



Quality Electric Inc: 5272 Irving Street | Boise, Idaho 83706

Environmental, Health and Safety Manual



2022 Edition REV 1

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*** = Forms Associated**

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POLICY CHANGES DISCLAIMER			Next Review Date:	01/01/2023
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Policy Changes Disclaimer

A. Reservation of Rights

Quality Electric Inc. reserves the right to administer the requirements of this manual and the attached programs and policies and to interpret the requirements set forth at its sole discretion. In addition, Quality Electric reserves the right to change and/or rescind the requirements in whole or in part at its sole discretion.

In addition, Quality Electric maintains the right to update ESHS site policies and procedures.

B. Severability

If any portion of this manual and/or the attached programs and policies or the application of any portion to any person or circumstance is held invalid, the remainder of the manual and/or the attached programs and policies shall remain in effect without the invalid portion or application.

C. Annual Review


The requirements in this manual will be reviewed for effectiveness of safety and health protection at least annually. The annual review will be conducted in April of each year.

This manual was last reviewed on:

April 28, 2021

This manual is due for its next review in:

April 28, 2022

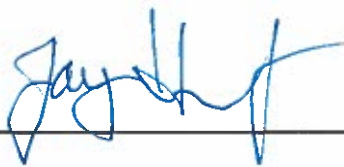
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SAFETY DIRECTOR ANNOUNCEMENT			Next Review Date	01/01/2023
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Safety Director Announcement

I am pleased to announce that **Samantha Erickson** has been appointed to the position of Corporate Safety Director for Quality Electric.

We are asking the Corporate Safety Director to give you all the assistance possible to help provide a safe environment for all employees and the general public. The Corporate Safety Director has the full authority to implement our safety program, so please refer any questions or comments regarding the safety program to this person.

We will expect all employees to abide by the guidelines of the safety program and to cooperate with the Corporate Safety Director in all safety related matters.



 Jay Hintze
 President



Quality Electric Safety and Health Policy

At Quality Electric Inc., protecting the safety and health of our employees is the most important aspect of our execution during all phases of construction. Our Environmental, Health and Safety Manual describes the policies, procedures, rules, and guidelines established in agreement with state and federal laws, as well as regulations. These are then coupled with contract requirements and recognized industry standards that set expectations for the completion of work and the implementation of safety and health standards. The Environmental, Health and Safety Manual is foundational to our safety culture and sets expectations for our business. As one of our core values, safety involves "The Quality Way" and is not something conducted separately but is integrated into the design and execution of every task.


Responsibility for safety and health resides at every level. These responsibilities are made clear in two ways. First, our Safety Responsibility and Accountability Guideline establishes behaviors and expectations for every employee. Second, specific responsibilities are laid out for key personnel as related to specific scopes and phases of construction. We believe it is important for a clear vision of these responsibilities so that we can plan for and provide management appropriate safety strategies. Understanding these responsibilities enables our company to assign necessary resources at all levels. Additionally, it is essential that we provide training that gives our supervisors the needed skills and knowledge to be competent in their duties. As well as invest in our employees, so that they also understand and perform their duties in harmony with the behaviors that are vital to our safety culture.

Quality Electric's Environmental, Health and Safety Manual is connected to and supports our planned goals and is the foundation of our core values of "The Quality Way". We measure our performance on every project by tracking both leading and lagging indicators and then using this information to guide action plans and potential trends. Measuring and tracking our performance guarantees that we have a joint effort among our leaders, employees, and clients of our dedication to achieving safety distinction. Quality Electric managers, at all levels, are accountable for workplace safety and health with reliable and strong leadership. With this said, our employee participation and engagement are also key components to our success.

Quality Electric is committed to the following principles:

- A safety attitude that is centered on actions, performance, and beliefs that our goals of achieving zero incident and injury projects is an integral part of our "Core Values"
- Our safety culture encourages achieving our corporate objectives of being a crucial business partner by facilitating a safe and healthful work environment and providing unmatched service to all our clients and stakeholders.
- Our safety culture is based on coaching, teaching and mentoring leaders, employees, as a cohesive team on safety processes and behaviors.
- A prevention-based risk management approach focused on removing damaging impacts to safety and health and mitigating hazards to an appropriate level.
- Transparency through safety communications that notifies employees of our policies, trends, and cost impacts.
- A training program that ensures employees have the knowledge and skills needed to work safely
- A safety culture based on performance where leaders and employees are held accountable for their actions, decisions, and behavior.
- Collaboration between our Office and the Field for safety and health planning and decision-making
- Deliberate and methodical processes to assess and audit our safety and health management system to guarantee compliance to all associated requirements and to promote continuous improvement of our culture.
- To investigating all incidents in a timely manner and providing clear and concise corrective actions and lessons learned
- Environmental practices and processes that ensure zero harm to the environment.

Jay Hintze
President

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CORE VALUES AND THE QUALITY WAY			Next Review Date:	01/01/2023
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Core Values and “The Quality Way”

Quality Electric is dedicated to providing a quality product and service, with a set of core values as the foundation for everything we do.

A. Mission Statement:

Quality, it is not just a name, it is what we do. We connect people, partners, products, and performance to the “Quality Way”.

B. Vision Statement:

To be the benchmark for Quality in the electrical industry through our values, our people, our partnerships, and our service.

C. Core Values


- Our People
- Our Customers
- Our Community
- Committed
- Add Value
- Results Delivered
- Exceed Expectations
- Support

“The Quality Way”

The Backbone of Our Values

Quality
Fun
Safety
Leadership
Integrity
Teamwork
Family

Employeees
Loyalty
Respect
Community
Trust
Generational
Innovation
Accountability

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INJURY FREE WORKPLACE			Next Review Date:	01/01/2023
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Section 1: Injury Free Workplace

A. Intent Statement

The intent of this section is to provide a consistent safety management approach committed to eliminating all occupational injuries and incidents.


B. General Requirements

1. Quality Electric Inc. promotes and adheres to all regulatory Environmental, Safety and Health policies and procedures. Quality Electrics' objective is to provide the best service while maintaining a safe and healthy work environment.
2. Roles & Responsibilities - Specific Roles and Responsibilities defined in Quality Electric's Responsibility and Accountability Guideline and the execution of Safety Activities.
 - a) Quality Electric Project Manager/Department Manager - Leads Injury Free execution effort. Works to define injury free execution strategy for the scope of work defined. Ensures adequate resources dedicated to the project (manpower, dollars, etc.). Remains committed and are visible in driving project safety to achieve the Injury Free goal.
 - b) Quality Electric Safety – Works with Project Management to define Injury Free scope of work and works to ensure appropriate dollars are placed in project budgets to accommodate all aspects of the Health and Safety Plan. Works with Project Management to develop training and workshops, provides feedback for the project, schedule for project staff, including subcontractors, as necessary. With project management in the lead, coordinates lunch and learn exercises.
 - c) Quality Electric Superintendents - Works with Quality Electric Safety Manager, Quality Electric employees, and trade partners to ensure compliance with all aspects of the Injury Free Workplace concept. Leads the Injury Free trainings and lunch n learn schedules.
 - d) Trade Partner(s)/Sub-tier Trade Partner(s) – Work in conjunction with Quality Electric Inc.
3. Company to ensure compliance with all aspects of the Injury Free Workplace concept. Shall attend and participate in scheduled Injury Free Workshops and Lunch and Learn exercises. Trade partner management shall ensure employees participate in IFW efforts including but not limited to Safety Perception Surveys, Site Wide All Hands meetings/announcements, etc. Trade Partners Safety Representative attends monthly safety committee meetings.

C. Indicators

Leading Activities:

- # of employees on site,
- # of Risk Planning and Control,
- # of Operational Planning,
- # of Operational Controls,
- # of Inspections / Observations / Audits,
- # of Weekly Took Box Talks

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- Employee Training Hours

Lagging Indicators: injuries by type (ex. First aid, recordable only, restricted / job transfer, lost workday cases)

- The project scorecard has been established to accurately collect, record, and track leading activities and lagging indicators. All projects are required to update project scorecards on a weekly basis and discuss during Project Reviews. This allows for optimal safety performance in a project and sets the framework for a strong safety culture.
- Both leading and lagging indicators must be managed by the PM and Project Teams. This is done through the execution of safe work processes following a prescribed list of safety activities along with recording project man-hours and injuries which were incurred inside of the project.
- These indicators are required to be populated weekly through each project's website.
- On a monthly basis, indicators must be reviewed by the Project Manager to ensure the project is meeting the intent of the safety management system and measurement of performance is continually exceeding expectations.

D. Key Responsibilities

- Employer Responsibilities:
 - Provide the necessary leadership and problem-solving skills to jobsite supervision.
 - Provide positive recognition.
 - Be fair and consistent with enforcement.
 - Promote an effective training plan.
 - Treat all employees in a respectful and dignified manner, acknowledging contributions to a successful project.
 - Promote and foster an environment free of recognized hazards.
 - Each project shall collect, document, and submit to Quality Electric safety performance data based on leading and lagging indicators monthly. This includes manpower, man-hours worked, first aid cases, recordable cases, # of JHA's, # of operational controls, # of training hours conducted on site, # of weekly toolbox talks, # of special risk plans, # of disciplinary actions, # of positive recognition / reinforcement taken. These are safety prevention requirements which must be submitted and are required by each department.
- Employee Responsibilities:
 - Actively participate in daily stretch and flex.
 - Attend, support, and participate in daily JHA's.
 - Perform work in a manner which prevents incident and accidents to themselves, fellow workers, the public, and property.
 - Cooperate and participate in investigations, as necessary.
 - Be responsible for your safety as well as your fellow-workers.
 - Arrive to work every day fit for duty and on time.
 - Respect and obey employer and customer rules and policies.
 - Be proactive and focused keeping distraction and inactive time to a minimum.
 - Wear and maintain required PPE.
 - Inspect tools and equipment before use to ensure proper working condition.

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- k) Attend and participate in toolbox talks.
- l) Hazard Recognition – see it, fix it, report it
- m) Report all accidents, incidents and near misses.
- n) Never walk past or leave an unsafe condition; make it safe or report it immediately to your supervisor.
- o) Ensure work area is free of all safety hazards.
- p) Be respectful and have a positive attitude.
- q) Follow safe, reasonable, and legitimate management directives.
- r) Adhere to starting and quitting times, including lunch and break periods.

E. Annexes

1. Forms and Permits:

- Safety Scorecard

Assessment Tool

Environmental health and safety issues impact each Department in Quality Electric. Actions you may take to create and maintain a safe work environment and reduce your environmental footprint can materially impact your department. The steps to a sustainable environmental health and safety program include committed management, engaged employees, feasible business strategy, gap analysis and plan, and integration of environmental health and safety practices into the core values and daily activities of Quality Electric.

The following questions should help you develop or expand on an environmental health and safety strategy. Starting, running, and growing an environmental health and safety sustainable program takes significant time, resources, and financial commitment. The more "yes" answers you select, the more prepared your department should be to improve your health and safety performance and reduce your environmental footprint. If you need assistance in interpreting the questions or findings, please contact the Safety Department at Quality Electric.

Instructions

This tool has been created in Excel to accept your responses and automatically calculate and graph your results. To enter your responses, simply select a Yes or No **GREEN** cell, enter an "x" and hit "enter." In the event you want to go back and change your response, select the cell, enter the new response and hit "enter." You can delete the questions that are not relevant to your department and add questions that are pertinent.

A. Management Commitment and Employee Involvement

How can your department integrate EH&S into the day-to-day business operations?

	YES	NO
1. Are employees aware of their Supervisor's commitment to health, safety, and environmental protection?		
2. Does management communicate their commitment to the safety and health program?		
3. Have program goals and expectations been established and communicated to all employees?		
4. Are there dedicated EH&S staff, committed and working in the department?		
5. Is EH&S performance included in the employee's personal development and evaluation process?		
6. Is there a safety budget to address outstanding financial outlays for EH&S matters?		
7. Are employees encouraged to report health and safety concerns?		
8. Do workers have access to safety and health information?		
9. Are workers involved in all aspects of the safety and health program?		
10. Are employees held accountable for not following work rules designed to promote safety?		
MANAGEMENT COMMITMENT AND EMPLOYEE INVOLVEMENT TOTALS		

B. Worksite Analysis

Is there an ongoing process to identify and prioritize hazards?

	YES	NO
1. Are there procedures in place to manage health and safety hazards and environmental impacts?		
2. Are there systems in place to identify and keep current with legal and other requirements?		
3. Have Job Hazard Analysis (JHAs) been completed and are they up-to-date?		
4. Have PPE Hazard Assessments been completed and are they up-to-date?		
5. Is proper clothing attire being worn?		
6. Are spill kits fully stocked?		
7. Are self-inspections being conducted to identify new hazards and are existing hazards being tracked to resolution?		
8. Are hazards being evaluated for severity of outcome, likelihood of occurrence, and the number of workers exposed?		
9. Are hazards associated with emergency and non-routine work being evaluated?		
10. Are employees reporting practices and conditions that look dangerous or out of place?		
WORKSITE ANALYSIS TOTALS		

SAFETY SCORE CARD

C. Hazard Prevention and Control

Is there an ongoing process to correct and prevent hazards from reoccurring?

	YES	NO
1. Are safe work procedures set-up based on the analysis of the work environment?		
2. Where feasible, are hazards being engineered out of the work environment?		
3. Is personal protective equipment (PPE) being used and maintained properly?		
4. Are Preventive Maintenance programs established and functioning?		
5. Is an up-to-date emergency plan in place and routinely tested during table top and field drills?		
6. Are medical personnel readily available for advice and consultation?		
7. Are emergency medical procedure in place?		
8. Are routine walk-throughs of the worksite conducted?		
9. Are root-cause incident investigations being conducted?		
10. Are EH&S issues resolved in a timely manner?		
HAZARD PREVENTION AND CONTROL TOTALS		

D. Training for Employees, Supervisors, and Managers

Does the staff know about the hazards in their work environment and how to control them?

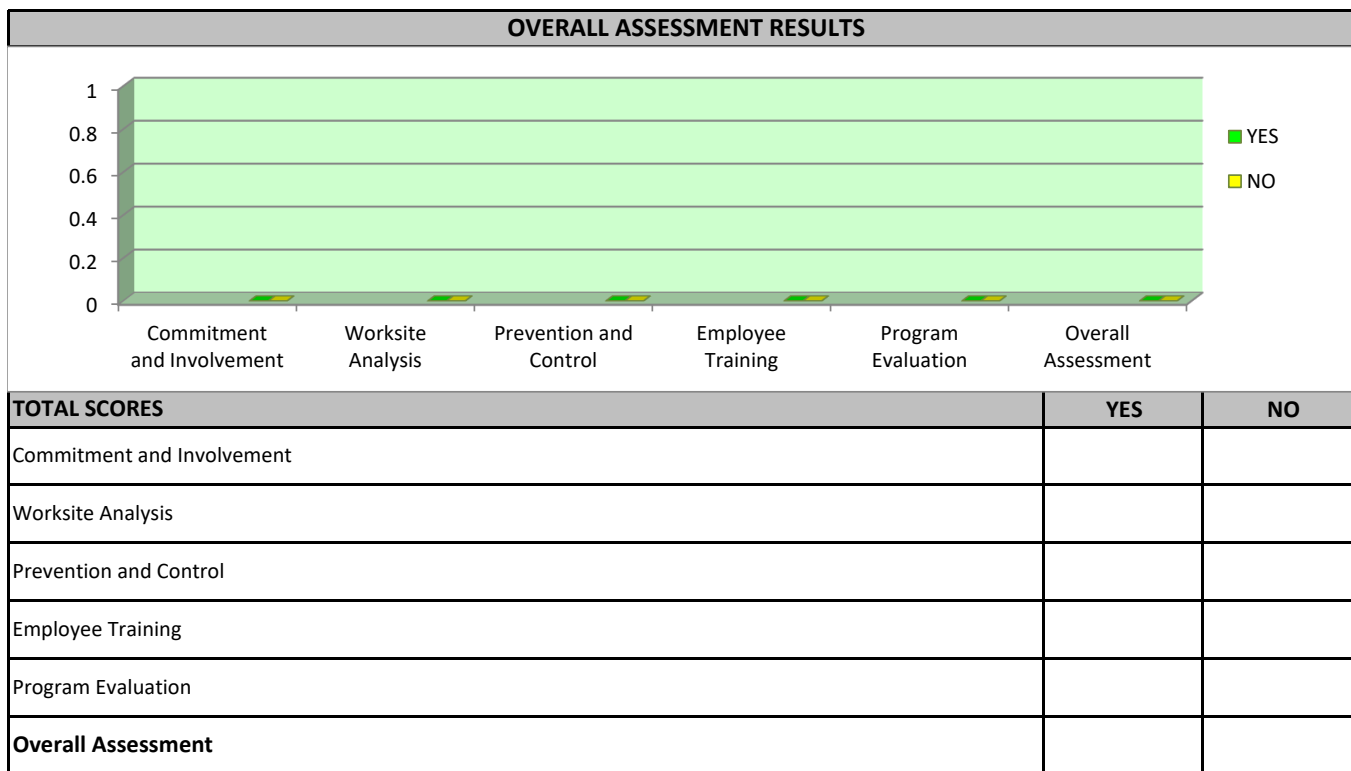
	YES	NO
1. Do the employees have a basic understanding of the program's structure, plans, and procedures?		
2. Are the employees being trained on their roles and responsibilities in the safety and health program?		
3. Are workers being trained on hazard identification, hazard analysis, and controls?		
4. Is training being done when work procedures or personnel change?		
5. Is training being provided in a language and at a literacy level that all workers can understand?		
6. Is training being documented to verify that training was conducted and the employee understood the training and his or her role and responsibility?		
7. Are individuals trained in emergency preparedness (e.g., spill kits) and response?		
8. Are lessons learned communicated to employees and affected parties?		
9. Do supervisors understand all the hazards faced by their employees and how to reinforce training?		
10. Does Administration understand their responsibilities and how to hold subordinates accountable?		
TRAINING FOR EMPLOYEES, SUPERVISORS, AND MANAGERS TOTALS		

E. Program Evaluation and Improvement

Is there a process in place to evaluate hazards and track metrics to identify whether the program is effective?


	YES	NO
1. Have metrics been established to indicate whether the program is effective?		
2. Has a baseline been completed of the overall program followed by periodic reviews to identify hazards and opportunities for improvement?		
3. Are injuries, illnesses, incidents, hazards, and concerns being reported?		
4. Are injury and illness records being reviewed to identify trends (lagging indicator)?		
5. Are the number of hazards identified decreasing during inspection walk-arounds (leading indicator)?		
6. Is management conducting safety walk-arounds on a frequent basis (leading indicator)?		
7. Are maintenance activities conforming to planned preventive maintenance schedules (leading indicator)?		
8. Have objectives and targets been established to address high risk EH&S practices and conditions?		
9. Have the program's core elements been fully and effectively implemented?		
10. When issues are identified, is prompt action taken to correct the problem and prevent recurrence?		
PROGRAM EVALUATION AND IMPROVEMENT TOTALS		

SAFETY SCORE CARD



One Approach to Interpreting Your Department's Overall Results

- 40-50:** Your department is well on its way to reducing your health, safety, and environmental risks. Review each category and see what you can do to address your “no” answers. Use the Action Plan Worksheet to identify and record your next steps. Contact the QEI Safety Office if you need assistance.
- 30-39:** Your department has some work to do in order to reduce your risk profile. Look at the categories and see where you selected the most “no” answers. Consider what your department can do to make those responses “yes.” Use the Action Plan to identify and record your next steps. The QEI Safety Office may be able you further translate your ideas into a plan for a successful risk reduction strategy.
- 29 and below:** Review each category to determine where to concentrate your department's efforts. Do you need to be more prepared before taking on more initiatives? Do you need to focus on a different programs? Use the Action Plan Worksheet to identify and record your next steps. The QEI Safety Office may provide the structured assistance needed to transform your ideas into a successful plan.

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Section 2: Safety Accountability and Responsibility Guideline

A. Intent Statement

The intent of this section is to establish minimum roles and responsibilities by position and provide a framework for safety accountability.

B. Responsibilities and Duties

1. Management

a. Responsibilities

- Safety begins with management commitment and participation.
- We will set goals, establish accountability, and become involved.
- A poor safety record is an indication that there is a management issue.
- Establish, implement, and maintain the company safety program.

b. Duties

- Communicate the importance of safety commitment and policies.
- Attend company safety functions.
- Review accident reports and safety activities.
- Make needed appropriations.
- Be the leading example for Safety.


2. Safety Director

a. Responsibilities

- Is responsible for the safety of the organization in its totality.
- Coordinate, administer, and enforce intensive training programs that are safety related.
- Ensure employees and employers within the organization comply with safety programs that guide the industry in which the organization operates.
- In the event of accidents, they respond by carrying out evaluation of current modes of operation and practices within the organization and then recommend changes or adjustments when necessary.
- Establishing policies that maintain a healthy workplace.

b. Duties

- Develop written safety policies and procedures.
- Coordinate activities with safety committee.
- Inform management of proposed safety and health recommendations.
- Compile and distribute safety and health information to employees.
- Provide safety training for employees, supervisors, and managers.
- Arrange for training of new employees.
- Conduct routine workplace safety inspections.
- Complete and analyze accident investigation reports.
- Monitor and evaluate the effectiveness of safety and health programs.

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- Assure compliance with government regulations.
- Prepare progress reports on programs for management and safety committee.


3. Supervisors

a. Responsibilities

- Supervisors have a direct responsibility for a working group.
- They will help build safety into the work process and be alert for safety and health problems.
- Knowledge of Industry Standards.
- OSHA 30 Safety Trained.
- In depth knowledge of NFPA 70E, Energized Electrical Work Permitting and Arc Flash PPE.

b. Duties

- Schedule the training of new employees by either conducting the training themselves or working with the Safety department in the shop.
- Schedule re-training of present employees when retraining is deemed necessary due to scheduled training time frames, safety violations, or new tasks in need of training.
- Make department inspections.
- Prepare accident reports.
- Enforce safety rules.
- Correct unsafe acts and conditions.
- Aware of and ensure a safe work environment .
- Ensure crew abides by area safety requirements (hearing protection, hard hats, Tyvek, etc.).
- Understand QEI Electrical Safety Program.
 - Refer to QEI's Safety Manual.
 - Refer to appendix H for Micron Electrical Safety Program.
- Ensure egress routes, work and staging areas are open, clean, and free of clutter.
 - Ensure team members use cones, bars, caution tape, danger tape with signage to control work area.
- Contact Safety Manager for signage needs.
- Counsel/Discipline team members for safety violations.
 - Follow QEI's disciplinary policy for all safety violation.
 - Disciplinary form can be found in the QEI safety manual.
- Ensure JHA's are filled out prior to work being performed on projects/work orders and are reviewed and signed by team members daily.
 - JHA's are required for all projects.
 - Consult with Safety Manager for any questions or concerns.
- Ensure EEWP's are properly filled out by team members prior to performing energized electrical work.
 - Contact Safety Foreman if work is required on a system classified as a CAT4 or greater.
 - An EEWP is not required for testing voltage or amperage.

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- The appropriate PPE identified for that system shall be worn.
- Ensure crew wears appropriate PPE identified on Arc Flash sticker.
 - Anytime a team member is exposed to live electrical parts, such as opening a panel door where the dead front is attached to the door, the required PPE identified for that panel shall be worn.

4. Employees

a. Responsibilities

- Workers must learn the hazards of their jobs and abide by safety rules, the program requires the wholehearted support of those it was designed to protect.

b. Duties

- Abide by safety rules. Report hazardous conditions or concerns.
- Communicate safety to fellow employees.
- Make suggestions to help improve safety.
- Report any work-related injuries immediately to your supervisor.

c. Attendance

- Consider impact to projects when scheduling time off.
- Do not abuse break and lunch times.
- Ready to work at scheduled start time and works until scheduled stop time.
- On time for scheduled meetings and training classes.
- Adhere to Union attendance guidelines when scheduling time off.

d. Job Knowledge and Skills


- Understands and applies NEC requirements.
- Understands and follows Micron procedures, policies, and protocol.
- Correctly uses and maintains tools and equipment.
- Ability to read and understand blueprints, schematics, diagrams, and schedules.

e. Safety

- Properly use PPE.
- Aware of and insures a safe work environment.
- Abides by area requirements (Wears hearing protection where required, etc.).
- Keep egress routes, work, and staging areas, open, clean, and free of clutter.
- Fills out a JHA at the beginning of each workday **"NO JHA, NO WORK"**.
- Properly fill out energized electrical work permit (EEWP) before hot work begins.
- Wears appropriate PPE identified on arc flash stickers.

f. Communication

- Express concerns and problems with tact.
- Verbally communicates well with others.
- Listens and understands what others have to say (takes notes).

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- Keeps Foreman informed of pertinent information.
- Fully explains projects and expectations to apprentice(s).
- Responds to communications in a timely manner.

g. Dependability and Initiative

- Willing to work overtime, weekends and odd hours as needed.
- Stays focused on work and always looking out for QEI and customers best interest.
- Completes assigned tasks on time.
- Seeks out new assignments.
- Keeps busy, do not wander from the job, and looks for ways to be more productive.
- Turns in all paperwork after project/work orders are completed (Reused Material Sheets, QC Checklists, JHA, EEWP, Panel Schedules, etc.).

h. Quality

- Jobs are done in a professional manner (straight, plumb, and square).
- Do not leave a job unfinished (testing, supports, covers, documentation complete, etc.).
- Job is well thought out with little to no rework or scrap.
- Promotes quality of work within the crew.
- Maintains a high level of quality without sacrificing productivity.

i. Productivity and Time Management


- Able to set realistic goals.
- Can be counted on for accurate assessment of time schedules.
- Able to keep in front of the project with information, material, and labor.
- Do not use QEI time for personal reasons.

j. Teamwork

- Maintains good working relationship with customer and trades.
- Keep supervisors informed of schedules, time off, training, project needs, etc.
- Consult with other trades and Foreman regarding impact issues.
- Willingness to accept changes in routine and flexible in moving to other areas.


k. Organization

- Keep work area clean and organized (staging areas, electrical rooms, etc.).
- Keep all tools clean and orderly (Customers and Personal).
- Return tools to tool crib within the allotted time requested.
- Organizes projects/work orders accordingly (scheduling, layout, material, special order items, etc.).
- Cleanup work area at shift end (store ladders and material in appropriate areas).
- Keep personal paperwork and information organized.

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I. Leadership

- Effectively sets objectives, establishes priorities, and anticipates future requirements.
- Maintain control of costs and attempt to avoid or reduce waste.
- Motivates and influences others by setting a good example with a positive attitude.
- Voluntarily shares knowledge and information (provide direction and encouragement).

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Section 3: Subcontractor Management Plan

A. Purpose

The purpose of this program is to ensure that we verify our subcontractor's competencies, establishes oversight methods and monitoring of their work in order to ensure safe and environmentally compliant work is performed at all times.

B. Scope

This program applies to all Quality Electric locations that use subcontractors.

C. General Requirements

The use of subcontractors must be pre-approved by Quality Electric in accordance with this program. Subcontractors will be pre-qualified by reviewing their safety programs, safety training documents, safety statistics, current W9 on file, current Workman's Compensation Insurance on file, and current Liability/Auto Insurance on file.

D. Subcontractor Relations Requirements

1. Competency Requirements


A verification process must be conducted to ensure that on-site subcontractors are competent and capable of performing their assigned duties in a safe and environmentally sound manner. The Quality Electric supervisor hiring any subcontractor is accountable for obtaining pre-approval of the subcontractor per the Subcontractor Management Plan prior to any work being performed by the subcontractor. This includes a review of the subcontractor's safety history, safety program, OSHA 300 A, and EMR by our Safety Director, and insurance, license, and W9 information by our Purchasing Manager.

E. Communications Requirements

Prior to the start of work Quality Electric and any subcontractor will establish clear lines of communication that includes an effective reporting relationship. The aim of this process is to improve HSE performance by facilitating the interface of Quality Electric activities with those of the client, other contractors, and subcontractors. Pre-work or project kickoff meetings shall be held before work starts and be documented to ensure the subcontractor is completely aware of the reporting and communications requirements between Quality Electric, its client, and the subcontractor.

F. Emergency Planning

Prior to the start of work Quality Electric and any subcontractor will communicate the emergency response procedures and capabilities. Quality Electric should contact all subcontractors to ensure their roles in emergency response plans are known. Subcontractors must follow emergency planning requirements for any Quality Electric client location.

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G. Oversight

An appropriate level of oversight and monitoring must and will be put in place to verify subcontractor performance for the life of the contract. Quality Electric should periodically review the HSE performance of all subcontractors and verify compliance with regulatory and work-specific requirements, safety key performance indicators and other agreed upon requirements.

Quality Electric and each subcontractor shall meet no less than once a year and at the end of the project to formally evaluate the subcontractor's regulatory and work-specific compliance and performance. The meeting shall be documented and if the client wishes to attend an invitation will be sent to the appropriate client representative.

In addition, subcontractors are required to follow or implement the work practices and systems described below while performing work at Quality Electric or client work sites:

- Attend all safety orientations, included in any pre-job meeting or kick-off meeting provided by Quality Electric or client prior to any work beginning.
- Monitor its employees for substance abuse and report nonconformities to Quality Electric.
- Be included in Quality Electric toolbox safety meetings, job safety analysis or hazard assessments and on the job safety inspections.
- Perform a pre-job safety inspection that includes equipment.
- Report all injuries, spills, property damage incidents and near misses.
- Comply with Quality Electric and client safety and environment rules, policies, guidelines, or procedures.
- Implement Quality Electric safety practices and processes as applicable.
- Clean up and restore the work site after the job is over.
- Ensure compliance with regulations at all times.

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Section 4: Records Management

A. Policy Statement

The records management policy has been established to provide an effective company-wide system to

- (1) Maintain, identify, retrieve, preserve, and destroy safety related records.
- (2) Ensure records are adequately protected.
- (3) Ensure records are destroyed at the appropriate time.
- (4) Comply with all local, state, and federal laws and regulations.

B. Definitions


1. **Record** - A business related document (hard copy or digital) that records or provides the history of business dealings (All safety related business records must be retrievable until a specified date so that the companies' dealings can be accurately reviewed as required by law or other business need).
2. **Non-record** - Informational material that has no retention value or need to be kept for a specified time-period (Safety related Non-records do not contain unique business information that require retention beyond their immediate need or duration of the specific project jobsite completion).
3. **Record Retention Period** - The length of time for which a record shall be retained in accordance with the record retention schedule.
4. **Record Retention Schedule** - The attached table listing the required retention period for listed records.

C. General Requirements

1. The project team or the creating party of all safety records shall ensure that each record is saved or filed in its appropriate storage location as spelled out in the record retention schedule. No business-related records shall be permanently stored in personal computer drives, storage device, or files.
2. Care should be taken to protect the security and confidentiality of all safety related records that contain personal information or other protected information (such as information protected by the HIPPA act.) Each record shall be stored in a way to protect unauthorized access and protect against physical damage.
3. No records shall be destroyed prior to their specified record retention period. Any record involved in litigation may not be destroyed without the prior approval of the Quality Electric Inc. legal department.
4. Non-records, unless specifically specified by the record retention schedule, may be destroyed after use.
5. Any relevant record directly related to an accident, incident, or medical case shall be retained for the specified record retention period as noted for incidents in the record retention schedule. (This may be longer than the time specified for individual specific record.)

D. Annexes

1. Guidelines:
 - Record Retention Schedule

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Section 5: Planning for Safety

A. Intent Statement

Proper planning is critical to success. The intent of this section is to outline the responsibilities and processes for risk planning prior to the start of all Quality Electric projects.

B. Definitions

1. **JHA (Job Hazard Analysis)** – A list of all projects specific hazards related to activities within a scope of work. The JHA is required as part of the pre-installation meeting for each major scope.
2. **PTP (Pre-Task Plan)** – A list of the hazards related to the daily work plan and the safety measures that will be implemented to control these hazards. Each crew is required to complete a PTP form and conduct a PTP meeting daily.


C. General Requirements

1. Responsibilities
 - a) The Head Estimator is responsible for preparing the estimate. The PM will collaborate with the Safety Director to discuss and agree upon realistic funds to support the safety plan and staff requirements in with conditions, company safety policies, Federal and State Safety and Health Regulations, owner, and other regulatory agency requirements.
 - b) It is the responsibility of the Project Manager and Superintendent to develop and implement a Project Specific Safety Plan. Responsibilities also include providing the necessary planning, supervision, training, and documentation to execute the plan effectively. The safety department shall review the plan to ensure all recognized hazards are addressed. They shall also be responsible to monitor the plan to ensure changes are made to reflect changed conditions or statutes.
 - c) The safety department shall assist the Project Manager and Superintendent in achieving the safety goals and objectives for the project. They will also regularly audit the program to ensure compliance with all rules and requirements.
2. Pre-planning safety meeting
 - a) The purpose of this in-house meeting is to determine the components of the project specific safety plan. The meeting shall be conducted with a representative of the safety department to discuss company safety policies, project specific and/or owner mandated safety requirements, and local issues or concerns that may affect overall safety of the project.

3. Project Specific Safety Plan Components

The key components of a project specific safety plan, including but are not limited to:

- a) Project pre-planning safety meeting to address site specific requirements of the project. Prevention through the use of the hierarchy of controls should be evaluated and assessed to mitigate and eliminate risks throughout the life cycle of the project.
- b) Utilization of safety tracking by management to track leading / lagging activities and indicators.

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- c) Identification of medical clinic and hospital for emergencies.
- d) Pre-installation meetings with Trade Partners for all major or high-risk scopes of work.
- e) Safety orientation.
- f) Job Hazard Analysis (JHA) for each scope of work.
- g) Pre-Task Plans (PTP) for each task and process (perform daily).
- h) Safety audits.
- i) Safety walks.
- j) Review the site-specific program to address changed conditions.
- k) Emergency Action Plan.
- l) Records management.
- m) Identify required safety equipment and supplies.
- n) Schedule Kick Off meetings.

D. Risk Planning at the Start of Major Scopes or Tasks

1. Project team review of the Project Specific Safety and Health Plan must include:

- a) Review risks associated with the project.
- b) Check status of safety equipment ordered.
- c) Identify changed conditions from original risk assessment.
- d) Confirm coordination complete with utility companies, railroads, airports, and other government authorities and all permits and/or licenses have been obtained.


2. Safety Inspection of Equipment

An inspection must be performed on all equipment upon delivery to ensure all company safety requirements are met.

- a) The purpose of this meeting is to identify safety issues inherent with the type of work being performed and to provide workable solutions ensuring employee safety.
- b) The Superintendent and Project Manager must conduct a detailed Pre-Installation Meeting for all major scopes of work. Planning for this meeting will include collaboration with the safety department.
- c) The jobsite Foreman and Project Manager shall be present at the Pre-Installation Meeting. The Foreman is responsible for ensuring compliance with all applicable Federal, State, and local safety and health regulations on the project as well as full compliance with the Quality Electric safety program. In cases where a lower tier Trade Partner is involved, a field representative should be in attendance and/or all minutes from the Pre-Installation Meeting should be forwarded to the lower tier Trade Partner.

3. Contact with the Insurance Carrier

The Safety / Risk Management department will notify claims and loss control offices of the project start date. The safety department will secure forms, posters, training literature, and a list of approved doctors for medical treatment. Arrange for loss control visits including a pre-start visit to study plans and make recommendations.

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E. Engineering / Consultation / Peer Reviews


1. Adequate factors of safety shall be included when designing/selecting temporary structures, rigging, cranes, material hoists, shoring/bracing and other devices. (Refer to the manufacturer's recommendations and Federal, State Safety and Health Regulations for specific requirements). Consult manufacturer literature for load limits.
2. Engineers shall be consulted to review/approve:
 - a) The use of equipment or material placements on temporary or partially completed structures
 - b) Allowing equipment to work next to adjacent buildings or structures
 - c) Excavations or soil retention systems used when OSHA guidelines concerning such excavations cannot be followed
 - d) When system design may be affected by environmental conditions.

F. Public and Property Protection

1. Only authorized persons shall be allowed on the jobsite.
2. Visitors must sign in at the project office and sign a release of liability statement. They will be supplied appropriate personal protective equipment to wear during the visit and will be escorted.
3. A third-party preliminary survey of the adjacent/surrounding property is highly recommended to document existing conditions of structures and surrounding area. Photographs or videotapes should be taken to clearly establish the pre-existing conditions.
4. A temporary construction security fence shall be installed. The determinations and location of this requirement shall be made by the project superintendent, project manager, and safety director at the beginning of the project.
5. Requirement for off site protection of public property and pedestrians shall be in accordance with ANSI A10.34 Protection of the Public on or Adjacent to Construction Sites.
6. On site parking shall be limited to authorized vehicles and shall be done at the vehicle owners' risk.

G. Required Signage and Postings

1. Required Project Signs: Some signs may already be provided by the General Contractor having jurisdiction.
 - Bi-Lingual Jobsite safety requirement signage
 - Personal protective equipment banner
 - Entering the work zone signage
 - Visitors Must Check in at the Designated Trailer
 - Stop Work Authority
 - No Trespassing and Keep Out – Construction Area
 - Hard Hat Area
 - First Aid Station
 - Evacuation Area
2. All State, Federal required posters shall be obtained by contacting the Quality Electric safety department. The superintendent is responsible for ensuring these posters are posted in a prominent area. In addition to the


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Federal and State required posters, the following posters and/or information are mandatory and shall be placed with the other posters mentioned above. When the environment dictates, bilingual signage may be required:

- Emergency Phone Numbers (Fire, Police, Hospital, Clinic)
- OSHA 300 Log (February 1st through April 30th)
- Key supervisor after hours contacts information

H. Security

1. During the estimate phase, a determination shall be made on the type and level of security that will be required on the project. Input shall be received from the Regional Safety Director.
2. Watchman and security requirements shall be reviewed on an individual basis by the Superintendent, Project Manager, and Safety Director at the beginning of each project.
3. Decisions and budget requirements should be based on:
 - The location of the project (good/bad)
 - Public exposure
 - Proximity to housing with children
 - Remoteness of the project
 - Amount of materials and/or equipment that will be stored on the project
 - Pedestrian and automobile traffic patterns
4. Planning considerations on each project shall address the following:
 - a) Security system – a monitored security system tailored to the project should be considered for installation in the project office, tool storage room or trailer, meeting area, etc.
 - b) Project lighting – Lights shall be installed to illuminate the building, project trailers, equipment, materials, parking lots, and walkways.
 - Protect building openings, docks, yards, and alleys with quality lighting
 - Control all security lighting by a timer or photo-electric cell.
 - c) Six-foot chain link fence or the equivalent should encompass the project. If the area is too large for perimeter fencing, and no public nuisance exposure is present, with approval from the safety director, the fencing can be limited to an area around the project trailer and material storage area. If full project fencing is not used, all entrances to the project shall be secured by gate or cable during non-work hours.
 - Security fencing should be provided for the entire open lot. Try to make it a "man proof" type of fencing. Maintain the fence and check it regularly. Fence gates should have padlocks.
 - All outside doors should have double cylinder dead bolt locks.
 - Metal locking cross bars can also be added on outside doors to provide extra security.
 - d) All tool lockups such as company trailers or tool rooms that are inside the building shall have covered locking devices installed.
 - e) Small machines and hand-held tools must be secured.
 - f) Utilize the bar extension lock on overhead doors, along with a case-hardened padlock.

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- g) Door hinges should not be located on outside of entrance doors or be secured in such a manner that pins cannot be removed.
- h) Windows should be equipped with locks, bars, or wire mesh. Protect window bars and wire mesh from outside tampering.
- i) Develop a written procedure for securing the building and yard at the end of the business day.
- j) For life safety purposes, provide single cylinder locks, panic bars or alarmed releasing bars on outside doors.


5. Site security must also be reviewed on a regular basis. Conditions may change on the project that may warrant a review of the security needs.

I. Medical Facility Set-up

1. At the start of a project, the Superintendent will contact the Safety department with the start date and location of the project. The Safety department shall pick the closest available medical clinic in the area.
2. Once a clinic is selected, the Safety department representative shall verify with the clinic to set up written protocols to include, but is not limited to:
 - Fit-for-Duty
 - Injured workers
 - Instructions for sending work ability reports (both method and contacts)
 - Contact information for representatives of the project, company, insurer, and agency
 - Referral authorization information
 - Billing information
 - Drug testing protocols
 - Fees associated with treatment and drug testing
 - Listing authorized individuals for receiving confidential information
 - Restricted work availability
 - PT and returning visit scheduling instructions
 - Any other special instruction needed to provide direction to the clinic on the treatment of the injured worker.
 - Contact should be made with the hospital and ambulance services:
 - Provide the job location, best route, and any special instructions.
3. Medical Clinics

J. First-Aid/AED Device

1. An OSHA approved first aid kit and eye wash station for treatment of minor injuries shall be placed on the project. The kits shall be sized for the project. Contents of the kits should be determined by the exposure. Other than aspirin, no other over the counter or prescription medication shall be stocked in the kits.
2. In cases where work is a considerable distance from the project office, smaller kits shall be provided for gang boxes. The kits should be inspected on a regular basis. Kits should be restocked or replenished as needed.
3. An AED device should be available on all projects that have a full-time on-site safety person assigned.

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4. Every Foreman, General Foreman and Project Manager is certified in First Aid/CPR/AED by the American Red Cross or equivalent.
5. The Safety Department shall host annual First Aid/ CPR training to ensure that all supervisors are currently certified.
6. Establish a policy for transportation of injured workers to doctors or hospitals.
7. During supervisory and toolbox meetings, educate workers in the basic procedures for handling the injured.

K. Project Crisis / Emergency Response Plan

1. Purpose

Each Quality Electric location shall have a written Emergency Action Plan, appropriate to the hazards of the workplace, in order to respond to an emergency that may require rescue or evacuation.

Each Emergency Action Plan shall be prepared to reflect all known probable emergency conditions which may arise from within the workplace and from adjacent workplaces, the minimum of which will include fire or other emergencies.

The emergency action plan must be available to all employees to review. An emergency action plan must be in writing, kept in the workplace and available to employees for review. However, if a site has 10 or fewer employees the plan may be orally to employees.

2. Emergency Response Planning, Issuing and Annual Review Guidelines

Emergency Procedures shall be issued and discussed with all new/transferred personnel upon arrival for assignment.

Emergency Action Plans shall be established, implemented, reviewed, maintained, and updated annually in conjunction with:

- Client emergency services department requirements.
- Quality Electric safety staff and management.
- The requirement to ensure the plan is up to date to reflect current circumstances at the workplace.

The plan is to be reviewed before the job and when conditions warrant and should be used for routine and non routine emergencies as well as changes in operation, and products or services which warrant new emergencies situations.


3. Reviewing the Emergency Action Plan with Employees

A review of the emergency action plan should occur with employees:

- When the plan is developed, or the employee is assigned initially to a job.
- When the employee's responsibilities under the plan change.
- When the plan is changed.

4. Procedures for Emergency Evacuation Planning

The emergency action plan must include procedures for emergency evacuation. An emergency action plan must include, at a minimum, procedures for emergency evacuation, including type of evacuation and exit route assignments.

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The individual site evacuation procedure shall be appropriate to the risk must be developed and implemented to:

- Notify staff, including the first aid attendant of the nature and location of the emergency.
- Evacuate employees safely and procedures to account for all employees after evacuation.
- Check and confirm the safe evacuation of all employees.
- Notify the fire department or other emergency responders.
- Notify adjacent workplaces or residences which may be affected if the risk of exposure to a substance extends beyond the workplace. Notification of the public must be in conformity with the requirements of other jurisdictions, including provincial and municipal agencies.


5. List of Potential Emergencies

The emergency action plan must include, at a minimum, procedures for reporting a fire or other emergency.

Each location shall conduct a risk assessment for hazards posed by potential hazardous substances from accidental release, fire or other such emergencies that could cause an evacuation or rescue and list the potential emergencies for Quality Electric operations. Procedures for each of these potential emergencies shall be contained within the Emergency Action Plan. Examples include:

- Fire.
 - Gas Leaks/Chemical Spills.
 - Bomb Threats.
 - Medical Emergencies.
 - Explosion.
 - Workplace Violence.
- a. Guidance Procedures for Potential Emergencies
- (1) Fire
- Warn others in the immediate area. Notify the appropriate emergency response personnel by phone or radio and pull the nearest fire alarm if present.
 - If nearby staff have been trained, and it is safe to do so, fight the fire using a portable fire extinguisher. Remember, if in doubt get out.
 - Evacuate the premises via the nearest exit and proceed to the nearest Emergency Assembly Area.
 - Re-enter only after Management has given an ALL CLEAR.
- (2) Gas Leaks/Chemical Spills - Upon smelling or noticing a gas leak or unusual vapors, or a chemical spill:
- Pull fire alarm (if present) or sound warning and evacuate the premises via the nearest exit.
 - Proceed to the Emergency Assembly Area, parking lot in front of the building.
 - Contact local emergency response personnel by phone or radio.
 - Re-enter only after the Management has given an ALL CLEAR.

If employees are required to control a release of a hazardous substance, to perform cleanup of a spill, or to carry out testing before re-entry, Quality Electric shall provide:

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- Adequate written safe work procedures and documented training.
- Appropriate personal protective equipment which is readily available to employees and is adequately maintained.
- Material or equipment necessary for the control and disposal of the hazardous substance.

(3) Bomb Threats

- If a threat is received by phone, mail, or other means, get as much information as possible.
- If the threat is received by phone, try to keep the person on the line for as long as possible. Do not hang up the phone, even after the call has been terminated.
- Contact local emergency response personnel by phone or radio.
- If a suspicious device is identified, evacuate the immediate area, and notify local emergency response personnel.

(4) Medical Emergencies

- Call for assistance by phone or radio. Give the exact location and details of the medical emergency.
- If qualified, provide basic first aid, and keep the person comfortable. Do not move the person. Do not leave him/her unattended.
- Arrange for emergency medical transportation based on the medical planning portion of the site's Emergency Action Plan.

(5) Explosions

- Get down on the floor, take shelter under tables or desks, and protect your face and head against flying glass and debris.
- Once it is safe to do so, evacuate the premises via the nearest exit and proceed to the nearest Emergency Assembly Area, parking lot in front of the building
- Re-enter only after the Management has given an ALL CLEAR.

(6) Workplace Violence

- Notify police immediately by phone or radio and report the occurrence.
- Do NOT attempt to physically intervene. Protect yourself first at all costs.

6. Emergency Response Equipment

a. Listing of Types of Emergency Equipment


Each site Emergency Action Plan shall identify, list the locations of and provide operational procedures for types of emergency equipment. For off-site locations, available emergency equipment should be identified and reviewed with workers prior to commencing work activities.

Examples include:

- Living areas with an audible alarm and a fire hose cabinet.
- Emergency lighting, exit doors, dampers and fire stop flaps.
- First aid kits located throughout the facility and in vehicles.
- Portable fire extinguishers being located throughout the facility and clearly marked.
- Only authorized and trained personnel will operate emergency equipment.

b. Inspection & Maintenance Records

Maintenance records must be kept, including but not limited to the name of manufacturer, the type of equipment, the date put into service, when and for what purpose the equipment has been used, the date of the

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last inspection and name of the inspecting person, any damage suffered, and the date and nature of any of maintenance on emergency response equipment.

Ropes and associated equipment must be inspected visually and physically by qualified employees after each use for rescue, evacuation, or training purposes.

The Quality Electric designated representative will perform and maintain the Quality Electric Emergency Inspection Checklist Form on a monthly basis. The checklist shall be maintained for retention in active files for two years and in on-site archives for seven years.

7. Media Response Plan

Quality Electric employees must not be interviewed by anyone unless the President has given prior approval. In most cases the President will have an attorney present for such interviews.

Note: If after Quality Electric personnel have received approval for an interview from the President and another party's attorney appears unannounced, you should politely adjourn the interview until the Quality Electric President can be contacted. Personnel must not give any work-related interviews, affidavits, written or recorded statements, or depositions without the express approval from the Quality Electric President.


In the case of interviews of Quality Electric employees by non-attorneys, (law enforcement, government officials, media, etc.) you must inform the President before the interview. If the interview is taped or videotaped, you must request a copy of the tape. If the interview is reduced to writing, you must ask for a copy of any notes or statements taken. This procedure is to avoid information being misrepresented.

All media requests should be referred to the Quality Electric President Jay Hintze. Unless requested to do so by the President, other company personnel are not to give interviews or make statements to the media. Management prefers that families of personnel involved in an incident receive initial notification from a Quality Electric representative and not the media.

8. Training

Quality Electric shall ensure training for Emergency Action Plan is delivered, documented, and prepares the staff and facility for emergency conditions. Quality Electric will designate and train employees to assist in a safe and orderly evacuation of other employees. Requirements include:

- All employees must be given adequate instruction in the fire prevention and emergency evacuation procedures applicable to their workplace.
- The designated site representative shall provide the Emergency Action Plan orientation to all new/transferred personnel before they begin work.
- All personnel shall receive a review/update orientation at least annually, or whenever any new/revised information is to be provided.
- The Emergency Action Plan Orientation Check List shall be completed after orientation and the record maintained in the individual's training records.

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- Quality Electric management shall ensure that contractors/consultants working in areas under the supervision of Quality Electric also receive the Emergency Action Plan orientation upon arrival to the area.
- Employees expected to perform duties under the Emergency Action Plan will be trained prior to assuming their roles. This will include simulated rescue or evacuation exercises and regular retraining, appropriate to the type of rescue or evacuation being provided, and training records must be kept.
- A list of trained staff responders shall be posted and maintained indicating their name, response function, their work location and what type of equipment they have been trained for.

9. Location and Use of Emergency Facilities

Quality Electric shall ensure each Emergency Action Plan lists the location and how to use emergency facilities for each work site. For off-site locations, outside services that can provide assistance in the event of an emergency should be identified and reviewed with workers prior to commencing work activities. A list shall be posted in a conspicuous area showing local emergency facilities and how to contact. Examples include:


- Client Emergency Response Department (Initial Responder for All Emergencies If Applicable).
- Local Police, Local Hospital, Poison Center (Poison Response) See attached Sheet.

10. Fire Protection & Response

Quality Electric shall ensure each Emergency Action Plan provides fire protection and response planning within each site Emergency Action Plan and is utilized during all phases of work. As a minimum, all shall include the following:
Protection

- Smoking is not permitted except in designated 'SMOKING' areas.
 - Facilities shall be designed and maintained in accordance with local fire code and regulations.
 - Portable fire extinguishers shall be stationed, inspected, and maintained in accordance with local fire code and regulations. Quality Electric personnel shall be trained in their use.
 - Flammable and combustible liquids shall be properly stored.
 - Employees shall report all fire safety issues to their immediate supervisor.
 - Facilities shall be inspected by use of the Quality Electric Emergency Inspection Checklist Response
- In the event of a fire, personnel working in facility will adhere to the following procedure for their work area:
- Warn others in the immediate area. Notify the appropriate emergency response personnel by phone or radio and pull the nearest fire alarm if present.
 - If nearby staff have been trained, and it is safe to do so, fight the fire using a portable fire extinguisher. Remember, if in doubt get out.
 - Evacuate the premises via the nearest exit and proceed to the nearest Emergency Assembly Area.
 - Re-enter only after Management has given an ALL CLEAR.

Roads are designated as fire lanes. Vehicles can stop there for unloading, but no parking will be allowed.

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11. Alarm & Emergency Communication

Each Emergency Action Plan for Quality Electric shall contain methods to address alarms and communications in case of an emergency. For off-site locations, the method of emergency notification should be identified and reviewed with workers prior to commencing work activities.

a. Alarm System

A system must be in place to alert employees. The alarm system shall be distinctive and recognizable as a signal to evacuate the work area or perform actions designated under the emergency action plan. For sites with 10 or fewer employees in a particular workplace, direct voice communication is an acceptable procedure for sounding the alarm provided all employees can hear the alarm. Each Emergency Response plan will describe how to activate an alarm and what to do after either activating or hearing an alarm.

