or equipment stored near the edge increases. The gap between the toeboard and the work surface will not be greater than ¼ in.

6.15 Exclusion Zones

Proper flagging or barricades with suitable signage will be erected around the perimeter of an exclusion zone to exclude personnel from the area under which the riggers and connectors are erecting steelwork, reducing the risk of personnel being hit by falling objects.

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6.16 Debris Nets

Where skeleton steel erection is in progress and other overhead protection methods are not feasible, debris nets shall be installed directly under any erection work being performed. The nets shall be capable of supporting the anticipated loads imposed on them by potential falling objects. **Debris nets are not for fall protection of employees.**

6.17 Grating Installation

- All leading edges of platforms, catwalks, and stair landings shall be protected by means of periphery wire rope cable guardrail or permanent guardrail systems. Temporary guardrail systems will be constructed of ½-in. wire rope cable secured with Crosby clamps.
- Fall protection will follow the [Company Name] fall protection plan and the work methodology contained in this steel erection plan.
- Handling and installation:
  - A hi line shall be installed with a grate block and chain fall affixed to the hi line to assist in installation of grating or,
  - When a hi line is not feasible, grating hooks shall be used to handle grating.
  - Grating shall be fastened by means of saddles and screws (furnished by fabricator). Pilot holes shall be drilled for self-threading screws and saddles installed per design. Any panel less than 6 ft requires a minimum of 4 clips. Panels larger than 6 ft require a minimum of 5 clips for every 6 ft of panel.

6.18 Grating, Q-Decking, and Roofing

- Q-decking: To be developed and submitted prior to installation.
- Roofing: To be developed and submitted prior to installation.

NOTE

At this stage of the project, not all documentation is available to design an adequate Q-decking plan for the ball mill area.

7.0 KEY CONTACT

8.0 QUALITY RECORDS

9.0 ATTACHMENTS

- Attachment A, Crane Operator List.
- Attachment B, JHAs and JSAs.

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- Attachment C, Sketch of Scrubber Area.
- Attachment D, Sketch of Large Crane Placement.

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Attachment A – Crane Operator List

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Attachment B – JHAs and JSAs

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Attachment C – Sketch of Scrubber Area

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Attachment D – Sketch of Large Crane Placement

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