Personnel responding to any alarm shall avoid complacency. Every alarm should be treated as an actual incident until proven otherwise. Treating and responding to alarms as a routine happening can result in injuries, fatalities, and destruction of property.

b. Communications

Quality Electric responders use telephones, cell phones and radios in conjunction with emergency response.

12. Rescue and Evacuation Procedures

a. Procedures for Rescue and Medical Services

Each site Emergency Action Plan shall address who performs rescue services when required. It is the position of Quality Electric that all rescue and medical duties are performed by client emergency responders or local governmental responders when on their location. For off-site locations, evacuation procedures and methods of rescue shall be identified and reviewed with workers prior to commencing work activities.

At least one member of a rescue team must be a first aid attendant trained to immobilize an injured employee.

Effective communications must be maintained between the employees engaged in rescue or evacuation and support persons.

b. Procedure for Evacuation


(1) Preparation for Evacuation

Each site Emergency Action Plan shall contain a procedure for evacuation if required.

The Quality Electric Designated Emergency Coordinator April Stringfield will maintain an active list of all Quality Electric and contract emergency responders.

(2) Evacuation Drills

Evacuation drills shall be conducted at least annually. Before conducting an evacuation drill a pre-drill assessment of the evacuation routes and assembly points shall be conducted. The pre-drill assessment is intended to verify that all egress components (stairs, doors, etc.) are in proper order and that occupants can use them safely.

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(3) Coordination Within a Facility

Emergency training and drills should also be coordinated within a Quality Electric facility so that key staff are involved in the planning process and are aware of their responsibilities in an emergency as well as during the drill.

Facility management also needs to be informed of the potential for the interruption in productivity and business operations. Alternatives for the continuity of critical operations need to be considered.

(4) Procedures to Account for All Employees After Evacuation

The emergency action plan must include procedures to account for all employees after the evacuation. An emergency action plan must include, at a minimum, procedures to account for all employees after evacuation. Each muster or assembly point will have a blank roster for evacuees to enter their name. All completed rosters will be gathered and checked against a master list of employees assigned or checked in at the facility to verify all employees are accounted for.

13. Emergency Evacuation Notification and Routes

In the event of an emergency occurring within or affecting the work site, the Emergency Coordinator makes the following decisions and ensures the appropriate key steps are taken:


- Advise all personnel of the emergency.
- Activate the emergency notification sequence to alert the appropriate responders and initiate emergency notification within the building.
- Evacuate all persons to the identified assembly area and account for everyone including visitors and clients.

All personnel will proceed to the primary safe area immediately located at the identified emergency assembly area for their location.

A copy of escape routes shall be posted in all offices, at all alarm stations and at all exits.

14. Sweep Check by Quality Electric Designated Responders

- Quality Electric trained responders will establish a pattern that will permit covering the area in the shortest time, with a minimum of backtracking.
- When the evacuation alarm rings, stop work immediately, and conduct a sweep of the area. Ask everyone to leave the premises immediately and proceed to the identified emergency assembly area for their location.
- If you encounter smoke or flame, leave that section immediately, finish your sweep and evacuate the building by activating fire alarm pull stations. Remember, if in doubt get out.
- If anyone refuses to leave, note their name and location, and advise the client emergency services personnel.
- Meet the client emergency services personnel and advise them of your sweep or an area of smoke or flame that you were unable to check. Assist with head count and evacuation if required.

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- Ensure that everyone stays at the emergency assembly area until the Emergency Coordinator has given an all clear to re-enter the building.

15. Evacuation or Drill Evaluation

Following an evacuation or drill a response review shall be conducted and documented by the Quality Electric Emergency Coordinator and lessons learned share with the appropriate responders and staff using the Quality Electric Evacuation Report.

16. Emergency Response Program Management

Contact information will be provided to employees who need additional information pertaining to employees who need more information about the plan or an explanation of their duties under the plan.

For the purpose of this Emergency Action Plan guidance the Emergency Coordinator will be designated by the Quality Electric site manager. His/her alternate will be the Quality Electric Site Safety Supervisor or otherwise designated by the site manager.

Employees performing rescue or evacuation must wear personal protective clothing and equipment appropriate to the hazards likely to be encountered.

a. Duties

(1) Quality Electric Emergency Coordinator

The Quality Electric Emergency Coordinator ensures that:

- Evacuation drills are conducted on an annual basis.
- Inspections of facilities are performed monthly.
- All necessary repairs of components for evacuation paths are completed.
- Plans for the modification of any part of an evacuation path are reviewed.

During an evacuation or evacuation exercise, the Quality Electric Emergency Coordinator:

- Coordinates activities in accordance with local authorities or the client Security and ERT as required.

Following an evacuation or evacuation exercise, the Quality Electric Emergency Coordinator:


- Prepares a report following an evacuation (actual or drill).
- Reports to management for follow up or corrective actions.

(2) Quality Electric Site Safety Supervisor

- Assist the Quality Electric Emergency Coordinator when requested.

(3) Contractors & Visitors

- All employees, users, contractors, and visitors will follow the instructions of the Personnel, managers, and supervisors when asked to evacuate the building.
- Know the two safest and most direct evacuation routes from their work area(s).
- Know the designated evacuation assembly point for the building.

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L. Annexes

1. Forms and Permits:

- Emergency Action Plan Orientation List
- Emergency Phone List
- Quality Electric Emergency Inspection Checklist
- Quality Electric Evacuation Report

Emergency Action Plan Orientation List


Employee Name	
Department	
Hire / Transfer Date:	
Oreintation Date:	

- ☐ Emergency Procedures
- ☐ Evacuation route(s) from assigned work area
- ☐ Evacuation from an unfamiliar area
- ☐ Location of Emergency Assembly Areas
- ☐ Receiving and following instructions during an emergency
- ☐ ALL CLEAR and re-entry procedure
- ☐ Reporting hazards and / or substandard conditions
- ☐ Advising anyone who may require assistance during an emergency evacuation
- ☐ Location of Emergency Equipment (i.e. Fire Extinguishers, etc.)

Employee Signature

Orientation Conducted By

Job Position / Title

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Emergency Contacts of Quality Electric

Emergency Number (Fire, Police, Ambulance)	911
Police Department	208 – 377 – 6790 (Boise) 208 – 888 – 6678 (Meridian) 208 – 465 – 2257 (Nampa) 208 – 587 – 2100 (Mountain Home)
County Sheriff	208-377-6790 (ADA)
State Police	208-846-7500
Federal Bureau of Investigation (FBI)	208-344-7843
Range Fires (BLM)	208-384-3400
Highway Emergency	1 – 800 – 233 – 1212
Poison Information	1 – 800 – 860 – 0620
U.S. Marshall	208 – 334 – 1298
Nature Emergency Management	208 – 377 – 6645
Idaho Power	208 – 388 – 2050 (Boise) 208 – 468 – 6700 (Nampa)
Intermountain Gas	208 – 377 – 6800 (Boise) 208 – 468 – 6700 (Nampa)
United Water	208 – 362 - 7304
Weather Reports	208 – 342 - 6569

Quality Electric Emergency Inspection Checklist

Department		Location	
Date of Inspection:			
Inspector:		Title:	

This Form to be Used Monthly

	N/A	Yes	No
Egress			
Is every means of egress arranged and clearly marked, so that the way to safety is unmistakable at all times?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are exit signs lit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there sufficient exits for the prompt escape of all employees in case of fire or other emergencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are doors that aren't exits that could be mistaken as one, clearly marked "Not an Exit"?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do Exit doors swing out?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are means of egress at least 28" at any point and adequate width for the number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are egresses kept clear of obstructions and materials at all times?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there proper lighting for emergency exiting? (i.e. during a power failure)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are at least two exits by separate ways of travel available for each occupant?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the minimum width of any exit way no less than 28 inches?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are furnishings and decorations so placed that they will not obstruct the exits, the access thereto, or the egress there from, or the visibility thereof?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are explosive and highly flammable furnishings or decorations prohibited?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergencies / Evacuation			
Are evacuation maps posted in readily accessible places?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do employees know where their muster points are located?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do employees know area hazards, the nearest exit and alternate routes of escape?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do employees know the preferred means of reporting emergencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do employees know the site emergency numbers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the site emergency number posted on or by the phone?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do employees know what signal indicates evacuation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Can all personnel perceive the employee alarm?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do employees with special assistance needs been addressed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employees questioned know where the emergency shut off is for the natural gas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire Protection			
Are fire hydrants accessible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are fire hydrants inspected yearly and records maintained to show the date?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are control and operating valves locked open or electronically supervised?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are fire hoses maintained and periodically tested?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are combustible materials kept away from ignition sources?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are standpipe and hose system components visually inspected quarterly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the accumulation of flammable and combustible materials controlled so they do not contribute to fire emergency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All product, supplies, merchandise, ect. not piled within 18" of Sprinkler Heads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No Combustibles within three feet of the Hot Water tank, Space Heaters and Electrical Panels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All Compressed Gas Cylinders tied or chained to eliminate tipping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Quality Electric Emergency Inspection Checklist

	N/A	Yes	No
Detection and Alarm Systems			
Are detection systems installed and maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all trouble alarms and fire signals investigated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do detection / alarm systems shut down or reverse HVAC systems for smoke control?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do detection / alarm systems close smoke or fire doors?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do detection / alarm systems activate local alarms?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are alarm and PA systems periodically tested?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Portable Fire Extinguishers			
Does everyone know where the nearest fire extinguisher is stored?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has the area fire extinguisher been maintenance tested within the last year and tagged to show the date?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are fire extinguishers accessible and the proper type for the hazard?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are employees trained in how to use fire extinguishers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there a fire extinguisher mounted within 75 ft of any point in an area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the extinguishers clean and well cared for?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the seal and lock pin in place?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clear access to extinguishers? Not blocked?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the extinguisher location plainly marked, so as to be visible at a distance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the extinguisher calss marked on the extinguisher?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
First Aid / Medical Supplies			
Are first aid supplies stocked, clean, accessible and sanitary?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there eye / body wash facilities near injurious corrosive materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is a person or persons adequately trained to render first aid available in the near proximity to the workplace?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are AEDs present and operators trained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Condition of First Aid Kits Acceptable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are employees / subcontractors familiar with the incident / accident reporting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do employees / subcontractors know where accident / incident forms are located?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>


Date of last inspection of sprinkler system (required yearly)

Comments / Actions:

Quality Electric Evacuation Report

This form is to be used to record all emergency evacuations (including drills)

I. Building Details				
Building Name			Number of Floors (Including Ground Floor)	
Designated Muster Station				
Person Completing Form				
II. Evacuation Details				
Evacuation Date / Time:			Evacuation Drill	
Trigger for Evacuation:				
<input type="checkbox"/> Fire Alarm Activated	<input type="checkbox"/> Drill	<input type="checkbox"/> ERT	<input type="checkbox"/> Security	
Emergency Situation				
Condition:	<input type="checkbox"/> Staff Only	<input type="checkbox"/> All Occupants	<input type="checkbox"/> After Hours	<input type="checkbox"/> Unoccupied
Weather:			Evacuation was orderly with no panic	<input type="checkbox"/> Yes <input type="checkbox"/> No
Mobility impaired persons present (sight, hearing, physical, ect.)			<input type="checkbox"/> Yes <input type="checkbox"/> No	
The majority of evacuees went to mustering points?			<input type="checkbox"/> Yes <input type="checkbox"/> No	
Were building occupants notified of this drill?		<input type="checkbox"/> Not a Drill	<input type="checkbox"/> Yes <input type="checkbox"/> No	
III. Emergency Control Organization				
Emergency Coordinator				
Deputy Emergency Coordinator				
Emergency Coordinators were stationed at the proper emergency control point?			<input type="checkbox"/> Yes <input type="checkbox"/> No	
All Fire Wardens were identifiable (Vests, Hard hats, Flash lights)?			<input type="checkbox"/> Yes <input type="checkbox"/> No	
Control of external building exits achieved?			<input type="checkbox"/> Yes <input type="checkbox"/> No	
Evacuation maps and emergency procedure posters are up to date?			<input type="checkbox"/> Yes <input type="checkbox"/> No	
IV. Building Fire & Emergency				
Was the evacuation signal audible throughout the building?			<input type="checkbox"/> Yes <input type="checkbox"/> No	
Automatic closing fire doors closed when the fire alarm activates?			<input type="checkbox"/> Yes <input type="checkbox"/> No	
Card access doors automatically released when the fire alarm activated?			<input type="checkbox"/> Yes <input type="checkbox"/> No	
Fire doors and emergency exits unobstructed?			Yes No	
V. Emergency Response Members				
Client:	<input type="checkbox"/> Maintenance	<input type="checkbox"/> Security	<input type="checkbox"/> QEI Emergency Coordinator	<input type="checkbox"/> HSE
Emergency Response Team:	<input type="checkbox"/> Fire Brigade	<input type="checkbox"/> Ambulance	<input type="checkbox"/> Police	<input type="checkbox"/> Other
VI. Quality Electric Action Sheet				
Issue(s)	Action(s)	By Who	By When	Sign Off / Date

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Section 6: Safety Meetings and Committees

A. Intent Statement

The intent of this section is to achieve a consistent approach for standard safety meetings and the shop safety committee meetings. Active participation and cooperation between Operations, Craft Personnel, and Trade Partners will improve work conditions and behaviors.

B. Toolbox Talk Meeting

A weekly Toolbox Talk shall be conducted for all employees. Topics for the talk should be appropriate for the current work activities. The subject should be safety related and presented in a format in which all attendees can understand.

Safety meetings are to be held once a week at all job sites or by individual crews at the shop. During the safety meeting you will learn company policy, proper procedures, rules, and regulations regarding safety as it relates to your jobsite. You should always attend these meetings and sign the attendance sheet. A record of all meetings and topics discussed are kept on file at the Quality Electric office.

Certain incentives, such as our current Safety Jackpot game cards, encourage you to keep your jobsite incident free. You may accumulate points for prizes such as shirts, hats, jackets or tools and you may even win a gift certificate to a restaurant of your choice.

Your Safety is Quality Electric's priority.

C. Stand Down Meetings

These meetings should be held to help the workers refocus on safety and removing distractions from the workplace. They can be held after a long weekend/holiday, whenever the project is having incidents or near misses, supervision sees a lack of safety focus, at the start of a major scope of work, to recognize the project for a job well done or any other safety concern that needs attention. These meetings can be job wide or with an individual team or group.


Key points:

1. Set clear safety expectations and remove ambiguity from the work environment.
2. Limit to 5-10 minutes in the field.
3. Discuss unsafe conditions, behaviors and mutually agree on solutions.

D. Special Construction Hazard Meetings

Special Hazard meetings shall be conducted to bring together different parties for the recognition of special hazards and procedures including, but not limited to:

- Pre-cast Erection (daily meeting)
- Hazardous/heavy and critical lifts
- Equipment start up, etc.

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- Confined space entry (unique spaces / hazards as defined by Health and Safety)
- Shut down, turnaround
- Introduction of flammable liquids
- Highway/Road work adjacent to project
- Utility work involving any local utilities (e.g. gas lines, power, water, etc.)

E. Safety Committees

The committee concept stresses cooperation and commitment to safety as a shared responsibility between Operations, Health and Safety, Managers and Employees. Personnel can become actively involved in and make positive contributions to the project; their ideas can be translated into actions. The committee serves as a forum for discussing changes in regulations, programs, processes, and potential new hazards.

Our safety committee is invaluable to our safety program and provides the active participation and cooperation of key people within our organization. Our current members representing our committee are the following;


- Jay Hintze – President and CEO
- Don Rye – Vice President
- Larry Geyer – Executive Management
- Carl Pettek – Service Department Manager
- Samantha Erickson – Safety Manager
- Sean Sivesind – Road Crew Department Manager

Formation of the Safety Committee:

1. Members will represent daily work activities,
2. Both employer and employee representatives shall be on the committee,
3. Membership on this committee should vary.

Duties:

1. This committee shall meet monthly to discuss safety related issues pertaining to the company projects and safety related business. These meeting shall be documented monthly.
2. The Committee members shall chair this committee and will be responsible for ensuring all concerns raised by the committee are addressed.
3. Actively participating in health and safety instruction programs and evaluating the effectiveness of these programs.
4. Regularly reviewing audit inspections of job sites to detect unsafe conditions and practices and hazardous materials and environmental factors.

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5. Evaluates Education needs of the company to facilitate necessary safety expectations. As well as actively participating in safety and health instruction programs.
6. Regularly review and evaluate hazard recognition reports
7. Disseminating safety and hazard communications to project managers and personnel and,
8. Monitor Federal, state, and local worker related laws and regulations.

Agenda:

1. Review minutes of previous meetings.
2. Discuss any unfinished business from last meeting.
3. Report on actions taken by management because of previous suggestions.
4. Review accident investigation reports.
5. Review hazards recognition reports.
6. Review employee reporting and communication reports.
7. Report suggestions on health and safety hazards; and
8. Generate continuous improvements to company policies on Environmental, Health and Safety.
9. Select Tool box talks for the next month

F. Annexes

1. Forms
 - Safety Committee Agenda Form
 - Safety Toolbox Talk Meeting
 - Safety Activity Log



Quality Electric Inc. Safety Committee Meeting

8:00 AM
Quality Electric Conference
Room

Attendees:	Larry Geyer	Jay Hintze	Don Rye
	Sean Sivesind	Carl Petteck	Samantha Erickson
	Dave Bradshaw		

Topics	Presenter
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Review Previous Meeting Minutes

Reports:

1	1
2	2
3	3
4	4
5	5
6	6
7	7

Unfinished Business

Review Accidents

Review Employee Reporting and Communication Reports

Construction Site Safety Audits - Monthly Review

Toolbox Talk Selections:

- 1
- 2
- 3
- 4

Other Information:

Special Notes:

1 Jobsite Safety Meetings:

Monday	6:00 AM	Micron B 51
Monday	6:00 AM	St Lukes Central Plant
Monday	7:00 AM	Chobani
Tuesday	9:15 AM and 12 PM	Micron In House and Okland Projects
Wednesday	6:00 AM	St Lukes Meridian
Wednesday	12:30 PM	St Lukes Downtown
Friday	7:00 AM	Road Crew
Friday	7:00 AM	MHAFB
Friday	7:00 AM	Service Department
Friday	9:30 AM	Hewlwt Packard
Friday	12:30 PM	Heinz

Next Meeting:

Date:

Safety Toolbox Talk Meeting


QEI Job #		Job Name	
Week Ending		Date Completed:	
Foreman:			
1	Remind all employees that it is their right to a safe workplace. Each Employee is responsible to report and respond to unsafe work practices and conditions.		
2	Review recent accidents, injuries and near misses.		
3	Employee workplace safety concerns and recommendations:		
4	Safety Topic Presentation: Include review of company policies, procedures and location of specific expectations. Encourage questions and clarification.		
5	Safety Fun Facts:		

Please Sign Across from Your Name:

[illegible]

Safety Activity Log

WW	Safety Meeting Topics	Date:	Comments:
1			
2			
3			
4			
5			
6			
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Section 7: Incident Reporting, Investigation, and Injury Management

A. Intent Statement

The intent of this section is to provide a consistent approach for reporting and investigating incidents and non-conformances in order to prevent further occurrences, as well as manage injuries.

B. Definitions

1. **Near Miss** – an unplanned event that did not cause injury or damage but could have
2. **Incident** – an unplanned, undesired event that hinders the completion of a task and may cause injury, illness, or property damage or some combination of all three in varying degrees from minor to catastrophic that could have been prevented
3. **Accident** – an occurrence in a sequence of events that produces unintended injury, death, or property damage.

C. Key Responsibilities

Responsibilities for incident investigation will be assigned prior to occurrence of an incident. Individual responsibilities for reporting and investigation must be pre-determined and assigned prior to incidents.

a) *Quality Electric Safety Manager*

- Ensures investigations are conducted and assists in identifying corrective actions.

b) *Site Manager and Supervisors*

- Investigates (or assists in) incident investigations
- Corrects non-conformances
- Accompany injured employees to the medical provider for initial treatment.


c) *Employees*

- Immediately report any injury, job related illness, spill, or damage to any property to their immediate supervisor. If their immediate supervisor is not available, the employee is then to immediately notify the project manager. Employees who could be first responders will be trained and qualified in first aid techniques to control the degree of loss during the immediate post-incident phase.

D. General Requirements

Accidents and incidents, in which employees are injured or narrowly escape injury, clearly expose hazards. Accident investigation analysis, to identify accident causes, permits development of measures to help prevent future injuries. An accident investigation form must be filled out each time there is an accident or near miss by the Immediate Supervisor. This information is used to determine the cause of an accident or near miss and assist the Safety Committee to develop guidelines that should be followed to ensure we are working safe.

1. Superintendent is responsible for ensuring all incidents, accidents and near misses are reported in a timely manner and investigated.
2. Safety department shall provide timely support to Operations for incident investigation.

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3. The Supervisor or Safety Manager is responsible for investigating each type of event involving one of their crew members and for implementing appropriate corrective and preventive measures, as necessary.
4. The Supervisor is responsible for investigating incidents. They are also responsible for:
 - a) Process Steps:
 - Notification
 - Investigation: Root Cause Analysis (RCA), After Action Review (AAR)
 - Incident Broadcast publication
 - Executive Debrief Meeting
 - b) Approve and implement corrective / preventive measures.
5. Incident Broadcasts are jointly prepared by Operations and the safety department.

E. Near Miss, Incident, and Accident Reporting by Classification

1. All near misses, incidents, and accidents must be reported immediately to your supervisor regardless of severity.
2. Supervisors must promptly report the event to their local safety representative.
3. The Injury or Illness Incident Report must be completed and emailed to the safety department within 8 hours regardless of completeness.

4. Class I Incidents:

The Superintendent and safety professional shall receive notification within four (4) hours of Class I incidents. If an individual visits the first aid station to receive consultation or treatment for an injury, the case must be reported. Regardless of severity, it is required to report this injury to the insurance carrier.

Class I Incidents include, but are not limited to:


- First Aid Injuries
- Property damage of less than \$25,000
- Fires that incur damage less than \$25,000
- Spills or releases under the regulatory reporting threshold quantity
- Near misses

5. Class II Incidents:

Project supervision and/or full-time safety professional is required to notify the Safety Director within one (1) hour.

Class II Incidents include, but are not limited to:

- OSHA Recordable injuries or illnesses

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- Property damage between \$25,000-\$50,000, involves injury and/or a third party
- Fires with damage between \$25,000-\$50,000
- Spills or releases that exceed the regulatory reporting threshold quantity
- Regulatory agency visits to work site
- Job shutdown due to a safety infraction, deficiency, or non-conformity

6. *Class III Incidents:*

Project supervision and/or on-site safety professional is required to notify the Safety Director IMMEDIATELY via phone call and text.

Class III Incidents include, but are not limited to:

- Hospitalization or death of employee, trade partner, third party, owner, project stakeholder
- Spills and/or releases of hazardous substances that cause a threat to jobsite or surrounding area
- Job shutdown due to emergency or regulatory action
- Incidents or events resulting in media attention
- All explosions or implosions
- Incident involving criminal activity
- Damage that may reasonably exceed \$50,000

F. Investigation Procedures

After immediate rescue or response, actions to prevent further loss will occur if the scene is safe. For example, maintenance personnel should be summoned to assess integrity of buildings and equipment, engineering personnel to evaluate the need for bracing of structures, and special equipment/response requirements such as safe rendering of hazardous materials or explosives employed.


1. *Investigation of Incidents and Near Misses*

Investigation is an important part of an effective safety program in that it determines the root cause and corrective actions necessary to prevent similar incidents or non-conformances.

The following must be reported to the employee's supervisor immediately. If that person is not available then the Quality Electric Safety Manager shall be immediately notified for:

- Near miss incidents with the potential to harm people, the environment, or assets
- Work related injuries or illnesses; Property damage including vehicle incidents
- Hazardous chemical spillage, loss of containment and contamination
- Non-conformance to safety or environmental rules, policies, or standards

The supervisor shall make the necessary notifications and begin the incident investigation process by filling out the 4-page investigation form.

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In the case of a major injury or incident the scene of the event should be closed off and kept "as is" at the time of the incident. This is vital for effective incident investigation.

Incident investigation occurs as soon as possible, while the facts are still fresh within the minds of those involved (i.e. witnesses). Take the opportunity to talk to all of those involved before they become unavailable or memory fades. An incident investigation must be thorough and concerned only with cause and prevention and must be separate from administrative disciplinary action. The following steps shall be used;

- a. Isolate, eliminate, and control the hazard(s).
- b. Secure the area to prevent tampering.
- c. Do not allow any equipment, tools, materials, etc. involved in the incident to be removed from the scene without consultation.
- d. Verify the condition of all safeguards implemented at the time of the incident.
- e. Interview witnesses and participants as soon as possible. Do not solicit opinions regarding the cause of the incident. Separate the witnesses as soon as possible and obtain contact information from each witness. Obtain written statements in their own writing and from their own account. Immediately following, ask questions and document the questions and answers.
- f. Develop witness map.
- g. Develop a chronological sequence of events.
- h. Obtain weather-related data.
- i. Photograph the scene.

In addition to the steps above, additional information may be useful or required:

2. Notify proper authorities as required by regulations. (Consult with Safety Director prior to notification)
3. Collect all photographs, diary notes, measurements, and the physical conditions that may have had a bearing on the accident. Examples are; lack of guardrails, poor housekeeping, defective scaffolding, surface or road conditions, skid marks, weather conditions, time of accident, visibility/illumination, condition of equipment, etc.
4. Determine if proper PPE was used. Collect PPE if possible.
5. Determine the amount of experience, knowledge, and/or training the injured worker had in the type of work in which he/she was performing. Investigate whether hazards and safe practices related to the accident were covered in orientation, tool-box-talk meetings, or job instructions.
6. Consider physical or mental issues that may be a contributing case of the incident. Issues such as loss of consciousness, heart attack, confusion, irrational behavior, attempting too much for size and physical strength, etc. should all be considered.
7. Collect previous information and inspections, to include but not limited to, Audits, Daily Journal, meeting minutes, pre-installation meeting notes, PTP and JHA.
8. Determine the root cause and contributing factors.
9. Complete investigation and incident report.
10. Conduct After Action Review (AAR).

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11. Implement corrective actions.
12. Publish Incident Broadcast.
13. Conduct Executive Debrief.

14. Equipment

Proper equipment will be available to assist in conducting an investigation. Equipment may include some or all of the following items; writing equipment such as pens/paper, measurement equipment such as tape measures and rulers, cameras, small tools, audio recorder, PPE, flags, equipment manuals, etc.

15. Incident Reporting Matrix


The Incident Reporting Matrix identifies, based on type of incident, who within corporate management shall be verbally notified and when. It also specifies which type of report from the field shall be completed based on the type of incident.

Reporting of the incident must occur in a specified manner based on site specific requirements and the reporting sequence shall be posted.

INCIDENT NOTIFICATION MATRIX

TYPE OF INCIDENT	WHO TO NOTIFY	WHEN	INCIDENT REPORT
Minor First Aid	Safety Manager	24 hours	Yes
Clinic or Doctor Visit	Safety Manager	ASAP	Yes
In-patient Hospitalization Amputation Loss of an Eye	President, Operations Manager then Safety Manager, OSHA	Within 24 hours to State or Federal OSHA	Yes
Fatality	President, Operations Manager, then Safety Manager, OSHA	Within 8 hours to State or Federal OSHA	Yes
Reportable Spill	Safety Manager	ASAP	Yes
Non-conformance	Safety Manager	24 hours	Yes
Workman's Comp	Safety Manager	1 business day	FROI and Accident Investigation form

OSHA defines "in-patient hospitalization" as a formal admission to the in-patient service of a hospital or clinic for care or treatment. Treatment in an emergency room only is not reportable. OSHA defines "amputation" as the traumatic loss of all or part of a limb or other external body part. This would include fingertip amputations with or without bone loss; medical amputations resulting from irreparable damage; and amputations of body parts that have since been reattached. If and when there is a health care professional's diagnosis available, the employer should rely on that diagnosis.

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Results of incident investigations are communicated to employees via Toolbox Talks.

16. Time Elements of When Incidents Should Be Reported to Applicable Regulatory Agency(s) and the Host Facility/Client

Required incidents must be reported to applicable regulatory agency(s) within 8 hours of their discovery. Incidents must also be reported to the client (host facility) as soon as possible, or in a timely manner (within 24 hours of incident).

17. Safety Committee and Incident Investigation Report

All incidents will be investigated to the appropriate level with regards to incident severity. While all incidents should be investigated, the extent of such investigation shall reflect the seriousness of the incident utilizing a root cause analysis process or other similar method determined by the Quality Electric Safety Manager. The immediate Supervisor will fill out the 4-page Accident Investigation Report and send into the Safety Manager, if there is a Workplace accident involving a QEI employee the affected employee must fill out the First Report of Injury and send to the Safety Manager.

18. Initial Identification/Assessment of Evidence

Initial identification of evidence immediately following the incident could include a listing of people, equipment, and materials involved and a recording of environmental factors such as weather, illumination, temperature, noise, ventilation, etc.

19. Collection/Preservation and Security of Evidence


Evidence such as people, positions of equipment, parts, and papers must be preserved, secured, and collected through notes, photographs, witness statements, flagging, and impoundment of documents and equipment. All shall be dated.

20. Witness Interviews and Statements

Witness interviews and statements must be collected. Locating witnesses, ensuring unbiased testimony, obtaining appropriate interview locations, and use of trained interviewers should be detailed. The need for follow-up interviews should also be addressed. All items shall be dated. The final incident investigation report consists of findings with critical factors, evidence, corrective actions, responsible parties, and timelines for corrective action completion. Results of incident investigations are communicated to employees via the Incident Notice form.

21. Preparation of the Written Incident Report

Written incident reports will be prepared and include the Accident Investigation Form and a detailed narrative statement concerning the events. The format of the narrative report may include an introduction, methodology,

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summary of the incident, Incident Review Team member names, narrative of the event, findings, and recommendations. Photographs, witness statements, drawings, etc. should be included.

The supervisor completes the Quality Electric Inc Accident Investigation Report and takes the below steps when beginning an incident investigation.

- Provide emergency assistance, as needed and qualified for, if beyond simple First Aid send employee to St Luke's Occupational Health.
- Secure the area as quickly as possible to retain area in the same condition at the time of the incident
- Notify management by phone
- Identify potential witnesses
- Use investigation tools, as needed (camera, drawings, video, etc.)
- Tag out for evidence any equipment that was involved
- Interview witnesses (including the effected employee) and obtain written, signed statements and fax or email to the Quality Electric Safety Manager
- Prepare Quality Electric Accident Investigation Report, sign the form, fax it to the Quality Electric Safety Manager
- Implement any immediate corrective actions needed

22. Incident Notice Form

Quality Electric shall provide documentation and communication of lessons learned and review of similar operations to prevent reoccurrence. Lessons learned are reviewed and communicated. Changes to processes must be placed into effect to prevent reoccurrence or similar events.

In order to communicate incident information and lessons learned from incidents the Quality Electric Safety Manager shall send a debrief to all worksites to be discussed at the next Toolbox Talk.


G. Corrective Actions

Incident investigations should result in corrective actions, individuals should be assigned responsibilities relative to the corrective actions, and these actions should be tracked to closure.

Site Managers are held accountable for closing corrective actions. Corrective actions for safety improvement input are posted at each site and tracked by the Quality Electric Safety Manager to ensure timely follow up and completion.

Corrective actions are also used as needed for revisions to site specific safety plans and the Quality Electric Safety and Health Management System.

1. If an unsafe act occurred, the employee shall be disciplined and/or trained on the proper way to perform the task.
2. Correct unsafe physical conditions or equipment deficiencies immediately. For example, tag-out equipment until the equipment is cleared for use by the equipment supplier. Check similar equipment to ensure it does not have similar defects.

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3. Place additional warning signs, barricades, warning lights if need is indicated, add illumination, etc.
4. Make improvements in maintenance and inspection procedures or provide means for better enforcement of existing procedures.
5. Review orientation, tool-box-talk meetings, and on the job instructions to determine if additional information and/or training could prevent a recurrence.
6. Institute any follow up procedures required ensuring compliance with changes made.
7. Use this as a “lessons learned” and discuss the incident at progress meetings and Toolbox Talks. Names and personal information about the incident should be left out of the training opportunity. Be sure and discuss steps taken to prevent the incident’s recurrence.


H. Injury Classifications

Injuries shall be classified per the following:

1. **First Aid** – Dressing on a minor cut, removal of a splinter, typically treatment for household type injuries.
2. **Lost Workday Case (LWDC)** – An injury that results in an employee being unfit to perform any work on any day after the occurrence of an occupational injury.
3. **Number of Lost or Restricted Workdays** – The number of days, other than the day of occupational injury and the day of return, missed from scheduled work due to being unfit for work or medically restricted to the point that the essential functions of a position cannot be worked.
4. **Occupational Injury** – An injury which results from a work-related activity.
5. **Occupational Illness** – Any abnormal condition or disorder caused by exposure to environmental factors while performing work that resulted in medical treatment by a physician for a skin disorder, respiratory condition, poisoning, hearing loss or other disease (frostbite, heatstroke, sunstroke, welding flash, diseases caused by parasites, etc.). Do not include minor treatments (first aid) for illnesses.
6. **Recordable Medical Case (RMC)** – An occupational injury more severe than first aid that requires advanced treatment (such as fractures, more than one stitch, prescription medication of more than one dose, unconsciousness, removal of foreign body embedded in eye (not flushing), admission to a hospital for more than observation purposes) and yet results in no lost work time beyond the day of injury.
7. **Restricted Workday Case (RWDC)** – An occupational injury which results in a person being unfit for essential functions of the regular job on any day after the injury but where there is no time lost beyond the day of injury. An example would include an injured associate is kept at work but not performing within the essential functions of their regular job.
8. **Work or Work-Related Activity** – All incidents that occur in work related activities during work hours, field visits, etc. are reportable and are to be included if the occupational injury or illness is more serious than requiring simple first aid. Incidents occurring during off hours and incidents while in transit to or from locations that are not considered an employee’s primary work are not reportable.

The following are examples of incidents that will not be considered as recordable:

- The injury or illness involves signs or symptoms that surface at work but result solely from a non-work-related event or exposure that occurs outside the work environment.

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- The injury or illness results solely from voluntary participation in a wellness program or in flu shot, exercise class, racquetball, or baseball.
- The injury or illness is solely the result of an employee eating, drinking, or preparing food or drink for personal consumption (whether bought on the employer's premises or brought in). The injury or illness is solely the result of an employee doing personal tasks (unrelated to their employment) at the establishment outside of the employee's assigned working hours.
- The illness is the common cold or flu (Note: contagious diseases such as tuberculosis, brucellosis, hepatitis A, or plague are considered work-related if the employee is infected at work).

I. Non-Job-Related Injuries

1. If an employee reports a non-job-related injury to a supervisor, the supervisor should question the employee on the type of injury, when and how it happened and whether the employee is under a doctor's care. That information should be documented.
2. The supervisor should contact the safety department on guidance whether to allow the employee to work with the condition.

J. Pay Policy Concerning On-the-Job Injuries

When an employee sustains an on-the-job injury, and leaves the job for treatment, the employee shall be paid in accordance with state statutes.

K. Restricted Work Activities


When an employee is placed on restricted work activity by the treating physician, the project shall accommodate and provide work for this employee under those restrictions. If the Superintendent does not have work available for the employee under the restrictions, the Superintendent shall make every effort to find this employee work on another project. An employee that is placed on restricted work activity shall not be sent home, terminated, or laid off without authorization from the regional safety department.

L. Claims Reporting

All accidents, especially those involving injuries, should be reported to the Safety Director. There are two basic forms that we use to report accidents in the workplace. The Liberty Northwest Compensation form (Filled out by the Employee) and the Quality Electric Accident Investigation Report, both need to be filled out immediately following each accident.

There are also two forms for a driving accident; the Federated Insurance form and the Vehicle Accident Review. The Federated form needs to be filled out at the accident and turned into the Operations Manager so that the review form may be completed.

Property & Casualty Claims Office: Federated Insurance Agency Adam Grow Agent
485 East Riverside Drive, Suite 100
Eagle, Idaho

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208.617-4177
amgrow@fedins.com

Workers Compensation Claims: Alaska National Insurance Company
776 E. Riverside Drive Suite 245
Eagle, Idaho 83616-6966
208.955.8036 Claims, boise.claims@alaskanational.com

M. Training

Quality Electric shall train personnel in their responsibilities and incident investigation techniques. Personnel must be trained in their roles and responsibilities for incident response and incident investigation techniques. Training requirements relative to incident investigation and reporting are described below:


- Training frequency will be based on the specific area of responsibility but shall not exceed once every two years.
- Training requirements relative to incident investigation and reporting shall include:
 - Awareness
 - First Responder Responsibilities
 - The Initial Investigation at the Accident Scene
 - Managing the Accident Investigation
 - Collecting Data
 - Analyzing Data
 - Developing Conclusions and Judgments of Need
 - Reporting the Results

N. Quality Electric's Early Return to Work


1. Policies and Procedures

It is Quality Electric's goal to assist our employees who have sustained a compensable injury in returning to work as soon as possible. Our temporary light/modified duty program is designed to provide these employees, who are currently unable to perform their regular job duties, with temporary work during the period of medical recovery. The employees who are eligible to participate in this program are those injured workers with an open Idaho or Oregon workers' compensation claim. The Safety Director and the Operations Manager will facilitate the injured worker's participation in the temporary light/modified duty program with assistance from the injured worker, his/her supervisor, attending physician, and Alaska National, our worker's compensation insurer.

- a) Upon notification of a work-related injury, the employee will be sent to St. Luke's Occupational Health along with a Work Status Report form; this form must be filled out by the attending physician and returned to the supervisor. When the employee returns to work, they will need to fill out the Alaska National First Report of Injury form and give to their supervisor. The supervisor then submits the Work Status Report form and the First Report of Injury form to the Safety Director, who is responsible for contacting Liberty Northwest.

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- b) The Safety Director will contact the injured worker and his/her attending physician by phone and in writing to remind them of the company's temporary light/modified duty program. It is the injured worker's responsibility to report to his/her supervisor with a completed Work Status Report form after every physician visit.
- c) The Safety Director reviews the Work Status Report form and identifies whether temporary light/modified duty work is available within the outlined restrictions provided by the attending physician. Consideration will be given to flexible hours, reduced lifting, and use of a stool to eliminate standing, etc.
- d) The definition of temporary light/modified duty is considered to be any work within the employee's temporary physical capacities and is outlined on the Work Status Report form. All temporary light/modified duty positions must be approved by the Operations Manager and are subject to Quality Electric's business needs, which are determined at its sole discretion.
- e) If the injured worker does not provide the completed Work Status Report form, the supervisor will notify the Safety Director and the employee will be sent back to Occupational Health to obtain a signed copy.
- f) Once work status information has been obtained and a temporary light/modified job identified, the Safety Director will complete a Temporary Light/Modified Duty Job Analysis of the temporary light/modified duty position and submit it for approval to the Operation Manager. The Safety Director will then submit it to the attending physician for review.
- g) Upon receipt of the attending physician's signed approval of the Temporary Light/Modified Duty Job Analysis, the Operations Manager will provide the injured worker with a written notice of available employment of this position. This is done in the form of a Job Offer Letter and is sent certified mail and regular mail or delivered in person. The Quality Electric Job Offer letter should be used and should include the following:
- Job title and a brief description of the job duties
 - Start date (allow 5 to 7 days for mailing) and the duration of the job
 - Hourly wage or wage rate
 - Where to report for work
 - Start time and length of time expected to work each day
 - The name of the person to report to
 - Work restrictions as required by the attending physician
 - A copy of the physician-approved temporary Job Analysis
- A copy of the Work Status Report form and signed Temporary Light/Modified Duty Job Analysis

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should be attached. Be sure to send a copy of the Job Offer Letter, Temporary Light/Modified Duty Job Analysis, and the most recent Work Status Report form to the supervisor.

h) Before the injured worker starts the temporary light/modified duty job, he/she will meet with the supervisor and review the job, paying close attention to the job duties and the treating physician's limitations. The supervisor should emphasize the need for the injured worker to perform the job duties and the limitations, as prescribed by the attending physician. The supervisor will obtain the injured worker's signature on the Job Offer Letter. Once returned the Safety Director will forward all documents to Alaska National.

i) In the event that the injured worker refuses to accept the temporary light/modified duty job offer, the supervisor will report this to the Safety Director who will notify Alaska National.


j) The temporary light/modified duty may end when one of the following occur:

- The injured worker is released to regular employment by the attending physician.
- The workers' compensation claim is closed for the injured worker.
- The injured worker has returned to other work which is not considered part of the employer's ERTW program.
- Quality Electric has determined that business needs are not being served by the temporary light/modified duty work assignment.

k) The supervisor is responsible for monitoring the injured worker's participation in the temporary light/modified duty program and for keeping track of the hours worked. This information will be submitted to the Safety Director with other time records. If there are any problems with participation in the temporary light/modified duty job, they should be reported immediately to the Safety Director who will discuss them with the injured worker and the attending physician and make further modifications if feasible.

l) If the attending physician adds any new restrictions and/or changes to the previously approved temporary light/modified duty job, the injured worker is responsible for providing the supervisor with written notice. The supervisor will provide the Safety Director with the recommendations of the necessary modifications.

m) Be sure that all changes to the temporary light/modified duty job are approved by the Operations

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Manager. The Safety Director will send a second letter to the injured worker's attending physician to request approval of any recommended change.

O. Annexes

1. Forms and Permits:

- Idaho Job Offer Notice of Available Employment
- Incident Investigation Report
- Incident Statement – Witness or Injured Party
- Key Contacts
- Near Miss Investigation Report
- Request for Updated Work Capabilities
- St Luke's Occupational Health Services Locations
- Temporary Light / Modified Duty Job Analysis Form
- Vehicle Accident Report
- Workers Compensation – First Report of Injury or Illness
- Work Status Report Form



Idaho Job Offer Notice of Available Employment

"The Quality Way
Our People, Our Customers, Our Community

Date:

Injured Worker's Name:

Address:

City, State, Zip:

Certified Mail #, Return Receipt Requested:

RE: Injured Worker's Name, Claim Number and Date of Injury:

Dear Injured Worker:

Your doctor released you for temporary light / modified duty work and has agreed that you are physically able to commute to temporary light / modified duty work. Attached is a copy of the Physician approved job analysis. We are offering you a temporary light / modified duty job, as described below. Unless otherwise stated, the duration of the job is unknown.

Job Title:

Starting Time:

Starting Date:

Hours per Day:

Wage:

Hours per Week:

Where to Report:

Whom to Report to:

For a description of job duties, refer to the physician - approved job analysis and / or copy of the temporary light / modified duty release.

While on temporary light / modified duty work, your worker's compensation benefits may be offset by your wages.

If you choose not to accept this job offer or do not report to work as specified, your worker's compensation benefits may be adversely affected.

Sincerely,

Don Rye
Operations Manager
208-375-1300 Ext 23

I have read the above job offer and have decided to:

☐

Accept

☐

Decline

Employee's Signature and Date

Witness's Signature and Date

CC: Alaska National, Employee / Regular Mail, Employee's Attorney
Encl: Physician - Approved Job Analysis

Incident Investigation Report

I. Company Information									
Project Name:						Date:			
Address:									
Incident Location (If different than above)									
Location (Room, Col. Number)									
II. Employee Information									
Employee Name:						Sex:			
Job Title:						Department:			
Employment Status		<input type="checkbox"/> Full Time	<input type="checkbox"/> Part Time	<input type="checkbox"/> Temporary	<input type="checkbox"/> Other				
Length of Employment		<input type="checkbox"/> > 1 Month	<input type="checkbox"/> 1 - 5 Months	<input type="checkbox"/> 6 Months to 5 Years	<input type="checkbox"/> More than 5 Years				
Time in Occupation		<input type="checkbox"/> > 1 Month	<input type="checkbox"/> 2 - 5 Months	<input type="checkbox"/> 7 Months to 5 Years	<input type="checkbox"/> More than 5 Years				
III. Incident Information									
Supervisor's Name:						Supervisor's Contact:			
Employee Name:						Date Reported:			
Nature of Incident:									
Employee's Specific Task and Activity at Time of Incident:									
<input type="checkbox"/> Working Alone	<input type="checkbox"/> Working with Assignend Group	<input type="checkbox"/> Supervised	<input type="checkbox"/> Not Supervised						
IV. Witnesses									
Name:						Telephone:			
Name:						Telephone:			
V. Scene of Incident Information									
Specific Location:									
How Incident Occurred:									
Type of Machinery / Equipement Involved:			<input type="checkbox"/> N/A	<input type="checkbox"/> Yes					
Machinery / Equipment Placed:			<input type="checkbox"/> Out of Service	<input type="checkbox"/> Repaired					
VI. Incident Sequence									
Describe in order of occurance the events leading to the accident. Recontrust the sequence of events that led to the incident.									
Event 1:									
Event 2:									
Incident Event:									
Injury Event:									
VII. Causal Factors:									
Describe events and conditions that contributed to the accident. Include information on worker, machinery and equipment, environment and management.									

VIII. Diagram any Specific Location Factors that Contributed to the Incident:

IX. Casual Factors:

X. Corrective Actions

Causal Factors:	Assignment Responsibilities	Target Date for Completion:
1		
2		
3		
4		
5		
6		

XI. Acknowledgment of Incident:


Print Name:		Date:	
Signature:		Title:	

XII. This Incident Investigation Report was prepared by:

Print Name:		Date:	
Signature:		Title:	

Witness or Injured Party Incident Statement

Section I: Employee's Information					
Date of Incident:		Date Reported:		Time of Incident:	<input type="checkbox"/> AM <input type="checkbox"/> PM
Employee Name:				Employee Contact:	
Supervisor Name:				Supervisor Contact:	
Section II: Incident Description					
Specific Location of Incident:					
<i>Provide a detailed description of what happened in your own words.</i>					
Section III: Statement Completion					
<i>Witness Statement was prepared by:</i>					
Name (Print):					
Company:					
Job Title:					
Date:					
Signature:					

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Key Contacts

1. Insurance Company

Name: Federated Insurance Company Adam Grow Agent
Mailing Address: 485 E. Riverside Drive, Suite 100
City, State, Zip: Eagle, Idaho
Phone Number: 208-631-4177 amgrow@fedins.com email

2. Designated Occupational Health

Name: St Luke's Occupational Health
Mailing Address: 703 Americana Blvd.
City, State, Zip: Boise, Idaho 83702
Phone Number: 208-706-7500

3. Workers Compensation

Name: Alaska National
Mailing Address: 776 East Riverside Drive Suite 245
City, State, Zip: Eagle, Idaho 83616-6966
Phone Number: 208-955-8036 boise.claims@alaskanational.com

Near Miss Investigation Report

I. Company Information									
Project Name:						Date:			
Address:									
Incident Location (If different than above)									
Location (Room, Col. Number)									
II. Employee Information									
Employee Name:						Sex:			
Job Title:						Department:			
Employment Status		<input type="checkbox"/> Full Time	<input type="checkbox"/> Part Time	<input type="checkbox"/> Temporary	<input type="checkbox"/> Other				
Length of Employment		<input type="checkbox"/> > 1 Month	<input type="checkbox"/> 1 - 5 Months	<input type="checkbox"/> 6 Months to 5 Years	<input type="checkbox"/> More than 5 Years				
Time in Occupation		<input type="checkbox"/> > 1 Month	<input type="checkbox"/> 2 - 5 Months	<input type="checkbox"/> 7 Months to 5 Years	<input type="checkbox"/> More than 5 Years				
III. Near Miss Incident Information									
Supervisor's Name:						Supervisor's Contact:			
Employee Name:						Date Reported:			
Nature of Incident:									
Employee's Specific Task and Activity at Time of Near Miss Incident:									
<input type="checkbox"/> Working Alone	<input type="checkbox"/> Working with Assignend Group	<input type="checkbox"/> Supervised	<input type="checkbox"/> Not Supervised						
IV. Witnesses									
Name:						Telephone:			
Name:						Telephone:			
V. Scene of Near Miss Incident Information									
Specific Location:									
How Near Miss Incident Occurred:									
Type of Machinery / Equipement Involved:			<input type="checkbox"/> N/A	<input type="checkbox"/> Yes					
Machinery / Equipment Placed:			<input type="checkbox"/> Out of Service	<input type="checkbox"/> Repaired					
VI. Near Miss Incident Sequence									
Describe in order of occurance the events leading to the near miss. Reconstrust the sequence of events that led to the near miss.									
Event 1:									
Event 2:									
Near Miss Event:									
Potential Injury Event:									
VII. Causal Factors:									
Describe events and conditions that contributed to the near miss. Include information on worker, machinery and equipment, environment and management.									

VIII. Diagram any Specific Location Factors that Contributed to the Near Miss:

--

IX. Casual Factors:

--

X. Corrective Actions

Causal Factors:	Assignment Responsibilities	Target Date for Completion:
1		
2		
3		
4		
5		
6		

XI. Acknowledgment of Near Miss:

Print Name:		Date:	
Signature:		Title:	

XII. This Near Miss Incident Investigation Report was prepared by:

Print Name:		Date:	
Signature:		Title:	



Request for Updated Work Capabilities

Date:

Attending Physician:

Address:

City, State, Zip:

RE:

Claimant	
Employer	

Claim Number:	
Date of Injury	

Dear Physician:

Our Employee has been on temporary light / modified work as _____
since _____. We would like to increase _____
duties in effort to return him / her to regular work.

The restrictions you placed were (indicate in the space provided, any increases and the period of time for which these increases will be in effect).

Current Restrictions:
(Completed by Employer)

1	_____
2	_____
3	_____
4	_____
5	_____

Additional Comments:

Change To:
(Completed By Physician)

1	_____
2	_____
3	_____
4	_____
5	_____

Additional Comments:

Date anticipated of release to regular work:

Physician's Signature and Date

Thank you for your assistance.
Sincerely,

Samantha Erickson
Safety Director
208-375-1300 Office : 208-697-0566 Cell

CC: Alaska National, Employee



Occupational Health Services

Prompt, Quality Medical Care for the Injured Worker

Occupational Health Clinics

(Appointments appreciated, same day care available for acute injuries.)

St. Luke's Boise

703 Americana Blvd., Suite 130
Boise, ID 83702
(208) 706-7500
Monday-Friday, 8 a.m.-5 p.m.

St. Luke's Nampa

9850 W. St. Luke's Drive, Suite 207
Nampa, ID 83687
(208) 505-2711
Monday-Friday, 8 a.m.-5 p.m.

St. Luke's Magic Valley

775 Pole Line Road W., Suite 101
Twin Falls, ID 83301
(208) 814-8100
Monday-Friday, 8 a.m.-6 p.m.

St. Luke's Meridian

520 S. Eagle Road, Suite 2213
Meridian, ID 83642
(208) 706-5447
Monday-Friday, 8 a.m.-5 p.m.

Elmore Medical Center

895 N. 6th East
Mountain Home, ID 83647
(208) 580-5488
Monday-Friday, 8 a.m.-5 p.m.

Other St. Luke's Clinics Providing Occupational Health Services

Fruitland

St. Luke's Clinic – Family Medicine

1210 NW 16th Street
Fruitland ID 83619
(208) 452-8600
Monday-Friday, 8 a.m.-8 p.m.
Saturday, 9 a.m.-5 p.m.

Jerome

St. Luke's Clinic – Family Medicine

132 5th Avenue W.
Jerome, ID 83338
(208) 324-5286
Monday-Friday, 8 a.m.-6 p.m.
(Appointments appreciated)

After Hours and Emergency Locations

St. Luke's Boise Emergency Department

190 E. Bannock Street
Boise, ID 83712
(208) 381-2235
Open 24 hours/day

St. Luke's Meridian Emergency Department

520 S. Eagle Road
Meridian, ID 83642
(208) 706-1140
Open 24 hours/day

St. Luke's Magic Valley Emergency Department

801 Pole Line Road W.
Twin Falls ID 83301
(208) 814-1400
Open 24 hours/day

St. Luke's Eagle Urgent Care

3101 E. State Street
Eagle, ID 83616
(208) 473-3100
Monday-Friday, 7 a.m.-10 p.m.
Saturday-Sunday, 9 a.m.-10 p.m.

St. Luke's Nampa Emergency Department

9850 W. St. Luke's Drive
Nampa, ID 83687
(208) 505-2000
Open 24 hours/day

St. Luke's Jerome Emergency Department

709 N. Lincoln Avenue
Jerome, ID 83338
(208) 324-4301
Open 24 hours/day

Elmore Medical Center Emergency Department

895 N. 6th East
Mountain Home ID 83647
(208) 587-8401, ext. 213
Open 24 hours/day

Additional occupational health services available at our clinics include drug and alcohol testing, employment physicals, and immunizations.

Quality Electric Occupational Health Clinics

The following are the Occupational Health clinics that are authorized by our Workman's Compensation carrier, these clinics are best suited to treat our injuries and help with rehabilitation, thanks.

Boise – St Luke's Occupational Health 703 Americana Blvd. Suite 130 208-706-7500

Meridian – St Luke's Occupational Health, Meridian Medical Center Suite 2213 520 South Eagle Road 208-706-5000

Twin Falls – St Luke's Occupational Health 775 Poleline Road West Suite 101 208-814-8100

Ontario/Fruitland – St Luke's Occupational Health 1200 North Allen Street Fruitland 208-452-8600

Mountain Home – St Lukes Occupational Health located in the Elmore Medical Center 895 North 6th Street E, 208-580-5488. This clinic is open on Monday, Wednesday, and Friday; if an accident occurs on the other days of the week please use the emergency room.

Nampa/Caldwell- St Lukes Occupational Health 9850 W St Lukes Drive Suite 207 208-505-2711

Jerome – St Lukes Clinic – Family Medicine 132 5th Avenue W. Jerome 208-324-5286

Temporary Light / Modified Duty Job Analysis Form

I. General Information			
Injured Worker:		Claim Number:	
Employer Name:		Date of Injury	
Job Title:		Date:	
Completed By:			
Specific Tasks:			
Location of Work Site:			

II. Physical Demands			
Sit		Consecutive minutes / hours at a time	Total minutes / hours per day
Stand		Consecutive minutes / hours at a time	Total minutes / hours per day
Walk		Consecutive minutes / hours at a time	Total minutes / hours per day

Employee needs to alternate between sit / stand every _____ Minutes _____ Hours

Job Limitation Analysis involves the use of (*Check all that apply*):

Left - Leg / Foot Left - Arm / Hand Right - Leg / Foot Right - Arm / Hand Back

Check the amount of time the injured worker is able to perform the particular task:

Never Ocassionally (<33%) Frequently (33 - 66%) Continuously (67 - 100%) N/A

Hand / Wrist Work
Grasping
Pushing / Pulling
Fine Manipulation
Reach Above Shoulder
Bend / Twist
Kneel / Squat
Climb / Stairs
Lifting 1 - 10 lbs.
Lifting 11 - 20 lbs.
Lifting 21 - 50 lbs.
Lifting 50 - 100 lbs.

Other Task:

Other Task:

Distance objects are carried:

Seldom (0 - 1 hrs)	Ocassionally (1 - 3 hrs)	Frequently ((3 - 6 hrs)	Continuously (6 - 8 hrs)
1 - 5% / Day 1% = 1 time / hour	6 - 33 % / Day 10% = 4 - 6 times / hour 33% = 20 times / hour 33% = < 60 times / day	34 - 66% / Day 34% = > 20 times / hour 66% = 120 times / hour 66% = < 720 times / day	67 - 100 % / Day 67% = > 120 times / hour > 720x / day

The Job is approved for the injured worker:

No

Yes

Total number of hours each day the injured worker may work:

_____ (If not indicated a full work shift will be assumed)

The injured worker has been informed of the above work release

No

Yes

Physician's Name:

Physician's Signature:

Date:

Vehicle Accident Report

I. Review of Accident			
A. To be completed by the Driver			
Employee Name:		Date / Time:	
Location of Accident:			
Weather Conditions:			
Description of Accident:			
Primary Cause of Accident:			
How to Prevent a Future Accident:			
Signature:		Date:	
B. To be completed by Driver's Supervisor			
Supervisor Name:		Date / Time:	
I have reviewed this accident with the driver involved and have the following comments:			
Signature:		Date:	
C. Safety Committee Review			
The Committee has reviewed this accident and has found that is should be judged:			
<input type="checkbox"/> Preventable <input type="checkbox"/> Non - Preventable			
Consideration of the facts indicated the following action should be taken to prevent such an accident in the future:			
<input type="checkbox"/> Driver Notified in Writing <input type="checkbox"/> Driver Notified Verbally			
Committee Member Name:		Date / Time:	
Signature:			

Vehicle Accident Report

II. Accident Report Form

A. Vehicle

Make:		Model:	
Year:		Plate #:	
Mileage:		Serial #:	
Estimated Damage:			
Description of Damage:			

B. Driver

Driver Name:		Age:	
State of Physical Damage:		How long were you Driving:	
Driver's License:		Purpose of Vehicle Use:	
Home Address:		Home Phone:	
Business Address:		Business Phone:	

C. Situation

Date of Accident:		Time:	
Lighting:		Location of Accident:	
Weather Conditions:		Road Conditions:	
Your Speed:		Direction:	
Other Drivers Speed:		Other Driver's Direction:	
Police Investigation By:		Charges:	
Drugs / Alcohol taken before Accident:		Who was Responsible for the Accident / Reason:	

D. Other Driver(s)

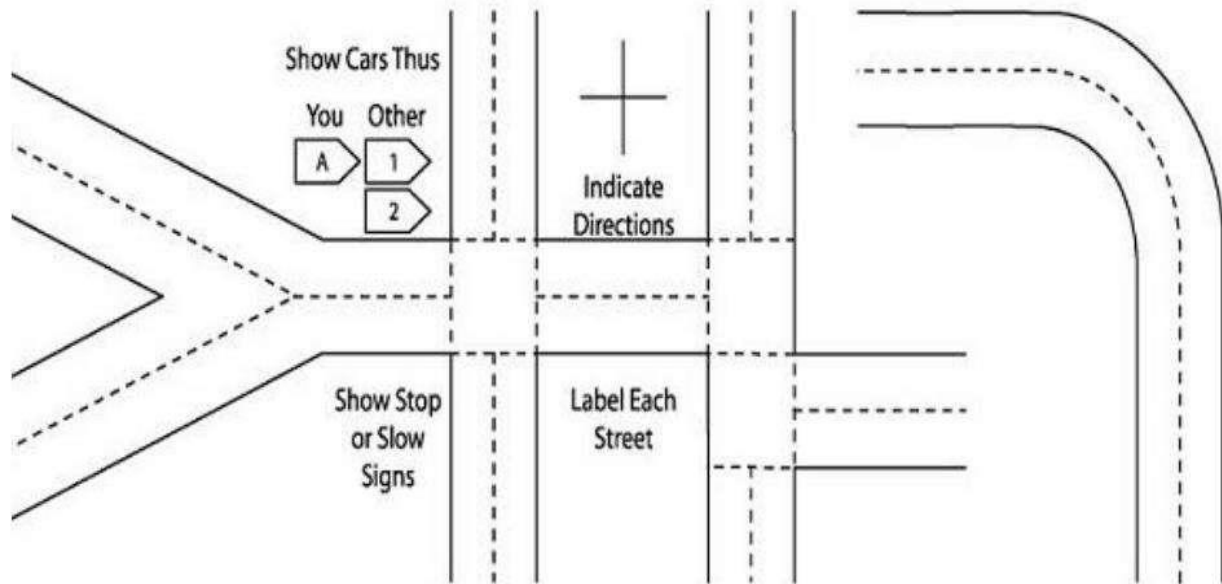
Driver #1:		Phone:	
Address:			
Vehicle Make:		Plate #:	
Name of Insurer:		Policy #:	
Description of Damage:			
Where can Vehicle be Inspected:			
Contact for Inspecton Location:		Phone:	
Address:			
Driver #2:		Phone:	
Address:			
Vehicle Make:		Plate #:	
Name of Insurer:		Policy #:	
Description of Damage:			
Where can Vehicle be Inspected:			
Contact for Inspecton Location:		Phone:	
Address:			

E. Witness(s)

Name:		Address:		Contact:	
Name:		Address:		Contact:	
Name:		Address:		Contact:	

Vehicle Accident Report

Illustrate position of cars at time of collision. Show skid marks. If any street is more than two lanes or is more than one lane only, please indicate.



Notes:

WORKERS COMPENSATION – FIRST REPORT OF INJURY OR ILLNESS

General	Employer (Name & Address incl. zip) Quality Electric Inc 5225 Irving Street Boise, Idaho 83716		Carrier/Administrator Claim Number		Report Purpose Code	
	Sic Code 238210/1731		Employer FEIN 82-0264457		Jurisdiction Claim No.	
	Insured Report No.		Employer's Location Address (if different)		Location No.	
	Phone No.		Jurisdiction		Insured Report No.	
Carrier/Claims Admin	Carrier (Name, Address & Phone Number) Alaska National Insurance Company 1111 Third Avenue Suite 2600 Seattle, Wa 98101		Policy Period To		Claims Admin (Name, Address & Phone Number) Alaska National Insurance 776 E. Riverside Drive Suite 245 Eagle, Id 83616 (208) 955-8036	
	Carrier FEIN		Policy Number or Self-Insured Number 13GWS09122		Administrator FEIN	
	Agent Name & Code Number Hub International Mountain States, Cheryl Porter, 2600 Rose Hill Suite 101 Boise, Idaho 83705, 208-947-1426		Check if self insured			
Employee	Legal Name (Last, First, Middle)		Birth Date		Social Security Number	
	Address (incl. Zip)		Sex <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Unknown		Marital Status <input type="checkbox"/> Unmarried/Single/Div. <input type="checkbox"/> Married <input type="checkbox"/> Separated <input type="checkbox"/> Unknown	
	Phone		No. of Dependents		Occupation/Job Title	
	Wage Rate \$		Day <input type="checkbox"/> Week <input type="checkbox"/> Other		# Days Worked/WK # Hrs Worked per Day	
	Time Employee Began Work <input type="checkbox"/> AM <input type="checkbox"/> PM		Date of Injury or Illness		Time Occurred <input type="checkbox"/> AM <input type="checkbox"/> PM	
	Employer Contact Name/Phone Number		Type of Illness/Injury		Part of Body Affected	
	Did Injury/Illness Exposure Occur on Employer's Premises? Yes <input type="checkbox"/> No <input type="checkbox"/>		Type of Illness/Injury Code		Part of Body Affected Code	
	Department or location where accident or illness exposure occurred		All Equipment, Materials, or Chemicals Employee Using upon Occurrence			
	Specific Activity Employee Engaged in at Time of Occurrence		Work Process the Employee Was Engaged in at Time of Occurrence			
	How injury or illness/abnormal health condition occurred. Describe the sequence of events and include any objects or substances that directly injured the employee or made the employee ill.		Cause of Injury Code			
Occurrence	Date Returned to Work		If Fatal, Date of Death		Were Safeguards or Safety Equipment Provided? Yes <input type="checkbox"/> No <input type="checkbox"/>	
					Were they used? Yes <input type="checkbox"/> No <input type="checkbox"/>	
	Physician/Health Care Provider (Name & Address)		Hospital (Name & Address)		Initial Treatment 0 <input type="checkbox"/> No Medical Treatment 1 <input type="checkbox"/> Minor: By Employer 2 <input type="checkbox"/> Minor Clinic/Hosp 3 <input type="checkbox"/> Emergency Care 4 <input type="checkbox"/> Hospitalized – 24 hr. 5 <input type="checkbox"/> Anticipated Major Med/Lost Time	
	Signature of Injured Employee, or Signature on File, Date		Witness to Accident (Name & Phone Number)			
Other	Date Administrator Notified		Date Prepared		Preparer's Name & Title	
					Preparer's Phone Number	

Filing this report is not an admission of liability. This report shall not be evidence of any fact stated herein in any proceeding in respect of the injury, illness or death on account of which this report is made. Idaho Industrial Commission, P.O. Box 83720, Boise, ID 83720-0041 IC Form IA-1 (2/98)

I. General Information

Injured Worker:		Claim Number:	
Employer Name:		Date of Injury	

II. Work Status Information

Employee is able to return to:

☐ Regular Duty without Restrictions or ☐ Modified Duty with Restrictions

Date Released:

III. Physical Capabilities

Check the number of hours the employee can perform the particular task:

	1	2	3	4	5	6	7	8	Not Restricted
Sit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Employee needs to alternate between sit / stand every _____ ☐ Minutes ☐ Hours

Injury Occurred on the: ☐ Left - Side ☐ Right - Side ☐ Both Sides

Does the Employee have a prescription that would hinder the ability to safely perform normal work functions?

☐ No ☐ Yes Type of Drug :

Check the amount of time the injured worker is able to perform the particular task:

	Never	Ocassionally (<33%)	Frequently (33 - 66%)	Continuously (67 - 100%)	N/A
Hand / Wrist Work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grasping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pushing / Pulling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fine Manipulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reach Above Shoulder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bend / Twist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kneel / Squat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climb / Stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lifting 1 - 10 lbs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lifting 11 - 20 lbs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lifting 21 - 50 lbs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lifting 50 - 100 lbs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Total number of hours each day the injured worker may work: _____ (If not indicated a full work shift will be assumed)

Projected Date Employee can return to Unrestricted Duties:


The injured worker has been informed of Work Status Report: ☐ No ☐ Yes

Physician's Name:

Physician's Signature:

Date:

The entire form must be completed and returned to the employer, even if the injured worker is not authorized to return to work.

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Section 8: Drug and Alcohol Policy

A. Drug and Alcohol Policy

1. Quality Electric has a strong commitment to the health, safety and welfare of its employees, their families, and its customers. Widely available statistics and information establish that the incidence of drug and alcohol abuse is increasing and that the effect is devastating to lives, business and the community at large. Quality Electric is concerned because of the potential for abuse among some of our employees. The safety of our employees and the general public could be endangered. Our commitment to maintaining a safe and secure workplace requires a clear policy and supportive programs relating to the detection, treatment, and prevention of substance abuse by employees.

April Stringfield has been appointed as the drug and alcohol program contact point for employees who have questions about the program.

B. General Definition of Safety-Sensitive Function:

On-duty function, including time at carrier, terminal, public property, or other areas, waiting to be dispatched; time spent inspecting or servicing a vehicle; all driving time; loading and unloading, or supervising loading and unloading; remaining in readiness to operate the vehicle; time spent attending to or associated with an accident; repairing or assisting to a disabled vehicle.

Note: Quality Electric may add additional safety-sensitive functions as need based on job description

C. Drug and Alcohol Use:

No driver shall use alcohol while performing safety-sensitive functions.

NOTE: Alcohol is defined as ethyl alcohol or any other low molecular weight alcohol such as isopropyl alcohol or methanol. "Alcohol Use" means consumption of any material containing alcohol, including medication(s).


No driver will perform safety-sensitive functions within four hours after using alcohol.

No driver who has an accident while performing safety-sensitive functions shall use alcohol for eight hours following the accident unless the driver has been given a post-accident test.

No employee may report to work under the influence of drugs or alcohol.

No employee may consume drugs or alcohol during assigned work hours, including any and all break periods. Prescription drugs (non-alcohol) use will be allowed if this use does not interfere with the employee's safety-sensitive job duties, and if the use is medically necessary.

Commercial Driver's License drivers are required to submit to a post-accident alcohol test, random alcohol or

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controlled substance test, reasonable suspicion alcohol or controlled substance test, or follow-up alcohol or controlled substance test.

Any employee found to be in violation of this policy will be restricted from performing a safety-sensitive function and subject to disciplinary action, which may include termination.


D. Effective Date:

The effective date of this policy will be 6-24-1998.

(Employers must give employees thirty (30) days' notice prior to the implementation of a drug and alcohol testing policy or program.)

President

Date

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E. Idaho Chapter - NECA / Local Union 291 – IBEW Drug Free Workplace Policy

This Agreement between the Idaho Chapter - NECA (hereafter referred to as the Association) and Local Union 291 - IBEW (hereafter referred to as the Union) encompass the relationship between both the Association and the Union (otherwise referred to as the Parties) relative to their respective efforts in providing drug and alcohol testing of their employees/members or applicants for employment (hereafter referred to as Workers). The definition of a Worker for the purpose of this policy is anyone working under the Collective Bargaining Agreements for the Western Counties Inside Agreement and Residential Agreement, and all other employees of employer's signatory to these Agreements, within the geographical jurisdiction of LU291. The definition of an Employer is an individual firm who has chosen to adopt this policy as written.

(1) Policy Statement

Both the Association and the Union have an interest in establishing a work environment free from the influence of drugs and alcohol for the benefit of its workers, as well as its customers and the public at large. As a result, the Association and the Union will implement a drug- and alcohol- free workplace policy to insure that its workers are free from the effects of drugs and alcohol while at work or on related business. This is consistent with regulations recently enacted by Federal agencies requiring drug testing for transportation workers, as well as Federal regulation requiring a drug-free workplace for all businesses contracting with the Federal Government.


Therefore, effective June 24, 1998, this Drug-Free Workplace Policy will be implemented and will apply to all prospective and current workers within the geographical jurisdiction of LU 291 employed by signatory contractors covered by this policy.

(2) Introductory Provisions

Possession, Use, Or Distribution of Illegal Drugs or Alcohol

The possession, use, purchase, sale, or distribution of illegal drugs (meaning those drugs for which there is no generally accepted medical use, e.g. marijuana, cocaine, methamphetamines, etc.) or drug paraphernalia by a worker in an employer vehicle, at a job site, on employer property, or during work hours is strictly prohibited. Any worker violating this prohibition will be terminated from employment. The possession or use of alcohol by a worker in an employer's vehicle, at a job site, on employer's property or during work hours without the employer's approval is prohibited. Any worker violating this prohibition will be terminated from employment.

The Parties have an absolute prohibition against worker use of illegal drugs both on and off the worksite. A worker's off the job illegal use, manufacture, purchase, possession, sale, or distribution of illegal drugs, or drug paraphernalia, which results in criminal charges being brought against the worker, will result in the worker being requested to submit to drug testing. Any worker convicted of a criminal drug statute will be terminated from employment.

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(3) Self-Referral

All workers who consider themselves drug or alcohol dependent and who voluntarily identify themselves to either the Employer or the Union will be encouraged to obtain an evaluation by a substance abuse counselor and seek treatment if such is the counselor's recommendation. The Employer and/or the Union will direct the worker to the Parties' Employee Assistance Provider (hereafter referred to as "EAP") services for professional substance abuse counseling.

Workers who undergo drug or alcohol rehabilitation will be expected to do so at their own expense (with the exception of those expenses covered by the Parties' insurance program), on their own time, or during a non-paid leave of absence approved by the employer.

Workers who demonstrate successful progress or completion of a recommended course of treatment may return to work or be referred for additional work after following the provisions of a worker Assistance Agreement and after they have passed a drug and/or alcohol test. Any worker returning to work will be expected to comply with all aspects of this drug-free workplace policy. A request for rehabilitation may not be made in order to avoid the consequence of a positive drug result, or to avoid taking a drug test when requested to do so under the terms of this policy.

(4) Prescription Medication


Workers are cautioned regarding the use of prescription medication that contains a warning label stating that the use of that drug may impair his/her ability to safely operate equipment or machinery. Workers may be allowed on the job site while using such medication if the drug is prescribed by a licensed medical practitioner who is familiar with the worker's medical history and assigned duties, and who has advised the worker that the prescribed drug will not adversely affect his/her ability to safely perform the job. Workers will only be tested for the drugs listed in this policy unless there is reasonable cause to suspect abuse of prescription medications.

(5) Drug or Alcohol Testing Required of Workers

Minert & Associate, Inc. will arrange that all initial drug testing will be conducted consistent with regulations adopted by the State of Idaho. Specimens will be tested for the following drugs and their metabolites: Marijuana, Cocaine, Opiates, Amphetamines, Phencyclidine (PCP). Consent by employees to submit to a screening test in accordance with this policy is a condition of new or continued employment of workers. The threshold levels for the above-mentioned drugs for a positive test will be attached to this policy.

a. Baseline Testing

The initial baseline testing will start thirty (30) days after the effective date of this policy. In initiating the provisions of this drug free policy, all workers currently employed will be required to submit to testing for the presence of illegal drugs within 30 days of the effective date of this policy.

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b. Employment Testing

Any applicant who does not hold a recognized current Clean Card will be required to submit to testing for the presence of illegal drugs upon being referred to work for any Employer covered by this policy. Once hired, a worker is considered an applicant until the results of their drug test have been confirmed and received by the Employer.

c. Reasonable Cause Testing

The employer will require a worker to be tested for the use of alcohol, illegal drugs, or the abuse of prescription medication if a worker's physical appearance or pattern of behavior gives the employer reason to believe the worker is impaired because of substance abuse which would endanger their wellbeing, or the safety of fellow workers, or the general public. The basis of suspicion regarding drug or alcohol abuse may be specific, contemporaneous event or conduct evidencing impairment observed over a period of time. While any person may notice and report this event or conduct to their supervisor, at least two supervisor or management officials must also be present to concur in this evaluation, or one supervisor may be present, and a second supervisor may concur via a telephone call. The Employer will make arrangements to insure that all workers who are requested to take a reasonable cause test will be transported to a collection clinic for testing as quickly as possible. The testing administrator (Minert & Associates, Inc.) will provide supervisors and management officials of Employers covered by this policy information relative to issues relating to reasonable cause drug and alcohol testing.

A worker suspected of being under the influence of a prohibited substance and/or alcohol may, for reasons of safety, be suspended without pay until test results are available. If the test proves negative, the worker will be reinstated with back pay.


d. Random Testing

All workers will be subject to random testing for the presence of illegal drugs. A random test is a test that is unscheduled and results in every worker being subject to testing at any given time.

The random selection process will be administered by Minert & Associates, Inc., and will be conducted in the following manner:

A "25% Random Selection" method will be employed. This means that over a course of one year, approximately 25% of all workers covered by this policy will be randomly tested for illegal drugs.

On a monthly basis, each Employer will provide Minert & Associates, Inc. with a complete list of all workers covered by this policy. Minert & Associates, Inc. will then randomly select a certain number of people for testing, equivalent to 1/12 of 25% of the number of people on the combined lists. A selection process will be utilized that ensures the selections are accomplished in an arbitrary manner. Minert & Associates, Inc. will notify

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the proper Employer(s) of those of their workers that have been selected for a random test. The Employer will inform the worker of their random selection and will arrange for the testing to take place as quickly as possible. A worker who submits to random testing will be compensated for the time spent to take the test by their Employer for up to one hour if the testing is done off-site.

Upon receiving the results of the test, Minert & Associates, Inc. will contract the Employer to inform them of the results of such test, following proper chain of custody protocol. In the event a test is negative, a worker's Clean Card will be updated with an expiration date of two years from that date.

e. Post-Accident Testing

Any worker who is involved in a work-related accident (as defined below) will be tested for the use of illegal drugs and/or alcohol as soon as practicable after the accident. Examples of conditions that will require a worker to take a drug and/or alcohol test include accidents that are caused by a worker and result in one of the following:


- a. A fatality, or bodily injury to another person, requiring medical treatment away on the site of the accident;
- b. An injury to the worker that may result in that worker filing a worker's compensation claim, with lost time likely exceeding one working day; or:
- c. Damage to property owned by the employer, or by a third party, that may reasonably be estimated to exceed \$500.

Workers who are involved in a work-related accident requiring medical attention are to inform their supervisor of the accident as soon as possible so that any needed drug or alcohol testing may be promptly conducted in conjunction with their medical treatment.

Any alcohol testing under this section will be limited to circumstances where there is evidence that the worker involved may have been alcohol - impaired at the time of the accident.

f. Clean Cards

Any worker who is required to take a drug test under the terms of this policy and test negative will be issued a clean card. This card will be effective for two (2) years from the date of the test and will be good in the jurisdiction of Local Union 291 where this policy is in effect. Thereafter, such a worker will not be required to submit to employment drug testing when he/she presents a clean card within the guidelines above. A new clean card will be issued each time an employee takes a drug test and tests negative. The clean card will be good for a period of two (2) years. A person not randomly selected during a two-year period must renew his

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clean card by taking and passing a drug test just prior to the card's expiration date. At the time of a required drug or alcohol test, the Employee will surrender their current clean card to the Employer before a new card will be issued.

Drug/Alcohol Testing Procedures **Specimen Collection Procedure**

When a prospective or current worker is notified that he/she is to submit a drug or alcohol testing, he/she will be given instructions as to where to report for testing. All specimen collections will be conducted by personnel who have been properly instructed and will be done according to approved collection procedures.

(1) Adulteration or Submission of Concealed Specimen


If, during the collection procedure, the collection monitor detects an effort by a worker to adulterate or substitute a specimen, a second specimen will be requested. If a second specimen is provided, it will be tested. If the request for a second specimen is refused, the collector will convey to the employer the worker's refusal to submit a true specimen. Such conduct will result in either a perspective worker not being offered employment, or a current worker being terminated from employment.

In the event that a prospective or current worker submits a specimen that is later identified as a diluted specimen, the company will advise the worker of that finding and request that the worker submit a second specimen. Such workers will be advised not to drink any fluids prior to the test. A second specimen will be submitted and paid for by the worker to the employer, and that worker will not be compensated by their employer for time lost for this second specimen.

(2) Drug / Alcohol Testing and Confirmation

All specimens will be tested for the presence of illegal drugs through a urine specimen. No other clinical tests will be performed on the specimen. When a worker is tested for the presence of alcohol, the testing level will be the equivalent of 0.04 alcohol concentration (BAC). Alcohol testing will be done by breath or saliva testing.

Any specimen that screens positive for the presence of illegal drugs will be confirmed by the Gas Chromatography/Mass Spectrometry (GC/MS) confirmation method. Any worker who tests positive for drugs or alcohol may request the same specimen by retested at the worker's expense. This must be requested in writing within 48 hours of the worker being notified of the positive test result. If this second test proves negative, the worker will be reimbursed for the cost of this test.

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(3) Notification of Test Results

Where a test is determined negative, a Clean Card good for two (2) years will be sent to the Employer for distribution to the worker. The Employer will be responsible for the timely distribution of the card to the Employee. The Employee will furnish a current mailing address to the Employer.

All test results received regarding current workers will be forwarded through the office of Minert & Associates, Inc. to the Employer. In the event a specimen tests positive the Employer will be notified of the worker's identity and drug(s) involved. Test results will be reported only to those individuals authorized by the Parties to receive them, following chain of custody protocols.

Prospective and present employees who are currently using prescription medication will have an opportunity to make this fact known at the time that their specimen is collected. Any prospective or present employee who is taking a prescription medication that may have been the cause of a positive test result will be asked to provide the name of the medication and the identity of the prescribing physician for verification. If this information is verified the employee's test result will be reported as negative.

The Employer may afford an employee an opportunity to discuss a positive test result with the servicing agency, Minert & Associates, Inc., prior to taking disciplinary action. If necessary, the servicing agency will consult with a medical professional and will follow up on such information as is deemed necessary. If, after consideration of the matter, the staff at Minert & Associates, Inc. finds no reason to doubt the validity of the positive test result, they will then report that finding to the Employer for disciplinary action.

Minert & Associates, Inc. will communicate a positive test result directly to the Employer if the worker expressly declines the opportunity to discuss the results of the test, or fails to contact Minert & Associates Inc. in a timely manner after being instructed to do so.


(4) Refusal

A worker's refusal to test consistent with this policy's provisions will be considered the equivalent of a positive test result, and the worker will be subject to the resulting terms outlined in this policy.

(5) Effect of Testing Positive

Any current or prospective worker who tests positive for the presence of illegal drugs or alcohol will be suspended from work and will be referred to the Parties' EAP. Any worker who tests positive for illegal drugs or alcohol will not be allowed to return to work until he/she has signed and complied with the terms of the Worker Assistance Agreement as follows:

The worker will be required to consult with the Parties' EAP and if found to be alcohol or drug dependent will be

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expected to abide by the prescribed rehabilitative measures prior to being allowed to return to work. The worker must then provide evidence of successful completion of an approved EAP counseling and/or rehabilitation program.

Any worker who completes any EAP recommended rehabilitation, or is found not to be drug or alcohol dependent, must take and pass a drug/alcohol test at his/her expense. If found to be dependent by the EAP, the worker will then be subject to further testing on a random basis for one year, not to exceed four (4) test per year. The first two (2) of these tests will be paid at the worker's expense. The next two (2) will be paid for at the employer's expense.

If at any time during that year the worker should test positive for illegal drugs, the worker's employment will be terminated. The EAP will be notified, and the worker will be re-evaluated for fitness for return to work.

(6) Grievance Procedure

All grievances or questions in dispute regarding the provisions of this policy may be submitted through the normal grievance procedure as outlined in the local jurisdiction's Inside Wireman Agreement, ARTICLE I.

(7) Cost of Drug Testing

The administrator of the Idaho Chapter - NECA / Local Union 291 - IBEW Drug Free Workplace Policy will be directed to give a statement to the Local and Chapter of the cost of drug and alcohol test. Any changes in price will be negotiated by the administrator and parties to this policy before implementation. The cost of current drug testing will be attached as an Appendix to the Policy.


Unless as otherwise specified in this Policy, testing expenses incurred with this policy shall be paid for as agreed to by the Parties.

(8) Conclusion

The terms of this drug free workplace policy are intended to produce a work environment where workers are free from the effects of drugs and/or alcohol. The Employer and the Union anticipate that by implementing the provisions of this drug free workplace policy its workers will enjoy the benefits of working in a safer and more productive work environment. Changes to this policy can be made only with the consent of both parties and after notification of any such changes is made to the workers. The terms of this policy will be limited to the expiration date of the Local Inside Wireman Agreement.

(9) Appendix to Idaho Chapter-NECA / LU_291-Ibew Substance Abuse Policy

The following illegal drugs are the substances that will be screened for in initial and confirmation tests for the purposes of this drug policy. Listed also are the test levels for the initial test as well as the confirmation test. Information provided by Minert & Associated, Inc., Meridian, Idaho. (A negative test result in the initial testing will not be subject to a confirmation test.)

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Substance	Initial Test Level	Confirmation Test Level
	(ng. mL)	(ng. mL)
Amphetamines	1000	500
Cocaine Metabolites	300	150
Opiates / Metabolites	300	300
Phencyclidine (PCP)	25	25
Marijuana Metabolites	50	15

F. Annexes

- Minert and Associates, Inc. – Drug Testing Services Proposal
- Worker Assistance Agreement between Idaho Chapter – NECA / Local 291 IBEW and Quality Electric Inc.
- Employee Acknowledgment
- Drug Test Form

MINERT & ASSOCIATES, INC.

Drug Testing Services Proposal
to
NECA/Electrical Workers Local Unions No. 449 & 291

Minert & Associates, Inc. **proposes** to provide the following services:

- * Policy development and/or review;
- * Provide supervisor drug/alcohol awareness training materials;
- * Arrange and coordinate all drug and alcohol testing and reporting;
- * Provide collection services at locations requested by companies, or on-site at locations where available;
- * Conduct computer generated random selection for testing of employees;
- * **Coordinate Medical Review Officer (MRO) services for employees testing positive; and**
- * Provide semi-annual/annual statistical reporting;
- * Provide clean cards to all employees who test negative.

The prices that are proposed for these services are:

* Each drug test will cost	\$	30.00
* Alcohol Testing	\$	10.00
* Collection Fee	\$	10.00

Note: Collection fees for Local 449 are subject to onsite testing fees as set forth in previous documents received. Collection fees for 291 are stated above.

NECA/Electrical Workers Local Unions No. 449 & 291 agrees to pay Minert & Associates, Inc for the cost of the testing with in thirty days of the date of the invoice.

**Worker Assistance Agreement
between
Idaho Chapter - NECA / Local Union 291 - IBEW
and**

**Quality Electric, Inc.
(Employee)**

Pursuant to the provisions of this Drug - Free Workplace Policy, you (the employee) were given a drug / alcohol test, the results of which indicated the presence of illegal drugs / alcohol. Therefore, your employer plans to take the following action consistent with the terms of the above stated policy. You will be offered further employment with the company provided you agree to the terms outlined below:

You will be required to consult with the appropriate EAP provider and if found to be alcohol or drug dependent, will be expected to abide by the prescribed rehabilitative measures prior to being allowed to return to work. You must then provide evidence of successful completion of an approved EAP counseling and / or rehabilitative program.

When you complete any EAP recommended rehabilitation, or are found not to be drug or alcohol dependent, you must take and pass a drug / alcohol test at your expense.

If found to be dependent by the EAP, you will then be subject to further testing on a random basis for one year, not to exceed four (4) tests per year. The first two (2) of these tests will be paid for at your expense. The next two (2) will be paid for at the Employer's expense.

If at any time during that year you should test positive for illegal drugs, your employment will be terminated. The EAP will be notified and you will be re-evaluated for fitness to return to work.

The terms of this Agreement, and all test results, will be held in confidence by Employer and Union representatives.

Employer Signature

Date

I understand the terms of this Agreement and agree to abide by each item as above stated.

Worker's Signature

Date

EMPLOYEE ACKNOWLEDGMENT

I, _____ acknowledge receipt of the Drug and Alcohol Program and agree to the conditions and rules as stated in the **Quality Electric** program. I further state that I am aware of the consequences for violating the rules, including revocation of driving privileges, referral to a substance abuse professional (SAP), and possible termination of employment.

I further acknowledge that April Stringfield is the point-of-contact within **Quality Electric** for questions about this policy and program.

Signed

Date

LETTER OF INTRODUCTION

Quality Electric, Inc./NECA
5272 Irving
Boise, ID 83706
Phone: 375-1300
Contact: April Stringfield / Jay H. / Dave B.

Collection Facility:
623 E. Schiller Ln.
Meridian, ID 83642
Telephone: 208-884-4100
1-800-388-3204
Fax: 208-884-4111
Hours: M-F 8:00 AM - 5:00 PM
****No Appointment Necessary!**

Date: _____

Please accept this letter of introduction in behalf of: _____

of Quality Electric. We are requesting that this individual be given a test as follows:

(Please put an "X" indicating the test reason, type and substances.)

Reasons:

Pre-Employment	_____
Random	_____
Post Accident	_____
Reasonable Cause	_____
Baseline	_____
Return to Duty	_____
Follow-up	_____
Other	_____

Type:

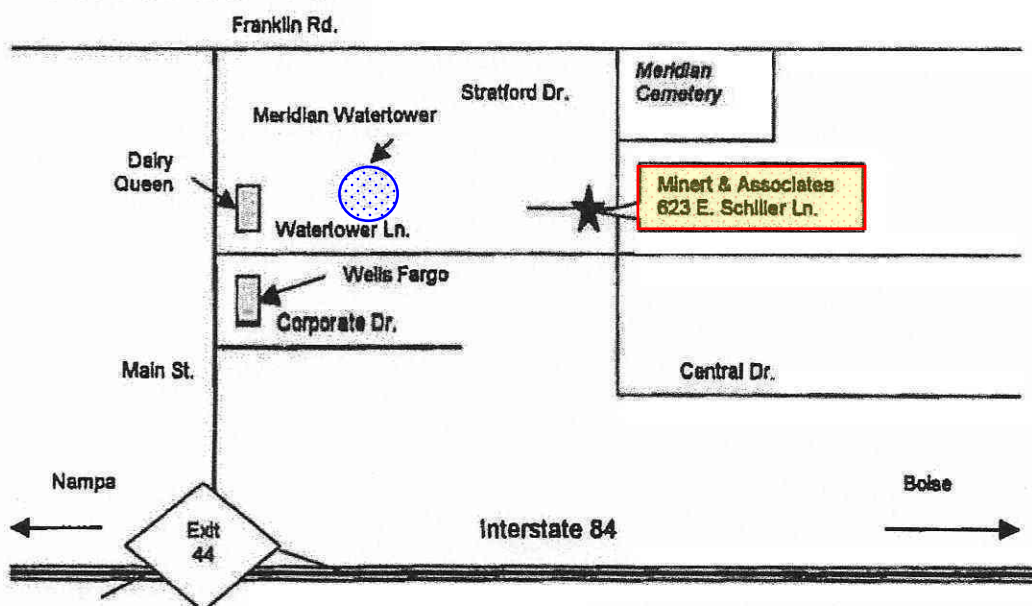
NonDOT	_____
DOT	_____


Substances

Drugs	_____
Alcohol	_____

!!Donor MUST provide photo ID at the time of collection!!

Location of Minert & Associates, Inc.



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Section 9: Enforcement Policy

A. Policy Statement

The purpose of this policy is to outline firm but fair specific enforcement procedures when an employee is found in violation of a safety standard, policy, or procedure outlined in this manual. Issues that are considered minor in nature should be handled as a teaching/coaching moment to improve the overall safety culture of the organization. ALL safety issues likely to result in serious injury or death be addressed immediately.

B. General Requirements

1. It is the employee's responsibility to work safely in accordance with procedures outlined in this manual.
2. It is the Safety Director's, Operations Managers, Supervisors or Foreman's responsibility to ensure all workers are trained and equipped to perform their work safely in accordance with procedures outlined in this manual. Employees that fail to perform work in accordance with our standards shall be re-trained or disciplined in accordance with the procedures outlined below.
3. Quality Electric is committed to safety and senior management holds all supervisory staff responsible and accountable for safety within their respective areas.
4. Physical inspections by Quality Electric Inc. officials or insurance representatives shall occur. Company officials must conduct periodic inspections of work areas to ensure compliance with safety rules and policies.


C. Level 1 Safety Violation

Level 1 safety violations Include, but is not limited to the following:

- Violation of less than life-threatening rules or regulations
- Breach of a written safety and health requirement that places people or property in an at-risk condition
- Failure to use, or execute properly, a required permit i.e. cranes, lockout/tag-out/try, confined space, excavation, line-opening, etc. per project requirements
- Unsafe use of PFAS or Primary / Secondary Fall Prevention or Protection
- PPE infraction (other than serious)
- No seat belt use

D. Level 1 Safety Violation Enforcement Procedures

A four-step enforcement program consisting of a verbal warning, written warning, suspension and termination for Level 1 Safety Violations. All violations, regardless of verbal or written, will be documented within the project safety folder. Workers under the supervision of field supervisors that continue to violate safety and health procedures may result in both employee and supervisor write-ups.

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1. Verbal Reprimand:

When an employee is found violating a safety policy or procedure, it is important that the supervisor states the issue to the employee, shows the employee what steps need to be taken to correct the issue and get assurances from the employee that this issue will not happen again. The supervisor should make it clear to the individual that this is a documented verbal reprimand. The employee will be given a written reprimand if it happens again.

2. Written Reprimand:

- If an employee is in violation of any policy or procedure in this manual for the second time, the employee will receive a written reprimand
- The employee shall be required to re-attend project safety orientation training and/or safety training specific to the unsafe act
- The reprimand should state the nature of the violation and what the resulting actions will be if the employee violates the program the third time.

3. Final Reprimand:

Upon the final reprimand of a Quality Electric employee, the supervisor will suspend the employee for a minimum of 3 calendar days, but not to exceed 7 calendar days. The severity of the penalty shall be adequate for the violation. Upon final reprimand of an employee, they will be removed from the project site. Following a suspension for safety violations, if an employee is found violating any safety policy or procedure, it will result in permanent termination.

E. Level 2 Safety Violation (Gross Misconduct)

Level 2 Safety Violations include, but are not limited to the following:


- Non-compliance safety violation which could or does result in life threatening conditions
- Acts of sabotage, vandalism or threats against personnel or property
- Initiation of horseplay or harassment that results in personal injury or physical confrontation
- Fighting, violence or threats of violence to other employees or personnel on site
- Failure to adhere to the Harassment Policy and Guidelines.

F. Level 2 Safety Violation (Gross Misconduct) Enforcement Procedures

Episodes of gross misconduct by a Quality Electric employee for any reason will result in immediate and permanent termination.

G. Sliding Scale

The above actions are to be placed against a twelve-month sliding scale. If an employee receives reprimand on January 1 and commits his / her fourth offense on or before December 31st of the same year, he / she will be terminated. The

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employee does not have to commit the same violation each time to receive further reprimands. He / She could receive a verbal reprimand for smoking in a no smoking area on his / her first offense and then get a written reprimand for their second offense which could be a forklift violation. Then another for failing to use proper personal protective equipment. He / She will be terminated upon their fourth offense in the last twelve months.

In the case of serious safety violations such as by – passing guarding or other unsafe activities that put the violator or other employees at serious risk of injury, the manager may move the violator directly to the second or third warning level. If the violator’s actions put him / her or others at risk of death or dismemberment the manager has the option to terminate him / her with no further warning.

H. Annexes

1. Forms and Permits:
 - Safety Reprimand Form
 - Safety Reprimand Rebuttal Form

Reprimand Form

EMPLOYEE DISCIPLINE FORM			
Employee Name:		Postion:	
Supervisor Name:		Warning Date:	
SECTION A: WARNING TYPE & REASON			
TYPE OF WARNING			
First Warning	Second Warning	Third Warning	Fourth Warning
REASON FOR WARNING			
Tardiness / Leaving Early Absenteeism Breach of Company Policy Conduct Disregard to Verbal or Written Instruct	Insubordination Perfomance Work Quality or Quantity Damage or Theft of Company Property Other _____		
SECTION B - DETAILS			
Description of Infraction:			
SECTION C - CORRECTIVE ACTION			
SECTION D - VERIFICATION			
TITLE:	NAME:	SIGNATURE:	DATE:
Employee:			
Supervisor:			
Witness			
SECTION E - FOLLOW UP TRAINING			
Presented By:			
Topic of Training and Material Covered:			
Date of Training:			
Trainee Signature:			

Warning Notice Procedure:

These warnings are the minimum and depending on the severity of the infraction can be changed to a more severe warning.

1. **First Warning** will result in a verbal warning. The employee will be met with and informed that he or she is being issued a verbal warning and informed of the infraction, rule or procedure that was violated and the corrective action to be taken. Proper procedure will be discussed to clarify the situation and allow the employee to correct the behaviour. This person making this verbal warning will inform the operations manager of their branch that this warning has been issued, so the operations manager may make written record for the warning. A Safety Reprimand Form will serve as the written record for this warning.

2. **Second Warning** will result in a written reprimand and additional training. The reprimand will be written on the Safety Reprimand Form and will describe the action or behavior that needs correction. The employee receiving the reprimand has the right to submit a written rebuttal to the reprimand. The employee must sign the reprimand. The reprimand and the rebuttal will become part of the employee's employment records.

3. **Third Warning** will result in another written reprimand (using the standard form) and punitive layoff, the duration of which will be decided at the time of disciplinary action and is to be weighed by the severity of the offense. Again, the employee may submit a rebuttal to the reprimand. The employee must sign the reprimand. The reprimand and any rebuttal will become a part of the employee's employment record.


4. **Fourth Warning** will result in removal from work site.

The above actions are to be placed against a sliding twelve - month scale. In the case of a serious violation such as theft of company property, the manager has the option to terminate the violator with no further warning.



Safety Reprimand Rebuttal Form

EMPLOYEE DISCIPLINE FORM			
Employee Name:		Position:	
Supervisor Name:		Warning Date:	
Section A – WARNING TYPE & REASON			
TYPE OF WARNING			
<input type="checkbox"/> First Warning	<input type="checkbox"/> Second Warning	<input type="checkbox"/> Third Warning	<input type="checkbox"/> Fourth Warning
REASON FOR WARNING			
<input type="checkbox"/> Tardiness / Leaving Early	<input type="checkbox"/> Insubordination		
<input type="checkbox"/> Absenteeism	<input type="checkbox"/> Performance		
<input type="checkbox"/> Breach of Company Policy	<input type="checkbox"/> Work Quality or Quantity		
<input type="checkbox"/> Conduct	<input type="checkbox"/> Damage or Theft of Company or Micron Property		
<input type="checkbox"/> Disregard to Verbal or Written Instruction	<input type="checkbox"/> Other: _____		
SECTION B – DETAILS			
Description of Infraction:			
SECTION C – REBUTTAL STATEMENT			
SECTION D - VERIFICATION			
TITLE	NAME	SIGNATURE	DATE
Employee:			
Supervisor:			

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Section 10: Employee Training and Education

A. Intent Statement

The intent of this section is to clearly outline the training standards for the safety and health program for all employees. To ensure a successful safety program, constant reinforcement of the program through training is required.


B. General Requirements

1. The Supervisors are responsible for ensuring that all workers attend the safety orientation, and all workers receive task specific safety training as required.
2. The Supervisor is also responsible for verifying that workers have training and are proficient at the tasks they are required to perform.
3. The safety professionals are responsible to assist and provide training as requested.

Re-training is required when the individual shows a lack of proficiency, or understanding, to the subject matter. Quality Electric Supervision may request re-training to protect the individual.

C. Quality Electric Safety Orientation

1. Before a new employee starts work, they shall attend the new employee safety orientation which at a minimum requires:
 - a) The worker to view the Quality Electric safety orientation which identifies safety requirements of the company
 - b) Supervisors are to instruct the worker on site specific rules, requirements, and cover emergency action plan within the project
 - c) Each safety orientation must include training on PTP's, site specific hazards and other relevant information
 - d) Awareness training is required when health hazards are known to exist (i.e., lead, asbestos, silica, etc.)
 - e) Supervisors to instruct the employee of what to do in the case of an announced emergency
2. Contact your assigned safety professional to assist in the development of a site-specific safety orientation and summary.
3. New Quality Electric employees shall be initially assigned to work with a mentor, i.e., experienced employee until he/she can show that they understand the assigned task and can perform the task in a safe manner.
4. New Quality Electric employees shall be given an orange stripe on their hard hat identifying them as a new member of the team.
5. The Superintendent and Foreman shall review the incident reporting procedures with the employee and remind them that all incidents, accidents, near misses, and/or injuries must be reported to a Foreman or Superintendent immediately.
6. The Superintendent and Foreman shall also make it clear that following safety rules are a condition of employment and employees will be held accountable if they fail to do so. Inform employees that everyone has the authority and responsibility to stop work when an unsafe behavior or condition exists.

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D. Core Safety Training Requirements

1. Operations (Project Management and Field Supervision) Training:

- First Aid/CPR/AED
- OSHA 30 Hour Hazard Recognition
- Minimum of eight hours of safety training per year (i.e., silica, PPE, fall protection, etc.)

2. Trade/Craft Training:


- Operations will ensure and verify that task and equipment specific training is provided. An OSHA 10-Hour card is required.
- Operations will ensure and verify that qualification training is provided (i.e., crane, forklift, rigging, hand signals, etc.).
- Training records shall be submitted to Quality Electric Safety Department on a regular basis and prior to employee exposure. Training records shall be documented on the applicable forms and are to include:
 - instructor name,
 - date,
 - criteria,
 - employee signature,
 - duration of training (ex. 2 hours).

3. Supplemental Training Requirements:

A worker may be required to obtain supplemental training or certification before being allowed to perform a task or use a piece of equipment. Workers shall not be allowed to perform work activities or utilize equipment before the appropriate training and/or licensing is obtained. Tasks requiring proof of training or accompanied by a valid license (notification via letterhead, electronic database, or card) include, but not limited to:

- Crane signaling
- Crane operator (*NCCCO or equivalent required)
- Rigging
- Respirator
- Aerial work platform / Scissor lifts (*must be readily accessible and on site)
- Forklift (*required to have a license / certification on them)
- Confined space
- Powder actuated tools
- Lead awareness
- Asbestos awareness
- Silica awareness

4. Competent person training is required, but not limited to, the following areas:

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- Silica
- Scaffold
- Excavation
- Electrical
- Lockout/Tagout
- Fall protection
- Utilization of any type of specialty equipment

E. Records

Employee training records shall be electronically archived and retained for 11 years following date employee left the company.

F. Annexes

1. Forms and Permits:

- Certification Badging and Mentoring Notification on Hard Hat
- Employee Fall Protection Training
- Employee Safety Orientation Checklist
- Equipment Operation and Safety Training
- Lift, Ladder and Harness Training Form
- New Hire Training Form

Certification Badging on Hardhats for Safety

1.0 Purpose

- To prescribe a method of identification of safety training using pictograms on the hardhat for quick and easy reference for all workers on site.
- To include;
 - Safety Training Pictograms
 - Emergency Contact Information






2.0 Scope


- Site(s) impacted:
- Target user Audience: All qualified workers with Quality Electric Inc.

3.0 Safety

- Main purpose is to provide:
 - Quick identification of workers who possess the knowledge and training of the skills acknowledged by the pictograms on the label.
 - Quicker response time if any medical attention is needed by the worker who is unable to communicate effectively at the time due to a medical emergency or incident.

4.0 Definitions

Pictogram	Description of Certification
	<ul style="list-style-type: none"> • Lift Training Certification
	<ul style="list-style-type: none"> • LOTO and Operational Locking and Tagging Safety Training Certification
	<ul style="list-style-type: none"> • Ladder Safety Training Certification
	<ul style="list-style-type: none"> • Gas Bunker Training Certification
	<ul style="list-style-type: none"> • Electrostatic Discharge Safety Training Certification

	<ul style="list-style-type: none"> Fall Arrest System Training Certification
	<ul style="list-style-type: none"> Powder Actuated Tool Safety Trained Certification <ul style="list-style-type: none"> Specifically, HILTI
	<ul style="list-style-type: none"> Raised Metal Floor Safety Trained Certification
	<ul style="list-style-type: none"> Emergency Contact Information in the event the worker is unable to communicate
	<ul style="list-style-type: none"> Reverse Donning Symbol <ul style="list-style-type: none"> ANSI Z89.1 standard

5.0 Specifications

- The Certification stickers will be 1" by 1" rounded triangles that stack in a nesting pattern.
- The Emergency Contact Information Sticker will be a ½" Height by 2 ¾" Long. It will house an internal paper for any medical issues and an emergency contact in case of an unforeseeable event.

6.0 Requirements

- To provide continuity and uniformity to all team members in Quality Electric Inc employment we will have the certification stickers stacked on the back lower portion of the hard hat or on the brim of the hardhat if worn with the brim backwards.
 - If the brim is backwards it is required that the hat have the symbol of Reverse Donning to be OSHA compliant with ANSI Z89.1 standard.
- To provide continuity and uniformity to all team members in Quality Electric Inc employment we will have the Emergency Contact Information sticker placed on the inside of the hardhat above the brim on the side that will be on the back of your head if you are wearing it.





Employee Fall Protection Training

This Company has a written fall protection program that details its responsibilities under Occupational Safety and Health Administration (OSHA) fall protection requirements: 29CFR 1926 Subparts E (Personal Protective Equipment 1926.105 - 106), L (Scaffolding 1926.450 - 454 and Appendices A - E), M (Fall Protection 1926.500 - 503 and Appendices A - E), R (Steel Erection 1926.760 - 761 and Appendices D and G) and CC (Cranes and Derricks 1926.1423). All employees will be trained by a competent person* who is qualified to any job assignment where fall protection is required. The training will enable each employee to recognize fall hazards and to follow appropriate procedures that minimize the hazards. This record certifies the following employees have been trained to recognize fall hazards and to use appropriate fall protection systems and methods to minimize exposures to the hazards, as required in 1926.503(b).

Employee Name:

FALL PROTECTION EQUIPMENT COVERED IN TRAINING				
Type of Equipment	Manufacturer / Model #	Employee Signature	Trainer Signature*	Date
Full Body Harness	DBI Sala / Model # 1102000			
Shock - Absorbing Lanyard				
Work Positioning Lanyard				
Self - Retracting Lifeline (SRL)	Protecta / Model #'s 3100425 & 3100431			
Restraint Line	Clarified for field use			
Horizontal Lifeline	Clarified for field use			
Vertical Lifeline	Clarified for field use			
Incline Line				
Rope Grab				
Deceleration Device				
Locking Snap Hooks	Clarified for field use			
Locking Carabineers	Clarified for field use			
Controlling Descent / Self - Rescue				
Relief Straps	Clarified for field use			
Anchorage	Beamer Guardian / Model #00102			
Safety Nets				
FP on Aerial Work Platforms (AWP)				
FP on Crane - Supported Personnel Platforms				
Other : Cross Arm Strap	Guardian Cross Arm Strap / Model # 10787			
Other				

Warning Access Zones and Safety Monitors: For Leading edge work [29 CFR 1926.501(b)(2)] and precast concrete [29 CFR 1926.501(b)(12)] work where the employer can demonstrate that it is infeasible or creates a greater hazard to utilize conventional fall protection equipment, the employer may decide to use controlled access zones and safety monitors. The OSHA position is that it is feasible and the employer has the burden to provide proof that it is infeasible and to prepare a site specific plan in accordance with 29 CFR 1926.502(k). The Quality Electric Inc. position is that the conventional method of fall protection is feasible in these activities.

OSHA STANDARD / COMPANY PROGRAM COVERED IN TRAINING	Employee Signature	Trainer Signature*	Date
Company's Written Fall Protection Program			
Company's Written Fall Protection Rescue Plan			
Trained to Perform Rescue of Fallen Worker Suspended by Fall Arrest			
Subpart E (Safety Nets) 29 CFR 1926.105			
Subpart E (Working Over Water) 29 CFR 1926/106			
Subpart L (Scaffolds / Aerial Lifts) 29 CFR 1926.450 - 454 and Appendix A - E			
Subpart M (Fall Protection) 29 CFR 1926.500 - 503 Appendix B - E			
Subpart R (Steel Erection) 29 CFR 1926.750 - 761 and Appendix A - H			
Subpart CC (Crane Standard) 29 CFR 1926.1423 and 1431			

** I certify that I have trained the employee / worker for the equipment, company programs and / or OSHA standards listed above. I also certify that I am a competent person who is qualified to provide this training. A Competent Person is one who is capable of identifying existing and predictable hazards [OSHA 29 CFR 1926.32(f)]; authorized to take prompt corrective measures to eliminate hazards [OSHA 29 CFR 1926.32(f)]; and qualified to train employees in all aspects of fall protection covered in OSHA Subpart M [29 CFR 1926.503 (Subpart M)].*



Employee Safety Orientation Checklist

Employee Name:	
Job Title:	
Person Conducting Training	

	Supervisor	Initials Employee	Date
1 Company Safety Policy Statement	_____	_____	_____
2 Company Safety Rules	_____	_____	_____
3 Job Orientation	_____	_____	_____
4 Accident Reporting	_____	_____	_____
5 Employee Reporting and Communication System	_____	_____	_____
6 SDS Book	_____	_____	_____
7 Federal Labor Poster	_____	_____	_____
8 State Labor Poster	_____	_____	_____

Tools, Machinery and Equipment

Managers are required to conduct "hands on" demonstration on the safe use of tools, machinery and equipment to be used by the employee. Special instruction and emphasis will be placed on safety devices. Identify equipment on which employee was trained below.

	Supervisor	Initials Employee	Date
1 DBI Sala / Model # 1102000	_____	_____	_____
2 Protecta / Model #'s 3100425 & 3100431	_____	_____	_____
3 Beamer Guardian / Model #00102	_____	_____	_____
4 Guardian Cross Arm Strap / Model # 10787	_____	_____	_____
5 Genie AWP Superseries 25	_____	_____	_____
6 Genie GR - 12	_____	_____	_____
7 Skyjack SJIII - 321	_____	_____	_____
8 Ladders	_____	_____	_____

Supervisor's Name Printed:	
Supervisor's Signature:	Date:

Employee's Name Printed:	
Employee's Signature:	Date:

Equipment Operation and Safety Training

Employee Name:	
Job Location:	
Person Conducting Training	

Type of Equipment	
Make / Model:	
Equipment Owner:	

Review Equipment Operation and Safety Manual

Demonstrate Ability to Operate Equipment

Contact Customer and Affected Personnel

Identify Hazards

1	Crushing	5	
2	Pinch Points	6	
3	Cuts	7	
4	Abrasions	8	

Required PPE

1	Hard Hats	5	
2	Gloves	6	
3	Safety Glasses	7	
4	Work Boots	8	

Supervisor's Name Printed:	
Supervisor's Signature:	Date:

Employee's Name Printed:	
Employee's Signature:	Date:

Lift, Ladder and Harness Safety Training Form

(Review with each new employee and site Supervisor before any work begins)

New Employee Name:			
Signature:		Date:	
Department:		Building:	

Contractor Safety Training Checklist

I. Lift Safety

Basic Lift Safety

II. Lift Styles Available On – Site – Check all that apply

Genie AWP Super Series 25

Genie GR – 12

Genie GR – 20

SkyJack SJIII 321

III. General Information

Building Entry and Exiting

IV. Ladder Safety

Basic Ladder Safety

3 Points of Contact

Ways to Reduce your Chances of Falls

V. Ladder Varieties

Platform Ladders

Step Ladders

Extension Ladders

VI. Inspections

Inspection Specifications

VII. General Harness Safety

Safety Harness Guidelines

Fail Criteria

How to Wear a Harness - Visual

How to Wear a Harness

Safety Factor if You Fall

New Hire Form

(Review with each new employee and site Supervisor before any work begins)

New Employee Name:			
QEI General Foreman:		QEI Foreman:	
Department:		Date:	

Contractor Safety training Checklist

I. Site Specific Orientation

Contractor Safety Video

II. Introduction

Core Values

Team Members Expectations (Journeyman / Apprentice)

III. General Information

Important Telephone Numbers

Work Schedule

Break / Lunchroom Locations, Times, and Durations

Tool and Storage Locations

IV. Policies and Procedures

Smoking

Drugs and Alcohol

Dress Code

Proper Conduct

Housekeeping

ESD Control

Clean Room

CUP Control

Security Protocols and Area Security Issues

6s Barrier Zone Control

Environmental Compliance

Hazardous Waste Disposal

Non – Compliance



QUALITY ELECTRIC INC.

V. Safety Policies and Procedures

Safety Policy Elements

Reporting Safety Incidents, Event Issues and Blood Borne Pathogens (BBP)

Evaluating Hazards in the Work Area

Personal Protective Equipment (PPE) and Clothing

Safety Shower / Eyewash Stations

Area Alarm Systems

Fire Evacuation, Mustering Sites and Evacuation Routes

Electrical Safety / Energy Isolation (CoHe) (Lockout / Tagout)

Clean Room Energized Electrical Work

Fall Protection

Subfloor Entry and Guarding

Confined Space

Fire Extinguishers

SDS and Chemical Safety

TMAH (Tetramethylammonium Hydroxide)

Chemical Hazards / Tyvek Suit Training Date and Location

Automated Material Handling System (AMHS)


VI. Quality Control Program

What is Quality Control?

Why is Quality Control Important?

Work Tasks that are Quality Controlled

QC Personnel and Job Assignments

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Section 11: Safety Incentive and Employee Recognition

A. Intent Statement

The intent of the Safety Incentive and Employee Recognition program is to promote a strong safety culture.


B. Definitions

1. **Safety Incentive** – by way of positive participation and involvement with safety prevention, an incentive (or award) is handed out through a point structure or one-time award
2. **Employee Recognition** – through the act of good safety behavior and/or by using proven safety prevention tools, an individual or group, may be recognized. Recognition may be in the form of verbal or written and may include an award.

C. General Requirements

1. Quality Electric is committed to maintaining an accident-free environment for all individuals working on our projects. Achieving an accident-free environment requires individual workers to maintain a constant awareness of their surroundings and a willingness to participate as part of the solution by identifying and correcting un-safe conditions before they result in an accident.
2. The Incentive programs are designed to encourage employees to actively participate in creating an accident-free environment through proactive means, such as participating in safety training programs, early identification of un-safe conditions, participating in safety solutions (such as safety committees), and participation in pre-work activities (such as tool-box-talks and morning huddles). Eligible workers will receive safety points for their participation in such programs and in turn those points can be redeemed for various incentives.
3. This program provides a three-point approach for employees working on Quality Electric's projects to be proactive in safety efforts:
 - a) Improving safety awareness by participating in safety risk assessments and planning, training and going above and beyond with preventing incidents by using Good Catch or reporting to their management.
 - b) Identifying and correcting un-safe actions to prevent accidents from occurring.
 - c) Collaboratively encouraging employees to bring forth good safety ideas for implementing into our projects.
4. The slogan for this program is "Light the Way", and this slogan will appear on safety incentive gear, and other areas within the company. This slogan is meant to remind all employees to continuously strive to gain safety knowledge, as Quality Electric is always looking to improve upon our safety efforts through planning, training, and keeping safety at the highest of importance while accomplishing daily tasks.

D. Program Eligibility

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All Quality Electric field employees are eligible to participate in the program. Field employees for this policy will be defined as a worker that is physically on a project site full time, which may include, but not limited to: Superintendents, Foremen, Tradespeople, Project Management, Project Engineers and Administrative staff.

E. How the Program Works

1. The employee will participate in a safety program related activity and be electronically awarded points through a bar code on a company issued badge. The bar code sticker will be provided to the employee at orientation. Employees coming back to work for Quality Electric that was already enrolled in the program will not be required to re-enroll.

2. The employee will be required to:

Be issued a badge during initial orientation, the badge will have the following information;

- Picture
- Name
- Title
- Barcode for Safety Points for Incentives, Recognition
- Barcode for recording Training

F. Points Award

1. Points will be awarded or reduced for individual safety performance, including:

a) Category "A" awards:

- Weekly toolbox talk attendance (once per week). 2 points per meeting
- Formal reporting of a near miss incident. 5 points
- Leading by example (Role Modeling Safety). 2 points

b) Category "B" awards:

- Approved Training Attendance. 5 points per meeting

*This training shall be sponsored and/or approved by the regional safety departments. This does not include required training for the employee's position done during normal work hours.

- Participation in safety committee (once per month). 5 points per meeting
- Safe act recognition. 5 points


c) Category "C" awards:

- Valid safety idea incorporated within the work. 10-50 points
- Nomination by peers for going above and beyond. 10-150 points

2. The Safety Director must approve all and will direct deposit the category "C" awards.

3. Near Miss Reporting - Once the Superintendent and/or Foreman receives a near miss notification, an investigation should take place. The results of that investigation should be discussed with the Superintendent and changes should be implemented to prevent a reoccurrence. The "lesson learned" should also be discussed and documented during the next tool-box-talk and Foremen's meeting.

4. All safety ideas should be entered on the (?)

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- Nomination by Peer - A worker can be nominated for going above and beyond their safety responsibilities to make the project safe. To nominate a worker, their supervisor shall send an email to the safety department explaining why this worker should be recognized for going above and beyond. The safety department shall then forward the nomination to the Safety Director.

G. Depositing Points

- Points can either be deposited immediately upon enrollment, used towards incentives, or can be allowed to accumulate in the employee's online account to be used for incentives later.
- Points are valid for two (2) years after award, and maximum point accumulation allowed is 200 points. Therefore, all points not used within two (2) years will be lost/un-redeemable, and all points accumulated beyond 200 points within two (2) years will be lost/un-redeemable.

H. Points Deduction

Points will be deducted for violations of the safety policy, including failure to carry out assigned safety supervisory responsibilities:

- Hourly Employee - below Foreman:
 - Failure to timely report an accident/injury - 25 points per occurrence
 - Major safety infraction - 50 points per occurrence
- Employee - Foreman or above:
 - Failure to timely report an accident /injury - 50 points per occurrence
 - Major safety infraction - 50 points per occurrence

*by an employee under the control of the foreman or above


*A major safety infraction is defined as any act that has the potential of causing death or serious injury.

I. Ordering Incentives

Incentives can be viewed and purchased with points from the Shadows Catalog Order Form. (Do we want to add more to this?)

J. Program Administration

- The program will be sponsored and managed by the Quality Electric Safety Department.
- The safety department is responsible for the distribution and tracking of bar codes.
- Operations is responsible for administering the program at the project level.
- The Superintendents and/or Foremen are responsible for awarding points at the crew level.
- Each participant is responsible for registering in the program for their membership.

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K. Employee Recognition

1. It is encouraged of Leadership and Project Teams to recognize workers for creating and maintaining a positive safety culture. Employee recognition should follow the guide of 7:1 ratio as a best practice.
2. Quality Electric embraces a safety culture of continuous improvement through a 3rd party process which has equipped out project teams with tools and resources to effectively recognize employees for good safety behaviors and acts. (e.g. START, SCEW, SULU)
3. Project Executive's and their respective teams should be creative in recognizing employees on a regular basis and when earned. Through each project, employee recognition may vary but here are a few examples of industry best practices: a. Employee of the week, b. Employee of the month, c. Leadership recognizing employee publicly during Leadership walks, d. Spot recognitions and rewards, etc.

L. Disclaimer

Quality Electric reserves the right to change, modify or terminate the safety incentive / employee recognition program, or any portion of it, at any time. Awards points have no cash value and may not be redeemed for other than the products offered. Vouchers or points may not be sold or traded, and violation of this rule will result in voiding such vouchers or points.


M. Work Improvement / Good Catch Program

1. Good Catch

A good catch is an action-oriented program that implies somebody did something positive to prevent something bad from happening. It goes something like this: "I recognized an unsafe condition, action, defect or flawed piece of equipment and I acted to prevent an event from occurring. I caught it early and prevented something unfortunate from happening."

It can be as simple as one employee notifying a supervisor that there's an unsafe condition present or, even better, saying there's an unsafe condition and "this is what I just did about it." When a company's safety culture includes encouragement and recognition for employees who see something, say something, and do something to prevent events from occurring, the company has implemented a good catch program.

Good-catch programs are well-suited for cultures trying to initiate or reinvigorate a positive reporting experience. Employees can feel very good about taking some measure of action to potentially prevent a bad thing from happening. It's an opportunity for employees to see the potential for an injury before one happens and do something to address it. There is usually no stigma attached to this program since it isn't blame-based. There is no blame to administer if nothing has happened yet.

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2. Three Characteristics: A Common Thread

First, each program must be easy to use and uncomplicated, so employees will be more inclined to make a report. In your organization, do your employees have to complete exhaustive paperwork or file a formal report to notify the supervisor of a conditional, procedural or behavioral opportunity in the workplace? If so, consider simplifying the process, even to the point where it is informal.


Next, the programs need to be well-communicated, so employees have absolute certainty the information collected will never result in reprimand—to anyone. Who controls this message in your company? Are employees telling tall tales of fellow workers being reprimanded or fired for reporting? Is there merit to that storyline? Or is the plant leadership reinforcing a more compelling truth that nobody is punished for making a report?

Finally, it is important to do something with the information collected so employees don't believe their report will go into a black hole, to never again see the light of day. Employees are motivated by visible progress toward a goal, so it only makes sense to take deliberate action on reported items and communicate those actions to the workforce. Do the safety stakeholders in your company act on near misses and communicate those actions to employees?

N. Annexes

1. Forms

- Work Improvement / Good Catch Program Form
- Good Catch Poster
- Shadows Ordering Form

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Good Catch

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Work Improvement / Good Catch Program

Project Name		Person Reporting Good Catch	
Division		Phone Number	
Foreman's Name		Where did this happen?	

Process Issue ☐

Safety Issue ☐

Describe the Good Catch / Situation:
Why do you think this happened?
What you did to solve the issue and suggestions on how to prevent this in the future: (Procedures, Process, Communication, Tools, ect.)
Additional Involved Employees

Form Completed by: _____

Date: _____

“GOOD CATCH”


Reporting

- **SEE SOMETHING** that may be **UNSAFE . . . REPORT IT**
- **SEE SOMEONE** doing something in an **UNSAFE MANNER . . . ASSIST** and let's report a Good Catch so that we all learn and benefit.
- **IF YOU ARE NOT SURE** if something is safe or not . . . **ASK SOMEONE.**

The best opportunity we have in preventing injuries, equipment or property damages is to report and correct unsafe acts or conditions.

Join us for acknowledgements on the
4th week of the Month at your Tuesday TBT

**Report GOOD CATCHES to your supervisor
or Safety Compliance Manager**

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Section 12: Inspections

A. Intent Statement

The intent of this section is to establish the minimum inspection guidelines for all Quality Electric projects. This process will help recognize safe behaviors, correct unsafe work conditions and practices.

B. Definitions

1. **Leadership Safety Walks** - are used to demonstrate a visible commitment to safety. Leadership will engage employees and assess the overall safety culture of the project.
2. **Project Safety Walk/Inspection** – are used to demonstrate active involvement and participation. The individuals should be assessing situations and communicating solutions or best practices to ensure that compliance is being met.

C. General Requirements

A survey of the workplace should be performed in order to record those hazards and potential hazards which can be recognized without intensive analysis. This procedure will provide you with a checklist for the more frequent, routine inspections that should be carried out for the control of those known and recognized hazards. The workplace survey should focus on the occupancy, operations, machines, processes, and activities that are necessary to perform all aspects of the business. Identify the recognizable hazards, develop rules and regulations to deal with those hazards, and try to eliminate the hazards from the workplace, provide employee training and safety meeting activity regarding the hazards and develop a process to provide job site inspections to help control those hazards.


1. Documentation

The groups will positively reinforce safe behaviors, recognize, and eliminate all unsafe work practices and conditions that are observed. The findings will be reviewed with the project team and documented on Observation Cards.

2. Key Responsibilities

- a) Project Executive responsibilities:
 - Monthly Leadership Safety Walk/Inspection will be conducted on each project independently or in conjunction with a monthly Leadership Safety Walk.
- b) Senior Project Leadership (Senior PM, PM, General Foreman) responsibilities:
 - Weekly Safety Observation Walks/Inspection will be conducted on the project.
- c) Front Line Supervisors responsibilities:
 - Daily safety observations/inspections will be conducted on the project.

- d) Employee's responsibilities:

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- Daily inspections will be conducted of personal protective equipment, tools and equipment associated with their work activities.

e) Safety department responsibilities:

- Daily/Weekly safety observation/inspection will be conducted on assigned projects.

D. OSHA Inspections

1. Operations to contact the Safety department
2. Conduct inspection
3. Complete OSHA Post Inspection Report

E. Annexes

1. Inspections and Checklists:
 - Jobsite Audit Inspection Form
 - Observation Forms
 - OSHA Post Inspection Report

Date:			
Company Name:		Company Contact:	
Project Location:		Project Contact:	

The purpose of this checklist is to assist the Construction Safety Champion Auditor in identifying the most common conditions that are hazardous or contrary to OSHA standards found on a construction site. *It is not designed to identify every possible condition that could be a potential hazard. There is a page provided for documenting issued observed during the inspection and the corrective action to be taken.*

This checklist can provide you with the documentation needed to assure that the Safety Auditor is controlling worksite hazards and violations, as well as determining whether programs listed on the written program audit are being implemented in the field.

The Four Most Common Cause of Construction Fatalities and Serious Injuries are:

- Falls: (e.g., Floors, platforms, roofs, unguarded surfaces)
- Electrical: (e.g., overhead power lines, power tools and cords, outlets, temporary wiring)
- Struck By: (e.g., falling objects, vehicles)
- Caught In / Between: (e.g. trenching cave in's, unguarded machinery, equipment)

Take special note of these conditions as these are the cause of most construction fatalities, as well as the basis of violations when ID – OSHA conducts a Focused Construction Inspection.

Administration:

- A. Pre-construction meeting with subcontractors
- B. OSHA poster and other warning signs
- C. Emergency phone number posted
- D. Written Safety Program on site including HazCom Program
- E. Weekly safety meetings documented
- F. MSDS from all subcontractors
- G. Hazardous chemical list updated for job
- H. Competent Person assigned for site
- I. Potable Water/ Flush Toilets

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

First Aid and Emergency:

- A. First aid kit fully stocked
- B. Employees aware of personnel trained in first aid
- C. Employees aware of emergency procedures

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

Housekeeping

- A. General neat appearance of all work areas
- B. Passageways and walkways clear
- C. No projecting nails and screws
- D. Regular site cleanup and trash disposal
- E. Materials stored / stacked in orderly and safe manner

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

Tool, Hand and Power

- A. Grounding
- B. All guards in place
- C. Tools and cords in good condition
- D. Inspected and maintained

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

Electrical

- A. Terminal boxes equipped with required covers
- B. GFCI's in place
- C. All extension cords are 3-wire with ground pin in place and in good condition
- D. All electrical tools and machinery have a ground pin in place on power cable
- E. Exposed lighting equipped with protective cage
- F. Adequate Temporary lighting
- G. Minimum 10-foot clearance maintained from high voltage power lines

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

Stairways and Ladders

- A. Inspected and in good condition by competent person
- B. Properly secured
- C. Siderails extend 36" above the top of landing ext. ladders
- D. Ladder extends 42" above top of landing for step ladders
- E. Guardrails provided for stairway landings
- F. Handrails provided for stairways with four or more risers
- G. Competent person periodically inspects ladders
- H. Competent person conducts ladder safety training

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

Scaffolding

- A. Properly erected and supervised by competent person
- B. Scaffolding tied to structure
- C. Scaffolding plumb, with cross bracing in place
- D. Fully planked with toe boards in place if required
- E. Base plates used (no cinder blocks)
- F. Ladder access provided
- G. Employees tied-off while working on elevated motorized scaffolding
- H. No riding on rolling scaffolding

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

Hoists, Cranes and Derricks

- A. Inspections of cables, slings, chains, hooks by Competent Person
- B. Routine and annual inspections and logs maintained
- C. Power lines deactivated, removed, protected or maintain 10' safe distance
- D. Swing radius protected (360 degrees)
- E. Load capacity chart on machine
- F. Proper hand signals used
- G. Boom angle indicator
- H. Proper cribbing and/or mats

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

Work Practices

- A. Lifting correctly
- B. Hard Hats worn
- C. Proper footwear
- D. Ear protection
- E. Eye Protection
- F. Covid – 19 PPE
- G. Unusual exposures identified and controlled

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

Motor Vehicles and Heavy Equipment

- A. Service brakes and trailer brake connections inspected daily
- B. Parking brake and service brake operable
- C. Tires, horn, backup alarms, seat belts inspected
- D. Lights, windshield wipers, defroster
- E. Fire extinguisher in place and fully charged
- F. Weights and loads controlled
- G. Personnel carried safely – seat belt provided

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

Fire Prevention

- A. Proper number of Fire Extinguishers provide and charged
- B. "No Smoking" posted and enforced
- C. Combustibles > 10' from building
- D. Approved safety cans for gasoline

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

Excavations

- A. Shoring adequate for soil and depth
- B. Support system in place for adjacent structures
- C. Spoil bank and equipment sufficient distance from excavation
- D. Ladders provided
- E. Competent person on site
- F. Underground utilities located prior to excavation "811 Call Before you Dig"
- G. Air samples taken prior to entry in underground tunnels/openings

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

Welding and Cutting

- A. Personnel qualified
- B. Screens, shields, goggles, gloves
- C. Gas cylinder secured in upright position
- D. Fire Extinguisher
- E. Electrical equipment grounded
- F. Valve protection caps in place when gas not in use
- G. Fire watch provided 30 min. subsequent to welding/cutting near combustibles

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

Fall Protection

- A. Floor opening and holes
- B. Guardrails in place/replaced after each load received
- C. Safety harnesses provided and used
- D. Double-locking snap hooks on all Personal Fall Protection
- E. Floor holes protected/secured/marked
- F. Wall openings guarded

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

Concrete and Masonry

- A. Proper scaffolding
- B. Safe Hoisting equipment
- C. Masonry walls over 8ft. Braced
- D. Limited Access Zone established
- E. Fall Protection used
- F. Guard rails on all open floors
- G. All protruded rebar guarded
- H. Hard hats and safety shoes

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

Highway / Work Zone

- A. Competent Flagger's reflective garments, instructed, posted
- B. Adequate warning signs and markers
- C. Traffic control through construction area
- D. Dust Control
- E. Work Zone of Heavy Equipment protected from pedestrians and traffic
- F. Equipment inspected daily
- G. Back up alarms and horns operational
- H. Proper Lighting

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

Health

- A. Silica Exposures and Controls
- B. Lead (Leaded Paint) Exposures and Controls
- C. Noise (Hearing Conservation) Exposures and Controls
- D. Asbestos Exposures and Controls
- E. Hazardous Materials Exposures and Controls
- F. Ergonomic Exposures and Controls
- G. Confined space Procedures and training in place
- H. System in place to notify other contractors of health-related hazards
- I. Covid – 19 Exposures and Controls

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

- Personal Protective Equipment Required and Provided**
- A. Fall Protection
 - B. Hard Hats
 - C. Hearing Protection
 - D. Eye Protection
 - E. Foot Protection
 - F. Respiratory Protection
 - G. 70E arc flash protection
 - H. Covid – 19 Protection

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

Lifts

- A. Pre – inspection before work
- B. Utilization of 100% tie off
- C. All Safety alarms and devices are in good working order
- D. All guards are in place
- E. Lift is dry and clear, to include free from debris
- F. Guard rails are in place
- G. Workers are utilizing proper communication system while working
- H. Harnesses, Hard Hat, Safety Glasses, Gloves and Boots

Y	N	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional for this Inspection:

NOTE: There may be other situations on your job site that require a competent person. You should tailor this checklist to fit your own work situations/hazards. Thank you.



Company Observed:		Date:		Name:	
Observation					
Physical:	Yes / No	Behavioral:	Yes / No	Safe Act:	Yes / No
<i>If this is a Safe Observation; proceed to communication to Supervisor and Employee</i>					
Correction					
Corrected:	Yes / No	Communicated to Who?			
Corrective Means					
Elimination: (e.g. Moving work to the ground level eliminates falling from heights.)					
Engineering: (e.g. Guards, Caps, Ventilation, Shields, Barriers, etc.)					
PPE: (e.g. Face Shield, Gloves, Fall Protection, etc.)					
Correction: Unsafe Act			Action Stopped: Yes / No		
Description:					
Control:					
Communicated to Employee: Yes / No		Communicated to Supervisor: Yes / No Name:			



Company Observed:		Date:		Name:	
Observation					
Physical:	Yes / No	Behavioral:	Yes / No	Safe Act:	Yes / No
<i>If this is a Safe Observation; proceed to communication to Supervisor and Employee</i>					
Correction					
Corrected:	Yes / No	Communicated to Who?			
Corrective Means					
Elimination: (e.g. Moving work to the ground level eliminates falling from heights.)					
Engineering: (e.g. Guards, Caps, Ventilation, Shields, Barriers, etc.)					
PPE: (e.g. Face Shield, Gloves, Fall Protection, etc.)					
Correction: Unsafe Act			Action Stopped: Yes / No		
Description:					
Control:					
Communicated to Employee: Yes / No		Communicated to Supervisor: Yes / No Name:			



OSHA Post Inspection Report

Project Name:

Project Number:

Date of Inspection:

Section I: Pre - Inspection

1 Who did the OSHA inspector first contact at the jobsite?

Name:

Title:

2 Did the OSHA inspector show his / her credentials?

Yes

☐

No

☐

3 Did you get copies of the OSHA Inspector's credentials or business card and attach them to this report?

Yes

☐

No

☐

If credentials or business card are not attached, explain why:

4 OSHA Inspector's Name: (List all if more than one)

5 Was the Quality Safety Director contacted?

Yes

☐

No

☐

Section II: Opening Conference:

1 List who was present during the Opening Conference:

Employee Name:

Company Name:

Position:



OSHA Post Inspection Report

2 What was the purpose of the visit as explained by the OSHA Inspector?

3 Was there a complaint filed? Yes ☐ No ☐

4 Did you get a copy of the complaint? Yes ☐ No ☐

If yes, attach a copy to this report. If no, ask the OSHA Inspector for a copy.

5 Was there a search warrant served? Yes ☐ No ☐

If yes, attach the search warrant to this report.

6 Did the OSHA Inspector request to review records? Yes ☐ No ☐

- why: -

Requested

Reviewed

Comments:

	Yes <input type="checkbox"/> No <input type="checkbox"/>	
	Yes <input type="checkbox"/> No <input type="checkbox"/>	
	Yes <input type="checkbox"/> No <input type="checkbox"/>	
	Yes <input type="checkbox"/> No <input type="checkbox"/>	
	Yes <input type="checkbox"/> No <input type="checkbox"/>	
	Yes <input type="checkbox"/> No <input type="checkbox"/>	
	Yes <input type="checkbox"/> No <input type="checkbox"/>	
	Yes <input type="checkbox"/> No <input type="checkbox"/>	

7 Were employees selected to be interviewed with the OSHA Inspector during the Opening Conference?

Yes ☐ No ☐

Explain how the employee(s) were selected:



OSHA Post Inspection Report

8 List employees selected, their employer, and trade / craft represented:

Employee Name:

Company Name:

Trade:

9 Other comments that should be noted as being discussed during the Opening Conference:

--

Section III: The Inspection:

1 List who was present during the inspection process:

Employee Name:

Company Name:

Position:

2 Were pictures taken?

Yes

☐

No

☐

3 Were any portions of the jobsite shut down?

Yes

☐

No

☐

If so, describes the area, why it was shut down and for how long:

--



OSHA Post Inspection Report

4 List any employees that were talked to by the OSHA Inspector:

Employee Name:	Company Name:	Trade:

NOTE: YOU ARE NOT ALLOWED TO ASK THE EMPLOYEES WHAT THEY DISCUSSED WITH THE OSHA INSPECTOR.

5 Other comments that should be noted as being discussed during the inspection.

Section IV: Closing Conference:

Employee Name:	Company Name:	Position:

2 Were alleged violations of standards discussed? Yes ☐ No ☐

If yes, list alleged violations:



OSHA Post Inspection Report

3 Did the OSHA Inspector give an indication of future OSHA Inspections (required or otherwise)?

Yes

☐

No

☐

If yes, list the comments from the OSHA Inspector:

4 Other comments that should be noted as being discussed during the Closing Conference:

Section V: Signatures and Distribution of Report

Project Manager Signature

Date

Safety Manager Signature


Date

CC:

Project File

Quality Electric Safety Department:

Safety Representative:

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Section 13: Risk Assessment and Management

A. Intent Statement

This policy is designed to provide guidance on creating an effective development and use of risk assessment and management tools and processes to promote safety and health on our jobsites. In construction, it is to great benefit that we assess and manage our jobsite risks due to the variable nature of the environment. Due to this, Quality Electric has put in place several different policies and procedures to support our Management teams in their effort to implement the necessary controls to eliminate or mitigate risks. By providing guidelines for identifying, assessing, and controlling workplace risks/hazards and to ensure the potential risks/hazards of new processes and materials are identified before they are introduced into the workplace.

B. Key Responsibilities and Involvement

- Unsafe risks/hazards must be reported immediately by all employees and addressed by their supervisor. The supervisor discusses the worksite hazard assessment with employees at the respective work location during the employee's documented orientation.
- Quality Electric must assess a work site and identify existing or potential risks/hazards before work begins at the work site or prior to the construction of a new work site.
- Employees and/or sub-contractors are actively involved in the risk/hazard identification process. The Quality Electric program must provide processes to ensure employees and/or sub-contractors are actively involved in the hazard identification process and hazards are reviewed with all employees concerned, provide mechanisms to involve workers and their elected representatives in the development of the worker safety and health program goals, objectives, and performance measures and in the identification and control of hazards in the workplace.
- The respective supervisor or project manager advises the Safety Manager when additional hazards are introduced into the workplace in order to revise planning and assessment needs.


C. When the Risk/Hazard Identification Process is Used

The hazard identification process should be used for routine and non-routine activities as well as new processes, changes in operation, products, or services as applicable.

The On-Site Supervisor shall conduct a baseline worksite risk/hazard assessment which is a formal process in place to identify the various tasks that are to be performed and the accompanying identified potential risks/hazards. The results are included in a report of the results of the risk/hazard assessment and the methods used to control or eliminate the risks/hazards identified. The risk/hazard assessment report must be signed and have the date on it.

Inputs into the baseline risk/hazard identification include, but are not limited to:

- Scope of work;
- Legal and other requirements;
- Previous incidents and non-conformances;
- Sources of energy, contaminants and other environmental conditions that can cause injury;

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- Walk through of work environment;

Risks/Hazards identifications (as examples) are to include:


- Working Alone
- Thermal Exposure
- Isolation of Energy
- Hearing Protection
- Musculoskeletal Disorders
- Bloodborne Pathogens
- Confined Spaces
- Driving
- General Safety Precautions
- And any other established policy or procedure by Quality Electric
- Any other site-specific work scope

All identified risks/hazards are assessed for risk and risk controls are assigned within the worksite hazard assessment for that specific hazard.

D. Worker Risk Hazard Analysis Training

Employees are trained in the risk/hazard identification process. Employees will be trained in the hazard identification process including the use and care of proper PPE.

1. Each Project shall provide JHA and PTP training to each new employee in the orientation process.
2. Before a task is started, the JHA shall be reviewed with the crew to ensure the affected workers are aware of the potential hazard and protective measures/controls described within the activity analysis. Worker's training shall include the following concerns of the task:
 - What can go wrong?
 - What are the consequences?
 - What is the worst that could happen?
 - How could it happen?
 - What are other contributing factors?
 - How likely is it that the hazard will occur?
3. The process shall be reviewed, updated and retraining shall occur when:
 - Immediately following any accident or near miss
 - When a safety violation is observed by a supervisor
 - Whenever the process, equipment, conditions, or environment change

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- When a new crew member is added.

a) Review of Risk/Hazard Assessment

Existing worksite risk/hazard identifications are formally reviewed annually or repeated at reasonably practicable intervals to prevent the development of unsafe and unhealthy working conditions and specifically updated when new tasks are to be performed that have not been risk assessed, when a work process or operation changes before the construction of a new site or when significant additions or alterations to a job site are made.

E. Formal Process for Identifying Risk Assessment

Quality Electric must establish procedures to identify existing and potential workplace hazards and assess the risk of associated workers injury and illness. This program must identify processes are in place to identify potential hazards by the use of JSA's, JHA's, facility wide or area specific analysis/inspections.

Risks/hazards are classified and/or ranked based on severity. The program must identify hazards are classified/prioritized and addressed based on the risk associated with the task / (Risk analysis matrix outlining severity and probability).

a) Certification of Risk/Hazard Assessment

The Safety Manager completes and signs the certification of risk/hazard assessment for the worksite risk/hazard assessment (also see PPE Program) and includes it within the site specific HSE plan. Risk/hazard assessments are reviewed annually and updated when new tasks are to be performed that have not been risk assessed.

While the Risk Assessment is similar to the JHA, the most important difference is that a job safety analysis looks at job-specific risks while the risk assessment looks at a bigger picture. The risk assessment will identify risks throughout the facility, and not just those that may directly impact an employee.


b) Job Hazard Analysis (JHA)

Job hazard analysis (JHA) Also referred to as a job safety analysis (JSA), a JHA is a systematic way of identifying hazards associated with a specific task or operation. The JHA simplifies the process of identifying hazards by looking at the individual subtasks involved in a specific job. Completed JHAs are documented in the safety department and are available from the Safety Manager.

c) Pre – Task Plan (PTP)

The PTP process is similar to conducting a JHA. A PTP is a valuable tool created with the common goal in each is for supervisors and workers to fully think through what risks are involved in their specific task, what could happen if those risks are left uncontrolled, and enable them to plan for and implement the necessary controls to prevent incidents/injuries from occurring. Quality Electric's PTP process involves 6-steps:

- **Task:** Work that will be done that day.

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- **Tools:** Tools, equipment, and materials that are needed to accomplish the task safely and efficiently.
- **Process:** How the work will be performed.
- **Hazards:** Hazards associated with how the work will be performed.
- **Impact:** Impact the identified hazards may have on the employee and company if not controlled.
- **Controls:** What the crew must do to control the identified hazards

The PTP process is to be conducted at the start of each day. It is also to be updated throughout the day, as many times as necessary, if any task changes occur. The process is intended to promote communication between the employees and the Supervisor. The PTP process is to be conducted by each working group or pair of employees; the Supervisor is to solicit input and feedback from the crew as they go through each section of the PTP. All workers are expected to participate in and understand the safe work plan for that day; they should provide feedback on the tools, equipment, and material needed to conduct their work safely and efficiently. The effort put into the PTP process by both the foreman and the crew will determine its effectiveness.

d) Site Incident Prevention Plan (SIPP)

When Quality Electric performs construction activities in operating facilities it is crucial that we have a complete understanding of how our scope of work will impact the facility's operations and how their operations may impact the safety of our workers while conducting their work. The Site Incident Prevention Plan process helps identify the hazards and controls for both the facility and our workers. Prior to conducting work in an operating facility our Quality team must:

- Validate if the operating facility has an established Site Incident Prevention Plan in place.
- If they do, Quality Electric is to receive training on and follow the facility's established SIPP process.
- If they do not, Quality Electric will introduce our process to the facility.
- Quality Electric will initiate the SIPP process several weeks in advance of the planned operation.
- Quality Electric will ensure all the stakeholders on the facility's side are involved in the planning of the operation.
- Quality Electric will execute the operation in accordance with the established SIPP.

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COMPANY RISK ASSESSMENT MATRIX

Severity	CONSEQUENCE				PROBABILITY				
	People	Assets	Environment	Reputation	A	B	C	D	E
					Not Done	Rarely	Once a week	Several Times in a Week	Multiple Times in a Day
0	No health effect	No damage	No effect	No impact					
1	Slight health effect	Slight damage	Slight effect	Slight impact					
2	Minor health effect	Minor damage	Minor effect	Limited impact					
3	Major health effect	Localized damage	Localized effect	Considerable impact					
4	Single fatality	Major damage	Major effect	National impact					
5	Multiple fatalities	Extensive damage	Massive effect	Global impact					
Key		Manage for continuous improvement (Low)		Incorporate risk reduction measures (Medium)			Intolerable (High)		

F. Methods to Ensure Identified Risks/Hazards Are Addressed and Mitigated

The program must demonstrate how identified hazards are addressed and mitigated. This can be accomplished by dedicated assignment, appropriate documentation of completion and implemented controls. The following describes how identified hazards are addressed and mitigated:

- Risk assessed hazards are compiled with and addressed and mitigated through dedicated assignment, appropriate documentation of completion, and implemented controls methods including engineering or administrative controls and PPE required into the worksite hazard assessment of the site specific HSE plan. No work will begin before the worksite assessment is completed. Additionally, no risk assessed as High (Intolerable) shall be performed.
- If an existing or potential hazard to workers is identified during a risk/hazard assessment Quality Electric must take measures to eliminate the hazard, or if elimination is not reasonably practicable, control the hazard. If reasonably practicable, Quality Electric must eliminate or control a hazard through the use of engineering controls. If a hazard cannot be adequately controlled using engineering controls, Quality Electric must use administrative controls that control the hazard to a level as low as reasonably achievable. If the hazard cannot be adequately controlled using engineering and/or administrative controls, Quality Electric must ensure that the appropriate personal protective equipment (PPE) is used by workers affected by the hazard. Quality Electric may use a combination of engineering controls, administrative controls, and personal protective equipment if there is a greater level of worker safety because a combination is used.

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a) Emergency Control of Hazards

Only those employees competent in correcting emergency controls of hazards may be exposed to the hazard and only the minimum number of competent employees may be exposed during hazard emergency control. An example is a gas leak in a building. Only those personnel with training on fire safety, gas supply shut off and other related controls will attempt to resolve the emergency control of a hazard. Quality Electric will make every possible effort to control the hazard while the condition is being corrected or under the supervision of client emergency response personnel in every emergency.

G. Annexes

1. Forms and Permits:

- Daily Risk Assessment – Interruption to Production Form
- Job Hazard Analysis (JHA) Form
- Pre-Task Plan (PTP) Form
- Mission of Procedure Form
- SIPP Systems Verification Form

Daily Risk Assessment: Interruption to Production

Identify items in your work area that could be impacted by your activities throughout the day. To be completed daily by Forman.		
<input type="checkbox"/> POC's	<input type="checkbox"/> Valves / Valve Handles	<input type="checkbox"/> Brittle Plastic Pipe / PVC
<input type="checkbox"/> Sample Ports	<input type="checkbox"/> Small Bore Fragile Piping	<input type="checkbox"/> Hazardous Material Lines
<input type="checkbox"/> Life Safety Systems / HPM Sensors	<input type="checkbox"/> Fire Pull Stations / Smoke Sensors	<input type="checkbox"/> Hazardous Liquid Drains
<input type="checkbox"/> Duct Dampers / Slide Gates	<input type="checkbox"/> Cable Tray	<input type="checkbox"/> Electrical Panels / Boxes
<input type="checkbox"/> High Point Vents	<input type="checkbox"/> Sprinkler Heads	<input type="checkbox"/> EMO Buttons
<input type="checkbox"/> Air Lines	<input type="checkbox"/> Loose Cables / Comm. Lines	<input type="checkbox"/> Flex / EMT Conduit
<input type="checkbox"/> Heat Trace / Electrical	<input type="checkbox"/> High Purity Tubing	<input type="checkbox"/> Other
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Explain locations and specific controls . (<i>Controls = Awareness / Communication, Housekeeping, Buddy System, Flagging / Signage, Hard and Soft Barricading, Blocking / Hardening Ect.)</i>		
Risk - Area / Location	Potential Impact	Controlling Action



Daily Risk Assessment: Interruption to Production

Will Work involve penetrations? (Drilling / screwing into - concrete, drywall, pop - outs, RMF, Roof Ceiling, Walls, ECT.)	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, what is the mitigation? (Obstructed conduit / utilities?)
Is congestion blocking access / egress?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, how will you mitigate?
Identify and note any changes from :		
<input type="checkbox"/> Yesterday		
<input type="checkbox"/> Break		
<input type="checkbox"/> Lunch		

All crew review and initial:

Date:	
-------	--

Supervisor Sign - Off	
-----------------------	--

Company:	
----------	--

Jobsite Hazard Analysis

I am accountable for my safety and the safety of my coworkers
Focus. Assess. Safe Choice. Speak up.



Location / Dept:		Task:			
Names of People Performing Task:					
Supervisor(s):					
Analysis By:		Date:		Revision:	
Approved By:		Date:		Revision:	

Principal Task Steps	Known or Potential Hazards	Controls (Preventative or Corrective Action)
1		
2		
3		
4		

Jobsite Hazard Analysis

I am accountable for my safety and the safety of my coworkers
Focus. Assess. Safe Choice. Speak up.



5		
6		
7		
8		
9		
10		

Jobsite Hazard Analysis

I am accountable for my safety and the safety of my coworkers
Focus. Assess. Safe Choice. Speak up.



Training Requirements	Minimum Required Personal Protective Equipment
Minimum: All QE1 required basic employee safety training Anyone performing this task, must be trained on these JHA provisions Additional: Ladder training Hilti Certification Lift Certification Harness Training	Hard Hats, Safety Glasses, High Visibility Clothing (Vest), Work Boots and Cut Resistant Gloves. Covid – 19: Face Mask If working closer than 6’ a face shield and gloves will be in addition to the face mask required. While in panels the arc flash helmet will be sufficient to prevent the spread of Covid and the face mask can be taken off and then replaced as soon as the work has finished per Micron specifications. Cleaning will be done after each use.
Equipment to Be Used:	Inspection Requirements
Check Items Required to do this Job:	

- | | | | |
|--|---|---|--|
| <input checked="" type="checkbox"/> Safety Glasses | <input type="checkbox"/> Face Shield | <input type="checkbox"/> Fire Extinguisher | <input type="checkbox"/> Atmospheric Testing |
| <input checked="" type="checkbox"/> Hard Hats | <input checked="" type="checkbox"/> Work Vest | <input type="checkbox"/> Goggles (Type) | <input type="checkbox"/> Lockout / Tagout |
| <input checked="" type="checkbox"/> Safety Shoes | <input type="checkbox"/> Personal Fall Arrest Systems | <input type="checkbox"/> Flame Resistant Clothing | <input type="checkbox"/> Warning Signs |
| <input type="checkbox"/> Other _____ | <input type="checkbox"/> Other _____ | <input type="checkbox"/> Other _____ | <input type="checkbox"/> Other _____ |

Jobsite Hazard Analysis

I am accountable for my safety and the safety of my coworkers
Focus. Assess. Safe Choice. Speak up.



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Pre - Task Plan

Company: _____

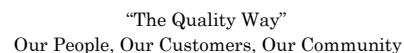
Task:	Location:	Responsible Person:	Date:																																												
Process: How are we doing it?	Hazards: What could go wrong?	Risk Ranking: Use Risk Matrix	Controls: What are we doing about it?																																												
		<p>Post risk task identified as Medium or High require apporval from your company and safety representative.</p> <table border="1"> <thead> <tr> <th colspan="2"></th> <th colspan="5">Risk</th> </tr> <tr> <th></th> <th>1 Near Impossible</th> <th>2 Unlikely</th> <th>3 Notable Chance</th> <th>4 Likely</th> <th>5 Almost Certain</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Severity</td> <td>1 Insignificant</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>2 Minor Injuries</td> <td>2</td> <td>4</td> <td>6</td> <td>8</td> <td>10</td> </tr> <tr> <td>3 Noable Injuries</td> <td>3</td> <td>6</td> <td>9</td> <td>12</td> <td>15</td> </tr> <tr> <td>4 Major Injuries</td> <td>4</td> <td>8</td> <td>12</td> <td>16</td> <td>20</td> </tr> <tr> <td>5 Death</td> <td>5</td> <td>10</td> <td>15</td> <td>20</td> <td>25</td> </tr> </tbody> </table>			Risk						1 Near Impossible	2 Unlikely	3 Notable Chance	4 Likely	5 Almost Certain	Severity	1 Insignificant	1	2	3	4	5	2 Minor Injuries	2	4	6	8	10	3 Noable Injuries	3	6	9	12	15	4 Major Injuries	4	8	12	16	20	5 Death	5	10	15	20	25	
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	8		Energized Electrical																																												
	9		Hot Work																																												
	10		Soil Permit																																												
	11		Crane Lift Plan																																												

Mission of Procedure (M.O.P.)

Date Plan Prepared	
Job Name:	
Job Number:	
Job Location:	

I. Overview					
Company:		Planner:		Location:	
Task to be Completed:					
Start Date and Time:		End Date and Time:		Crew Size:	
II. Break Down Of Work To Be Performed:					
Construction Activity (In Sequence)					
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The task have been reviewed in the work area where they will be performed and this plan has been reviewed with the workers on this crew.

[illegible]

V. Contacts		
Quality Electric Representative:	Name:	
Position:	Contact :	
Quality Electric Representative:	Name:	
Position:	Contact :	
Quality Electric Representative:	Name:	
Position:	Contact :	
General Contractor Representative:	Name:	
Position:	Contact :	
Owner Representative:	Name:	
Position:	Contact :	
Owner Representative:	Name:	
Position:	Contact :	
Owner Representative:	Name:	
Position:	Contact :	
Owner Representative:	Name:	
Position:	Contact :	
Owner Representative:	Name:	
Position:	Contact :	
Owner Representative:	Name:	
Position:	Contact :	



(Systems Interruption Prevention Plan)
SIPP Systems Verification

"The Quality Way"
 Our People, Our Customers, Our Community

I. Authorization Requestor:				
Company Requesting Authorization:		Quality Electric Inc.		
Contact Information:		5272 Irving, Boise Id 83704		
		Project Manager		
		General Foreman		
Time:			Date:	
II. Scope of Work:				
III. Affected Systems				
Affected System A:				
Energy Source:		Panel / Circuit:		
Energy Isolation Procedure (EIP) (Shutdown / Start Up):	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If No, then what procedure is in place:	
Responsible Technician:			Contact:	
Authorization Sign off by System Owner:				
Print Name:				
Signature:			Date:	
Affected System B:				
Energy Source:		Panel / Circuit:		
Energy Isolation Procedure (EIP) (Shutdown / Start Up):	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If No, then what procedure is in place:	
Responsible Technician:			Contact:	
Authorization Sign off by System Owner:				
Print Name:				
Signature:			Date:	

SIPP Systems Verification

Affected System C:			
Energy Source:		Panel / Circuit:	
Energy Isolation Procedure (EIP) (Shutdown / Start Up):	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If No, then what procedure is in place:
Responsible Technician:		Contact:	
Authorization Sign off by System Owner:			
Print Name:			
Signature:		Date:	
Affected System D:			
Energy Source:		Panel / Circuit:	
Energy Isolation Procedure (EIP) (Shutdown / Start Up):	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If No, then what procedure is in place:
Responsible Technician:		Contact:	
Authorization Sign off by System Owner:			
Print Name:			
Signature:		Date:	
Affected System E:			
Energy Source:		Panel / Circuit:	
Energy Isolation Procedure (EIP) (Shutdown / Start Up):	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If No, then what procedure is in place:
Responsible Technician:		Contact:	
Authorization Sign off by System Owner:			
Print Name:			
Signature:		Date:	

Affected System F:			
Energy Source:		Panel / Circuit:	
Energy Isolation Procedure (EIP) (Shutdown / Start Up):	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If No, then what procedure is in place:
Responsible Technician:		Contact:	
Authorization Sign off by System Owner:			
Print Name:			
Signature:		Date:	
Affected System G:			
Energy Source:		Panel / Circuit:	
Energy Isolation Procedure (EIP) (Shutdown / Start Up):	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If No, then what procedure is in place:
Responsible Technician:		Contact:	
Authorization Sign off by System Owner:			
Print Name:			
Signature:		Date:	
Affected System H:			
Energy Source:		Panel / Circuit:	
Energy Isolation Procedure (EIP) (Shutdown / Start Up):	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If No, then what procedure is in place:
Responsible Technician:		Contact:	
Authorization Sign off by System Owner:			
Print Name:			
Signature:		Date:	




SIPP Systems Verification

"The Quality Way"
Our People, Our Customers, Our Community

V. Approvals

Quality Electric Supervisor:	Print Name:			
	Signature:		Date:	
GC Superintendent:	Print Name:			
	Signature:		Date:	
Customer Representative:	Print Name:			
Position:	Signature:		Date:	
Customer Representative:	Print Name:			
Position:	Signature:		Date:	
Customer Representative:	Print Name:			
Position:	Signature:		Date:	
Customer Representative:	Print Name:			
Position:	Signature:		Date:	

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Section 14: Employee Health Hazards and Prevention

A. Ammonia Awareness

1. Purpose

The purpose of this procedure is to advise employees in areas where Ammonia is being used and to supply information about the hazards of Ammonia, general guidelines, and training requirements.

2. Scope

This procedure applies to Quality Electric operations where employees whose work activities may involve working around Ammonia.

3. Key Responsibilities

- a) Supervisors
 - Ensure personnel are aware of work that has the potential of exposure to ammonia.
 - Identify possible locations where ammonia in the workplace may be used.
 - Ensure employees comply with the ammonia awareness requirements.
- b) Employees:
 - Comply with the Ammonia awareness requirements and direct any questions or concerns to their supervisor.
 - Attend required annual training.

4. Trade Names:

Anhydrous ammonia, Aqua ammonia, Aqueous ammonia, NH₃

5. Immediately Dangerous to Life and Health:

300 ppm


6. Personal Protection / Sanitation

- a) Skin – Prevent Skin Contact
- b) Eyes – Prevent Eye Contact
- c) Skin – Wash Skin when Contaminated
- d) Clothing or Any Associated Items – Remove when contaminated

❖ Eyewashes shall be provided when exposure is a potential

7. Procedure

- a) Characteristics of Ammonia
 - (1) Appearance

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Ammonia is a colorless gas under normal conditions and has a pungent, suffocating odor. This chemical is typically shipped as a liquified compressed gas and is easily liquified when under pressure.

(2) Description

Ammonia refers to solutions that are 50% ammonia or greater, ammonia anhydrous, and ammonia anhydrous liquefied, unless otherwise specified. Ammonia is a toxic gas or liquid that, when concentrated, is corrosive to tissues upon contact. Exposure to ammonia in sufficient quantities can be fatal. One of the highest production-volume chemicals in the U.S., concentrated Ammonia is used in manufacturing, refrigeration, and agriculture (as a fertilizer). Household Ammonia is much less concentrated; it rarely causes burns, but it does cause irritation. The lowest level at which humans can detect the odor of ammonia (odor threshold) generally, provides sufficient warning of exposure; however, persons with prolonged exposure to ammonia will lose their ability to detect the odor (olfactory fatigue). Ammonia commonly exists as part of a solution.

8. Exposure Routes, Symptoms and Target Organs

a) Exposure

Inhalation, Ingestion and / or Contact.

b) Symptoms

Some of the potential health effects of Ammonia such as burning of the eyes, temporary blindness, coughing, chest pain, etc. Exposure of the eyes to ammonia may cause burning, tearing, temporary blindness and severe eye damage. Exposure of the skin to ammonia may cause severe burns, blistering or frostbite. Exposure of the respiratory tract (mouth, nose, and throat) to ammonia may cause runny nose, coughing, wheezing, chest pain, pulmonary edema, pink frothy sputum, severe breathing difficulties, severe burns, and death.

Possible ways employees may be exposed to ammonia during their job functions. Some examples may include, but not limited to:


- Working on/near industrial refrigeration machinery rooms, equipment and/or piping
- Working in petroleum refineries
- Working with/near agricultural fertilizer.

c) Target Organs

Eyes, skin and / or Respiratory System.

9. First Aid

- Eye – Irrigate the eyes immediately with an eye wash solution.
- Skin – Water flush immediately for at least 20 minutes
- Respiratory – Seek medical attention immediately, a breathing support device will be necessary.
- Ingestion – Seek medical attention immediately.

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10. Training

Employees must be informed where ammonia is used in the host facility and aware of additional plant safety rules.

Quality Electric shall provide training for all affected employees working near ammonia and the training shall emphasize:

- The characteristics of Ammonia.
- The hazards of Ammonia.
- Proper PPE – Impervious Clothing, Gloves, and/or Face Shield
- Owner client requirements.

Documentation of training - Ammonia awareness training shall be documented using our Safety Training Document.

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B. Asbestos Awareness

1. Purpose

The purpose of this procedure is to advise Quality Electric employees in areas where Asbestos is suspected on an awareness level basis about the properties and dangers of Asbestos, general guidelines, and training requirements and to provide basic precautions and protections for employees to avoid exposure to asbestos containing material (ACM) or presumed asbestos containing material (PACM).

2. Scope

This procedure applies to Quality Electric operations where employees whose work activities may be in the vicinity of asbestos containing materials during their work activities.

3. Key Responsibilities

a. Supervisors

- Ensure owners or operators are notified of PACM.
- Prohibit Quality Electric employees from working until material in question is confirmed as non-asbestos or abated.
- Ensure proper employee asbestos awareness training is completed.

b. Employees

- All employees are required to act in strict compliance with the requirements of this program and delay or discontinue work if there is ever an unresolved concern regarding exposure to asbestos.
- Immediately report any suspected Asbestos containing material to their supervisor

4. Awareness Level Requirements and Information


a. Asbestos Exposure Control

Depending on the exposure level Quality Electric is required to develop and train workers on an Asbestos Exposure Controls Plan.

b. Background of Asbestos

The word Asbestos is derived from a Greek word that means inextinguishable or indestructible. Asbestos is a naturally occurring mineral that is found throughout the world. Asbestos has several characteristics that make it desirable for many commercial uses. The fibers are extremely strong, flexible, and very resistant to heat, chemicals, and corrosion. Asbestos is also an excellent insulator, and the fibers can be spun, woven, bonded into other materials, or pressed to form paper products. For these reasons and because it is relatively inexpensive asbestos has been widely used for many years and now is found in over three thousand different commercial products.

Exposure to Asbestos fibers can cause serious health risks. The major risks from Asbestos come from inhaling the fibers. Asbestos is composed of long silky fibers that contain hundreds of thousands of smaller fibers. These fibers can be subdivided further into microscopic filaments. that will float in the air for several hours. Asbestos fibers can easily penetrate body tissues and cause disabling and fatal diseases after prolonged exposure.

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Although exposure to asbestos is potentially hazardous, health risks can be minimized. In most cases the fibers are released only if the Asbestos containing materials (ACM) is disturbed. Intact and undisturbed Asbestos materials do not pose a health risk. The mere presence of asbestos does not mean that the health of occupants is endangered. When ACM is properly managed, release of fibers into the air is prevented or minimized, and the risk of Asbestos related disease can be reduced to a negligible level. However, asbestos materials can become hazardous when they release fibers into the air due to damage, disturbance, or deterioration over time.

The ability to recognize the kinds of material that contain Asbestos, knowing under what conditions they are dangerous, and understanding basic safety precautions, are all important in keeping exposures to a minimum.

c. Health Effects of Asbestos

The most dangerous exposure to Asbestos is from inhaling airborne fibers. The body's defenses can trap and expel many of the particles. However, as the level of Asbestos fibers increase many fibers bypass these defenses and become embedded in the lungs. The fibers are not broken down by the body and can remain in body tissue indefinitely. Exposure to Asbestos has been shown to cause respiratory diseases such as lung cancer, asbestosis, mesothelioma, and various types of cancer of the stomach and colon.

d. Types of Asbestos


Asbestos can be defined as friable or non-friable. Friable means that the material can be crumbled with hand pressure and is therefore likely to emit fibers. The fibrous or fluffy sprayed-on materials used for fireproofing, insulation, or sound proofing are friable and they readily release airborne fibers if disturbed.

Materials such as vinyl-Asbestos floor tile or roofing felts are considered non-friable and generally do not emit airborne fibers unless subjected to sanding or sawing operations. Asbestos cement pipe or sheet can emit airborne fibers if the materials are cut, abraded, or sawed, or if they are broken during demolition operations.

e. Possible Locations Where Employees May Be Exposed to Asbestos During Their Job Functions

Asbestos materials are used in the manufacture of heat-resistant clothing, automotive brake and clutch linings, and a variety of building materials including insulation, soundproofing, floor tiles, roofing felts, ceiling tiles, Asbestos-cement pipe and sheet and fire-resistant drywall. Asbestos is also present in pipe and boiler insulation materials, pipeline wrap and in sprayed-on materials located on beams, in crawlspaces, and between walls.

Client owned and/or operated equipment and facilities, where surfacing material or insulation is present, must be confirmed non-Asbestos before Quality Electric employees disturb that material. Where surfacing material or insulation cannot be confirmed non-Asbestos, the client or owner must test, and where necessary abate, the material before Quality Electric employees are permitted to work.

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f. Identifying Asbestos

There are many substances that workers contact that may contain Asbestos and have the potential to release fibers. Only rarely can Asbestos in a product be determined from labeling or by consulting the manufacture. The presence of Asbestos cannot be confirmed visually in many cases. The only way to positively identify Asbestos is through laboratory analysis of samples. If the presence of Asbestos is suspected always assume that it is an asbestos containing material and have it analyzed.


Employees will abide warning signs and labels and will not disturb the Asbestos containing material.

Signs and labels shall identify the material which is present, its location, and appropriate work practices which, if followed, will ensure that Asbestos Containing Material (ACM) and/or Presumed Asbestos Containing Material (PACM) will not be disturbed. Quality Electric shall ensure that employees working in and adjacent to regulated areas comprehend the warning signs.

g. General Safety Precautions

The following general precautions will reduce exposure and lower the risk of Asbestos related health problems:

- Drilling, sawing, or using nails on asbestos materials can release Asbestos fibers and should be avoided.
- Floor tiles, ceiling tiles or adhesives that contain Asbestos should never be sanded.
- Use care not to damage asbestos when moving furniture, ladders, or any other object.
- Know where asbestos is located in your work area. Use common sense when working around products that contain Asbestos. Avoid touching or disturbing Asbestos materials on walls, ceilings, pipes, ducts, or boilers.
- All Asbestos containing materials should be checked periodically for damage or deterioration. Report any damage, change in condition, or loose asbestos containing material to a supervisor.
- All removal or repair work involving Asbestos must be done by specially trained personnel.
- Asbestos should always be handled wet to help prevent fibers from being released. If asbestos is soaked with water or a mixture of water and liquid detergent before it is handled, the fibers are too heavy to remain suspended in the air.
- In the presence of Asbestos dust above the PEL, the use of a respirator approved for asbestos work is required. A dust mask is not acceptable because Asbestos fibers will pass through it.
- Dusting, sweeping, or vacuuming dry asbestos with a standard vacuum cleaner will put the fibers back into the air. A vacuum cleaner with a special high efficiency filter (HEPA) must be used to vacuum Asbestos dust.
- If a HEPA vacuum is not used clean-ups must be done with a wet cloth or mop. The only exception to this would be if the moisture presents an additional hazard such as around electricity.

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Remember, the mere presence of asbestos itself does not create a health hazard unless the material is disturbed and releases fibers to the atmosphere. Protect yourself and others by being aware of where Asbestos is located, the dangers involved and using common sense when working around ACM.

h. Multiple Worksites

When working on multi-contractor worksites our employees shall be protected from exposure. If employees working adjacent to Class I Asbestos jobs are exposed to Asbestos due to the inadequate containment of such jobs Quality Electric shall either remove the employees from the area until the enclosure breach is repaired or perform an initial exposure assessment.

i. Personnel Air Monitoring

Depending on the exposure level Quality Electric is required to perform air sampling.

j. Medical Surveillance Program

All Quality Electric employees who are exposed to Asbestos at the regulated level shall be included in the Quality Electric medical surveillance program.

k. Respiratory Protection

The only circumstances that will necessitate Quality Electric employees using respiratory equipment for protection against asbestos is during the asbestos exposure assessment process, while confirming (via personnel monitoring) that the engineering controls and work practices designed and employed for a particular work activity are adequate to maintain exposure levels below the PEL/excursion limit. Asbestos work that requires respiratory equipment beyond the PEL should be performed by a qualified contractor.

l. Waste Disposal


Asbestos waste, scrap, debris, bags, containers, equipment, and contaminated clothing shall be collected and disposed of in sealed, labeled impermeable bags of greater than 6 mils thickness or other closed, labeled, impermeable containers.

m. Training

Asbestos awareness training is required for employees who work in areas that contain or may contain Asbestos and the training is documented.

Asbestos awareness training is required for employees whose work activities may contact Asbestos Containing Material (ACM) or Presumed Asbestos Containing Material (PACM) but do not disturb the ACM or PACM during their work activities. Training elements are to include:

- The health effects associated with asbestos exposure.
- The relationship between smoking and exposure to asbestos producing lung cancer:
- The quantity, location, manner of use, release, and storage of Asbestos and the specific nature of operations which could result in exposure to Asbestos.
- The engineering controls and work practices associated with the employee's job assignment.

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- The specific procedures implemented to protect employees from exposure to Asbestos, such as appropriate work practices, emergency and clean-up procedures and personal protective equipment to be used.
- The purpose, proper use, and limitations of respirators and protective clothing, if appropriate.
- The purpose and a description of the medical surveillance program.
- The content of the OSHA asbestos standard, including appendices.
- The requirements for posting signs and affixing labels and the meaning of the required legends for such signs and labels.

Subcontractors performing work shall comply with the requirements of this standard and all applicable regulatory and environmental regulatory requirements


5. Regulated Areas

- (1) All Class I, II and III asbestos work shall be conducted within regulated areas. The different classifications are detailed in the OSHA regulation, however for the purposes of Quality Electric, all ACM is to be treated as Class I.
- (2) A Daily inspection should ascertain the integrity of the enclosure and/or the effectiveness of the control method relied on by the primary asbestos Contractor to assure that asbestos fibers do not migrate to adjacent areas.
- (3) Demarcation. The regulated area shall be demarcated with signage and physical barriers in a manner that minimizes the number of persons within the area and protects persons outside the area from exposure to airborne asbestos. Where critical barriers or negative pressure enclosures are used, they may demarcate the regulated area. Signs shall be provided and displayed. Signs shall comply with the OSHA standard for each location and type of protective methods.
- (4) Access. Access to regulated areas shall be limited to authorized person(s) only.
- (5) Exposure Assessment should be completed by the abatement Contractor. This can be completed through empirical data (past records of tests) from the Contractor if the employees have been trained in the OSHA standard requirements. If empirical data is not used, an Initial Exposure Assessment must be completed by the abatement Contractor through air sampling of workers performing asbestos abatement at the site.

6. Methods of Compliance

Engineering controls and work practices that are required to be followed by all abatement, unless deemed infeasible or create a greater hazard:


- (1) Vacuum cleaners equipped with HEPA filters to collect all debris and dust containing ACM and PACM
- (2) Wet methods, or wetting agents, to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup, except where the abatement Contractor demonstrates that the use of wet methods is infeasible due to the creation of electrical hazards, equipment malfunction, and in roofing where a greater hazard may be created.

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- (3) Prompt clean-up and disposal of wastes and debris contaminated with asbestos in leak-tight containers (Exception – In roofing, intact ACM shall be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift.)
- (4) Local exhaust ventilation equipped with HEPA filter dust collection systems.
- (5) Enclosure or isolation of processes producing asbestos dust with a negative air machine with HEPA filter. This includes HVAC systems isolated in the regulated area by sealing with a double layer of 6 mil plastic or the equivalent
- (6) Use of protective clothing for workers involved in abatement or cleanup activities
- (7) Wherever the feasible engineering and work practice controls described above are not sufficient to reduce employee exposure to or below the permissible exposure limit, the abatement Contractor shall use them to reduce employee exposure to the lowest levels attainable. They shall then supplement them using respiratory protection that complies with the requirements of the OSHA regulation.

7. Prohibited acts that will not be allowed for asbestos work:

- (1) High-speed abrasive disc saws that are not equipped with point of cut ventilator or enclosures with HEPA filtered exhaust air.
- (2) Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air.
- (3) Dry sweeping, shoveling or other dry clean-up of dust and debris containing ACM and PACM.
- (4) Employee rotation as a means of reducing employee exposure to asbestos.
- (5) Cutting, abrading, or breaking the ACM or PACM shall be prohibited unless the abatement Trade Partner can demonstrate that methods less likely to result in asbestos fiber release are not feasible.
- (6) Eating, drinking, smoking, etc. are forbidden in regulated areas.
- (7) Waste disposal. Asbestos waste, scrap, debris, bags, containers, equipment, and contaminated clothing designated for disposal shall be collected and disposed of in sealed, labeled, impermeable bags or other closed, labeled, impermeable containers. Disposal needs to conform to the local, state, and federal regulations; in any case, it may not be placed in dumpsters used for general construction debris.

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C. Benzene and Benzene Awareness

1. Purpose

The purpose of this program is to define work practices, administrative procedures and engineering controls to protect employees exposed to benzene concentrations above the OSHA action level. This plan shall be implemented and kept current by the Safety Manager as required to reflect the most recent exposure monitoring data.

2. Scope

This program covers all employees who may be exposed to benzene during the completion of job duties. When work is performed on a non-owned or operated site, the operator's program shall take precedence; however, this document covers Quality Electric employees and contractors and shall be used on owned premises, or when an operator's program does not exist or is less stringent. Employees will be aware of provisions of site-specific contingency/emergency plans by either Quality Electric or of a facility owner.

The Quality Electric Safety Manager will develop and implement project/task specific benzene control procedures prior to the start of activities that may include exposure to benzene. Quality Electric will be aware of an owner's contingency plan provisions and all employees must be informed where benzene is used in host facility and aware of additional plant safety rules.


Possible locations where employees may be exposed to benzene during their job functions may include, but not limited to petroleum refining sites, tank gauging (tanks at producing, pipeline & refining operations) and field maintenance operations.

3. Definitions

- Action Level** – means an airborne concentration of benzene of 0.5 ppm calculated as an 8-hour time-weighted average.
- Benzene** – a toxic, colorless liquid or gaseous material. Benzene has an aromatic odor, is not soluble in water and is flammable.
- Employee exposure** – exposure to airborne benzene that would occur if the employee were not using respiratory protective equipment.
- Health Effects** – Short-term overexposure may cause irritation of eyes, nose and skin, breathlessness, irritability, euphoria, headache, dizziness, or nausea. Long term effects may result in blood disorders such as leukemia and anemia.

4. Key Responsibilities

- Manager or Designee
 - Ensure personnel are aware of work that has the potential of exposure to benzene.
 - Ensure individuals responsible for monitoring areas of exposure are properly trained.
 - Ensure personnel receive documented medical surveillance exams.
 - Ensure that emergency exams are performed if an overexposure or suspected overexposure occurs.

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b. Supervisors

- Ensure employees have the appropriate personal protective equipment (PPE) and are properly trained in its use and care.
- Ensure employees comply with the benzene control program. Safety Manager
- In coordination with the Manager, develop and implement project/task specific benzene control procedures prior to the start of activities that may include exposure to benzene.
- Coordinate monitoring activities, ensuring monitoring equipment is in proper working order and, as necessary, modifying the benzene control procedures to reflect exposure monitoring data.
- Maintain the benzene control program, notify management of any regulatory changes, and ensure compliance with regulatory, client and corporate requirements.
- Coordinate training activities.
- Coordinate the medical surveillance program, including maintenance of medical records and administration of exams.
- Ensure fire extinguishers shall always be readily available where benzene is used/stored. Benzene liquid is highly flammable, and vapors may form explosive mixtures in air. Fire extinguishers must be readily available in areas where benzene is used or stored.

c. Employees

- Comply with the benzene control program.
- Know where benzene is used at Quality Electric or client facilities and follow any of additional plant safety rules required by the client.
- Comply with the medical surveillance program and attend examinations as required.
- Maintain respiratory protection equipment in good working order and notify the supervisor or Safety Representative of any problems prior to starting work
- Review material safety data sheets or consult with the supervisor to identify any container with benzene containing material.
- Not smoke in prohibited areas where benzene is present.
- Report exposures resulting in any symptoms immediately.

5. Procedure

a) Permissible Exposure Limits

The time-weighted average limit (TWA) for benzene is:


- 8-hour TWA 1 ppm
- 12-hour TWA 0.67 ppm

The short-term exposure limit (STEL) for benzene is 5 ppm.

6. Regulated Areas

Quality Electric shall establish regulated areas wherever airborne concentration of benzene exceeds or can reasonably be expected to exceed the PEL or STEL.

Quality Electric will control access to regulated areas and limit access to authorized personnel.

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Safety precautions such as prohibition of smoking in areas where benzene is used/stored shall be taken. Smoking is prohibited in areas where benzene is used or stored. The following signage shall be posted in all regulated areas when the potential exists for benzene vapors to be in excess of the PEL:

DANGER – BENZENE REGULATED AREA CANCER CAUSING AGENT FLAMMABLE – NO
SMOKING AUTHORIZED PERSONNEL ONLY RESPIRATOR REQUIRED

7. Methods of Compliance

The benzene control program shall be written and implemented to comply with OSHA regulation 29 CFR 1910.1028 (Benzene).

Quality Electric shall establish and implement a written program to reduce employee exposure to or below the PEL primarily by means of engineering and work practice controls to ensure compliance with the benzene control program and federal and state requirements.


8. Exposure Monitoring

Exposure monitoring shall be performed for the 8-hour and 12-hour TWAs or for the 15-minute STEL exposure when:

- Regulated areas are established
- An emergency occurs that could require a regulated area
- A change in the production, process, control equipment, personnel or work practices may result in new or additional exposure to benzene
- Cleanup of a spill, leak repair, or rupture occurs
- If the monitoring required reveals employee exposure at or above the action level but at or below the TWA, Quality Electric shall repeat the monitoring for each employee at least every year.
- If the initial monitoring reveals employee exposure to be below the action level Quality Electric may discontinue the monitoring. If the monitoring reveals that employee exposures, as indicated by at least two consecutive measurements taken at least 7 days apart, are below the action level Quality Electric may discontinue to monitor.
- Direct reading detection instruments (Dräger CMS is recommended) will be used where benzene vapors may be present in work areas not previously monitored. Personal monitoring will be performed by use of vapor monitoring badges following manufacturer requirements. All samples shall be analyzed at an AIHA (American Industrial Hygiene Association) certified laboratory.

9. Medical Surveillance

Baseline and annual medical exams shall be provided to employees that may work or are anticipated to participate in operations more than 10 times per year or may work in areas where benzene exposures may exceed the PEL over 30 days per year.

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Quality Electric shall make available a medical surveillance program for employees who are or may be exposed to benzene at or above the action level 30 or more days per year; for employees who are or may be exposed to benzene at or above the PELs 10 or more days per year; for employees who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to the effective date of the standard when employed by their current employer.

Notification of monitoring results shall be provided to employees in writing within 15 working days of receipt of results.

10. Personal Protective Equipment

- PPE will be selected based on its ability to prevent absorption, inhalation, and ingestion.
- PPE will reflect the needs of the employee based on work conditions, amount and duration of exposure and other known environmental factors but shall contain as a minimum; boots, proper eye protection, gloves, sleeves, aprons, and others as determined.
- PPE shall be provided and worn when appropriate to prevent eye contact and limit dermal exposure to liquid benzene. PPE must meet the requirements of 29 CFR 1910.133 and provided at no cost to the employees.

11. Respiratory Protection

A respiratory protection program shall be established in accordance with 29 CFR 1910.134.

Respiratory protection is required:

- During the period necessary to implement engineering controls or work practices.
- When engineering and work practices are not feasible.
- In emergencies.

Approved respirators shall be selected according to airborne concentrations of benzene or condition of use.


- 0 to 0.67 ppm – no respirator required
- 0.67 to 6.7 ppm – half-mask respirator with OV cartridges
- 6.7 to 33 ppm – full-face respirator with OV cartridges
- Greater than 33 ppm – Due to the Quality Electric policy of not permitting SCBA no employee shall enter a space containing more than 33 ppm.

12. Recordkeeping


- Medical surveillance records shall be maintained for 30 years after termination of employment.
- Exposure monitoring records shall be maintained for 30 years after completion of the project
- Exposure and medical monitoring records shall be made available to affected employees or their representatives and to OSHA upon request

13. Communication of Benzene Hazards

- Signs and labels shall be posted at entrances of regulated areas
- The benzene control program shall be updated by the Quality Electric Safety Manager
- Project site specific contingency and emergency procedures shall be updated by the Safety

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d) Manager and made available to project staff prior to beginning work at the specific site.

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D. Blood Borne Pathogens

1. Purpose


This program's purpose is to eliminate and/or minimize employee occupational exposure to blood, other body fluids, and other potentially infectious materials. It is the policy of the company to protect employees who could be exposed, as part of their assigned duties, to human blood or other potentially infectious materials (OPIM) that may contain blood borne pathogens, infectious microorganisms that are present in human blood and can cause disease in humans. To help minimize the potential risk to employees this plan will include exposure determination, methods of compliance, engineering work practice control, personal protective equipment, housekeeping, Hepatitis B Virus (HBV) vaccination post-exposure evaluation and follow-up information training and record keeping that, coupled with employee education. The safety department is responsible for annually reviewing this program and its effectiveness, and for updating this program as needed.

2. General Requirements

- Exposure determinations shall be made without regards to the use of personal protective equipment. All personnel exposed to blood borne pathogens must be tested after an incident.
- Exposure in the construction industry is expected to be limited to emergency situations involving job related injuries. Employees should review the blood borne pathogen program.
- All employees involved in a situation where it is reasonably anticipated that exposure to infectious materials is likely are required to wear PPE. PPE items are in the first-aid kit.
- Employees shall be furnished with readily accessible hand washing facilities when feasible.
- All exposure incidents shall be reported, investigated, and documented. When an employee incurs an exposure incident, it shall be reported immediately to the company's safety department.
- Following a report of an exposure incident, the exposed employee shall immediately receive a confidential medical evaluation and follow up

3. Definitions

- Blood** – human blood, human blood components, and products made from human blood
- Blood borne Pathogens** – infectious microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV) commonly known as AIDS.
- Contaminated** – the presence of blood or other potentially infectious materials on an item or surface
- Exposure Incident** – a specific incident in which an eye, mouth, other mucous membrane, skin, encounters blood or other potentially infectious materials resulting from the performance of an employee's duties
- Hand Washing Facilities** – a facility providing an adequate supply of running potable water, soap, and single use towelettes or hot air-drying machines
- Occupational Exposure** – reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of employees' duties

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- g) **Other Potentially Infectious Materials (OPIM)** - human bodily fluids contaminated with blood and all bodily fluids where it is difficult or impossible to differentiate between body fluids. Includes, but is not limited to, blood cultures, organs, and other tissues
- h) **Personal Protective Equipment** – specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes not intended to function as protection against a hazard are not considered to be personal protective equipment
- i) **Source Individual** – any individual, living, or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to an employee
- j) **Universal Precautions** – an approach to infection control; Per the concepts of Universal Precautions, all human blood and certain body fluids are treated as if known to be infectious for HIV, HBV, and other blood borne pathogens
- k) **Work Practice Controls** – controls that reduce the likelihood of exposure by altering the way a task is performed (i.e. wearing protective equipment)
- l) **Engineering Controls** – controls (e.g. sharp disposal containers, self-sheathing needles, or other equipment) that may isolate or remove blood borne pathogens from the workplace

4. Exposure Determination

- a) Employees covered by this policy include:
 - Designated first-aid personnel
 - Designated emergency response individuals

Who are involved in the following tasks and procedures:


- Cardiopulmonary resuscitation
 - First Aid for choking victim
 - Treatment of injury
 - Wound care
 - First Aid for strokes or seizures
 - Cleaning and decontaminating an area after exposure to blood or other potentially infectious material
- b) Exposure determinations shall be made without regards to the use of personal protective equipment. All personnel exposed to blood borne pathogens must be tested after an incident.
 - c) Exposure in the construction industry is expected to be limited to emergency situations involving job related injuries. Employees should review the blood borne pathogen program.

5. Responsible Persons

- a) Safety Director

This person will be responsible for the overall management and support of the Blood borne Pathogens Exposure Control Plan (BPECP). Activities will include, but not be limited to:

Overall responsibility for implementing the BPECP.
Development of additional related policies as needed.

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Revisions and updating of plans, as necessary.

Keeping abreast of legal requirements concerning blood borne pathogens.

b) Jobsite Supervisors

- Responsible for reporting incident to Safety Director.

c) CPR/First Aid Responders

- Knowing which tasks, they perform are potentially hazardous for blood borne pathogen exposure.
- Attending the blood borne pathogen training session.
- Using all work practice controls.

6. Availability of the Exposure Control Plan

The BPECP is available to all employees at any time. Employees will be advised of this availability during their training session. Employees will also be informed of the BPECP through their employee indoctrination.


7. Method of Compliance

In the office location the requirements for compliance will be carried out by the Safety Director and/or designated coordinator.

Universal precautions will be observed at this facility to prevent contact with blood and other potentially infectious material. All blood or other potentially infectious material will be considered infectious regardless of the perceived status of the source individual.

8. Work Practice Controls

- Employees who may be exposed to blood borne pathogens are required to implement “universal precautions” or “body substance isolation”. Control measures will be implemented in accordance with the requirements set forth during employee training in “work practice controls”, whereby steps are taken by the employee and the company that shall reduce the likelihood of exposure to potentially infectious materials by altering the way tests are performed. All exposure cases without regards to the use of PPE must be tested.
- All employees assigned as a designated first-aid person, infirmity personnel, and other emergency response personnel will be provided training in how to recognize and control blood borne exposure. Work practice controls, as outlined in this section, will be furnished to all affected employees and each employee will be trained in their use with updated implementation training to be given annually. The Safety Director will maintain all training records.
- Hepatitis B vaccinations are available to all employees who have occupational exposure as defined in this control program. The employee may elect to have vaccine administered any time after initial assignment. Employees who decline the vaccine will be asked to sign a statement to that effect; however, he or she may decide to accept the vaccination at a later date. In addition, all employees who have an exposure incident are entitled to a post-exposure evaluation and follow-up with a licensed healthcare professional (i.e. doctor

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or nurse). Vaccines, post exposure evaluations, and follow-ups will be provided at the company's expense. All medical records will remain confidential.


- d) Immediately following the removal of PPE, the employee is required to wash their hands and other potentially exposed skin with antiseptic hand wash or towelettes. The employee shall then wash their hands with soap and water as soon as possible thereafter.
- e) Work surfaces and equipment that are contaminated with blood or OPIM shall be disinfected with an appropriate cleaner.

9. Control Procedures

- a) Assess the Workplace Environment:
 - (1) Employees shall be trained to look for signs or labels that indicate the presence of infectious materials that are or may become present during work operations. If the worker suspects there may be infectious materials present, they should contact their supervisor who will in turn call the Safety Director for guidance.
 - (2) In cases where we are performing work within a business or industry where there is a possibility of encountering this issue, a meeting shall be held with the building occupant's internal infection control person to discuss the possible exposure.
- b) Engineered Controls
Engineering and work practice controls will be utilized to eliminate or minimize exposure to company employees where occupational exposure remains after institution of these controls, personal protective equipment shall also be utilized.

The following engineered controls will be utilized:

- All employees involved in a situation where it is reasonably anticipated that exposure to infectious materials is likely are required to wear PPE. PPE items are in the first-aid kit.
- PPE will be considered appropriate only if it does not permit blood or OPIM to contact the employee or the employee's clothing.
- Disposable latex/vinyl gloves shall be worn where it is reasonably anticipated that employees will have hand contact with blood, non-intact skin, mucous membranes, or other potentially infectious material.
- Micro shields with one-way valves will be required to be used if blood or other infectious materials can reasonably be anticipated.
- The protective equipment will be considered appropriate only if it does not permit blood or other potentially infectious materials to pass through or reach the employees clothing, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time which the protective equipment will be used. Personal protective equipment (PPE) is readily accessible to


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each employee listed in the job classification. The PPE will be kept in first aid kits located on each jobsite and other designated locations.

- The Jobsite Supervisors will be responsible to oversee that after the removal of personal protective gloves, the employees wash their hands and any other potentially contaminated skin area immediately or as soon as feasible, with soap and water.
 - PPE Accessibility - All personal protective equipment used at this facility will be provided without cost to employees and the appropriate size is readily accessible at the work site.
 - PPE Use - The Jobsite Supervisor shall oversee that the employee uses the appropriate PPE unless the supervisor shows that the employee temporarily and briefly declined the use of PPE when under rare and extraordinary circumstances, it was the employee's professional judgment that in the specific instance its use would have prevented the delivery of health care or posed an increased hazard to the safety of the worker or co-worker. When the employee makes this judgment, the circumstances shall be investigated and documented to determine whether changes can be instituted to prevent such occurrences in the future.
- c) Housekeeping After use of Personal Protective Equipment (PPE):
- (1) All Jobsite Supervisors will facilitate the disposal of Contaminated PPE. Contaminated PPE shall be placed in a bag or container marked with the universal biohazard label and disposed of at the proper biohazard disposal facility.
 - (2) Immediately following the removal of PPE all employees are required to wash their hands and any other potentially exposed skin with antiseptic hand cleaner or towelettes. As soon as possible thereafter the employees shall wash the same areas with soap and water.
- d) Work surfaces or equipment that is contaminated with blood or other OPIM shall be disinfected with an appropriate cleaner. Cleaning and disinfecting will be done with a 1:10 bleach solution.
- Hard Surface – 1:10 Bleach Solution
- Carpeted Surface – Absorbent Bleach Material (i.e. Zep Chlor – Retain)

10. Hand Washing Facilities

- a) Employees shall be furnished with readily accessible hand washing facilities when feasible.
- b) When hand washing facilities are not readily accessible to the employee, antiseptic towelettes provided in the first-aid kit should be utilized. Should the use of antiseptic towelettes be necessary, employee shall wash hands with soap and running water as soon as feasible.
- c) All employees must, without exception, wash hands and any other infected skin with soap and water, or flush mucous membranes with water immediately or as soon as feasible following contact of such body areas with blood or OPIM's.

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11. Post Exposure and Follow-Up

- a) All exposure incidents shall be reported, investigated, and documented. When an employee incurs an exposure incident, it shall be reported immediately to the Jobsite Supervisor, who then forward the information to the Safety Director before the end of the workday.
- b) Following a report of an exposure incident, the exposed employee shall immediately receive a confidential medical evaluation and follow-up in accordance with OSHA standards at no charge to the employee. The follow up will include the following elements:
 - (1) Documentation of the route of exposure, and the circumstances under which the exposure incident occurred.
 - (2) Identification and documentation of the source individual, unless it can be established that identification is not feasible or prohibited by state or local law.
 - (3) The source individual's blood shall be tested as soon as feasible, after consent is obtained to determine HBV and HIV infectivity. When law does not require the source individual's consent, the source individual's blood, if available, shall be tested and the results documented.
 - (4) If the source individual is already known to be infected with HBV or HIV, testing for the source individual's known HBV or HIV status does not need to be repeated.
 - (5) Results of the source individual's testing shall be made available to the exposed employee, and the employee shall be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual.
- c) Collection and testing of blood for HBV and HIV serological status will comply with the following:
 - (1) The exposed employee's blood shall be collected as soon as feasible and tested after consent is obtained. The employee will be offered the option of having his/her blood collected for testing of the employee's HIV/HBV serological status. The blood sample will be preserved for up to 90 days to allow the employee to decide if the blood should be tested for HIV serological status.
 - (2) All employees who incur an exposure incident will be offered post-exposure evaluation and follow-up in accordance with the OSHA standard. All post exposure follow-ups will be performed by a local designated medical center.
- d) Supervisor's Duties to the Affected Employee


The Jobsite Supervisor evaluating an employee after an exposure incident shall ensure that the health care professional responsible for the employee's Hepatitis B vaccination is provided the following information:

Written documentation of the route of exposure and circumstances under which the exposure occurred.
(see attached exposure incident report)

- Results of the source individual's blood testing, if available.

All medical records relevant to the appropriate treatment of the employee, including vaccination status.

The Jobsite Supervisor shall obtain and provide the employee with a copy of the evaluating healthcare professional's written opinion within fifteen (15) days of the completion of the evaluation.

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The health care professional's written opinion for HBV vaccination shall be limited to whether HBV vaccination is indicated for an employee, and if the employee has received such vaccination. The healthcare professional's written opinion for post exposure follow-up shall be limited to the following information:


- A statement that the employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials which require further evaluation or treatment.
- A statement that the employee has been informed of the results of the evaluation.
- All other findings and diagnosis shall remain confidential.

12. Training

Jobsite Supervisors shall ensure training of all employees with occupational exposure and are required to be trained in requirements set forth in CFR1910.1030 Blood Borne Pathogens. The Supervisor will be knowledgeable in the subject matter or a trainer who is will be brought in to facilitate. This training will be repeated within twelve months of the previous training. The training program will consist of the following elements:

- a) An accessible copy of the regulatory text of OSHA 1910.1030 and explanation of its contents.
- b) A copy of the blood borne pathogen program and hazard control plan.
- c) A general explanation of the epidemiology and symptoms of blood borne disease.
- d) An explanation of the modes of transmission of blood borne disease.
- e) A description of the hazard control plan.
- f) Information on how to recognize a potential hazard.
- g) An explanation of the use and limitations of the methods required to control exposure including engineering controls, work practices and personal protective equipment.
- h) Information on the types, proper uses, location, removal, handling, decontamination, and disposal of personal protective equipment.
- i) Information on the benefits, use and availability of the Hepatitis B vaccine.
- j) Appropriate action to take and persons to contact in the event of an emergency involving medical follow-up.
- k) Information on post-exposure evaluation and follow-up that is required to be provided following an exposure incident.
- l) An opportunity for interactive questions and answers with the person conducting the training session.
- m) An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available.

Employees who have received training on blood borne pathogens in the twelve months preceding the effective date of this policy shall only receive training in provisions of the policy that were not covered. Additional training shall be provided to employees when there are any changes of tasks or procedures affecting the employee's occupational exposure.

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13. Record Keeping

The company shall maintain records of all exposure incidents, including the names of the source individual(s).

a) Training Records - The Safety Director is responsible for maintaining the following training records. These records will be kept in Quality Electric's office.

Training records shall be maintained for three years from the date of training. The following information shall be documented:

- The dates of the training sessions.
- An outline describing the material presented.
- The names and qualifications of persons conducting the training.
- The names and job titles of all personnel attending the training sessions.

Availability - All employee records shall be made available to the employee in accordance with 29 CFR 1910.20.

All employee records shall be made available to the Assistant Secretary of Labor for the Occupational Safety and Health Administration and the Director of the National Institute for Occupational Safety and Health upon request.


Medical Records - The Safety Manager/Coordinator is responsible for maintaining medical records as indicated below. These records shall be kept in the Safety Directors office.

Medical records shall be maintained in accordance with OSHA Standard 29 CFR 1910.20. These records shall be kept confidential and must be maintained for at least the duration of employment plus thirty (30) years. These records shall include the following:

- The name and social security number of the employee.
- A copy of the employee's HBV vaccination status, including the dates of vaccination or a declaration statement indicating they choose not to be vaccinated.
- A copy of all legally accessible results of examinations, medical testing, and follow-up procedures.
- A copy of the information provided to the healthcare professional, including a description of the employee's duties as they relate to the exposure incident, and documentation of the routes of exposure and circumstances of the exposure.

14. Vaccinations

Vaccinations shall be provided at no cost to the exposed employee. Employees that decline treatment shall sign and date the Declination Statement.

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15. Evaluation and Review

The Safety Director and or designated coordinator is responsible for annually reviewing this program, and its effectiveness, and for updating this program as needed.

16. Bloodborne Pathogen Exposure Control Plan


a) Coordinators Responsibilities

- (1) Read and understand the Blood borne Pathogen Exposure Control Plan.
 - (2) Inform CPR responders in your business that you are the coordinator and that you must be contacted immediately if an exposure occurs.
 - (3) Inform CPR responders that you have a copy of the Exposure Control Plan and they may review it or receive a copy at any time.
 - (4) Locate a qualified trainer to conduct your annual Blood borne Pathogen Review Training and maintain training records in your office for three (3) years from the date of training. Training records will include:
 - Dates of training.
 - Outline describing material presented.
 - Names and qualifications of persons conducting training.
 - Names and job titles of all persons attending the training session.
1. You, as the responsible person, will oversee that the Blood borne Exposure Control Plan is implemented and followed as described. This includes the following responsibilities:
 - Distribute micro shields and latex gloves to all trained CPR responders. This personal protective equipment is to be stored by the responder. Make sure all gloves are the proper size.
 - Monitor first aid supplies and re-supply, as necessary.
 - If an exposure incident occurs, you must follow all post evaluation and follow-up procedures.
 - Ensure that all regulated and non-regulated waste at the exposure scene is handled safely and disposed of properly.

b) Post Evaluation and Follow-Up

If a first responder responds to any situation involving the presence of blood or other potential infectious material (OPIM) the following steps must be taken:

- a. If responder has exposure (direct contact with skin, eyes, mucous membrane) to blood or OPIM, wash all affected areas with disinfecting soap immediately, or rinse with running water. When in doubt if an exposure occurred, call the nearest clinic.
 - Contact the coordinator as soon as possible, but no later than the end of the exposed person's work shift.

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- Offer to send the employee to the nearest health care clinic to have a confidential medical evaluation. Specifically request that all charges be billed directly to Quality Electric. The employee can decline this service.
- Bring a copy of the medical evaluation form with you to the clinic and give it to the attending licensed health care professional and ensure that all information has been covered with the exposed employee.
- Complete the Exposure Incident Report as soon as possible and forward it to the Safety Manager.
- Obtain and provide the employee with a copy of the evaluating health care professional's written opinion for HBV vaccination and whether the employee has received such HBV vaccination within fifteen (15) days of the completion of the evaluation.

The health care professional must also provide a statement indicating that the exposed employee has been told of any medical conditions resulting from the exposure and that the employee has been informed of the results of the evaluation.

c) Confidential Medical Evaluation Form


All charges are to be billed directly to Quality Electric.

- Provide written documentation of route of exposure.
- Test source individual for HBV and HIV infectivity if consent is given.
- Test exposed individual for HBV and HIV infectivity if consent is given. Document if consent is not given to test.
- Provide information identifying whether the HEP B vaccination was recommended for the exposed employee and whether the employee received the vaccination. Any added findings must be kept confidential.
- Provide a written statement that the employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials which require further evaluation or treatment.
- Provide a statement that the employee has been informed of the results of the evaluation.
- Offer the employee counseling with the appropriate health care professional.

17. Annexes

a) Forms

- Hep B Vaccine Declination Form
- Exposure Incident Report
- Medical Records – Blood Borne Pathogen Exposure

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E. Cadmium and Hexavalent Awareness

1. Purpose:

The purpose of this program is to establish requirements for the use and handling of materials that expose Quality Electric employees to cadmium and/or hexavalent chromium.


2. Scope

This program covers all employees.

3. Key Responsibilities

a. Managers/Supervisors

- Shall ensure that all employees are aware of the proper work procedures for cadmium and hexavalent chromium
- Shall ensure that initial training is conducted for all new employees and that retraining is conducted when employee behaviors suggest that retraining is warranted.
- As part of the JHA and other hazard evaluation processes, identifies and evaluates chromium or cadmium hazards and potential exposures during planning and the conduct of work.
- Reviews and approves the Task-Specific Safety Analysis.
- As necessary, quantitatively determines the presence of chromium or cadmium in materials, substrates, and other media. This may involve the collection of samples for analysis by a qualified laboratory or field testing using acceptable test methods.
- Provides results of any chromium or cadmium survey to management/supervision, along with information regarding hazard potential and control measures. As appropriate, makes recommendations to management/supervision to maintain, modify, upgrade, or downgrade controls accordingly.
- Takes prompt corrective measures (or supports any Competent Person in this role) to eliminate hazards, such as recommending to management/supervision to implement or modify engineering, administrative, work practice, and personal protection (including respiratory protection) controls.
- Conducts periodic exposure assessment.
- As appropriate, assists management/supervision in ensuring that workers have the necessary training and medical surveillance based upon the activity and hazard.
- Ensures that medical monitoring is conducted in accordance with 29 CFR 1926.1126 (for chromium) or 29 CFR 1926.1127 (for cadmium) including imposition of work restrictions where appropriate and reviewing results of medical monitoring.
- In evaluating chromium or cadmium hazards and specifying controls for a job, (a) utilizes reliable historical exposure monitoring data generated for other similar operations or activities, (b) utilizes objective data, and/or (c) plans and conducts initial monitoring to determine exposures and assess the effectiveness of hazard controls.
- Conducts initial and periodic exposure monitoring in accordance with National Institute for Occupational Safety and Health (NIOSH)/OSHA methods if lacking historical or objective data.
- Maintains effective records of jobs monitored, so that a historical database can be used to specify controls and eliminate unnecessary and redundant monitoring for future activities.

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- Supports project management/supervision in responding to exposures above the PEL when workers were not adequately protected.
- As appropriate, participates in pre-job and daily worker briefings regarding task-specific chromium or cadmium hazards and controls, work practices/plans (such as JSAs), and other applicable information, including any changes that are made to controls or to the work practices or plans.

b. Employees

- Shall follow all requirements regarding the safe work procedures for cadmium and hexavalent chromium.

4. Trade Names

CdO, Cadmium metal, Cadmium Monoxide, Cadmium oxide fume

5. Immediately Dangerous to Life and Health

9 mg/m³

6. Cadmium Procedure

(1) Appearance

In solid form it will appear as a metal which is silver – white, blue – tinged lustrous, odorless solid. In fume form it will appear odorless, yellow – brown, finely divided particulate dispersed in the air.

(2) Symptoms

Some of the potential health effects of Cadmium will present themselves through inhalation of particulate or fumes as chest tightness, cough, pulmonary edema, headache, chills, muscle aches, nausea, vomiting, loss of smell, mild anemia.

(3) Target Organs


Respiratory System, Kidneys and with long term exposure prostatic and / or lung cancer.

(4) Compliance Program

A written compliance program shall be implemented when the PEL for cadmium is exceeded at a work site.

The following areas shall be addressed within the site compliance program and to ensure emergency plans are in place should a release of cadmium occur:

- Potential exposure determination including a description of each operation where cadmium is omitted, machinery use, material processed, controls in place, crew size, employee job responsibilities and maintenance practices.
- Air monitoring data or developing a justification for not conducting monitoring based on previous monitoring/historical data or objective data.
- Engineering controls including the specific means that will be employed to meet compliance.
- A report of technology considered in meeting the PEL.

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- A detailed schedule of implementation.
- Consideration of respiratory protection.
- A documented, written plan for dealing with emergency situations involving a substantial release of cadmium.
- Work practice program.
- Other relevant information such as protective clothing, housekeeping, hygiene areas and practices (including consideration of shower facilities), consideration of medical surveillance, training, and recordkeeping.

The written program must be reviewed and updated annually or more often to reflect significant changes in the compliance status for Quality Electric.


The program shall be provided for examination and copying upon request of affected employees, their representatives, or OSHA officials.

Maintenance procedures while working on ventilation systems and changing of filters will be established. Procedures shall be developed and implemented to minimize employee exposure to cadmium when maintenance of ventilation systems and changing of filters. Examples include: Proper use of PPE, use of HEPA filtered vacuums, wet sweeping, or other methods to minimize the likelihood of exposure to chromium. No compressed air shall be used to remove chromium from any surface. Cleaning equipment must be handled in a manner that minimizes the reentry of chromium into the workplace.

Construction work activities that result in exposure to chromium or cadmium may include, but are not limited to, the following:

- Demolition or salvage of structures where chromium or cadmium, or materials containing chromium or cadmium, are present.
- Removal or encapsulation of materials containing chromium or cadmium.
- New construction, alteration, repair, or renovation of structures and substrates that contain chromium or cadmium.
- Installation of products containing chromium or cadmium.
- Working with/around Portland cement (in powder or dust form – chromium only).
- Torch-cutting chromium/cadmium containing paints.
- Transportation, disposal, storage, or containment of chromium or cadmium, or materials containing chromium or cadmium.
- Maintenance operations associated with construction activities.
- Welding, cutting, burning, or grinding stainless steel, chromium-/cadmium-containing alloy steel, and chromium/cadmium containing alloys.

❖ **Note – Exposure to chromium (especially hexavalent chromium) has also occurred when the welding rod or wire in use contains chromium.**

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The permissible exposure limit (PEL) for cadmium and hexavalent chromium is five (5) micrograms calculated as an 8-hour time-weighted average over a work shift. The action levels (AL) of 2.5 micrograms triggers the following requirements:

- Pre-job planning includes, as needed, a thorough identification of chromium or cadmium materials. Identification may include the product name, a Safety Data Sheet (SDS) with the SDS number (if available) or a sample content analysis. Sampling data includes location, sampling method, sampling dates, laboratory identification, and analytical method.
- If documentation is not feasible or has been determined by the project engineer to be unavailable or unreliable, chromium or cadmium content sufficient to exceed the action level for chromium or cadmium is assumed.

Results of bulk sampling, calculations of potential chromium or cadmium exposure, and other data that demonstrate compliance with this practice (as well as the pertinent standards) are attached to the work package.

Where chromium or cadmium exposure above the action level is suspected, and in the absence of monitoring data, interim protective measures are established that are equal to or greater than the assumed exposure levels.

7. *Hexavalent Chromium Procedure*


(1) Welding, Cutting, and Grinding

Certain welding and cutting activities have been shown to expose the welder/cutter, and potentially helpers, to hexavalent chromium above the action level when exhaust ventilation is not used. The activities have included the following:

- Shielded metal arc welding, Gas metal arc welding
- Flux cored arc welding, Sub arc welding
- Torch cutting through chromate-containing paints, grinding chromium-containing metals.

The types of metal involved have been stainless steel, chromium-containing alloy steel, and chromium-containing nonferrous alloys. Exposure has also occurred when the welding rod or wire in use contains chromium, and exhaust ventilation is not used.

Therefore, exhaust ventilation is always prescribed as a control measure when activities with the materials mentioned above are in use unless historical personal monitoring data performed when similar materials, using similar methods, under similar environmental conditions are used shows conclusively that the welder/cutter and helper (if applicable) are not exposed above the action level without regard to respiratory protection.

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No employee shall be exposed to more than the PEL of 5 micrograms per cubic meter of air as an 8-hour TWA. Employees shall not be exposed to more than the permissible exposure level.

8. Plasma and Air Arc Cutting and Gouging

Plasma and air arc cutting, and gouging operations have been shown to expose the worker and helpers within 10 feet of the work to levels of hexavalent chromium above the permissible exposure limit (PEL) under most circumstances and conditions. Exhaust ventilation and respiratory protection (at least a half-face, tight-fitting respirator with a HEPA filter/cartridge) are always prescribed as control measures when activities with the materials mentioned above are in use; a higher level of respiratory protection may be prescribed, depending on conditions.

Note – Each discrete task must begin with ventilation and respiratory protection control measures in place.

- Respiratory protection may be downgraded only upon conclusive results of breathing zone monitoring of the employee(s) involved in each discrete task showing exposure to be less than 50 percent of the protection factor of the respirator relative to the concentration and PEL of hexavalent chromium.
- Respiratory protection may be eliminated only upon conclusive results of breathing-zone monitoring of the employee(s) involved in each discrete task showing exposure to be less than the PEL as an 8-hour time-weighted average.

Additional controls may also be appropriate to be in compliance with 29 CFR 1926.1126, depending on the results of evaluations of the materials to be used, environmental conditions, length of the work process/activity, etc.

(1) Medical Surveillance


Medical surveillance must be provided to employees who are exposed above the PEL for 30 days or more per year or exposed in an emergency. Medical surveillance shall be provided when an employee experiences signs or symptoms of the adverse health effects of Hexavalent Chromium (dermatitis, asthma, bronchitis, etc.). Medical evaluations will be provided at no cost to employees. Examinations will be performed by or under the supervision of a physician or other licensed health care professional.

(2) Hygiene

Personal hygiene is very important while working with chromium or cadmium products. To avoid accidental ingestion of chromium or cadmium, employees wash thoroughly (regardless of other controls) prior to eating, chewing, smoking, or drinking.

9. Practices

Quality Electric Management/supervision supported by safety professional(s), the medical contractor and training providers conduct the following basic steps to control exposure to

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chromium or cadmium:

- Determine the types of projects, activities, and operations that could involve chromium or cadmium, or chromium or cadmium-containing materials. For those jobs, conduct hazard identification as part of the work design, planning, and control process.
- If chromium or cadmium materials are involved, ensure that project safety (for chromium) or a competent person (for cadmium) conducts a hazard evaluation to determine the potential exposure and to recommend initial controls.
- Develop and implement a Task-Specific Safety when exposure is or is likely to be above the PEL. The JHA (or equal) addresses the scope of work activities; provides initial exposure assessment; and prescribes exposure controls, air-monitoring requirements, work practices, personal protective equipment, and additional information as required.
- Incorporate recommendations from project safety for chromium or cadmium hazard control measures into any JHA and work control documents.

a) Exposure Monitoring

Periodic monitoring shall be conducted at least every 6 months if initial monitoring shows employee exposure. Air monitoring will be performed at the beginning of each job task. If exposure monitoring results indicate exposure is above the PEL, a written notification must be included with the corrective action being taken to reduce exposure to or below the PEL.


- Notify each affected employee, in writing, of the results of monitoring within five (5) working days.
- Air monitoring for chromium or cadmium may be waived provided the following conditions are met:
 - Monitoring has been performed in the last 12 months.
 - Data from historical monitoring originates from work operations that closely resemble the planned work operations.
 - Workplace and environmental conditions (such as indoors or outdoors, temperature, wind speed, ventilation, and space configuration) are similar to those when the monitoring was performed.
 - The processes, types of material, control methods and work practices are similar.
 - Justification for waving initial monitoring shall be included in the Task-Specific Safety Analysis or equal. Employees involved are briefed regarding the existence of such data.

b) Surveillance

Medical surveillance shall be provided when an employee experiences signs or symptoms of the adverse health effects of Hexavalent Chromium (dermatitis, asthma, bronchitis, etc.). Medical evaluations will be provided at no cost to employees. Examinations will be performed by or under the supervision of a physician or other licensed health care professional.

c) Changing and Hygiene Facilities Are Provided for Decontamination

Quality Electric must provide change rooms for decontamination and ensure facilities prevent cross-contamination. Washing facilities shall be readily accessible for removing chromium from the skin. Workers must wash their hands and face or any other potentially exposed skin before

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eating, drinking, or smoking.

d) Regulated Areas

Regulated areas shall be established when exposure to an employee is or is expected to be in excess of the PEL. Regulated areas shall be marked with warning signs to alert employees and access is restricted to authorized persons only.

e) Controls

Quality Electric is responsible for implementing effective engineering and work practice controls if the exposure level is above the permissible limit for more than 30 days per year. Engineering and work practice controls should be provided to reduce exposure to the lowest feasible level. If employees can demonstrate that such controls are not feasible, Quality Electric shall use engineering/work controls to reduce employee exposure to the lowest levels achievable, and shall supplement them using respiratory protection.

f) Recordkeeping

Quality Electric is required to maintain and make available an accurate record of all employees exposure monitoring, medical surveillance, and training records.

g) Respiratory Protection is Required & PPE

Respirators must be used when engineering controls and work practices cannot reduce employee exposure, during work operations where engineering controls and work practices are not feasible, and emergencies.

Respirators shall be provided in accordance with 1910.134 (Respiratory Protection) (see Quality Electric Respiratory Protection Program). Specific requirements contained within 1926.1127 (Cadmium) regarding respiratory protection shall also be followed including:


- Providing employees with full face piece respirators when they experience eye irritation.
- Providing HEPA filters for powered and non-powered air-purifying respirators.
- Providing a powered air-purifying respirator instead of a negative-pressure respirator when an employee entitled to a respirator chooses to use this type of respirator and such a respirator will provide adequate protection to the employee.

PPE will be provided at employees at no cost. PPE must be provided when there is a hazard from skin or eye contact. Gloves, aprons, coveralls, goggles, foot covers etc.

Contaminated PPE will be removed at the end of the work shift. Quality Electric must clean, launder, repair and replace protective clothing as needed.

h) Housekeeping

Surfaces shall be maintained as free as practicable of accumulation of chromium.

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All spills and releases of chromium shall be cleaned promptly. Methods of cleaning include HEPA filtered vacuums, dry or wet sweeping, shoveling or other methods to minimize exposure.

No compressed air shall be used to remove chromium from any surface unless the compressed air is used in conjunction with a ventilation system designed to capture the dust cloud created by the compressed air or no alternative method is feasible.


Cleaning equipment must be handled in a manner that minimizes the reentry of chromium into the workplace.

10. Training of Employees

Quality Electric shall provide appropriate types of training for employees who are potentially exposed to chromium or cadmium prior to their initial assignment and annually thereafter. Quality Electric will assure employee participation and maintain a record of the training contents.

This training includes:

- Hazard communication training for potentially exposed employees.
- Chromium hazards, control methods and medical surveillance.
- Training specified by the applicable chromium or cadmium standard for workers exposed at the action level for any one day, or who are exposed to chromium or cadmium compounds that are skin irritants.
- Respirator training if respirators are to be used.
- Provide information to workers regarding task-specific chromium or cadmium hazards and control methods, the JSA, work practices, medical surveillance, and other applicable information, including any changes that are made to these controls.
- Provide training annually, as appropriate, to workers who continue to have exposure to chromium or cadmium at or above the action level on any one day.
- All training will be recorded and include the identity of the employee trained, the signature of the person who conducted the training and the date of the training.
- Training records must be kept for one year.

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F. Cold Stress Prevention

1. Intent Statement

The intent of this section is to control employee risks associated with extreme cold or work in cold environments.

2. Definitions


- Hypothermia** - a rapid loss of body temperature and causes the body to lose capability to warm itself or control temperature at the necessary rate
- Cold Water Immersion** - when a person would be immersed in water causing them to become rapidly cold and shock the body, for cases of cold-water immersion should be treated the same as hypothermia, frost bite, trench foot
- Frost Bite** - where the body loses circulation because of extreme cold and causes the area to freeze resulting in eventual death of the skin cells
- Trench Foot** - caused by the skin being constantly wet or shoes containing moisture, this could result in bacterial infection or similar type
- Chilblains** - caused from rapid temperature changes, this gives irritation to the skin in a rash or reddening, and can kill the skin cells if not controlled by slowly adapting to temperatures

3. General Requirements

- All workers shall receive training and awareness of cold stress risks, types and symptoms and methods to prevent an overexposure.
- Cold weather work should discontinue for the person if symptoms of cold stress are noticed. Person should be taken to a warm area for treatment.
- Work should be scheduled to avoid periods where extreme wind chill and temperatures exist.
- Appropriate and suitable clothing should be worn and communicated before the conditions exist.
- By using personal protective equipment, such as layered body wear, facial coverings, appropriate gloves, etc., these controls will help reduce an occurrence of an incident to being over-exposed.
 - Hands should be covered when temperatures are below 0 degrees F.
 - Caps, hoods, and hard hats with liners that fit the style and protective equipment should be planned for and used.
 - Carefully evaluate the outdoor work and determine suitable measures for controlling employee risk.
- Cold stress disorders are associated with excessive exposure to cold working conditions and can present serious, even life-threatening effects on individuals. For example:

Frostbite occurs when there is actual freezing of the body tissues, normally when temperatures are below freezing. The injury can result from overexposure to cold wind (wind chill) from prolonged exposure to cold temperatures, or from skin contact with an object whose temperature is below freezing.


Symptoms: Skin may start with a prickling or tingling sensation and progresses into numbness with cold with superficial redness of the skin. First aid treatment is required.

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- g) When working alone, ensure you have a means for frequent communication with another employee.
(every 30 minutes at a minimum)

4. Annexes

- a) Forms
- OSHA Quick Card for Cold Stress

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G. COVID – 19 Awareness

1. Pandemic Policy

a) Purpose

Ensuring the health and safety of our employees, clients, contractors, visitors, and community is our most important responsibility. Pandemic disease, however, demands a different set of continuity assumptions since it will be widely dispersed geographically and potentially arrives in waves that could last several months at a time.

We need to consider how best to decrease the spread of the disease and lower the impact in our workplace and those of our customers. This includes activity in one or more of the following areas.

- Reduce transmission among employees
- Maintain healthy business operations
- Maintain a healthy work environment

b) Assignment of Ownership of the Pandemic Disease Plan

Quality Electric will develop a plan on dealing with the disease issues and their impact on the workplace, the coordinator for our company will be Larry Geyer. Each jobsite will be assigned a coordinator who will be responsible for passing on the most current information as well as monitoring their own jobsite.


c) Assumptions

A pandemic disease will spread rapidly and easily from person to person, affecting all businesses due to absenteeism. Businesses that are relied upon by other businesses will be facing the same massive absentee rates and will be unable to provide essential components to maintain the daily operations.

Risk assessments to identify the essential/critical components of our business operation will be conducted.

Recognize that a pandemic includes:

- Healthcare services not being available (they are already full at present with the usual ailments).
- Schools, churches, and other public places not being open.
- Borders are partially or fully closed, especially airports, leaving people (our families, employees, business partners, customers, and suppliers) “stranded”.
- Essential materials and supplies may be limited due to distribution chains that are affected by the travel restrictions or absentee workers supporting those transportation means.
- Essential services around utilities, food distribution/access and banking systems may not be at “normal levels”; access to cash flow could be tight.
- People may not be willing to or able to come to work.

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d) Effective Internal/Employee Communication Procedure

Communications during a pandemic involves both internal communications and external communications. Internal communication will be provided to jobsite coordinators from our crisis management team to help educate our employees about pandemic diseases and measures they can take to be prepared.

Risk communication is critical to inform employees regarding changes in the pandemic status. The following method will be used for providing such information.

- **Alert:** conveys the highest level of importance; warrants immediate action or attention.
- **Advisory:** provides key information for a specific incident or situation; might not require immediate action.
- **Update:** provides updated information regarding an incident or situation; unlikely to require immediate action.

Provide continuous updates through internal & external communications when a pandemic is imminent:

- Notification to employees of operational changes
- Provide frequent updates about the pandemic status
- Provide advisories and alerts as conditions change
- Ensure vendors and suppliers have available a dedicated communications contact
- Monitor local, state, and federal pandemic updates


We will use our crisis management team and the project coordinators to pass on all information concerning our employees, their families, our customers, and the community. The use of the company website also will serve as a portal for sharing information with employees and vendors.

e) Effective External/Customer Communication Procedure

Quality Electric will notify key contacts including both customers and suppliers in the event an outbreak has impacted our ability to perform services, and we will provide notification to customers and suppliers when operations resume.

f) Business Continuity Planning

Business continuity plans will be prepared so that if a large or significant absenteeism of personnel become ill or changes in business practices are required business operations can be effectively maintained.

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COMMAND STAFF:

Incident Commander Jay Hintze (President/CEO)	Organizes and directs all aspects of the incident response
Public Information Officer Dave Bradshaw (Media/Public Relations)	Creates and releases upon approval from the incident commander all information to the staff, media and public.
Liaison Officer Don Rye (Vice President)	Establishes and maintains relationships with outside organizations
Safety Officer Larry Geyer (Safety Manager)	Ensures the safety of all persons involved with the pandemic

OPERATIONS SECTION:

Operations Section Chief Dave Bradshaw (Director of Operations)	Initiates and manages ongoing operations throughout a pandemic
--	--

LOGISTICS SECTION:


Logistics Section Chief Scott Campbell (Purchasing/Inventory Manager)	Meets the goods, services, and staffing needs of the operation during the pandemic
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PLANNING SECTION:

Planning Section Chief Samantha Erickson (Lead Administrator)	Collects information and resources potentially relevant to the pandemic and company operations
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FINANCE SECTION:

Finance Section Chief Darcia Johnson (Accounting Manager)	Monitors all expenditures during the pandemic
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g) Pandemic Response by Pandemic Phase

Currently the WHO (World Health Organization) has created various phases for a pandemic but does not always relate to events locally.

- Level 0 (WHO Phase 3) - Novel virus alert- not human-to-human transmission
- Level 1 (WHO Phase 4) - Confirmed cases of human-to-human transmission of novel disease virus.
- Level 2 (WHO Phase 5) - Suspected/confirmed cases in the area.
- Level 3 (WHO Phase 5) - Numerous suspected/confirmed cases in the area.

h) Work at Home or Stay at Home Policy

Flexible work policies should be developed when possible. Workers should be encouraged to stay at home when ill, when having to care for ill family members, or when caring for children when schools close, without fear of reprisal. Tele-commuting or other work-at-home strategies have been developed to meet the needs of those who can/should work from home.


i) Infection Control Measures

Guidelines for infection control are important to clarify the routes of transmission and the ways to interrupt transmission through measures of hygiene. Infection control is an essential component of pandemic management and a component of public health measures. Essential measures include:

- Hand washing and use of hand sanitizers when available should be encouraged by our supervision. Hand washing facilities, hand sanitizers, tissues, no touch trash cans, hand soap and disposable towels should be provided on your jobsite.
- Workers are encouraged to obtain appropriate immunizations to help avoid disease. Granting time off work to obtain the vaccine will be considered when vaccines become available in the community.
- Limiting large or crowded gatherings of personnel if an outbreak or increased level of disease is in progress - Social distancing including increasing the space to six feet between employee work areas and decreasing the possibility of contact by limiting large or close contact gatherings should be considered.
- Equipment and/or working surfaces shall be cleaned periodically. Clean all areas that are likely to have frequent hand contact (like doorknobs, faucets, handrails) periodically and when visibly soiled. Work surfaces should also be cleaned frequently using normal cleaning products.

Additional examples of infection control measures include:

- Stay at home when you are sick. If possible, stay away from work, school and from running errands. You will help others from catching your illness.
- Cover your coughs and sneeze into tissue, or cough into the inside of your elbow.
- Enhance existing housekeeping service by wiping down and disinfecting work areas (i.e. keyboards, telephones, desks, etc.) frequently.

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- Enhance housekeeping services for general public use areas several times throughout the work period.
- Use personal protective equipment where appropriate to minimize exposure (i.e. gloves- for handling money, masks- for ill employees)

j) Implementation, Testing, and Revision of the Plan

Testing the plan will be accomplished by conducting exercises. Exercises range from low stress to full scale, hands on drills. A tabletop exercise is the easiest way to begin testing the plan. This type of exercise involves having discussions regarding a scenario that challenges the plan and the decision makers during an emergency. Functional exercises take on an additional level of complexity, in that they actually require participants to conduct functional components of the plan. This usually involves planning specific scenarios, creating pretend data and present issues that target an area within the plan to be tested.

Each of these methods of testing the plan requires extensive planning for the exercise and the evaluation. The evaluation is critical to revising the plan, by capturing actual responses during the exercise or drill objectively. Once this data is captured, an after-action report with recommendations to revising the plan should be completed within a few weeks of the exercise.

k) Process for Implementing Lessons Learned Following a Pandemic Event

Following a pandemic event, Larry Geyer who is responsible for implementation of the plan will identify learning opportunities and take action to implement any corrective actions.

l) Training

Employees will be trained on health issues of the pertinent disease to include prevention of illness, initial disease symptoms, preventing the spread of the disease, and when it is appropriate to return to work after illness. Disease containment plans and expectations should be shared with employees.

Documentation of all training is required.


2. Covid – 19 Policy

a) PURPOSE

Ensuring the health and safety of all of our employees, clients, contractors, and visitors is our most important responsibility. As we continue to monitor the impacts of COVID-19 closely, we are following federal and municipal directives and recommendations.

We need to consider how best to decrease the spread of COVID-19 and lower the impact in our workplace and those of our customers. This includes activities in one or more of the following areas:

- reduce transmission among employees,
- maintain healthy business operations, and
- maintain a healthy work environment.

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b) Exposure Determination

a) Precautions We Have Taken Thus Far for Our Company

- Canceled all non-essential travel.
- Encourage staff to telework (when feasible), particularly individuals at increased risk of severe illness.
- Restricted access to our worksite if the individual has traveled in the past 14 days via airlines, cruise ship or train.
- Prompt identification and isolation of potentially infectious individuals is a critical step in protecting our workers, customers, visitors, and others. Employees who have symptoms (i.e., fever of 100.4, cough, or shortness of breath) should notify their supervisor and stay home.
- If an employee is confirmed to have COVID-19 infection, we will inform fellow employees of their possible exposure to COVID-19 in the workplace but maintain confidentiality as required by law. The fellow employees should then self-monitor for symptoms (i.e., fever of 100.4, cough, or shortness of breath).
- Employees who miss work because of illness are required to provide a doctor's note before returning to work.
- Ensured hand hygiene supplies are available in our workplace.
- Cleaning with disinfectants recommended for coronavirus like; (1 tablespoon bleach to 1 quart of water or ¼ cup bleach to 1 gallon of water).
- Require frequent and thorough handwashing, sanitizing, as well as coughing and sneezing etiquette.
- Implementing various levels of social distancing measures including limiting of in-person meetings to our conference room or lobby, using email and phone calls to conduct business, and using software like web-ex or zoom to conduct meetings.

b) Employee Education

- Wash your hands often with soap and water for at least 20 seconds. Use hand sanitizer with at least 60% alcohol if soap and water are not available. Always wash hands when they are visibly soiled and after removing any PPE.
- Avoid touching your eyes, nose, and mouth with unwashed hands.
- Cover your mouth and nose with a tissue when you cough or sneeze or use the inside of your elbow. Throw used tissues in the trash and immediately wash hands with soap and water for at least 20 seconds. If soap and water are not available, use hand sanitizer containing at least 60% alcohol.
- Clean AND disinfect frequently touched objects and surfaces such as workstations, keyboards, telephones, handrails, and doorknobs. Dirty surfaces can be cleaned with soap and water prior to disinfection. To disinfect, use products that meet criteria for use against COVID-19, and are appropriate for the surface you are cleaning. (1 tablespoon to 1 quart of water or ¼ cup bleach to 1 gallon of water)
- Avoid using other employees' phones, desks, offices, or other work tools and equipment, when possible. If necessary, clean and disinfect them before and after use.
- Practice social distancing by avoiding large gatherings and maintaining distance (approximately 6 feet) from others when possible.

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C) Precautions We Ask of Contractors, Suppliers Or Visitors

- We require that any contractor, supplier, or visitor comply with federal and municipal guidelines and postpone any plans to visit our facility or jobsites if within the last 14 days they have:
 - been diagnosed with COVID-19.
 - traveled internationally in the past 14 days.
 - been exposed to an individual diagnosed with COVID-19.
 - have had close contact with a person suspected of direct exposure to COVID-19.

D) Precautions We Take for Our Clients

- Deny access to any client location if any employee has traveled internationally in the past 14 days.
- Deny access to any client if an employee has been diagnosed with COVID-19.
- Deny access to any client location if any employee shows symptomatic signs (fever of 100.4, cough or shortness of breath) or have had close contact with a person suspected of direct exposure to COVID-19.
- We will strictly follow our client requirements for entry on their property to perform work.
- No formerly denied access employee will be allowed to return to work until cleared by a doctor.

e) Covid-19 Crisis Management Emails:

Don Rye don@qeidaho.com


Larry Geyer larry@qeidaho.com

David Bradshaw dave@qeidaho.com

Carl Pettek carlp@qeidaho.com

Sean Sivesind sean@qeidaho.com

Samantha Erickson sam@qeidaho.com

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H. Driving Safely

2. Purpose

This program is written to be in compliance with local regulatory requirements and provide directives to managers, supervisors, and employees about their responsibilities in the operations and management of Quality Electric vehicle safety.

3. Key Responsibilities

a. Quality Electric Fleet Manager


Don Rye is responsible for developing and maintaining the program and related procedures. These procedures are kept in the safety manual. No vehicle may be used outside of normal work hours without permission of Jay Hintze.

b. Maintenance Manager

Jeremy Gonzales is responsible for the implementation and maintenance of the program for Quality Electric and ensuring all assets are made available for compliance with the plan.

c. Employees

- All shall be familiar with this procedure and the local workplace vehicle safety program.
- Follow all requirements, report unsafe conditions, and follow all posted requirements.
- Only authorized employees will drive a motor vehicle in the course and scope of work or operate a company owned vehicle.
- The driver of a Quality Electric vehicle will have a valid and current license to operate the vehicle. Drivers will be appropriately assessed, licensed, and trained to operate the vehicle they have been authorized to operate.
- Authorized drivers are not allowed to operate a motor vehicle while under the influence of alcohol, illegal drugs, certain medications, prescription or over-the counter medications that might impair their driving skills.
- Fill out a Motor Vehicle Record Review Form, Driver Information Form, and a Vehicle Usage Policy Vehicle and Transportation Related Driving Safety
- No passengers shall be on trucks used to deliver goods.
- Backing is prohibited whenever practicable. Where backing is required, drivers, when parking, should make every effort to park the vehicle in a manner that allows the first move when leaving the parking space to be forward.
- Drivers must have either a reversing alarm, use a spotter or walk around the truck/trailer prior to backing.
- Passenger compartments are to be free from loose objects that might endanger passengers in the event of an incident. Any vehicle with non-segregated storage shall be equipped with a cargo net or equivalent to separate the storage area.
- Vehicles (light vehicles, heavy vehicles, and trailers) may not be modified without the endorsement of the manufacturer.

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- Signs, stickers, or labels are to be fitted in such a manner that they do not obstruct the driver's vision or impede the driver's use of any controls. Reporting of Traffic Violations and Vehicle Accidents - Authorized drivers will report any collision or traffic violation while driving to the Operations Manager Don Rye.

4. Safe Driver Behaviors/Practices:

- Authorized drivers will follow Quality Electric Safe Driver Behaviors/Practices.
- Obey all federal and local driving laws or regulations as well as requirements of clients.
- Immediately report any restriction or change to their driving privileges to the supervisor.
- Driver and all passengers must wear seatbelts. Seatbelts shall be always worn by all occupants whenever a vehicle is in motion.
- Defensive drivers continually assess conditions and hazards and remain prepared for any challenge that may approach them.
- When speaking with a passenger, always keep your eyes on the road.
- Both hands on the wheel.
- Use of cell phones, manipulating radios or other equipment which may cause distraction while driving any vehicle is prohibited. Utilizing a hands-free device with appropriate discretion is ok. The vehicle must be safely parked prior to using a cell phone or 2-way radio.
- Drivers shall not exceed the posted speed limit.
- Drivers shall maintain a safe distance between other vehicles.
- Slow down around construction, large vehicles, wildlife, fog, rain, snow, or anything else that adds a hazard to your driving.
- Alcohol or illegal drugs are not allowed to be in a company, client, or leased vehicle at any time.
- Hitchhikers and Passengers other than company employees are strictly prohibited.

5. Drivers are to be prepared before leaving:

- Perform 360 walk around – Fill out Inspection form on a weekly basis.
- Check windshield for cracks that could interfere with vision.
- Inspect for vehicle damage and immediately report any damage to the supervisor if not previously observed.
- Make sure dirt or snow is removed from lights on all sides of the vehicle.
- Brush or clean off snow or ice on all windows to ensure complete vision.
- Check fuel level to be certain the destination can be reached.
- Check to ensure the license plates and inspection tag on vehicle are current.
- Ensure that there is a first aid kit and inspected fire extinguisher in the company vehicle.
- Ensure driver is rested and alert for driving.
- Employees are not to perform repairs or maintenance other than routine fluid additions. Vehicle Requirements
- Vehicles shall be maintained in safe working order.
- Vehicles are of the correct size and designed for intended use. The vehicle shall be fit for the purpose.
- Tires, including spares if full size, are to be of same type, profile, and tread pattern, except when the vehicle or tire Manufacturer recommends a different type for certain axles.

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- Tire type and pattern is to be recommended by the vehicle or tire manufacturer for use on the vehicle in operation.
- Vehicles are to be fitted with a spare wheel and changing equipment to safely change a wheel, or a suitable alternative.
- All seats are to be fitted with headrests
- All light duty vehicles (including buses) are to be equipped with an adjustable left, right and central rear-view mirrors
- Loads shall be secured and within the manufacturer and legal limits and shall not exceed the manufacturer's specifications and legal limits for the vehicle.
- All vehicles are to be equipped with a multipurpose fire extinguisher with a capacity of at least 0.9 kg/2 lb. The fire extinguisher shall be securely mounted on a bracket and located so that it is easily accessible in an emergency without becoming a hazard in case of an incident.
- All light vehicles shall be equipped with a securely stowed first aid kit.
- All drivers of light vehicles shall carry a high visibility jacket for use in case of emergency stops.
- All light duty vehicles carry a minimum of one collapsible hazard warning triangle.
- Rollover protection will be installed in any vehicle to address high risk environments. The rollover protection engineered will conform to recognized regulatory standard and industry preferred practices.

6. Transportation

If workers are required to travel in a worker transportation vehicle Quality Electric must ensure that reasonable measures are taken to evaluate road, weather, and traffic conditions to ensure the safe transit of the workers.

The operator of a worker transportation vehicle must ensure that the worker transportation vehicle has been inspected by a qualified person before first use on a work shift.

Seated workers must wear seat belts while being transported in a vehicle equipped with seat belts.


A worker must not ride in a vehicle in a standing position, unless protected from being thrown off balance.

A worker must not ride in a vehicle with any part of the body outside the vehicle unless essential to the work process and then only if the worker is adequately restrained.

Materials, goods, tools, or equipment carried in a portion or compartment of a vehicle in which workers are riding must be located and secured to prevent injury to the operator or workers.

Any enclosed portion or compartment of a vehicle in which workers are transported must have:

- effective ventilation, independent of doors, providing clean air,
- adequate lighting and means for heating and cooling,
- an effective means of communication between the operator and passengers, and
- more than one means of exit.

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7. Traffic Control


Quality Electric shall develop, in writing, and implement a traffic protection plan for its workers at a worksite if any of them may be exposed to a hazard from vehicular or pedestrian traffic that may endanger the safety of any worker. It shall include the following control measures:

- Effective means of traffic control shall be provided whenever the unregulated movement of vehicular traffic constitutes a hazard to workers.
- Traffic control shall include barricades and cones as the primary control and, where required, signs, flagmen or other techniques and devices made necessary by the prevailing circumstances.
- Operations or equipment, encroaching on the traveled way, shall be protected by barricades and cones as the primary control and, where required other effective devices.
- Quality Electric must train workers in the traffic control safe work procedures.
- Quality Electric will ensure that before a worker is designated as a flag person, the worker is trained in the safe work procedures for the safe control of traffic operations and wears the appropriate high visibility outer clothing and/or equipment.
- If a worker at a project on a highway may be endangered by vehicular traffic unrelated to the project, the project shall make use of as many measures as necessary to adequately protect the worker.
- A worker who is required to set up or remove traffic control measures on a roadway or a shoulder of a roadway shall be a competent worker, shall be equipped with the appropriate high visibility apparel, shall not perform any other work while setting up or removing the measures and shall be given adequate written and oral instructions in a language that he or she understands, with respect to setting up or removing the measures.

8. ATV Vehicles

If a Quality Electric work site utilizes ATV vehicles, then the following shall apply:

- If the manufacturer has not set limits for operation of the ATV on sloping ground, 5% is the maximum allowable slope unless Quality Electric has developed and implemented written safe work procedures appropriate for any steeper slope on which the equipment is to be used.
- Quality Electric must ensure that each ATV operator is properly licensed and trained in the safe operation of the vehicle. The training program for an ATV operator must cover:
 - the operator's pre-trip inspection,
 - use of personal protective apparel,
 - operating skills according to the ATV manufacturer's instructions,
 - basic mechanical requirements, and
 - loading and unloading the vehicle if this is a job requirement.
- An ATV operator and any passenger on an ATV must wear approved eye and hearing protection as required by local regulatory requirements and the Quality Electric PPE Program. An ATV operator and any passenger on an ATV must wear clothing suitable for the environmental conditions and when necessary, to protect against the hazards presented at the worksite, suitable gloves and clothing which covers the ankles and legs and the arms to the wrists and appropriate footwear.
- Quality Electric requires that approved helmets shall be worn by the operator and passenger.


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- Loading and unloading of an ATV onto or off a carrier vehicle must be done in a safe manner. If ramps are used when loading or unloading an ATV they must be placed at a suitable angle, be sufficiently wide and have a surface finish which provides an adequate grip for the ATV's tires.

9. Annexes

a. Forms

- Driver Information Form
- Motor Vehicle Record Review
- Notification of Counseled Driver
- Quality Electric Cell Phone Usage Policy
- Vehicle Usage Policy
- Weekly Vehicle Inspection Form

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I. Hearing Conservation

1. Intent Statement

The intent of this section is to provide a Hearing Conservation Program designed to prevent noise induced hearing loss. Areas that have been screened with noise levels above 80 dBA will be summarized with affected employees and job positions identified. All employees found to be exposed to a time weighted average for the eight-hour day of 85 dBA or greater will be notified within 21 days of this determination. Whenever noise monitoring is being performed employees will have the opportunity to observe the monitoring in a manner which does not disrupt workflow. The safety coordinator will be the hearing conservation coordinator and shall be the contact person for information or questions.

2. Definitions

- a) **Noise** - sound consists of pressure changes in a medium (usually air), caused by vibration or turbulence. These pressure changes produce waves emanating away from the turbulent or vibrating source. Exposure to high levels of noise causes hearing loss and may cause other harmful health effects as well. The extent of damage depends primarily on the intensity of the noise and the duration of the exposure.
- b) **Noise-induced hearing loss** - can be temporary or permanent, temporary hearing loss results from short-term exposures to noise, with normal hearing returning after period of rest. Generally, prolonged exposure to high noise levels over a period of time gradually causes permanent damage.


3. General Requirements

- a) Supervisor responsibilities:
 - (1) Use engineering and administrative controls to limit employee exposure
 - (2) Provide adequate hearing protection for employees
 - (3) Post signs and warnings in all high noise areas
 - (4) Conduct noise surveys annually or when new equipment is needed
 - (5) Conduct annual hearing test for all employees
 - (6) Conduct hearing conservation training for all new employees
 - (7) Conduct annual hearing conservation training for all employees.
- b) Employee responsibilities:
 - (1) Use company-issue approved hearing protection in designated high noise areas
 - (2) Request new hearing protection when needed
 - (3) Exercise proper care of issued hearing protection.

NOTE - When directed by the safety coordinator hearing protection will be always worn at the work station. Failure to do will result in disciplinary action.

4. Procedures

Workplace noise can create physical stress and can contribute to accidents by making it difficult to hear warning signals. As many as 14 million workers in the U. S. are exposed to hazardous noise levels in the workplace. Noise levels can be controlled by:

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- Using quieter work processes.
- Altering or enclosing equipment to reduce noise at the source or
- Using sound absorbing materials to prevent the spread of noise by isolating the source.

The Occupational Safety and Health Administration has specific standards on noise levels in the workplace. Sound level meters and/or noise dosimeters are used and then calculations must be made to determine the noise level average over an 8-hour period. This must be done for all employees who may be exposed to noise levels above 85 dBA. Once this is done there are 3 categories into which the employees would fall:

(1) The time weighted average for the eight-hour day is below 85 dBA.

Nothing more needs to be done other than periodic monitoring to insure that the level is not exceeded in the future.

(2) The time weighted average for the eight-hour day is between 85 & 90 dBA.

Every employee must receive a baseline audiometric exam and one annually thereafter at no charge to themselves. The results must be reviewed by a "competent" person to determine if a partial loss of hearing has occurred.

Hearing protection equipment must be made available to the affected employees such as ear plugs or muffs. Proper training must be provided to them about the selection, use, care, and maintenance of the equipment.

The use of equipment must be strictly enforced if the employee has suffered a significant threshold shift as determined by the review of 2 successive hearing tests.


(3) The time weighted average for the eight-hour day is above 90 dBA.

Every employee must receive a baseline audiometric exam and one annually thereafter at no charge to themselves. The results must be reviewed by a "competent" person to determine if a partial loss of hearing has occurred.

Hearing protection equipment must be made available to the affected employees such as ear plugs or muffs. Proper training must be provided to them about the selection, use, care, and maintenance of the equipment.

The use of hearing protection equipment must be strictly enforced without exception for all employees exposed to noise levels above 90 dBA.

Engineering evaluations must be performed to determine what, if any, things need to be done to reduce the noise at its source. This includes but is not limited to redesign of the workplace, machinery, and task; enclosure

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barriers around the machine; changes in the tool design, material being use etc. As these studies are done, the use of hearing protection must be enforced until such time as the engineering controls prove effective.

a) Noise Monitoring

- (1) Monitoring for noise exposure levels will be conducted by Safety Department. It is the responsibility of the individual departments to notify Safety Director when there is a possible need for monitoring. Monitoring will be performed with the use of sound level meters and personal dosimeters at the discretion of Safety Director.
- (2) Monitoring will also be conducted whenever there is a change in equipment, process or controls that affect the noise levels. This includes the addition or removal of machinery, alteration in building structure, or substitution of new equipment in place of that previously used. The responsible supervisor must inform Safety Director when these types of changes are instituted.
- (3) All noise exposure measurement records will be maintained for at least 20 years.

b) Employee Training


An annual training program for employees will include information on the effects of noise on hearing, the purpose and use of hearing protection including the advantages and disadvantages of various types, instructions in the selection, fitting, use and care of the hearing protection and the purpose of audiometric testing and an explanation of the test procedures.

- (1) Affected employees will be required to attend training concerning the proper usage and wearing of hearing protection. The training will be conducted by Safety Department, or a designated representative.
- (2) Training shall consist of the following components:
 - How noise affects hearing and hearing loss
 - Review of the OSHA hearing protection standard
 - Explanation of audiometric testing
 - Rules and procedures
 - Locations within company property where hearing protection is required; and
 - How to use and care for hearing protectors.
- (3) Quality Electric will maintain audiometric test records for the duration of the affected workers employment. All records will be available to employees for their review at their request.

c) Hearing Protection

Management, supervisors, and employees shall properly wear the prescribed hearing protection while working in any area or location that is designated as a high noise area.

- (1) Hearing protection will be provided at no cost to employees who perform tasks designated as having a high noise exposure and replaced, as necessary. It is the supervisor's responsibility to require employees to wear hearing protection when noise levels reach or exceed 85 dBA. Those employees


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will have the opportunity to choose from at least two different types of hearing protection (ear plugs and earmuffs).


- (2) Personal headsets, earbuds, portable radios, or similar devices are not approved for hearing protection and are not permitted on jobsites.
 - (3) Signage is required in areas that necessitate hearing protection. It is the responsibility of the Superintendent to provide signage to the appropriate areas.
 - (4) Preformed earplugs and earmuffs should be washed periodically and stored in a clean area. Foam inserts should be discarded after each use. Hands should be washed before handling preformed earplugs and foam inserts to prevent contaminants from being placed in the ear.
 - (5) Superintendent will keep a log of the areas or job tasks designated as requiring hearing protection, as well as the personnel affected by this Hearing Conservation.
 - (6) Hearing protection shall be outlined in each Trade Partners written safety plan.
 - (7) Exposing employer is responsible for measuring, monitoring, and controlling those work areas where hearing protection may be required. This includes any surveys performed by a qualified person.
 - (8) Responsible Subcontractors shall supply adequate hearing protection for its employees.
- d) Audiograms/Hearing Tests
- (1) Employees subject to the Hearing Conservation Program who have time-weighted average (TWA) noise exposures of 85 dBA or greater for an eight (8) hour work shift will be required to have both a baseline and annual audiogram. The audiograms will be provided by the Quality Electric Company and conducted by Designated Clinic of Quality Electric Inc's choosing with no cost to the employee.
 - (2) The baseline audiogram will be given to an employee within one (1) month of employment with Quality Electric Inc. and before any exposure to high noise levels. Exposure to noise will be minimized for 14 hours prior to the exam. Annual audiograms will be performed within one year from the date of the previous audiogram. It is the responsibility of the individual and Safety Department to schedule the annual audiogram.
 - (3) Testing will be performed with equipment that meets ANSI s3.1969 specifications. Tests will be pure tone, air conduction, hearing threshold examinations at test frequencies of 500, 1000, 2000, 3000, 4000, and 6000 Hz. Each ear will be tested separately. The functional operation of the audiometer will be checked by biological calibration prior to each day's use. An acoustic check will be performed if the biological calibration indicates deviations of 10 dBA or greater, and an exhaustive calibration performed if the biological calibration indicates deviations of 15 dBA or greater.

If a standard threshold shift (an average shift in either ear of 10 dBA or more than 2000, 3000, and 4000 Hz.) is identified:

- the employee will be notified of the threshold shift within 21 days of this determination.
- the employee will be informed of the need for further evaluation if a medical problem is suspected.
- the use of hearing protection will be mandatory.
- the employee will be refitted or retrained in the use of hearing protection.

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- any employee believed to have some pathology of the ear that is unrelated to workplace exposure may be referred for further examination.
- (4) If an annual audiogram shows that an employee has suffered a standard threshold shift, the employee will be retested within thirty (30) days of the annual audiogram. If the retest confirms the occurrence of a standard threshold shift, the employee will be notified in writing within twenty-one (21) days of the confirmation. Employees who do experience a standard threshold shift will be refitted with hearing protection and provided more training on the effects of noise.
- 5. Annexes**
- a) Forms
- Noise Level Audit

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J. Heat Illness Prevention

1. Intent Statement


The intent of this section is to control and eliminate incidents related to heat illness.

2. Definitions

- Acclimatization** - temporary adaption of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat
- Heat illness** - a serious medical condition resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope and heat stroke
- Environmental risk factors for heat illness** - working conditions that create the possibility of heat illness, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees
- Personal risk factors for heat illness** - such as an individual's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat
- Shade** - blockage of direct sunlight
- Temperature** - degrees in Fahrenheit obtainable by using a thermometer or mobile phone apps

3. General Requirements

- Provision of Water
Employees shall have access to potable drinking water in appropriate quantities located in areas where employees are working. Projects must have a plan to replenish water in quantities sufficient based on current heat and weather conditions.
- Access to Shade
Shade shall be present when the temperature exceeds 80 degrees Fahrenheit. When the outdoor temperature in the work area exceeds 80 degrees Fahrenheit, one or more areas with shade should be accessible. The amount of shade present shall be at least enough to accommodate employees on recovery or rest periods, so that they can sit in a normal posture fully in the shade without having to be in physical contact with each other. The shade shall be located as close as possible to the work area. Subject to the same specifications, the amount of shade present during meal periods shall be at least enough to accommodate the number of employees on the meal period who remain on site. Shade shall be available when the temperature does not exceed 80 degrees Fahrenheit. When the outdoor temperature in the work area does not exceed 80 degrees Fahrenheit employers shall either provide shade or provide timely access to shade upon an employee's request. Employees shall be allowed and encouraged to take preventative cool-down rest in the shade when they feel the need to do so to protect themselves from overheating. Such access to shade shall be permitted always. An individual employee who takes a preventative cool-down rest; a) shall be monitored and asked if he or she is experiencing symptoms of heat illness, b) shall be encouraged to remain in the shade, and c) shall not be ordered back to work until any signs or symptoms of heat illness have abated, but in no event, less than 5 minutes in addition to the time

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needed to access the shade. If an employee exhibits signs or reports symptoms of heat illness while taking a preventative cool-down rest or during a preventative cool-down rest period, the employer shall provide appropriate first aid or emergency response.

4. Monitoring Weather

- Operations will monitor the weather and communicate extended weather forecast. Weather forecasts can be checked with the aid of the internet (<http://www.nws.noaa.gov/>), via cell phone application or contacting the designated person in charge of safety.
- A thermometer will be used at the jobsite to monitor for sudden increases in temperature and to ensure that once the temperature exceeds 80 degrees Fahrenheit, shade structures (when applicable) will be opened and made available to the workers. In addition, once the temperatures reach 95 degrees F, additional preventive measures such as the high heat procedures will be implemented.
- Other devices, such as: handheld smart phones with Osha heat app, handheld anemometers with temperature capabilities, or other typical types of thermometers, including WBGT devices may be utilized to follow weather conditions.
- Supervisors will communicate weather conditions, including any changes that may affect the worker.

5. High-Heat Procedures


Operations shall implement high-heat procedures when the temperature equals or exceeds 95 degrees Fahrenheit. These procedures shall include the following:

- Ensuring that effective communication by voice, observation, or electronic means is maintained so that employees at the work site can contact a supervisor when necessary
- Observing employees for alertness and signs or symptoms of heat illness
- Supervisors will monitor their people throughout the day
- No employee will work alone (buddy system)
- Pre-shift meetings and thorough JHA's before the commencement of work should assist to review conditions, including high heat procedures. Encourage employees to drink plenty of water and remind employees of their right to take a cool-down rest, when necessary.

6. Emergency Response Procedures

The employer shall implement effective emergency response procedures including:

- Operations will ensure that an effective communication system is in place to provide prompt reporting and response to heat illness or injuries.
- Responding to signs and symptoms of possible heat illness, including but not limited to first aid measures and how emergency medical services:
 - If a supervisor observes, or any employee reports, any signs, or symptoms of heat illness in any employee, the supervisor shall take immediate action commensurate with the severity of the illness.
 - If the signs or symptoms are indicators of severe heat illness (such as, but not limited to, decreased level of consciousness, staggering, vomiting, disorientation, irrational behavior, or convulsions), the employer must implement emergency response procedures.

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- (3) An employee exhibiting signs or symptoms of heat illness shall be monitored and shall not be left alone or sent home without being offered on-site first aid and / or being provided with emergency medical services in accordance with the employer's procedures.


7. Acclimatization

All employees shall be closely observed by a supervisor or designee during a heat wave. For purposes of this section only, "heat wave" means any day in which the predicted high temperature for the day will be at least 80 degrees Fahrenheit and at least ten degrees Fahrenheit higher than the average high daily temperature in the preceding five days. An employee who has been newly assigned to a high heat area shall be closely observed by a supervisor or designee for the first 14 days of the employee's employment.

8. Employee and Supervisor Training

Employees will be provided the following training prior to being assigned to Supervise other workers. Supervisory and Non-Supervisory personnel will be trained on the heat illness prevention procedures, including their responsibilities as a supervisor. In addition, topics will include but not be limited to provisions for water, shade, cool-down rest periods, first aid, and employee's rights under the standard without retaliation. Other topics and approach to training include:


- When temperature is expected to exceed 80 degrees F, short toolbox or Stand Down meetings will be held to reinforce the importance of heat illness prevention.
- Environmental and personal risk factors for heat illness as well as the added effects of physical labor, clothing and PPE must be taken into consideration to control risks.
- Importance of continuing to hydrate before and after the work shift.
- Procedures for complying with the requirements of this standard.
- Importance of frequent consumption of small quantities of water, up to 4 cups per hour, when the work environment is hot.
- Importance of acclimatization.
- Different types of heat illness and the common signs and symptoms.
- Importance of immediately reporting, through the proper chain of command, any signs of heat illness in themselves or co-workers.
- Procedures for responding to signs and symptoms of heat illness, including how emergency medical services will be provided should they become necessary.
- Procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider.
- Procedures for ensuring that, in the event of emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders. These procedures shall include designating a person to be available to ensure that emergency procedures are invoked when appropriate.
- Employee responsibilities, such as: preparing for the work environment, causes of heat illness, and prompt notification process.

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9. Annexes

a) Forms

- OSHA Quick Card for Heat Stress

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K. Hydrogen Sulfide H₂S

1. Purpose


The purpose of this program is to establish minimum requirements for site specific H₂S safety, which will enhance safety in the occupational setting where hydrogen sulfide is present or is recognized as being potentially present.

2. Scope

This program sets forth accepted practices for Hydrogen Sulfide (H₂S). This program applies to all employees of Quality Electric, temporary employees, and any contractors working for Quality Electric. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Quality Electric employees and contractors and shall be used on owned premises, or when an operator's program does not exist or is less stringent.

3. Definitions

- a) **Contingency Plan** - a site-specific written document that provides an organized plan for alerting and protecting the public within an area of exposure following the accidental release of all potentially hazardous atmospheric concentrations of hydrogen sulfide.
- b) **Exposure Level** - permissible exposure level of hydrogen sulfide is 10 PPM for an 8-hour, time weighted average.
- c) **Gas Detector Instrument** - An instrument/detector to measure levels of H₂S. Instruments may be electronically or manually operated.
- d) **Hydrogen Sulfide (H₂S)** - is an extremely deadly, toxic gas that in its pure state is colorless and is heavier than air. Additionally:
 - It is the second most toxic gas known to man, ranking behind hydrogen cyanide and ahead of carbon monoxide.
 - It has the odor of rotten eggs at low concentrations.
 - In higher concentrations rapidly paralyze the olfactory nerves (sense of smell).
 - Is soluble in water and is flammable and poses a definite threat of explosion.
- e) **Parts Per Million (PPM)** - parts of vapor or gas per million parts of contaminated air by volume.
- f) **Personal H₂S Monitor** - An electronic instrument worn on the person that is set to alarm at 10 PPM of H₂S.
- g) **Possible Locations of Where May Be Exposed to H₂S During Their Job Functions** – While clients are required to notify Quality Electric of known H₂S locations the majority of time H₂S can be located in drilling operations, recycled drilling mud, blowouts, water from sour crude wells, blowouts, tank gauging (tanks at producing, pipeline and refining operations), during routine field maintenance involving hydrocarbons, tank batteries and wells.
- h) **Venting** - the process of discharging a material to the atmosphere through a series piping and/or venting devices, to facilitate the proper and safe dispersion of toxic materials and to minimize personnel exposure.

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4. Key Responsibilities

Managers and Supervisors

- Shall ensure all employees who are to be assigned to work at locations where hydrogen sulfide is known to be present, or suspected to be present in any concentration, have been trained in hydrogen sulfide safety.
- To ensure employees have been medically approved to wear respirators and trained on the safe use of respirators, including a respirator fit test in accordance with Quality Electric's Respiratory Protection Program.
- To ensure employees have been trained and familiar with personal H₂S monitors and gas detection instruments.
- To have been provided with the client's safety procedures.
- To ensure the necessary respiratory equipment to perform the work safely is available.
- That each employee has been provided with a copy of this program.

Employees


- Employees are responsible to comply with this program.

5. Procedure

a) Characteristics of Hydrogen Sulfide

The characteristics of hydrogen sulfide include being toxic, colorless, with the odor of rotten eggs at low concentrations, is soluble in water and is flammable:

- Toxicity – See table below. Hydrogen sulfide is a very dangerous and deadly gas - it is colorless and heavier than air. It can accumulate in low places and in small concentrations. Exposure to certain concentrations of H₂S can cause serious injury or death.
- Color - H₂S is colorless – you cannot see it.
- Odor – it has a strong, pungent, somewhat distasteful odor similar to rotten eggs. In higher concentrations, it can deaden the sense of smell (olfactory nerve). Do Not Rely on Smell to Detect H₂s – Rely Strictly on Instruments Designed to Measure Concentrations of H₂S.
- Solubility – H₂S mixes with water.
- Flammability – H₂S is an explosive gas.
- Toxic by Products – H₂S presence can create sulfur dioxide which can ignite without warning

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6. Toxic Effects of Hydrogen Sulfide

Concentration	Physical Effect
.01 PPM	Can Smell Odor
10 PPM	Obvious and unpleasant odor. Beginning eye irritation. ANSI permissible exposure level for 8 hours (enforced by OSHA).
100 PPM	Immediately Dangerous to life or Health (IDLH) Kills smell in 3-15 minutes; may sting eyes and throat. May cause coughing and drowsiness. Possible delayed death within 48 hours.
200 PPM	Kills smell shortly, stings eyes and throat. Respiratory irritation. Death after 1-2 hours exposure.
500 PPM	Dizziness; breathing ceases in a few minutes. Need prompt rescue breathing (CPR). Self-rescue impossible because of loss of muscle control.
700 PPM	Unconscious quickly; death will result if not rescued promptly. 1000 PPM Unconscious at once, followed by death within minutes.

7. Health Effect of Exposure to Hydrogen Sulfide

Some basic health effects of H₂S can include eye irritations, effects nerve centers of the brain which control breathing.


8. General Requirements

Quality Electric should have a written confined space program per 29 CFR 1910.146 and employees must be aware of site-specific contingency/emergency plans and owner's contingency plan provisions.

Each person entering a H₂S designated location, regardless of the concentration, shall wear a personal H₂S monitor that is set to alarm at 10 PPM and shall carry a 5-minute escape pack with them at all times. When the alarms sound the employees must either evacuate the area or don the SCBA's or airline respirators. Employees must evacuate the area, don SCBA's or airline respirators upon sounding of H₂S alarm.

When work requires opening any equipment on location that has the potential of releasing concentrations of H₂S at 100 PPM or higher, two or more H₂S trained persons shall be present and follow these procedures prior to and during the opening of the equipment:

- Each person entering the H₂S location shall don a personal H₂S monitor prior to entry.
- A tailgate meeting will be held with everyone on location to discuss the work plan, the responsibilities of each person and the site-specific contingency plan.
- Each person shall have either a self-contained breathing apparatus (SCBA) or a supplied airline respirator equipped with a 5-minute escape pack and shall be worn when opening the equipment to the surrounding atmosphere.

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- At least one person (per two workers), equipped with a SCBA will act as a stand-by person and may not participate in the work being performed until the atmosphere has been tested and found to have no H₂S present in quantities over 10 PPM. The stand-by person shall be stationed up wind, within 100 feet and in clear view of the workers.
- If an operator or other third party provides the stand-by person, it will be the responsibility of the Quality Electric manager/supervisor in charge to verify that the person has been H₂S, CPR, and First Aid trained, and that they have been provided the proper respiratory equipment.
 - Only Quality Electric employees may wear Quality Electric respirator equipment.
 - If Quality Electric employees will use client or other third-party equipment, the equipment must be inspected to ensure it is safe to use and meets Quality Electric's requirements.

After the equipment has been locked and tagged out (per Quality Electric Lockout/Tagout Program), opened and the H₂S concentration has been cleared to less than 10 PPM, the stand-by person will no longer be required. Work may then be performed without respiratory equipment, except for the required 5-minute escape pack.


9. Safe Work Procedures

- Maintain compliance with permit requirements of Quality Electric and any requirements by the client.
- Verify that proper safety equipment is available, functioning properly and is utilized.
- Check and remain aware of wind conditions and direction.
- Perform a thorough check of the downwind area prior to the start of any potentially hazardous work activity.
- Check for other personnel and ignition sources.
- Ventilate work areas by venting and purging lines and vessels prior to beginning any work activities.
- Keep all non-essential personnel away from work areas.
- Immediately vacate the area when any H₂S monitor sounds and do not re-enter without proper respiratory protection.

10. Required Equipment

The following equipment shall be provided and used as required by this program:

- Methods of detecting H₂S by the use of fixed or portable monitors and will alarm at the appropriate permissible exposure limits of 20 PPM for 1910 or 10 PPM for 1926? Personal or area monitors that alarm when PEL exceeds the preset level of 20 PPM for OSHA 1910 or 10 PPM for OSHA 1926 requirements.
- Portable H₂S gas testing instrument, either electronic or manual pump operated, capable of testing the suspected concentrations of H₂S in the system.
- Each testing instrument must be capable of testing the suspected concentrations of H₂S by using the manufacturer's recommended calibrated tube or other means of measuring the concentration of gas.
- Testing instruments shall be calibrated periodically according to the manufacturer's recommendation, and at least annually.
- Calibration kits with regulator for calibrating the personal monitor.
- Calibration gas cylinder for testing the personal monitor.

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- Approved self-contained breathing apparatus or airline respirator with escape SCBA should be used with H₂S with a 5-minute escape pack and shall be worn when opening the equipment to the surrounding atmosphere.
- At least one person (per two workers), equipped with a SCBA will act as a stand-by person and may not participate in the work being performed until the atmosphere has been tested and found to have no H₂S present in quantities over 10 PPM. The stand-by person shall be stationed up wind, within 100 feet and in clear view of the workers.
- If an operator or other third party provides the stand-by person, it will be the responsibility of the Quality Electric manager/supervisor in charge to verify that the person has been H₂S, CPR, and First Aid trained, and that they have been provided the proper respiratory equipment.
 - Only Quality Electric employees may wear Quality Electric respirator equipment.
 - If Quality Electric employees will use client or other third-party equipment, the equipment must be inspected to ensure it is safe to use and meets Quality Electric's requirements.
- Respirator wearers requiring corrective eyewear will be fitted with spectacle kits according to the respirator manufacturer, at no expense to the employee.
- Respirators and their components, including all fittings of hoses, shall not be interchanged, which if done, would violate the approval rating of said respirator or related equipment.

11. Medical


Each employee shall have completed a medical evaluation by a physician or licensed health care professional to determine the employee's ability to wear a respirator as required by the Quality Electric Respiratory Protection Program.

Each employee will successfully complete the medical questionnaire and examination before being allowed to be fit tested with a respirator.

12. Training

Employees required to work on H₂S locations will be trained. Training shall consist of:

- Physical and chemical properties of H₂S
- Sources of H₂S
- Human physiology
- Signs and symptoms of H₂S exposure, acute and chronic toxicity
- Symptomatology of H₂S exposure
- Medical evaluation
- Work procedures
- Personal protective equipment required working around H₂S
- Use of contingency plans and emergency response
- Burning, flaring, and venting of H₂S
- State and federal regulatory requirement
- H₂S release dispersion models
- Rescue techniques, first aid, and post exposure evaluation

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- Use, care, and calibration of personal monitors and gas detection instruments
- Respirator inspections and record keeping

Each respirator wearer will complete Respiratory Protection training and a Respirator Fit Test, after being given a medical clearance and before entering any H2S location.

Employees and other personnel visiting H2S locations who will not be involved in the work shall be briefed on the following prior to entering:

- Site-specific sources of H2S
- Health hazards of H2S
- Routes of egress
- Emergency assembly areas
- Applicable alarm signals and
- How to respond in the event of an emergency.

13. Rescue

Each employee, when working alone in a H2S designated area, shall plan and become familiar with self-escape procedures to include being aware of wind direction and obstacles to avoid when exiting the work area.

Employees working under the buddy system shall pre-plan an emergency rescue and/or evacuation procedure prior to commencing work and arrange for periodic communications with his/her supervisor and document the discussion on each employee's service report.

14. Respirator Inspections

Respirators will be inspected by the employee before each use and at least monthly.


The inspection will include the respirator face piece, hose, harness, 5minute escape pack cylinder and all other components of the air supply systems used.

Monthly inspections will be documented as per Quality Electric Respiratory Protection Program and will be kept on file at the local office for review during safety audits.

15. Monitors and Gas Detector Calibration

Each personal H2S monitor shall be calibrated at least monthly, and the results recorded on the calibration log.

Those monitors that do not require calibrating shall be bump checked with calibration gas to test alarms, monthly or prior to use if not used routinely.

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L. Lead Awareness

1. Intent Statement

The purpose of this procedure is to advise employees in areas where lead is suspected on an awareness level basis about the properties and dangers of lead, general guidelines, and training requirements.

2. Scope

This procedure applies to Quality Electric operations where employees whose work activities may contact lead containing materials but do not disturb the material during their work activities.


When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Quality Electric employees and contractors and shall be used on owned premises, or when an operator's program does not exist or is less stringent.

3. Responsibilities

- a) Supervisors
 - Develop and implement annual lead awareness training.
 - Ensure personnel are aware of work that has the potential of exposure to lead.
 - Identify possible locations where lead in the workplace may be found.
 - Inform the Safety Manager of upcoming work involving known or suspected lead-containing materials, allowing the Safety Director to provide any necessary monitoring or other required actions.
 - Ensure employees comply with the lead awareness requirements.
- b) Employees:
 - Comply with the lead awareness requirements and direct any questions or concerns to your Supervisor.
 - Attend required annual training.
 - Review material safety data sheets or consult with the supervisor to identify any container with lead-containing material.

4. Procedure

- a) Trade Name
 - Pb, Lead Metal and Plumbum
- b) Immediately Dangerous to Life and Health
 - 100 mg / m³
- c) Personal Protection / Sanitation
 - Skin – Prevent Skin Contact
 - Eyes – Prevent eye contact
 - Skin – Wash Daily
 - Clothing or any Associated Items – Remove when wet or contaminated.

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d) Exposure Routes, Symptoms and Target Organs

Inhalation, Ingestion and / or skin / eye contact.

e) Symptoms

Common symptoms of acute lead poisoning are loss of appetite, nausea, vomiting, stomach cramps, constipation, difficulty in sleeping, fatigue, moodiness, headache, joint or muscle aches, and anemia. Long term (chronic) overexposure to lead may result in severe damage to the blood-forming, nervous, urinary, and reproductive systems.

f) Target Organs

Eyes, GI Tract, Central Nervous System, Kidneys, Blood or Gingival Tissue.

g) Locations

Each worksite shall create a list of possible locations of lead containing materials such as leaded paints, leaded solders, pipes, batteries, circuit boards, cathode ray tubes, leaded glass, and demolition/salvage materials.

The list is to be provided to the Safety Director on a quarterly basis and revised as lead containing materials are added or eliminated from the previous list.

5. General Requirements

Employees must abide by any signs/labels/assessment reports indicating the presence of lead containing materials and will not disturb the lead containing material. Appropriate work practices shall be followed to ensure the lead containing materials are not disturbed.


6. General Work Practices

When working on multi-contractor worksites Quality Electric employees shall be protected from exposure. If employees working immediately adjacent to a lead abatement activity are exposed to lead due to the inadequate containment of such job, Quality Electric shall either remove the employees from the area until the enclosure breach is repaired or perform an initial exposure assessment.

Employees will wash hands and face if lead materials are contacted. Employees' hands and faces shall be washed if lead containing materials are contacted. Any possible contact with lead containing material must be reported immediately to the supervisor or Safety Director.

If air is re-circulated back into the workplace, the system must be equipped with a HEPA (high efficiency particulate air) and backup filter, and a system to monitor the lead level will be installed.

Respirators shall be used during the time period required to install or implement control if engineering and work practices are insufficient as well as for emergency use.

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If respirators are required, they will be NIOSH certified and all employees will follow the Quality Electric Respiratory Protection Program.

7. Training

Lead awareness training is required at time of hire, during orientation or before initial assignment in areas where lead is suspected. Lead awareness training is required for employees whose work activities may contact lead containing materials but do not disturb the material during their work activities.

Refresher training must be given annually.


Documentation of training - Lead awareness training shall be documented on a Quality Electric Safety Training Form

Training will include the health effects of lead, how to report suspected locations of lead containing material and not to disturb any possible lead containing material.

Training records shall be provided upon request all materials relating to the employee information and training program to regulatory agencies.


8. Housekeeping

- (1) All surfaces shall be maintained as free as practicable of accumulations of lead. Clean-up of floors and other surfaces where lead accumulates shall be done by HEPA filtered vacuuming or other methods that minimize the likelihood of lead becoming airborne.
- (2) Never use compressed air to clean any surface, unless there is a ventilation system designed to capture airborne contaminants.

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M. Office Safety

- Each office should have fire extinguishing equipment available and a training program on how to use extinguishers.
- An evacuation plan should be in place with periodic fire drills and training.
- Inspect the workplace using an inspection form.
- Exit signs should be lighted and clearly visible and emergency lighting should be installed.
- Aisles should be kept clear to allow for easy travel and exit in the event of an emergency.
- Doors to stairwells and to exits should not be blocked. These areas should be clearly marked.
- Store inks, solvents and any other flammable or combustible liquid properly and use in small amounts only.
- Trash and rubbish should be properly stored and discarded daily.
- Machines should be grounded, and the use of extension cords should be avoided.
- Non-carpeted walking surfaces should be swept and mopped frequently to prevent grease and dirt buildup. Carpeted floors should be vacuumed regularly.
- Spills should be cleaned immediately.
- Use signs or barriers to warn of wet floors.
- Loads of 40 pounds or more should not be lifted manually. Proper lifting techniques should be utilized.
- Chairs should never be used in place of a ladder.
- Chairs should be stable and have at least a 5-point base.
- Adjustable seating should be used for different builds of people and for different tasks.
- Armrests for chairs should be low and short enough to fit the chair under the work surface and allow the user to get close enough to the work surface to use the chair backrest.
- Thin keyboards should be used to minimize wrist deviation or keyboard palm rests should be used.
- A short rest break should be encouraged after each hour of video display work is performed.
- A physician approved first aid kit should be available for emergency use.
- Work areas should be well illuminated; however, glare should be reduced by lowering the lighting.
- Window glare can be reduced by providing drapes or blinds.
- Items stored on racks and shelves should not be overhanging or protruding so as to cause personal injury.
- Available heating, air conditioning and ventilation systems should be kept in proper working order.
- Do not leave file drawers open and unattended.

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N. Safe Backing

- Whenever possible, avoid backing situations. Find a parking spot that will allow you to leave without backing.
- Avoid blocking the rearward, inside view with equipment and stock. Does the cargo safety cage block the view? How high is the load stacked?
- Increase the size of the side mirrors to gain a larger, clearer picture of hazards behind the vehicle.
- Install a wide-view, convex mirror on the upper rear driver's side of the vehicle.
- Drivers should walk completely around the vehicle, looking for dangers. Watch for overhangs too.
- When preparing to back, roll down the window and turn off the radio. The driver should check all mirrors and look over both shoulders before starting to back. Sound the horn twice to provide further warning for pedestrians. Back up s-l-o-w-l-y!
- If a second person is available, use this person to guide the backing vehicle. The guide should stand at the left rear driver's side of the vehicle (if room) and use full motion arm signals . . . not hand signals . . . to assist the driver. If the driver loses visual contact of the ground guide, backing should stop at once.
- Add dashboard stickers highlighting, "LOOK BEFORE YOU BACK".
- Provide paycheck stuffers and posters covering safe driving tips.
- Add backup alarms to vehicles.
- Hold safety meetings covering safe/unsafe driving techniques and driving rules.
- Provide orange traffic cones to be set out behind the vehicle, if backing will be required upon leaving.
- Add a reward/recognition program for safe drivers.
- Set up an obstacle driving course in a parking lot and hold a "driving rodeo" with score sheets and trophies for the best drivers.
- If a driver has trouble backing, have his/her eyes tested for depth perception.

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O. Silica

1. Intent Statement


The purpose of this exposure control plan (ECP) is to set out our approach to protecting workers from harmful exposure to airborne silica dust. Quality Electric will take reasonable steps and precautions to eliminate potential hazards of airborne silica in the workplace. The purpose and intent of this section is to minimize exposure and risks associated with respirable crystalline silica through training and awareness, use of engineering and work practice controls and following the silica standard as outlined in 29 CFR 1926.

***Employees should have access to plan at any time.**

****Quality Electric will review and evaluate the plan for effectiveness at least annually and update it, as necessary.**

2. Definitions

- a) **Action Level (AL)** - a concentration of airborne respirable crystalline silica of 25 ug/m³, calculated as an 8-hour Time Weighted Average
- b) **Air Monitoring Data** - the measurements taken to assess employee exposure to respirable crystalline silica
- c) **Competent Person** - a designated individual who can identify existing and foreseeable respirable crystalline silica hazards in the workplace and who has authorization to take prompt corrective measures to eliminate or minimize them. The competent person must have the knowledge and ability necessary to fulfill the responsibilities set forth in the Written Exposure Control Plan.
- d) **Employee Exposure** - the exposure to airborne respirable silica that would occur if the employee were not using a respirator
- e) **High-Efficiency Particulate Air (HEPA) Filter** - a filter that is at least 99.97% efficient in removing mono-dispersed particles of 0.3 micrometers in diameter
- f) **Objective data** - information, such as air monitoring data from industry-wide surveys or calculations based on the composition of a substance, demonstration employee exposure to respirable crystalline silica associated with a particular product or material or a specific process, task, or activity. The data must reflect workplace conditions closely resembling or with a higher exposure potential than the processes, types of materials, control methods, work practices, and environmental conditions in the employer's current operation.
- g) **Permissible Exposure Limit (PEL)** - a concentration of airborne respirable crystalline silica of 50 ug/m³, calculated as an 8-hour Time Weighted Average
- h) **Physician or other licensed health care professional (PLHCP)** - an individual whose legally permitted scope of practice (i.e. license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the particular health care services required by this paragraph (h) of this section
- i) **Regulated Area** - an area, demarcated by the employer, where an employee's exposure to airborne concentrations of respirable crystalline silica exceeds, or can reasonably be expected to exceed, the Permissible Exposure Limit

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- j) **Respirable Crystalline Silica (Silica)** - quartz, cristobalite, and/or tridymite contained in airborne particles that are determined to be respirable by a sampling device designed to meet the characteristics for respirable-particle-size-selective samplers
- k) **Respiratory Protection** - when the use of respirators is required by this rule, a respiratory program shall be instituted in accordance with governing standards. Respirators protect the user by the removal of contaminants from the breathing air. Respirators of this type include particulate respirators, which filter out airborne particles, and air-purifying respirators with cartridges/canisters which filter out chemicals and gases. Other respirators protect by supplying clean respirable air from another source. Respirators of this type include self-contained breathing apparatus, which include their own air supply.

3. Key Responsibilities


Due to the significant risk posed by respirable silica, it is critical that all personnel involved in operations that could potentially create silica dust take specific action to ensure that, as much as possible, a hazard is not created.

a) Quality Electric is responsible for:

- Substitution of less hazardous products for those that contain crystalline silica is required.
- Ensuring that the materials (e.g., tools, equipment, personal protective equipment) and other resources (i.e., worker training materials) required to fully implement and maintain this exposure control plan (ECP) are readily available where and when they are required.
- Providing a job specific ECP for each project, which outlines in detail the work methods and practices that will be followed on each site. Considerations will include
 - Availability and delivery of all required tools/equipment
 - Scope and nature of grinding work to be conducted
 - Control methods to be used and level of respiratory protection required
 - Coordination plan
- Conducting a periodic review of the effectiveness of the ECP. This would include a review of the available dust-control technologies to ensure these are selected and used when practical.
- Initiating sampling of worker exposure to concrete dust when there are non-standard work practices for which the control methods to be used have not been proven to be adequately protective.
- Ensuring that all required tools, equipment, and personal protective equipment are readily available and used as required by the ECP.
- Ensuring supervisors and workers are educated and trained to an acceptable level of competency.
- Maintaining records of training, fit-test results, crew talks, and inspections (equipment, PPE, work methods/practices).
- Coordinating the work with the prime contractor and other employers to ensure a safe work environment.

b) Field Supervisor is responsible for:

- Obtaining a copy of the ECP from the employer, and making it available at the worksite
- Selecting, implementing, and documenting the appropriate site-specific control measures

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- Providing adequate instruction to workers on the hazards of working with silica-containing materials (e.g., concrete) and on the precautions specified in the job-specific plan covering hazards at the location
- Ensuring that workers are using the proper respirators and have been fit-tested, and that the results are recorded
- Directing the work in a manner that ensures the risk to workers is minimized and adequately controlled
- Communicating with the prime contractor and other sub-contractors to ensure a safe work environment

c) The worker is responsible for:

- Knowing the hazards of silica dust exposure
- Using the assigned protective equipment in an effective and safe manner
- Setting up the operation in accordance with the site-specific plan
- Following established work procedures as directed by the supervisor
- Reporting any unsafe conditions or acts to the supervisor
- Knowing how and when to report exposure incidents


4. *Silica Properties*

Silica is the second most common mineral on earth and makes up nearly all of what we call “sand” and “rock.” Silica exists in many forms—one of these, “crystalline” silica (including quartz), is the most abundant and poses the greatest concern for human health. Some common materials that contain silica include:

- Rock and sand
- Topsoil and fill
- Concrete, cement, and mortar
- Masonry, brick, and tile
- Granite, sandstone, and slate
- Asphalt (containing rock and stone)
- Fibrous-cement board containing silica

Silica is a primary component of many common construction materials, and silica-containing dust can be generated during many construction activities, including:

- Abrasive blasting (e.g., of concrete structures)
- Jackhammering, chipping, or drilling rock or concrete
- Cutting brick or tiles
- Sawing or grinding concrete
- Tuck point grinding
- Road construction
- Loading, hauling, and dumping gravel
- Demolition of structures containing concrete
- Sweeping concrete dust

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Unprotected workers performing these activities, or working in the vicinity, can be exposed to harmful levels of airborne silica. Workers in other industries can also be exposed to silica, for example in the manufacture of toothpaste or pottery, or when loading coal (which can contain quartz) into the hold of a ship.

5. Health Hazards

Exposure to silica has been shown to cause silicosis, lung cancer, pulmonary tuberculosis, and other airway diseases. Crystalline silica dust can cause a disabling, sometimes fatal disease called silicosis. The fine particles are deposited in the lungs, causing thickening, and scarring of the lung tissue. The scar tissue restricts the lungs' ability to extract oxygen from the air. This damage is permanent, but symptoms of the disease may not appear for many years.

A worker may develop any of three types of silicosis, depending on the concentrations of silica dust and the duration of exposure:

- Chronic silicosis—develops after 10 or more years of exposure to crystalline silica at relatively low concentrations
- Accelerated silicosis—develops 5 to 10 years after initial exposure to crystalline silica at high concentrations
- Acute silicosis—develops within a few weeks, or 4 to 5 years, after exposure to very high concentrations of crystalline silica

Initially, workers with silicosis may have no symptoms; however, as the disease progresses, a worker may experience:

- Shortness of breath
- Severe cough
- Weakness

These symptoms can worsen over time and lead to death. Exposure to silica has also been linked to other diseases, including bronchitis, tuberculosis, and lung cancer.


6. Code of Practice

Quality Electric has a code of practice governing the storage, handling, use and disposal of silica if there is potential for exposure. The code of practice includes measures to be used to prevent the uncontrolled release of silica and the procedures to be followed if there is an uncontrolled release. Engineering controls such as ventilation or wet methods must be used to control silica-containing dusts.

7. Risk Identification, Assessment and Control

The potential for worker exposure to silica should be identified during the hazard assessment. A worker's exposure to silica is kept as low as reasonably achievable. Employees must not be exposed to airborne concentrations of silica more than 0.025 mg/cubic meter over an 8-hour time period. Atmospheric testing results should be assessed before a worker is exposed.

A key step in developing a silica exposure control plan is to identify the work activities that would put workers at risk of exposure.

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- Work activities — that may generate airborne silica dust—for silica, the route of exposure is through the inhalation of airborne dust. The employer should have a qualified person review the planned work activities to identify those that may generate airborne silica.
- Identify workers at risk of exposure—For example, workers who finish concrete would be at greater risk of exposure than plumbers or electrical workers.
- Amount of exposure—some work activities generate more dust than others, and the amount of exposure should be estimated. Published resources are available that provide air sampling data and compare silica dust levels from various construction activities.
- Duration of exposure—Workers who grind concrete for a full shift would be at greater risk than workers jackhammering for an hour.

8. Control Options

Effective control options must be used to eliminate or reduce the risk to workers from the hazards of silica dust exposure. The following hierarchy of control measures must be followed:


- Elimination/substitution (e.g., using products with less silica or using work methods that would eliminate the need for surface grinding)
- Engineering controls (e.g., water, local exhaust ventilation, enclosure)
- Administrative controls (e.g., coordination of tasks with subcontractors, signage)
- The use of proper PPE such as gloves, coveralls and eye protection when exposed to silica. Personal protective equipment such as gloves, coveralls and eye protection will be used to control silica exposures.

Our company commits to developing knowledge and expertise about these controls, and to establishing policies/procedures to protect workers from harmful exposure and to minimize reliance on respirators. Effective engineering controls such as HEPA vacuum attachments and wetting methods, which control silica dust at its source, are readily available. These controls have been proven to reduce airborne dust levels significantly when selected and operated in accordance with best practices. We know that engineering controls alone do not reduce airborne silica to safe levels; so in most cases other control measures, including respiratory protection, will be necessary.

If we take on a job that could release an unusually high amount of dust, and we are unsure of the adequacy of our control measures, we will conduct air sampling in order to ensure that control methods are protective.

We will reduce or eliminate worker exposure to silica dust by selecting a combination of the following controls listed in order of preference:

- Elimination and substitution
- Engineering
- Administrative
- Personal protective equipment

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9. *Elimination and Substitution*

We recognize the importance of planning the work to minimize the amount of silica dust generated. During the project planning phase, we will advocate for the use of methods that reduce the need for cutting, grinding, or drilling of concrete surfaces (e.g., formwork planning). Whenever possible, we will schedule work when concrete is still wet, because we know that much less dust is released at that time.

10. *Engineering Control of Dust*

Selecting an appropriate control measure depends on the specifics of the operation. In some cases, local exhaust ventilation (LEV) is more effective at controlling exposure (e.g., during grinding operations) than wetting methods. In a different application, wetting may be more effective (e.g., during cutting operations) than LEV. However, using LEV may reduce the amount of final cleaning required, as the silica dust is captured.


Our dust control systems may employ three well-established techniques:

- Local exhaust ventilation (LEV)
- Wet dust suppression (WDS)
- Restricting or isolating the work activity with barriers or full enclosures (this may be the only option where LEV or WDS is not practical or effective)

11. *Local Exhaust Ventilation (LEV)*

When LEV is used in our work, we will employ the following systems and safe work practices:

- Vacuum attachment systems to capture and control the dust at its source whenever possible.
- Dust control systems (used regularly and well maintained).
- Grinding wheels operated at the manufacturers' recommended rpm (operating in excess of this can generate significantly higher airborne dust levels).
- Retrofit shrouds or exhaust cowlings for corner grinding; use manufacturer-specified rpm speeds and a well-maintained HEPA vacuum.
- Diamond stone grinders, which allow for the use of a more efficient suction casing on the grinder, whenever practicable.
- HEPA or good quality, multi-stage vacuum units approved for use with silica dust. [The vacuum units should be capable of creating a target airflow of at least 70 cfm. This should achieve a face velocity at the shroud of about 1.3 m/s (260 fpm)—the higher the face velocity, the more dust captured at source.]
- Work planning, so that concrete grinding can be completed when wet (dust release can be significantly reduced).
- Good housekeeping work practices (for example, use vacuums with high-efficiency particulate air (HEPA) filters, or use wet sweeping).
- Train workers and supervisors on how to properly use and maintain the equipment.

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12. Wet methods for Dust Control (WDS)

When water spray systems are used in our work, we will follow these safe work practices:

- Pneumatic grinders will be used instead of electric-powered grinders if water is the method of control.
- Pressure and flow rate of water will be controlled in accordance with tool manufacturers' specifications (for cutting saws, a minimum of 0.5 liters of water per minute should be used).
- When sawing concrete or masonry, we will use only saws that provide water to the blade.
- Wet slurry will be cleaned from work surfaces when the work is completed, using a wet vacuum or wet sweeping.

13. Barriers and Enclosures

When barriers or enclosures are used in our work, we will follow these safe work practices:

- The site foreman will determine the type and design of barrier or enclosure (based on the work activity and the work area) and ensure it is constructed in accordance with the work plan. Barriers may be simple hazard-flagging ribbon or more restrictive hoarding.
- We will use commercially available negative air units when constructing a full enclosure.

14. Administrative Controls


We will follow these safe work practices:

- Exposure control plans and the site risk assessment/work plan will be submitted to the general contractor prior to the start of work.
- We will establish procedures for housekeeping, restricting work areas, personal hygiene, worker training, and supervision.
- As part of our project planning, we will assess when silica dust may be generated and plan to eliminate or control the dust at the source. We recognize that awareness and planning are key factors in the prevention of silicosis.
- Warning signs will be posted to warn workers about the hazards of silica and to specify any protective equipment required (for example, respirators).
- Work schedules will be posted at the boundaries of work areas contaminated with silica dust.
- Work that generates silica dust will be conducted after hours when access to other
 - unprotected workers cannot be restricted.
- We will develop a site-specific exposure control plan to cover project-specific issues (e.g., scope of work, project location and site-specific hazards) and to be kept available at the worksite.

15. Personal Protective Equipment

a) Respiratory protection

- All workers who wear respirators will do so in adherence with our respirator program.
- Respirators must be selected based upon measured exposure levels and the assigned protection factor of respirators.
- Only approved respirators will be used.

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- Workers who wear respirators will be clean-shaven. Filtering face piece respirators give little or no protection to workers with beards, and even a minor growth of stubble can severely reduce the effectiveness of respiratory protection.
- All workers who wear respirators will be fit-tested.
- Workers will be properly trained in the use of respirators, and a high standard of supervision, inspection, and maintenance will be followed.

b) Protective clothing

Quality Electric will provide workers in a restricted area with protective clothing that protects other clothing worn by the worker from silica contamination, ensure that workers' street clothing is not contaminated by silica, and ensure that a worker does not leave a restricted area until the worker has been decontaminated.

c) Health monitoring

Exposures to airborne concentrations of Silica must be kept below the permissible exposure limits shown in 29 CFR 1910.1000 Table Z-3.

Full shift personal samples shall be representative of the employee's regular, daily exposure to silica.

d) Documentation

Records must be kept of the following:

- All workers who are exposed to respirable silica dust while on the job
- Worker education and training sessions
- Respirator fit testing
- Equipment maintenance and repair
- Worksite inspections


The exposure control plan must be reviewed at least annually and updated as necessary by the employer, in consultation with the workplace health and safety committee or the worker health and safety representative.

e) Education and Training

A worker who may be exposed to silica is to be informed of the health hazards associated with exposure to that substance, is informed of measurements made of airborne concentrations of harmful substances at the work site and is trained in procedures developed by COMPANY to minimize the worker's exposure.

Training is required prior to using silica-containing materials or working in an environment known to contain airborne concentrations of Silica. Periodic refresher training is also required. We will train all silica dust in the following:

- Hazards associated with exposure to silica dust
- The risks of exposure to silica
- Signs and symptoms of silica disease
- Safe work procedures to be followed (e.g., setup of enclosures, disposal of silica waste, personal decontamination)


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- Use of respirators and other personal protective equipment (e.g., donning and doffing of personal protective equipment, and cleaning and maintenance of respirators)
- Use of control systems (e.g., LEV and wet methods)
- How to seek first aid (for example, the location and use of eyewash stations) How to report an exposure to silica dust

16. Annexes

a) Forms

- Site Specific Silica Exposure Plan

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P. Soft Tissue Injury Prevention

1. Intent Statement

The intent of this section is to provide methods to reduce soft tissue injuries in the workplace.


2. General Prevention Methods

- a) Stretch and Flex
 - (1) Warming up and stretching the neck and head, shoulders, back, arms, wrists, hands, fingers, and feet can prevent repetitive stress injury, or even relieve sore muscles and tendons.
 - (2) All Trade Partners, (including all tiered Trade Partners), should participate in a daily stretch and flex program to minimize occupational related sprains and/or strains at the beginning of each day's work. Mid-day stretch and flex based upon work environment and specific activities may be deemed necessary.
- b) To prevent Muscular Skeletal Disorder (MSD) and Cumulative Trauma Disorder (CTD) injuries, Quality Electric has a process in place that, at a minimum, includes the following items:
 - (1) Awareness/Education: All employees assigned to the project, should be provided training, that is designed to increase awareness and understanding of risk factors that may lead to MSD/CTD injuries, and how proper ergonomics can prevent such injuries.
 - (2) Risk Factor Assessment and Mitigation: An MSD/CTD risk factor assessment and mitigation plan can be a method to prevent risks for all job tasks, tools used, work procedures, workstations, and equipment operation where exposure may exist. Since the number one cause of MSD/CTD injuries are related to manual material handling, special emphasis shall be placed on the reduction of manual handling of material, equipment, and tools. This comes with good pre-planning to reduce risk and exposure.
 - (3) Quality Electric's pre-planning shall be considered part of MSD/CTD prevention. Logistic planning to include laydown, material handling & storage areas, constructability, and risk planning (start strong meeting) can reduce and limit multiple handling of materials and advocates innovative methods for employees to work in neutral positions. All efforts shall be made to bring materials and equipment on pallets and adequate carts for storage as well as movement and workstations set up in elevated position with debris bins present for excess scrap disposal. Moreover, pre-install meetings tie this industry best practice using a nothing hits the ground approach.

3. Eye Protection and First Aid

Safety glasses are to be worn 100% of the time while performing your job, except office work and driving.

- a) Protective equipment, including personal protective equipment for eyes and face, shall be provided, used, and maintained in a sanitary and reliable condition. This protection should be provided whenever it is necessary by reason of hazards of processes or entrainment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation, or physical contact.
- b) Where employees provide their own protective equipment, the employer shall be responsible to assure its adequacy, including proper maintenance, and sanitation of such equipment.

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- c) Protective eye and face equipment shall be required where there is a reasonable probability of injury that can be prevented by such equipment. In such cases, employers shall make conveniently available a type of protector suitable for the work to be performed, and employees shall use such protectors.
- d) Persons whose vision requires the use of corrective lenses in spectacles, and who are required by this standard to wear eye protection, shall wear goggles or spectacles of the following types: spectacles whose protective lenses provide optical protection or goggles that can be worn over corrective lenses mounted behind the protective lenses.
- e) Safety goggles or face shields should be worn when woodworking or cutting tools, such as chisels, brace bits, planes, scrapers, and saws are used and there is a chance of particles falling or flying into the eyes.
- f) Eye protection should be worn when working with grinders, buffing wheels and scratch brushes.
- g) Jobs such as cutting wire and cable, hand drilling, removing nails, chipping concrete, shoveling material, or working under objects where particles of materials may fall require eye protection.
- h) Wear eye protection, keep it clean and fit for use, wear the right protection for the job.

4. Foot Protection


Foot protection is guarding your toes, ankles, and feet from injury. Manufacturers now offer a wide variety of protective devices for hazards in many industries. Manufacturers also continually update materials and engineering of their products to insure protection from new hazards.

The Occupational Safety and Health Administration (OSHA) has outlined regulations that specify foot protection for the workplace. These regulations can be found in the Code of Federal Regulations, 29 CFR 1910.136.

a) Types of foot injuries:

Your feet are vulnerable to many types of skin diseases, cuts, punctures, burns, sprains, and fractures, but sharp or heavy objects falling on the foot are the primary source of injury. Other hazards include:

- (1) Compression - the foot or toe is squeezed between two objects or rolled over
- (2) Puncture - a sharp object, like a nail, breaks through the sole
- (3) Electricity - a hazard where workers use power tools or electric equipment
- (4) Slipping - surface hazards such as oil, water, or chemicals causing falls
- (5) Chemicals - chemicals corrode ordinary safety soles and can harm your feet
- (6) Extreme heat or cold - insulation or ventilation is required; depends on climate
- (7) Wetness - hazard may be slipping, but also discomfort and even fungal infections in your feet are wet for long periods of time


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Many plant operations or manufacturing processes involve a combination of hazards listed above.

b) Specific types of safety shoes:

- (1) **Leather boots** – At a minimum, each employee should be wearing a hard soled leather covered work boot that will provide protection to both the ankle and the entire foot.
- (2) **Safety boots** - rubber or plastic safety boots offer protection against oil, water, acids, corrosives, and other industrial chemicals. They are also available with features like steel-toe caps, puncture resistant insoles, and metatarsal guards. Some rubber boots are made to be pulled over regular safety shoes.
- (3) **Electric hazard shoes** - these are used in areas where employees work on live or potentially live electrical circuits. The toe box is insulated from the shoe so there is no exposed metal. These shoes are most effective when dry and in good repair.
- (4) **Foundry shoes** - foundry shoes are used by welders and molders where there is a hazard from hot splashes of molten metal or flying sparks. Instead of laces they have elastic gores to hold the top of the shoe close to the ankle. This way they can be removed quickly if hot metal or sparks get inside the shoe.
- (5) **Conductive shoes** - this type of protective footwear is used where there is a danger of shock from high voltage. They permit the static electricity that builds up in the body of the wearer to drain off harmlessly into a conductive grounded floor. These shoes must have rubber or cork heels, no exposed metal parts, and a connector (from calf to heel) to pass electricity to the ground.
- (6) **Non-conductive shoes** - unlike conductive shoes, they do not require that the floor be conductive and grounded. They offer protection from the hazards of electric current in live circuits and equipment. Non-conductive shoes have rubber soles and no metal parts, so they insulate feet from the ground.
- (7) **Add-on foot protection** - Metatarsal guards and shoe covers can be attached to shoes for greater protection from falling objects. Strap-on wooden-soled sandals can be used for protection against the underfoot hazards of oils, acids, hot water, caustic, or sharp objects.
- (8) Rubber spats protect feet and ankles against chemicals. Puncture-proof inserts made of steel can be slipped into shoes to protect against underfoot hazards. Strap-on cleats fastened to shoes provide greater protection.

Footwear should always be matched to the job and to the hazards that are encountered there. It is important during the selection and purchase of safety footwear that shoes and boots meet the requirements

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recommended by the American National Standards Institute (ANSI). OSHA regulations state that safety shoes should meet ANSI standards. ANSI approved footwear will have the ANSI label inside the shoe or boot. The ANSI standard relevant to protective footwear is ANSI Z41-1991.

5. *Hand Safety and First Aid*

(1) Sources of injuries:

- Burns
- Cuts
- Electrical shock
- Absorption of chemicals
- Pinching
- Crushing
- Cold
- Vibration
- Repetitive motion
- Gloves must be worn 100% of the time while performing your job, except office work and driving.
- Analyze the workplace for hazards to the hands. Look at each job and consider the possible hazards to the hands.
- Make sure all tools and machines are well maintained. Make sure all guards are in place.
- Employees must be properly trained in the use of the tools and machines in their area.
- Determine the proper protective equipment and make sure it is available to all employees who need it. Reinforce it by developing a company-wide hand protection policy.

(2) Preventing hand injuries:


- Use protective gloves or other protection whenever necessary. There are gloves to protect against heat, cold, sharp objects, chemicals, electricity, and a wide variety of other hazards.
- Gloves should not be worn around tools and machinery with rotating or moving parts, such as grinders, drills, lathes, or milling machines.
- Watches, rings, bracelets, or other jewelry should be removed, and loose-fitting clothing avoided.
- Use tools and equipment only for the job they were designed for.
- The workplace should be clean and well organized, and the tools and equipment well maintained.
- Tools and equipment should have their guards in place.

(3) First Aid for Hand Injuries

All employees should know:

- What to do in the event of an injury until help arrives.
- Name of the person who is trained in first aid.

The following is a list of basic first aid procedures for various types of hand injuries. Each organization may have first responder procedures and policies that differ from those listed.

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○ Bleeding

- Control bleeding by gently applying direct pressure with a dry, sterile dressing. If it becomes saturated, do not remove it. Add another dressing.
- If possible, wear latex gloves or use other methods to protect against transmission of infection.
- Do not remove any impaled objects. Immobilize the object instead.
- Seek medical attention immediately.

○ Fractures

- Symptoms: swelling, deformity, pain and tenderness, loss of use.
- Avoid moving the injured hand if possible. Check for symptoms.
- Control bleeding, but do not attempt to push protruding bones back beneath the skin.
- Seek medical attention immediately.

○ Amputations

- Control bleeding by applying direct pressure. Elevate extremity.
- Contact emergency medical service immediately.
- Recover and clean amputated body part by rinsing with water.
- Wrap amputated body part with sterile gauze or a dry, clean cloth, put in a waterproof container, such as a plastic bag, and place on a bed of ice. Transport to hospital with victim.

6. Hearing Safety


- Hearing protection must be worn in areas where sound levels exceed 85 DBA.
- Wear proper ear plugs for low level noise abatement.
- Earmuff hearing protection, along with ear plugs, may be needed in high level noise areas.
- Keep hearing protection clean and fit for use.
- Check ANSI Standard S 3.19 Method for the Measurement of Real-Ear Protectors and Physical Attenuation of Earmuffs to determine the efficiency of a specific device for a given noise exposure.
- Sound absorbing materials can be used to isolate the noise source helping to prevent the spread of noise.
- Altering or enclosing equipment or using quieter work processes can reduce overall noise levels.

7. Slips, Trips and Falls / First Aid

Slips, trips, and falls can happen to anyone, anytime, anywhere. No single method can be used to prevent all slips and falls.

The most common causes of slips and falls include unsafe use of ladders, jumping on or off lift gates, slippery surfaces, inappropriate footwear, poor lighting, and obstacles on walkways, inattention, and haste.

- Mop floor in area of spills immediately and post a sign stating, "WET FLOOR". Never leave spills unattended.
- An oil absorbing material should be used to control small oil spills in the workplace.

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- During inclement weather keep rugs, mats, and floors dry. Snow and ice should be removed from all sidewalks, drives and access points used by the public or employees. Post wet floor signs.
- Keep all floors, stairs, ladders, walkways, sidewalks, and driveways in good repair.
- Be aware that electrical cords cause many tripping injuries.
- Good housekeeping is a must in accident prevention.
- Stairs, aisles, and walkways should be clearly marked and kept free of any material.
- Look at each job and work area to consider the possible hazards.

a) First Aid Procedures for Victims of Slips and Falls

Employees should know:

- What to do in the event of an injury until help arrives.
- Name of person in organization who is trained in first aid.

The following is a list of basic first aid procedures for various types of slips and fall injuries. Be aware of your organization's first aid procedures and policies which may differ from those listed.

8. Fractures


- Symptoms: Swelling, deformity, pain and tenderness, loss of use.
- Gently remove clothing from area around injury. Avoid moving the injured area if possible. Check for symptoms.
- Control bleeding, but do not attempt to push any protruding bones back beneath the skin.
- Seek medical attention immediately.

9. Bleeding

- Control bleeding by gently applying direct pressure with a dry sterile dressing. If it becomes saturated, do not remove it, add another dressing.
- If possible, wear latex gloves or use other methods to protect against transmission of infection from the person's blood.
- Do not remove any impaled objects. Immobilize the object instead.
- Seek medical attention immediately.

10. Neck and spinal injuries


- Symptoms: Painful movement of the arms and/or legs, numbness, tingling, or weakness in arms or legs, loss of bowel or bladder control, paralysis to arms or legs, deformity of head and neck.
- Check heart rate and breathing; administer CPR if necessary, but do not use head tilt.
- Do not move victim unless he is in immediate danger.
- Stabilize victim to prevent any movement. Immobilize head and neck by placing objects on either side.

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- Protect victim against shock or hypothermia.
- Do not attempt to splint a victim. Await professional EMS help.


11. Annexes

- Forms
 - Stretch and Flex Infographic

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Q. Spray Painting

- Conduct all spray-painting operations according to NFPA Standard No. 33 "Standard for Spray Applications Using Flammable and Combustible Materials."
- Conduct all spray-painting operations in a factory built approved spray-painting booth.
- Construct the walls, floors, ceiling and doorways of steel concrete, masonry, or other noncombustible material.
- All electrical wiring and equipment should be approved for Class I, Division 1 hazardous locations.
- No open flame or spark producing equipment should be located within the spray area.
- Heat should be ducted into the booth, with no heat sources inside the booth.
- Keep only one day's supply of flammable or combustible liquids stored inside the booth.
- Mechanical ventilation, adequate to remove flammable or combustible vapors, mists, residues, dusts, or deposits to a safe location, should be provided and must be in operation while spray painting.
- The mechanical ventilation exhaust motor should be located outside the path of escaping vapors.
- The mechanical ventilation system should also be located within 18 inches of floor level.
- Replace filters and clean the ventilation system frequently. Remove overspray from the spray area and mechanical ventilation system on a regular basis.
- Always maintain good housekeeping practices.
- Personal protective equipment should be worn by all employees engaged in spray painting operations.
- Know and understand the MSDS available to you.
- "NO SMOKING" signs shall be posted in the spray-painting area.

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R. Working on or Near Water

1. Purpose

The purpose of this program is to establish requirements for proper conduct when working over or on the water and survival in the event of an emergency.

2. Scope

This program applies to all Quality Electric employees working on, near, or above the water.

3. Key Responsibilities


- a) Managers and Supervisors
 - Management shall determine if this program is required for regulatory compliance on your jobsite. If this program is deemed necessary, management shall determine which employees within the company are required to receive Water Safety Training.
 - Management shall select an appropriate training facility to provide the training outlined in this program and shall monitor the selected training facility to assure they are conducting the proper training including proper documentation of the training is kept and supplied to the Safety Committee to monitor the employee's training.
 - Supervisors shall verify that each of his/her employees have the proper training before those employees start any work-related tasks.
 - Supervisors shall participate in all training exercises to prepare for emergency situations.
- b) Employees
 - Employees shall assist their supervisors in tracking required training.
 - The employee shall monitor all expiration dates pertaining to his/her required training and notify his/her supervisor in advance of any nearing expiration dates.
 - Employees shall participate in all training exercises to prepare for emergency situations.

4. Procedure

- Employees working over or near water, where the danger of drowning exists, shall be provided with U.S. Coast Guard-approved life jacket or buoyant work vest.
- Prior to and after each use, the buoyant work vest or life preservers shall be inspected for defects which would alter their strength or buoyancy. Defective equipment shall be tagged out of service and removed from the project for repair or replacement.
- Ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. 200 feet between ring buoys shall not be exceeded.
- At least one life saving skiff shall be immediately available at locations where employees are working over or adjacent to water. A clear path shall be always maintained to the skiff.

5. Training

Training records shall be kept and maintained for each employee on site and turned into the office to be placed in their file. Training shall include: All employees working on or around water shall be trained on an annual basis on

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what to do in case of an emergency, proper use of a life jacket, throw ropes, what to do if you fall in the water and the safety skiff.

S. Annexes

a) Forms and Permits:

- Driver Information Form
- Exposure Incident Report
- Hepatitis B Vaccine Declination Form
- Medical Records – Blood Borne Pathogen Exposure
- Motor Vehicle Record Review
- Noise Level Audit
- Notification of Counseled Driver
- Site Specific Silica Exposure Plan
- Quality Electric Cell Phone Usage Policy
- Vehicle Usage Policy
- Weekly Vehicle Inspection Form

b) Guidelines:

- Stretch & Flex Infographic
- OSHA Quick Card for Cold Stress
- OSHA Quick Card for Heat Stress



Driver Information Form

Quality Electric Inc.
5272 Irving
Boise, Idaho 83706

Date:	
-------	--

Policy #:	
Fax #:	

1	Driver :		Date of Birth:	
	Type of Vehicle:		Driver's License:	
	Job Title:			

2	Driver :		Date of Birth:	
	Type of Vehicle:		Driver's License:	
	Job Title:			

3	Driver :		Date of Birth:	
	Type of Vehicle:		Driver's License:	
	Job Title:			

4	Driver :		Date of Birth:	
	Type of Vehicle:		Driver's License:	
	Job Title:			

5	Driver :		Date of Birth:	
	Type of Vehicle:		Driver's License:	
	Job Title:			

6	Driver :		Date of Birth:	
	Type of Vehicle:		Driver's License:	
	Job Title:			

7	Driver :		Date of Birth:	
	Type of Vehicle:		Driver's License:	
	Job Title:			

8	Driver :		Date of Birth:	
	Type of Vehicle:		Driver's License:	
	Job Title:			

9	Driver :		Date of Birth:	
	Type of Vehicle:		Driver's License:	
	Job Title:			

10	Driver :		Date of Birth:	
	Type of Vehicle:		Driver's License:	
	Job Title:			

Exposure Incident Report

(To be Completed by the Coordinator)

Name of Exposed Employee(s):	
Date:	

I. Explain in Detail how Exposure Occurred	
What body fluids were involved:	
Which body part was exposed:	
What was the size of exposure:	
Further Comments:	

II. Explain the source of Exposure:		
Did the exposed employee(s) use PPE?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If no, please explain.
Individuals who witnessed the exposure.		
Did the exposed employee wash the exposed area as soon as feasible after the exposure?		
<input type="checkbox"/> Yes <input type="checkbox"/> No If no, please explain.		

III. Medical Evaluation		
Was the employee(s) sent to the clinic to receive their confidential medical evaluation including the post exposure vaccination within 24 hour?		
<input type="checkbox"/> Yes <input type="checkbox"/> No If no, please explain.		
What clinic did the employee(s) attend?		
Who was the attending health care provider?		
Did anyone accompany the employee(s) to the clinic?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Was there any regulated waste that needed to be disposed of?		
<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, please explain how this was accomplished.		

Coordinator's Signature

Date



Hepatitis B Vaccine Declination Form

"I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring Hepatitis B Virus (HBV) infection. I have been given the opportunity to be vaccinated with Hepatitis B vaccine at no charge to myself. However, I decline the Hepatitis B vaccine at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring Hepatitis B, a serious disease. If, in the future, I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with Hepatitis B vaccine, I can receive the vaccination series at no charge to me."

Signature:

Date:

Medical Records Bloodborne Pathogen Exposure

Employee's Name:	
Social Security Number:	

Attached are the following:

Copy of the employee's HBV vaccination status, including **dates of vaccinations** or a declaration statement indicating they choose not to be vaccinated.

Copy of information provided to the health care professional including description of employee's duties as they are related to the exposure incident and circumstances of the exposure.

Motor Vehicle Record Review

Name:	
Social Security:	

I have reviewed the driving record of the above named driver and have carefully considered the accident record: any evidence he/she had violated laws governing the operation of motor vehicles, especially such violations as: speeding, reckless driving and operation while under the influence of alcohol and drugs, indicating the driver has exhibited a disregard for the safety of the public. The Motor Vehicle Record (MVR) results were also applied to the standards of this company in ~ Company Driving Policy. Having done all the above, I find that:

- ☐ The Driver meets the minimum requirements for safe driving; or
- ☐ The attached sheet outlines the disciplinary action taken; or
- ☐ The Driver is disqualified from driving a motor vehicle.

Reviewed By:		Date:	
Title:			

Reviewed By:		Date:	
Title:			

Reviewed By:		Date:	
Title:			

Reviewed By:		Date:	
Title:			

Reviewed By:		Date:	
Title:			

Reviewed By:		Date:	
Title:			

Noise Level Audit

Auditor Name:	
Department:	
Date:	

Employee Name	Job Duties or Workstation	Make, Model & NRR of Hearing Protection	Hearing Protection Size	Average Noise (in decibels)	Problems with Hearing Protection Use	Employee Comments or Complaints

Notification of Counseled Driver

Name of Driver	
Job Duties	
Address	
City , State	

Reason:

Action Taken:

Fleet Safety Supervisor

Date

Driver

Date

Site Specific Silica Exposure Plan

Location:		Date:	
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Work Description:

Primary Silica Control Options *(Check those options used and explain use if needed)*

☐ Substitution Controls *(Using Procedures or Products that do not create Silica; must review SDS)*

Other Means of Demo:	
Different Products:	
Other Substitutions:	

☐ Engineering Controls *(When using ventilation, draw air out and don't expose others to exhaust dusts)*

Vacuuming:	
Wetting:	
Ventilation:	
Isolation:	
Other Means:	

☐ Administration Controls *(Reducing Exposure by Work Schedules, Timing or Planning Options)*

Control Points:	
Work Schedule:	
Other Means:	

Secondary Silica Control Options *(Check those Options used and explain use if needed)*

Personal Protective Equipment

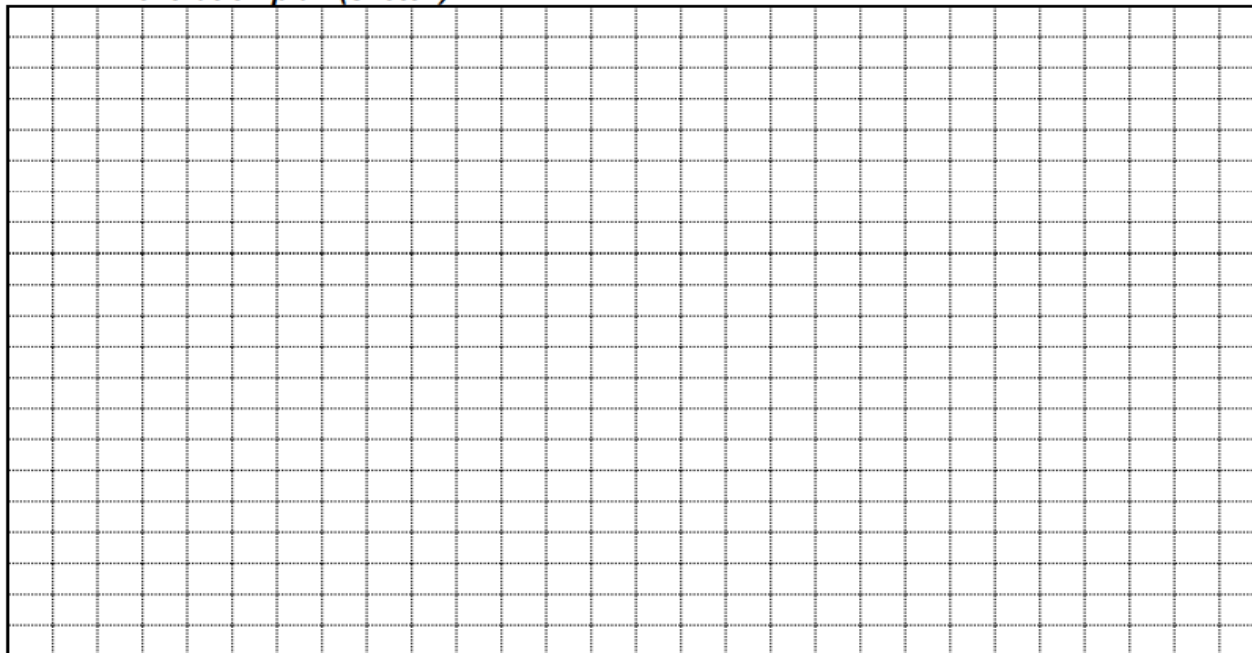
Half Face Respirator:	<input type="checkbox"/>	Cartridge Type:		Fit Tests Confirmed:	<input type="checkbox"/>
Full Face Respirator:	<input type="checkbox"/>	Cartridge Type:		Fit Tests Confirmed:	<input type="checkbox"/>
Supplies Air Units:					
Coveralls Required:	<input type="checkbox"/> Yes	<input type="checkbox"/> No			

Hygiene and decontamination options (Reducing exposures after work has stopped or during breaks)

Water or Washing Facilities on Site	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Vacuuming Clothing / Self:			
Safe Work Procedures and other details:			

Site Specific Silica Exposure Plan

Ventilation plan (sketch)



← Show direction of airflow including makeup air locations and discharge air outlets

Area or Location in Building of Ventilation Plan	
Date Plan was Reviewed by Workers and Posted for Workers	
Types of Negative Air Fans and No's * Indicate on Plan by Number the Location of the Negative Air Fans	

Ventilation Safety Checklist			
Makeup air free of possible contaminants	<input type="checkbox"/>	Workers not placed between contaminants created and	
Exhaust fan operation has failure warning	<input type="checkbox"/>	exhaust inlet ports	<input type="checkbox"/>
Dilution fans not stirring up dust	<input type="checkbox"/>	Discharge air nto affecting others	<input type="checkbox"/>
Wetting of materials used to keep dust down	<input type="checkbox"/>	All workers equipped with approved respirators	<input type="checkbox"/>
Others	<input type="checkbox"/>	Others	<input type="checkbox"/>

Note: Attach additional sheets if needed or other documents if required due to hazrds or work conditions.

Print Supervisor's Name

Supervisor's Signature



Quality Electric Cell Phone Usage Policy

Employees are prohibited from using a cellular phone while operating a company motor vehicle or while driving on company business, unless you are using a hands free device with appropriate discretion. All calls should be made, returned, or answered from a safe location within a designated parking area. Your safety and the safety of others is the purpose of this policy.

As a result;

- 1 Do not send or read emails, texts or alpha numeric pages while driving.
- 2 Do not accept or initiate calls, or read, create or send emails or texts while driving.
- 3 Allow business calls to go to voicemail and return calls upon arrival at the job site or when parked in a designated location.
- 4 Use caution when using your cell phone on a job site.

The only exception to the above prohibitions is in an emergency calls placed to 911 for situations such as fire, traffic accidents, road hazard or medical emergency.

Violation to the rules and policy will be considered serious offenses and may result in disciplinary action up to and including loss of company car / truck privilege and termination of employment.

Driver's Name

Driver's Signature

Supervisor's Name

Supervisor's Signature

Date

Vehicle Usage Policy

Quality Electric has developed a vehicle usage policy. Company owned vehicles and / or those used by company employees will be operated in a safe and economical manner. The guidelines are:

- 1 Operate vehicles in a manner consistent with the Driving Policy of **Quality Electric**. Operating any vehicle outside outlined rules in the Driving Policy may result in forfeiture of all driving privileges;
- 2 All traffic violations received while operating the assigned vehicle will be paid by the employee;
- 3 Report vehicle defects and needed repairs to company management so necessary repairs can be made;
- 4 The employee is not to give permission for the vehicle to be driven by any other person, including family members. Specific permission must be obtained from the President Jay Hintze;
- 5 Report all accidents to the Operations Manager consistent with **Quality Electric's** "Accident Reporting Policy".
- 6 Perform a Vehicle Inspection Report on a weekly basis and turn into Operations Manager or email to reports@qeidaho.com.

I have read, understood and agreed to the terms set forth in this Vehicle Usage Policy.

Employee's Printed Name

Employee's Signature

Date

HAZCOM Employee Training Checklist

Employee Name:	
Department:	
Training Date:	

- About the HAZCOM Standard? ☐ Yes ☐ No
- Who the HAZCOM Coordinator is? ☐ Yes ☐ No
- Where the written communication program is? ☐ Yes ☐ No
- About the chemical hazards they are exposed to? ☐ Yes ☐ No
- How to read and understand warning labels? ☐ Yes ☐ No
- The locatin of the SDS forms? ☐ Yes ☐ No
- How to read and understand SDS forms? ☐ Yes ☐ No
- The safety precautions for handling chemicals? ☐ Yes ☐ No
- How to detect presence or release of chemicals? ☐ Yes ☐ No
- Signs of overexposure? ☐ Yes ☐ No
- Emergency and first aid procedures? ☐ Yes ☐ No
- Their responsibilities and involvment with compliance ☐ Yes ☐ No

Employee Signature

Orientation Conducted By

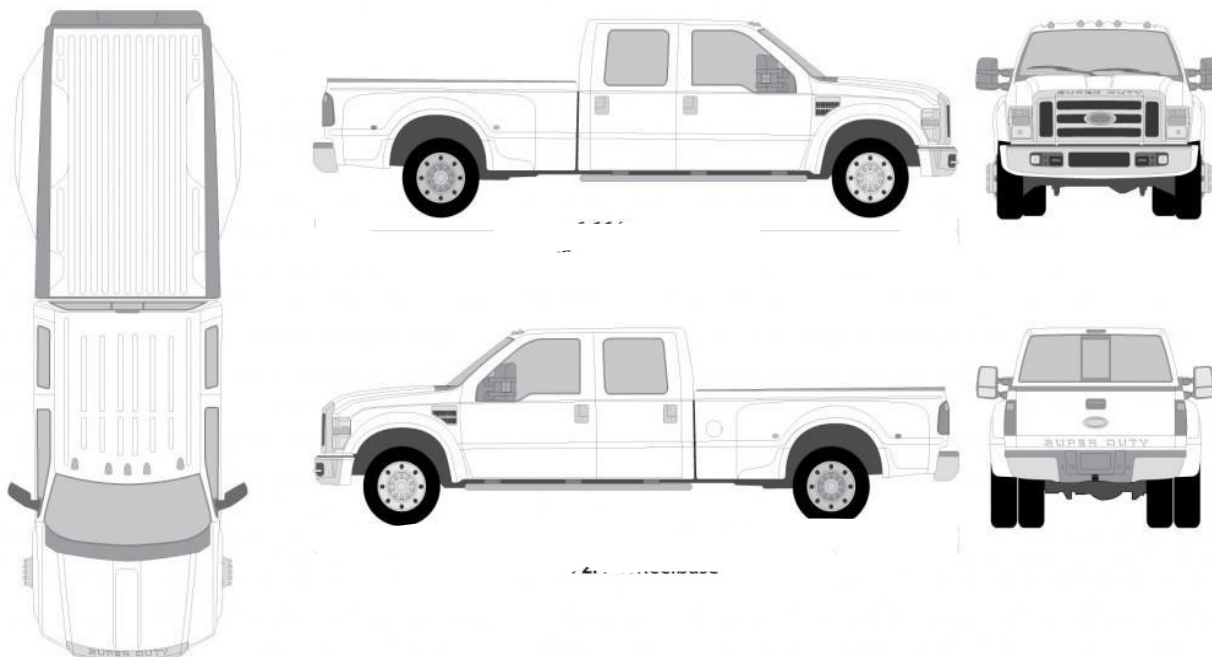
Job Position / Title

Weekly Vehicle Inspection Form

Project Location:				Date:	
Driver Name:					
Unit #:		Mileage:		Next Oil Change:	
<input type="checkbox"/> Maintenance due within 500 Miles		<input type="checkbox"/> Maintenance Past Due			
The following items are in good condition:			Yes	No	Problems
Vehicle Exterior					
Signs of leaks under the vehicle			<input type="checkbox"/>	<input type="checkbox"/>	
Tire inflated			<input type="checkbox"/>	<input type="checkbox"/>	
Windows and Mirrors Clean			<input type="checkbox"/>	<input type="checkbox"/>	
Doors Open / Close			<input type="checkbox"/>	<input type="checkbox"/>	
Under Hood					
Oil Level is Acceptable			<input type="checkbox"/>	<input type="checkbox"/>	
Transmission Fluid Level is Acceptable			<input type="checkbox"/>	<input type="checkbox"/>	
Power Steering Fluid Level is Acceptable			<input type="checkbox"/>	<input type="checkbox"/>	
Brake Fluid Level is Acceptable			<input type="checkbox"/>	<input type="checkbox"/>	
Corrosion on Battery			<input type="checkbox"/>	<input type="checkbox"/>	
Hoses (<i>Dripping Fluids, Cracked or Leaking</i>)			<input type="checkbox"/>	<input type="checkbox"/>	
Belts not frayed or cracked			<input type="checkbox"/>	<input type="checkbox"/>	
Vehicle Interior					
Clean Interior			<input type="checkbox"/>	<input type="checkbox"/>	
Floor Free of Hazards			<input type="checkbox"/>	<input type="checkbox"/>	
Seat Belts in Good Condition			<input type="checkbox"/>	<input type="checkbox"/>	
Adjust Mirrors			<input type="checkbox"/>	<input type="checkbox"/>	
Check Brakes			<input type="checkbox"/>	<input type="checkbox"/>	
Heater (Spring - Winter - Fall)			<input type="checkbox"/>	<input type="checkbox"/>	
A/C (Spring - Summer - Fall)			<input type="checkbox"/>	<input type="checkbox"/>	
Defrosting System			<input type="checkbox"/>	<input type="checkbox"/>	
Adequate Fuel			<input type="checkbox"/>	<input type="checkbox"/>	
Any Warning Lights on			<input type="checkbox"/>	<input type="checkbox"/>	
Two - way Communication			<input type="checkbox"/>	<input type="checkbox"/>	
Doors Locking			<input type="checkbox"/>	<input type="checkbox"/>	
Electrical					
Turn signals: Front Left, Front Right,			<input type="checkbox"/>	<input type="checkbox"/>	
High Beams			<input type="checkbox"/>	<input type="checkbox"/>	
Low Beams			<input type="checkbox"/>	<input type="checkbox"/>	
Emergency Flashers			<input type="checkbox"/>	<input type="checkbox"/>	
Horn			<input type="checkbox"/>	<input type="checkbox"/>	
Windshield Wipers			<input type="checkbox"/>	<input type="checkbox"/>	
Checked by another person by Mirror					
Turn signals: Back Left, Back Right			<input type="checkbox"/>	<input type="checkbox"/>	
Brake Lights			<input type="checkbox"/>	<input type="checkbox"/>	
Backup Lights			<input type="checkbox"/>	<input type="checkbox"/>	
Safety Equipment					
Reflective Triangles or Flares			<input type="checkbox"/>	<input type="checkbox"/>	
First Aid			<input type="checkbox"/>	<input type="checkbox"/>	
Fire Extinguishers			<input type="checkbox"/>	<input type="checkbox"/>	

Weekly Vehicle Inspection Form

Company Requirements			
Automobile Registration, Insurance card, Accident	<input type="checkbox"/>	<input type="checkbox"/>	
Have all employees been instructed on safe backing methods	<input type="checkbox"/>	<input type="checkbox"/>	
Have all employees have been informed of what actions to take in the they are invloved in an accident.	<input type="checkbox"/>	<input type="checkbox"/>	
Seat belt is required at all time's	<input type="checkbox"/>	<input type="checkbox"/>	
Have all Employees been informed of appropriate safety guidelines when hauling loads	<input type="checkbox"/>	<input type="checkbox"/>	



Note Any Body Damage on the Truck By Circling or Drawing on the Picture

Description of Problems:

Driver's Printed Name

Driver's Signature and Date

STRETCH & FLEX



SPENDING 10 MINUTES A DAY STRETCHING CAN REDUCE FATIGUE AND HELP AVOID INJURY.

DO THESE QUICK STRETCHES REGULARLY TO REDUCE FATIGUE AND AVOID INJURY:



1

BACK EXTENSION

Place your feet at hip with distance apart and slowly lean backwards as you reach upwards with both arms. Do this exercise for 5 seconds each round with a total of 3 rounds.



2

FORWARD NECK STRETCH

Tilt your neck down once for 15 seconds while gently lowering your chin towards your chest.



3

TILTED NECK STRETCH

Tilt your head on either your left or right side of your shoulder without twisting your neck. You will feel the opposite side of your neck pulling. Do this one time for 15 seconds on each side.



4

TORSO PULL OVER

Raise one arm up and over while pushing down in between your elbow and tricep area with the opposite hand. Repeat this 3 times for 5 seconds on each side.



5

SHOULDER PULL OVER

Raise one arm overhead while pushing down on your elbow with the opposite hand. Hold this position for 15 seconds on each side.



6

POSTERIOR SHOULDER STRETCH

Stand straight and place your left hand on your right shoulder and pull your arm across your chest. Do this position once on each side for 15 seconds.



7

SHOULDER OPENING STRETCH

Press one arm behind you as you twist your body open to feel a stretch in your shoulder. Do this for 15 seconds on each arm.



8

BRIDGE STRETCH

Lift both arms above your head and interlace your fingers straightening your elbows. Hold for a total of 15 seconds and reach as high as possible.



9

FOREARM & WRIST STRETCH

Keeping the elbow straight push one arm out bending the wrist up or down. With the opposite arm push the fingers towards you. Do once for 15 seconds on each side.



10

HAMSTRING STRETCH

Lift one leg up onto a chair and keep the knee straight. Hold this position for 15 seconds on each leg.



11

CALF STRETCH

Place one leg straight in front and bend the back knee. Grasp the toes on the front leg and hold for 15 seconds. Do this on each side.



12

QUAD & FLEXORS STRETCH

Balance your weight on one leg while reaching and bending the alternate knee. The deeper the bend, the greater the stretch. Do this on each side for 15 seconds.



Protecting Workers from Cold Stress

Cold temperatures and increased wind speed (wind chill) cause heat to leave the body more quickly, putting workers at risk of cold stress. Anyone working in the cold may be at risk, e.g., workers in freezers, outdoor agriculture and construction.

Common Types of Cold Stress

Hypothermia

- Normal body temperature (98.6°F) drops to 95°F or less.
- **Mild Symptoms:** alert but shivering.
- **Moderate to Severe Symptoms:** shivering stops; confusion; slurred speech; heart rate/breathing slow; loss of consciousness; death.

Frostbite

- Body tissues freeze, e.g., hands and feet. Can occur at temperatures above freezing, due to wind chill. May result in amputation.
- **Symptoms:** numbness, reddened skin develops gray/white patches, feels firm/hard, and may blister.

Trench Foot (also known as Immersion Foot)

- Non-freezing injury to the foot, caused by lengthy exposure to wet and cold environment. Can occur at air temperature as high as 60°F, if feet are constantly wet.
- **Symptoms:** redness, swelling, numbness, and blisters.

Risk Factors

- Dressing improperly, wet clothing/skin, and exhaustion.

For Prevention, Your Employer Should:

- Train you on cold stress hazards and prevention.
- Provide engineering controls, e.g., radiant heaters.
- Gradually introduce workers to the cold; monitor workers; schedule breaks in warm areas.

For more information:



OSHA 3156-02R 2014



How to Protect Yourself and Others

- Know the symptoms; monitor yourself and co-workers.
- Drink warm, sweetened fluids (no alcohol).
- Dress properly:
 - Layers of loose-fitting, insulating clothes
 - Insulated jacket, gloves, and a hat (waterproof, if necessary)
 - Insulated and waterproof boots

What to Do When a Worker Suffers from Cold Stress

For Hypothermia:

- Call 911 immediately in an emergency.
- To prevent further heat loss:
 - Move the worker to a warm place.
 - Change to dry clothes.
 - Cover the body (including the head and neck) with blankets, and with something to block the cold (e.g., tarp, garbage bag). Do **not** cover the face.
- If medical help is more than 30 minutes away:
 - Give warm, sweetened drinks if alert (no alcohol).
 - Apply heat packs to the armpits, sides of chest, neck, and groin. Call 911 for additional rewarming instructions.

For Frostbite:

- Follow the recommendations "For Hypothermia".
- Do not rub the frostbitten area.
- Avoid walking on frostbitten feet.
- Do not apply snow/water. Do not break blisters.
- Loosely cover and protect the area from contact.
- Do not try to rewarm the area unless directed by medical personnel.

For Trench (Immersion) Foot:

- Remove wet shoes/socks; air dry (in warm area); keep affected feet elevated and avoid walking. Get medical attention.

For more information:



Protecting Workers from Heat Stress

Heat Illness

Exposure to heat can cause illness and death. The most serious heat illness is heat stroke. Other heat illnesses, such as heat exhaustion, heat cramps and heat rash, should also be avoided.

There are precautions your employer should take any time temperatures are high and the job involves physical work.

Risk Factors for Heat Illness

- High temperature and humidity, direct sun exposure, no breeze or wind
- Low liquid intake
- Heavy physical labor
- Waterproof clothing
- No recent exposure to hot workplaces

Symptoms of Heat Exhaustion

- Headache, dizziness, or fainting
- Weakness and wet skin
- Irritability or confusion
- Thirst, nausea, or vomiting

Symptoms of Heat Stroke

- May be confused, unable to think clearly, pass out, collapse, or have seizures (fits)
- May stop sweating

To Prevent Heat Illness, Your Employer Should

- Establish a complete heat illness prevention program.
- Provide training about the hazards leading to heat stress and how to prevent them.
- Provide a lot of cool water to workers close to the work area. At least one pint of water per hour is needed.



For more information:
OSHA[®] Occupational
 Safety and Health
 Administration
www.osha.gov (800) 321-OSHA (6742)

OSHA 3154-06R 2014

- Modify work schedules and arrange frequent rest periods with water breaks in shaded or air-conditioned areas.
- Gradually increase workloads and allow more frequent breaks for workers new to the heat or those that have been away from work to adapt to working in the heat (acclimatization).
- Routinely check workers who are at risk of heat stress due to protective clothing and high temperature.
- Consider protective clothing that provides cooling.



How You Can Protect Yourself and Others

- Know signs/symptoms of heat illnesses; monitor yourself; use a buddy system.
- Block out direct sun and other heat sources.
- Drink plenty of fluids. Drink often and BEFORE you are thirsty. Drink water every 15 minutes.
- Avoid beverages containing alcohol or caffeine.
- Wear lightweight, light colored, loose-fitting clothes.



What to Do When a Worker is Ill from the Heat


- Call a supervisor for help. If the supervisor is not available, call 911.
- Have someone stay with the worker until help arrives.
- Move the worker to a cooler/shaded area.
- Remove outer clothing.
- Fan and mist the worker with water; apply ice (ice bags or ice towels).
- Provide cool drinking water, if able to drink.

IF THE WORKER IS NOT ALERT or seems confused, this may be a heat stroke. CALL 911 IMMEDIATELY and apply ice as soon as possible.

If you have any questions or concerns, call OSHA at 1-800-321-OSHA (6742).



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Section 15: Aerial and Scissor Lifts (MEWP's)

A. Policy Statement

This intent of this policy is to establish the general requirements, safe operating procedures and training of aerial lifts and scissor lift platforms.

B. Scope


This policy shall cover all aerial lift devices used by Quality Electric employees.

C. Definitions

1. **Aerial lift** – Any vehicle – mounted device, telescoping or articulating, or both, which is used to position personnel
2. **Protective Shroud** – A protective shield or cover to avoid inadvertent engagement with the control device
3. **Scissor lift** – Type of lift, including those with platforms that extend beyond the equipment's wheelbase (Scissor lifts fall under OSHA Subpart L provisions)

D. General Requirements

1. Equipment under the control and custody of Quality Electric will not be permitted to be used by anyone other than Quality Electric personnel, unless granted approval from the project Superintendent or designated Supervisor and a release of liability for use of equipment waiver is signed by the person(s) or company requesting its use.
2. The operator's manual must be maintained and stored on the lift.
3. Daily inspections, for safe operability and safety of personnel, of the lift must be documented before use.
4. Aerial lifts may not be "field modified" for uses other than those intended by the manufacturer.
5. Only authorized persons shall operate an aerial lift and boom and basket load limits specified by the manufacturer shall not be exceeded.
6. Aerial lifts shall have a working back-up alarm audible above the surrounding noise level or the vehicle is backed up only when an observer (spotter) signals that it is safe to do so.
7. To avoid "Entrapment" hazards and inadvertent engagement with the controls, the following control measures should be observed:
 - a) Plan the work at heights that involves trapping risks: a) Identify the range of work, b) Travel path, best selection of MEWP (e.g. type of telescopic boom, articulated boom or vertical lifts, and use spotters in tight, complex or low light areas)
 - b) If a secondary guarding/anti-crushing device is available from the manufacturer's / suppliers, then it must be used.
 - c) Operators and riders must receive basic training in the correct category of MEWP and be familiarized with the equipment (i.e. controls, characteristics, safety devices, decals, and emergency rescue systems).
 - d) Never lean over guardrails. Use caution when placing hands on the guardrail to avoid pinch points.
 - e) Repeatedly scan the area in front and above the platform in the direction of movement and consider any over-run that may occur.

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f) Move at speeds that always allow full control of the lift (MEWP) (low speeds).

E. Training

1. All employees who operate an aerial lift device shall be trained in the safe operation of the specific device they will operate. Training must conform to all OSHA requirements.
2. Operators must receive training regarding inspection, operation, and application along with the recognition of general hazards associated with the operation of the lift.
3. Operators must have training on the specific model he/she intends to operate. Training should include the purpose and function of all controls, safety devices and operating characteristics of that specific model elevated work platform.
4. Retraining shall take place whenever an incident occurs with the lift and/or when an employee lacks an understanding or proficiency in the subject matter.

F. Work Area Inspection


1. An inspection of the workplace must be conducted to identify overhead hazards (structural and utility interferences), surface hazards (i.e. holes, bumps, uneven surfaces, drop-offs, obstructions, mud, debris, and inadequate ground/floor support).
2. Floor holes, floor openings and drop offs shall be adequately covered, protected, and guarded. Stop blocks installed along the drop off to prevent the operator from driving into the hazard is required. For example, two 2x4's stacked on top of each other and secured to the floor with tap cons (or equivalent) is an accepted practice.
3. A structural engineer shall verify the loading capacity of an elevated deck/floor, or roof, before a lift is placed in that area. This will be typically taken care of by the General Contractor. This documentation should be made readily available for review on site.

G. Machine Inspection

1. Prior to use, all lifts must be inspected per the manufacturer's recommendations. Any deficiencies must be corrected before the machine is put into service. If a machine is taken out of service due to deficiencies, the equipment must be locked out or tagged out and removed from the site. This pre-use equipment inspection form shall be kept with the machine and be always available for inspection during operation.
2. Scissor lifts must be equipped with functional pothole protectors.

H. Safe Operating Procedures

1. No equipment attachments/modifications are allowed without manufacturer's approval.
2. An Aerial lift shall not be moved when the boom is elevated in a working position.
3. An aerial lift or scissor lift must never be used as a crane or for material handling unless approved for that use by the manufacturer.
4. Safety devices and interlocks shall not be by-passed.
5. Emergency stop must be engaged when equipment is not in motion.
6. Trash, excess material, and tools shall be removed from the lift frequently.

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7. Aerial lift and scissor lift operations must be shut down when wind conditions exceed the manufacturer's operating limits.
8. When working outside the confines of the guardrail, the lift shall not be used as an anchor point.
9. Employees shall always stand firmly on the floor of the basket and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.
10. An approved fall restraint system shall be worn when working from an aerial lift. The fall restraint system must be attached to the manufacturers approved tie off and it i
11. Cords and hoses shall never be secured to the rails of a lift unless they incorporate a break-away method to disconnect the cord or hose should it become snagged on equipment or structures.
12. Temporary barricades are required around lifts when they present an overhead hazard to surrounding areas or when exposed to vehicular traffic.

I. Tipping Hazards

1. Ground conditions must be adequate to support the equipment.
2. Allowable slope and grade conditions must not be exceeded.
3. Maximum working and/or occupancy loads must not be exceeded.
4. Wheel chocks shall be installed before using an aerial lift on an incline.
5. Never load an aerial lift or scissor lift onto the bed of a vehicle from an inclined position.

J. Fall Hazards

1. Quality Electric's policy requires 100% tie off in aerial lifts (i.e. articulating platforms, etc.).
2. When working inside of a scissor lift with properly maintained guardrails, 100% tie-off is not required unless the manufacturer recommends it or if the project requires it.
3. All gates and rails must be secured in the proper position.
4. Using steps, planks, or standing on guardrails to increase reach is prohibited. Employees shall always stand firmly on the floor of the basket and shall not sit or climb on the edge of the basket.

K. Electrocution Hazard

1. Safe clearance must be maintained from all electrical lines per the table below.

Minimum Safe Approach Distances

Voltage Range (Phase to Phase)	Minimum Safe Approach Distance (Feet / Meters)
0 to 50 KV	10 (3)
Over 50KV to 200KV	15 (5)
Over 200KV to 350KV	20 (6)
Over 350KV to 500KV	25 (8)
Over 500KV to 750KV	35 (11)
Over 750KV to 1000KV	45 (14)

L. Annexes

1. Inspections and Checklists:
 - MEWP Daily Inspection Checklist



Equipment Operators Daily Inspection Checklist

Job Name: _____
Unit #: _____
Company: _____

Hour Meter Reading _____
(Start of the Week)

Type of Equipment

☐ Forklift ☐ Manlift ☐ Scissorlift ☐ Skidsteer

This check must be made by the operator prior to use for each shift


	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday	
Daily Inspection Checklist for Week Beginning _____, 20__	OK	Needs Attn.	OK	Needs Attn.	OK	Needs Attn.	OK	Needs Attn.	OK	Needs Attn.	OK	Needs Attn.	OK	Needs Attn.
1. Platform Controls+A8:C35														
2. Handrail Installation														
3. Platform Assembly														
4. Ladder														
5. Lift Cylinder														
6. Limit Switch														
7. Scissor Arms and Sliding Pads														
8. Manual Descent Cable and Pull Handle														
9. Drive Motor														
10. Steer Cylinder and Linkage														
11. Compartment Cover and Latches														
12. Battery														
13. Built - In Charger														
14. Motor / Pump Unit														
15. Tilt Switch														
16. Hydraulic Reservoir														
17. Ground Controls														
18. Wheel and Tire Assembly														

Operator's Signature: _____

Comments:

Equipment Operators Daily Inspection Checklist



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Section 16: Cranes, Hoisting, and Rigging

A. Policy Statement

The intent of this policy is to outline the rigging equipment requirements and operating practices required on all Quality Electric projects.

B. Definitions

1. **Qualified Rigger** - one who has a recognized degree, certificate or by knowledge, training and experience has successfully demonstrated the ability to solve/resolve problems related to rigging

C. Hoists and Cranes


The proper installation, operation, testing and maintenance of cranes and hoisting devices are a continuing responsibility of the owner/user. All hoists and cranes should be inspected per OSHA guidelines. This includes annual, as well as daily pre-use inspections. These should be documented, signed, and dated. Special attention should be paid to load hooks, ropes, brakes and limit switches.

- The safe load capacity of each hoist should be clearly posted on the hoist body.
- All employees working with hoisting apparatus should be trained on safe lifting/rigging practices and operating rules. The operator is responsible for compliance to safe procedures and to maintaining safe operating conditions of the lifting equipment.
- A load should be picked up only when it is directly under the hoist.
- All hoists should be attached to their supports and have adequate design factor for the maximum loads to be hoisted.
- All lifting hooks will have operating safety latches.
- All slings will be inspected prior to use.
- Each control cord should be nonconductive unless they are grounded.
- Each control cord should be clearly marked "hoist" or "lower."
- Equipment should be kept away from energized power lines.
- When a crane is being used, standard hand signals should be posted at the site. Employees operating the crane should be trained in the hand signals, as per the construction industry guidelines.
- Only trained and certified employees should be allowed to operate any hoisting or crane device.

D. Rigging Material Handling

1. Purpose

The purpose of this program is to ensure a safe and incident free lifting operation.

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2. Scope

When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Quality Electric employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

3. Key Responsibilities

The Southwest JATC training facility is the qualified trainer to supply and document Rigging training.

Supervisors shall verify that each of their employees have the proper training before being involved in rigging operations.

Only qualified and trained personnel can attach or detach lifting equipment to loads or lifting loads.


4. Procedure

a) General

Only "qualified riggers" are allowed to attach any loads to a lifting hook and only "qualified operators" are allowed to operate a crane while engaged in lifting operations.

b) Material Handling

- Rigging equipment shall be inspected to ensure it is safe. Rigging equipment for material handling shall be inspected prior to use and on each shift and as necessary during its use to ensure that equipment is safe.
- Defective rigging shall be removed from service. Defective equipment shall not be used and removed from service immediately.
- Rigging equipment shall not be loaded in excess of its recommended safe working load. Rigging equipment shall not be loaded beyond its recommended safe working load and load identification shall be attached to the rigging.
- Rigging equipment not in use shall be removed from the immediate work area so as not to present a hazard to employees.
- Tag lines shall be used unless their use creates an unsafe condition.
- Latches will be in place on all hooks, eliminating the hook throat opening. Hooks on overhaul ball assemblies, lower load blocks, or other attachment assemblies shall be a type that can be closed and locked, eliminating the hook throat opening. Alternatively, an alloy anchor type shackle with a bolt, nut and retaining pin may be used.
- All employees shall be kept clear of loads about to be lifted and of suspended loads. No employee shall be allowed under a suspended load.

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5. Training and Education

Quality Electric employees shall display their competency in the following topics:

The selection of proper hardware (eye bolts, shackles, hooks, wire rope products, synthetic slings, chain slings, etc.) for the correct application (weight, hitches, angles, temperatures, center of gravity, etc.).


- The inspection of the selected hardware before, during and after the lift.
- The proper methods of securing the load, attaching the load to the hook, lifting the load, handling of the load during the movement of the load and lowering and placement of load.
- The proper storage of the rigging equipment.

All Quality Electric employees shall re-certify their training on a four (4) year basis

E. Rigging

1. General:

- Riggers must be designated and qualified in accordance with current ASME and OSHA regulations in the type and scope of their work.
- Rigging equipment shall:
 - Have permanently affixed and legible identification markings as prescribed by the manufacturer that indicates the recommended safe working load for types of hitches and number of sling legs
 - Not be loaded in excess of its recommended safe working load as prescribed on the identification markings by the manufacturer
 - Never be overloaded in excess of the manufacturer's safe working load
 - Not be shortened with knots or bolts or other makeshift devices
 - Be padded or protected from the sharp edges of their loads
 - Not be shock loaded
 - Not be pulled from under a load when the load is resting on the sling.
 - Due to quality control concerns, rigging equipment manufactured in China is not allowed to be used on JE Dunn projects.
- Special designed hooks, clamps or other special rigging devices shall be marked with the maximum safe working load and be proof loaded to 125% of rated load.
- Hands or fingers shall not be placed between the sling and its load while the sling is being tightened around the load.
- Sling legs shall not be kinked.
- Slings used in a basket hitch shall have the loads balanced to prevent slippage.
- Rigging equipment, when not in use, shall be removed from the immediate work area so as not to present a hazard to employees.
- When utilizing four individual single legged slings to rig a load, the total capacity of rigging shall be figured by only using three legs.
- Rigging at angles greater than 30 degrees is prohibited unless approved by the qualified rigger.

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2. *Inspections:*

- a) Rigging equipment including fastenings devices and attachments shall be inspected daily before first use for damage or defects by a competent person.
- b) Any rigging that does not meet the minimum requirements of this manual shall be tagged and removed from service. If the rigging device is rendered not usable or not repairable, the equipment shall be cut in half before discarding in the trash.
- c) Additional inspection criteria for chain slings are required.

3. *Synthetic slings:*


- a) Synthetic web slings shall be immediately removed from service if any of the following conditions are present:
 - (1) Snags, punctures, tears or cuts
 - (2) Broken or worn stitches
 - (3) Melting or charring of any part of the sling surface
 - (4) Acid or caustic burns
 - (5) When synthetic web slings are used, the following precautions shall be taken:
 - (a) Nylon, polyester, and polypropylene web slings shall not be used where fumes, vapors, sprays, mists or liquids of acids or phenolic are present
 - (b) Synthetic web slings of polyester and nylon shall not be used at temperatures in excess of 180 deg. F (82.2 deg. C). Polypropylene web slings shall not be used at temperatures in excess of 200 deg. F (93.33 deg. C).

4. *Wire rope slings:*

- a) Wire rope shall not be used if:
 - (1) In any length of eight diameters, the total number of visible broken wires exceeds 10 percent of the total number of wires
 - (2) If there are more than 5 visible broken wires in one strand of a lay length or 10 broken wires in any part of the rope in one lay length
 - (3) If the rope shows other signs of excessive wear, corrosion, or defect.
- b) Protruding ends of strands in splices on slings and bridles shall be covered or blunted.
- c) Wire rope shall not be secured by knots.
- d) Except for eye splices in the ends of wires and for endless rope slings, each wire rope used in hoisting or lowering, or in pulling loads, shall consist of one continuous piece without knot or splice.
- e) Eyes in wire rope bridles, slings, or bull wires shall not be formed by wire rope clips or knots.

5. *Chain slings:*

- a) Only alloy type chain slings shall be used for hoisting a load. Load or log chains or any chain without a tag identifying its capacity as a hoisting chain shall not be used.

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- b) Employers must not use alloy steel-chain slings with loads in excess of the rated capacities (i.e., working load limits) indicated on the sling by permanently affixed and legible identification markings prescribed by the manufacturer.
- c) In addition to the inspection required, a thorough periodic inspection of alloy steel chain slings shall be made on a regular basis, based on frequency of sling use, severity of service conditions, and nature of lifts being made. Such inspections shall in no event be at intervals greater than once every 12 months. A record of the most recent month in which each alloy steel chain sling was thoroughly inspected shall be maintained and made available for examination.
- d) Conditions to look for are:
 - Bent or twisted or deformed links
 - Cracked links
 - Gouges, chips, or cuts
 - Small dents, peen marks, and bright polished surfaces which usually indicate fatigue
 - Severe corrosion, pitting resulting in material loss
 - Links wear at the point of link contact.
- e) Whenever wear at any point of any chain link exceeds that shown in the table below, the assembly shall be removed from service.
- f) Chains not meeting the inspection requirements of this section shall be tagged and removed from service.
- g) Never weld on chain slings.

6. **End attachments:**

- a) Welding of end attachments, except covers to thimbles, shall be performed prior to the assembly of the sling.
- b) All welded end attachments shall not be used unless proof tested by the manufacturer or equivalent entity at twice their rated capacity prior to initial use. The employer shall retain a certificate of proof test and make it available for examination.
- c) Employers must not use shackles with loads in excess of the rated capacities (i.e., working load limits) indicated on the shackle.

7. **Wire rope clips:**

- a) When U-bolt wire rope clips are used to form eyes in wire rope, table below shall be used to determine the number and spacing of clips.
- b) When used for eye splices, the U-bolt shall be applied so that the "U" section is in contact with the dead end of the rope (never saddle a dead horse).
- c) The forming of eyes in slings with wire rope clips is prohibited.

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Maximum Allowable Wear at Any Point of Link

Chain Size (Inches)	Maximum Allowable Wear (Inch)
1/4	3/64
3/8	5/64
1/2	7/64
5/8	9/64
3/4	5/32
7/8	11/64
1	3/16
1-1/8	7/32
1-1/4	1/4
1-3/8	9/32
1-1/2	5/16
1-3/4	11/32

F. Annexes

1. Guidelines:

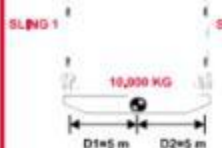
- Calculating a Load
- Chain Sling Capacities
- Shackle Capacities
- Sling Angle Effect on Capacities
- Wedge Sockets
- Wire Rope Clip Installation
- Wire Rope Sling Capacities

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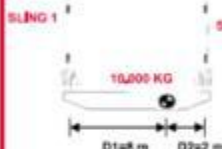
Rigging Information

CENTER OF GRAVITY AND SLING LOADING

WHEN LIFTING VERTICALLY, THE LOAD WILL BE SHARED EQUALLY IF THE CENTER OF GRAVITY IS PLACED EQUALLY BETWEEN THE PICK POINTS. IF THE WEIGHT OF LOAD IS 10,000 KG, THEN EACH SLING WILL HAVE A LOAD OF 5,000KG AND EACH SHACKLE AND EYEBOLT WILL ALSO HAVE A LOAD OF 5,000 KG.



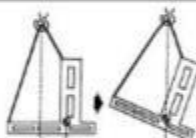
WHEN THE CENTER OF GRAVITY IS NOT EQUALLY SPACED BETWEEN THE PICK POINTS, THE SLINGS AND FITTINGS WILL NOT CARRY AN EQUAL SHARE OF THE LOAD. THE SLING CONNECTED TO THE PICK POINT CLOSEST TO THE CENTER OF GRAVITY WILL CARRY THE GREATEST SHARE OF THE LOAD.



SLING 2 : $10,000 \times 8 / (8 + 2) = 8,000 \text{ KG}$
SLING 1 : $10,000 \times 2 / (8 + 2) = 2,000 \text{ KG}$

LOAD STABILITY AND THE CENTER OF GRAVITY

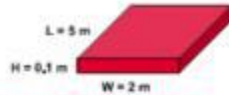
CONNECTION TO THE LOAD MUST BE MADE ABOVE THE CENTER OF GRAVITY. IF NOT, THE LOAD IS UNSTABLE AND WILL SHIFT. KEEP DISTANCE FROM COG TO SLING AS LARGE AS POSSIBLE.



CALCULATE WEIGHT

EXAMPLE - FLATS

WEIGHT = $L \times W \times H \times \text{UNIT WEIGHT}$

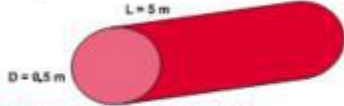


IF STEEL: UNIT WEIGHT = $7,85 \text{ t/m}^3$
WEIGHT = $5 \text{ m} \times 2 \text{ m} \times 0,1 \text{ m} \times 7,85 \text{ t/m}^3 = 7,85 \text{ t}$
IF ALUMINUM: UNIT WEIGHT = $2,64 \text{ t/m}^3$
WEIGHT = $5 \text{ m} \times 2 \text{ m} \times 0,1 \text{ m} \times 2,64 \text{ t/m}^3 = 2,64 \text{ t}$
IF CONCRETE: UNIT WEIGHT = $2,40 \text{ t/m}^3$
WEIGHT = $5 \text{ m} \times 2 \text{ m} \times 0,1 \text{ m} \times 2,40 \text{ t/m}^3 = 2,40 \text{ t}$

CALCULATE WEIGHT

EXAMPLE - SOLID CYLINDER

WEIGHT = $\frac{\pi \times D^2 \times L \times \text{UNIT WEIGHT}}{4}$




IF STEEL: UNIT WEIGHT = $7,85 \text{ t/m}^3$
WEIGHT = $\frac{\pi \times 0,5^2 \times 5 \text{ m} \times 7,85 \text{ t/m}^3}{4} = 7,70 \text{ t}$
IF CONCRETE: UNIT WEIGHT = $2,40 \text{ t/m}^3$
WEIGHT = $\frac{\pi \times 0,5^2 \times 5 \text{ m} \times 2,40 \text{ t/m}^3}{4} = 2,35 \text{ t}$

WIRE ROPE SLINGS AND CONNECTIONS TO FITTINGS

USE A THIMBLE TO PROTECT SLING AND TO INCREASE D/d RATIO.


NEVER PLACE EYE OVER A FITTING WITH A SMALLER DIAMETER OR WIDTH THAN THE ROPE'S DIAMETER.




WIRE ROPE SLINGS AND CONNECTIONS TO FITTINGS

NEVER PLACE A SLING EYE GREATER THAN ONE HALF THE NATURAL LENGTH OF THE EYE (L).

$1/3(L)$ FOR SYNTHETICS.



BASKET HITCH



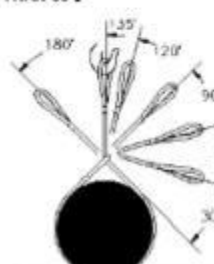

A BASKET HITCH HAS TWICE THE CAPACITY OF A SINGLE LEG ONLY IF THE D/d RATIO $\geq 25/1$ AND LEGS OF SLING ARE VERTICAL.

AT OTHER ANGLES, SEE TABLE.


ANGLE β	PERCENTAGE OF SINGLE LEG CAPACITY
0	200%
30	170%
45	140%
60	100%

CHOKER HITCHES



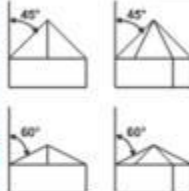
A CHOKER HITCH HAS 80% OF THE CAPACITY OF A SINGLE LEG ONLY IF THE CORNERS ARE SOFTENED AND THE VERTICAL SLING ANGLE β IS SMALLER THAN 60°. USE BLOCKS TO PREVENT ANGLES GREATER THAN 60°.



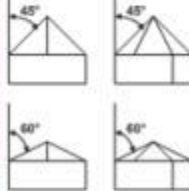




ANGLE OF CHOKE	SLING RATED LOAD PERCENTAGE OF SINGLE LEG SLING CAPACITY
120° - 180°	80%
90° - 119°	65%
60° - 89°	55%
30° - 59°	40%





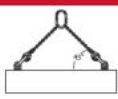

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Rigging Information

CHAIN SLING CAPACITIES (t) - GRADE 8/80 IN ACCORDANCE EN 818-4							13
							<p>A CHOKER HAS 80% OF THE CAPACITY OF A SINGLE LEG ONLY IF THE CORNERS ARE SOFTENED AND THE VERTICAL ANGLE β IS SMALLER THAN 60°.</p>  <p>USE BLOCKS TO PREVENT ANGLES GREATER THAN 60°.</p>  <p>TRIPLE LEG SLINGS HAVE 50% MORE CAPACITY THAN DOUBLE LEG ONLY IF THE CENTER OF GRAVITY IS IN THE CENTER OF CONNECTION POINT AND THE LEGS ARE ADJUSTED PROPERLY. (EQUAL SHARE OF THE LOAD)</p> <p>QUAD LEG SLINGS OFFER IMPROVED STABILITY BUT DO NOT PROVIDE INCREASED LIFTING CAPACITY.</p>
CHAIN SIZE MM	VERTICAL (SINGLE LEG) t	TWO LEG SLINGS		THREE & FOUR LEG SLINGS		CHOKER t	
		$0^\circ < \beta \leq 45^\circ$ t	$45^\circ < \beta \leq 60^\circ$ t	$0^\circ < \beta \leq 45^\circ$ t	$45^\circ < \beta \leq 60^\circ$ t		
6	1,12	1,60	1,12	2,36	1,70	0,90	
7	1,50	2,12	1,50	3,15	2,24	1,20	
8	2,00	2,80	2,00	4,25	3,00	1,60	
10	3,15	4,25	3,15	6,70	4,75	2,50	
13	5,30	7,50	5,30	11,20	8,00	4,25	
16	8,00	11,20	8,00	17,00	11,80	6,40	
19	11,20	16,00	11,20	23,60	17,00	9,00	
22	15,00	21,20	15,00	31,50	22,40	12,00	
26	21,20	30,00	21,20	45,00	31,50	17,00	
32	31,50	45,00	31,50	67,00	47,50	25,20	
INSPECTION OF CHAIN SLINGS							
<p>ALL SLINGS AND ATTACHMENTS SHALL BE VISUALLY INSPECTED BY THE PERSON HANDLING THE SLING EACH DAY THEY ARE USED. IN ADDITION, A PERIODIC INSPECTION SHALL BE PERFORMED BY A DESIGNATED PERSON, AT LEAST ANNUALLY, AND SHALL INCLUDE A RECORD OF THE INSPECTION.</p> <p>INSPECTION CRITERIA</p> <p>WEAR: NICKS, CRACKS, BREAKS, GOUGES, STRETCH, BENDS</p> <p>WELD SPATTER, EXCESSIVE TEMPERATURE, THROAT OPENING OF HOOK</p> <p>IDENTIFICATION</p> <p>CHAIN SLINGS SHALL HAVE PERMANENTLY AFFIXED IDENTIFICATION STATING: SIZE, GRADE, RATED LOAD, VERTICAL SLING ANGLE, NAME OF MANUFACTURER AND CE (EN818-4)</p> <p>CHAIN LINKS</p> <p>REMOVE SLING FROM SERVICE IF LINKS ARE WORN EXCESSIVELY (MORE THAN 10% OR REFER TO MANUFACTURER'S INFORMATION). SHARP TRANSVERSE NICKS AND GOUGES SHOULD BE ROUNDED OUT BY GRINDING (DO NOT EXCEED WEAR ALLOWANCE). CHAIN LINKS AND ATTACHMENTS SHOULD HINGE FREELY TO ADJACENT LINKS.</p>							

CHAIN SLING CAPACITIES (t) - GRADE 10/100							14
							<p>A CHOKER HAS 80% OF THE CAPACITY OF A SINGLE LEG ONLY IF THE CORNERS ARE SOFTENED AND THE VERTICAL ANGLE β IS SMALLER THAN 60°.</p>  <p>USE BLOCKS TO PREVENT ANGLES GREATER THAN 60°.</p>  <p>TRIPLE LEG SLINGS HAVE 50% MORE CAPACITY THAN DOUBLE LEG ONLY IF THE CENTER OF GRAVITY IS IN THE CENTER OF CONNECTION POINT AND THE LEGS ARE ADJUSTED PROPERLY. (EQUAL SHARE OF THE LOAD)</p> <p>QUAD LEG SLINGS OFFER IMPROVED STABILITY BUT DO NOT PROVIDE INCREASED LIFTING CAPACITY.</p>
CHAIN SIZE MM	VERTICAL (SINGLE LEG) t	TWO LEG SLINGS		THREE & FOUR LEG SLINGS		CHOKER t	
		$0^\circ < \beta \leq 45^\circ$ t	$45^\circ < \beta \leq 60^\circ$ t	$0^\circ < \beta \leq 45^\circ$ t	$45^\circ < \beta \leq 60^\circ$ t		
6	1,40	2,00	1,40	3,00	2,12	1,12	
7	2,00	2,80	2,00	4,20	3,00	1,60	
8	2,50	3,55	2,50	5,30	3,75	2,00	
10	4,00	5,60	4,00	8,00	6,00	3,20	
13	6,70	9,50	6,70	14,00	10,00	5,35	
16	10,00	14,00	10,00	21,20	15,00	8,00	
19	14,00	20,00	14,00	30,00	21,00	11,20	
22	18,75	26,50	18,75	39,40	28,00	15,00	
26	26,50	37,00	26,50	55,50	40,00	21,20	
32	40,00	56,00	40,00	85,00	60,00	32,50	
INSPECTION OF CHAIN SLINGS							
<p>ALL SLINGS AND ATTACHMENTS SHALL BE VISUALLY INSPECTED BY THE PERSON HANDLING THE SLING EACH DAY THEY ARE USED. IN ADDITION, A PERIODIC INSPECTION SHALL BE PERFORMED BY A DESIGNATED PERSON, AT LEAST ANNUALLY, AND SHALL INCLUDE A RECORD OF THE INSPECTION.</p> <p>INSPECTION CRITERIA</p> <p>WEAR: NICKS, CRACKS, BREAKS, GOUGES, STRETCH, BENDS</p> <p>WELD SPATTER, EXCESSIVE TEMPERATURE, THROAT OPENING OF HOOK</p> <p>IDENTIFICATION</p> <p>CHAIN SLINGS SHALL HAVE PERMANENTLY AFFIXED IDENTIFICATION STATING: SIZE, GRADE, RATED LOAD, VERTICAL SLING ANGLE, NAME OF MANUFACTURER AND CE (EN818-4)</p> <p>CHAIN LINKS</p> <p>REMOVE SLING FROM SERVICE IF LINKS ARE WORN EXCESSIVELY (MORE THAN 10% OR REFER TO MANUFACTURER'S INFORMATION). SHARP TRANSVERSE NICKS AND GOUGES SHOULD BE ROUNDED OUT BY GRINDING (DO NOT EXCEED WEAR ALLOWANCE). CHAIN LINKS AND ATTACHMENTS SHOULD HINGE FREELY TO ADJACENT LINKS.</p>							


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CHAIN SLING CAPACITIES (LBS) - ASME B30.9 - DESIGN FACTOR OF 4							7
GRADE 8 (80)							
CHAIN SIZE (IN.)							
CHAIN GR - 8 DESIGN FACTOR 4:1	VERTICAL (SINGLE LEG)	SINGLE-LEG VERTICAL CHOKER HITCH	TWO LEG OR BASKET HITCH	60 DEGREE SLING ANGLE	45 DEGREE SLING ANGLE	30 DEGREE	
1/4 - (9/32)	3500	2800	7000	6100	4900	3500	
3/8	7100	5700	14200	12300	10000	7100	
1/2	12000	9600	24000	20800	17000	12000	
5/8	18100	14500	36200	31300	25600	18100	
3/4	28300	22600	56600	49000	40000	28300	
7/8	34200	27400	68400	59200	48400	34200	
1	47700	38200	95400	82600	67400	47700	
1-1/4	72300	57800	144600	125200	102200	72300	
GRADE 10 (100)							
CHAIN GR - 10 DESIGN FACTOR 4:1	VERTICAL (SINGLE LEG)	SINGLE-LEG VERTICAL CHOKER HITCH	TWO LEG OR BASKET HITCH	60 DEGREE SLING ANGLE	45 DEGREE SLING ANGLE	30 DEGREE	
1/4 - (9/32)	4300	3500	8600	7400	6100	4300	
5/16	5700	4500	11400	9900	8100	5700	
3/8	8800	7100	17600	15200	12400	8800	
1/2	15000	12000	30000	26000	21200	15000	
5/8	22600	18100	45200	39100	32000	22600	
RATED LOADS BASED ON COMPONENTS OF PROPER SHAPE AND SIZE. COMPONENTS MUST SEAT PROPERLY IN THE LOAD HOOK. FOR CHOKER HITCHES, THE ANGLE OF CHOKE SHALL BE 120 DEGREES OR GREATER.							


FOR SLING ANGLES OTHER THAN THOSE SHOWN, USE THE RATED LOAD FOR THE NEXT LOWER ANGLE OR A QUALIFIED PERSON SHALL CALCULATE THE RATED LOAD.

HORIZONTAL SLING ANGLES OF LESS THAN 30 DEGREES ARE NOT RECOMMENDED.


THE CAPACITY OF A BRIDLE AT 30 DEGREES HORIZONTAL ANGLE IS SAME AS SINGLE VERTICAL LEG.

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SHACKLES (ALL TYPES) --Weldless Construction --Forged Alloy Steel		
Stock Diameter (Inches)	Inside Width at Pin (Inches)	Max. Safe Working Load - Single Vertical Pull (Pounds)
3/16	3/8	665
1/4	15/32	1,000
5/16	17/32	1,500
3/8	21/32	2,000
7/16	23/32	3,000
1/2	13/16	4,000
5/8	1-1/16	6,500
3/4	1-1/4	9,500
7/8	1-7/16	13,000
1	1-11/16	17,000
1-1/8	1-13/16	19,000
1-1/4	2-1/32	24,000
1-3/8	2-1/4	27,000
1-1/2	2-3/8	34,000
1-3/4	2-7/8	50,000
2	3-3/4	70,000
2-1/2	4-1/8	100,000
3	5	150,000
3-1/2	5-3/4	200,000
4	6-1/2	260,000

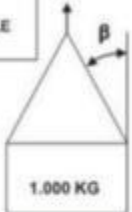
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SLING ANGLES
8



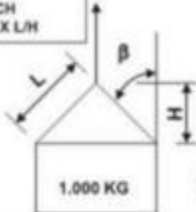
1,000 KG

LOAD =
500 X LOAD ANGLE
FACTOR



1,000 KG

LOAD IN EACH
SLING = 500 X L/H

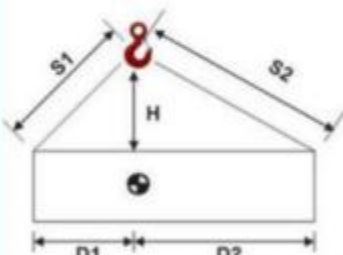


1,000 KG

VERTICAL SLING ANGLE β	LOAD ANGLE FACTOR = L/H
0°	1.00
30°	1.16 (1.2)
45°	1.41 (1.4)
60°	2.00 (2.0)

LOAD ON EACH LEG OF SLING =
VERTICAL LOAD X LOAD ANGLE FACTOR

UNEQUAL LEGS



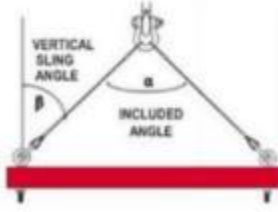
LOAD ON SLING CALCULATED
TENSION 1= LOAD X D2 X S1/H(D1 + D2)
TENSION 2= LOAD X D1 X S2/H(D1 + D2)


SLING LENGTH FOR DESIRED ANGLE


VERTICAL ANGLE	LENGTH FACTOR	L/H
60 DEGREES	1.15	2
50 DEGREES	1.31	1.55
45 DEGREES	1.41	1.4
40 DEGREES	1.55	1.3
35 DEGREES	1.74	1.21
30 DEGREES	2	1.16

LENGTH = D X (LENGTH FACTOR)
(D = DISTANCE PICK-UP POINT → C.O.G.)

**VERTICAL SLING ANGLE =
1/2 INCLUDED ANGLE**



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WEDGE SOCKETS


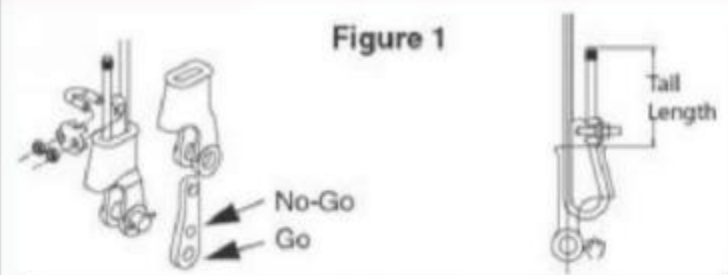
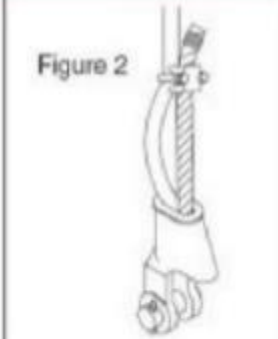

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Figure 1




Tail Length	
Standard 6 to 8 strand wire rope	Rotation Resistant Wire Rope
A minimum of 6 rope diameter, but not less than 150mm.	A minimum of 20 rope diameters, but not less than 150mm.

Figure 2




WRONG



ASSEMBLY SAFETY

- USE ONLY WITH STANDARD 6 TO 8 STRAND WIRE ROPE OF DESIGNATED SIZE. FOR INTERMEDIATE SIZE ROPE, USE NEXT LARGER SIZE SOCKET. TAIL LENGTH OF DEAD END AS PER FIGURE 1.
- ALIGN LIVE END OF ROPE, WITH CENTER OF PIN. (SEE FIGURE 1) 
- SECURE DEAD END SECTION OF ROPE. (SEE FIGURE 1)
- DO NOT ATTACH DEAD END TO LIVE END. (SEE FIGURE 2)
- USE A HAMMER TO SEAT WEDGE AND ROPE AS DEEP INTO SOCKET AS POSSIBLE BEFORE APPLYING FIRST LOAD.
- REFER TO FIGURE 1 FOR ASSEMBLY OF **Crosby** TERMINATOR WEDGE SOCKET.
- DEAD END SHOULD ALSO BE WELDED, BRAZED OR SEIZED BEFORE INSERTING.

OPERATING SAFETY

- APPLY FIRST LOAD TO FULLY SEAT THE WEDGE AND WIRE ROPE IN THE SOCKET. THIS LOAD SHOULD BE OF EQUAL OR GREATER WEIGHT THAN LOADS EXPECTED IN USE.
- EFFICIENCY RATING OF THE WEDGE SOCKET TERMINATION IS BASED UPON THE CATALOG BREAKING STRENGTH OF WIRE ROPE. THE EFFICIENCY OF A PROPERLY ASSEMBLED WEDGE SOCKET IS 80%.

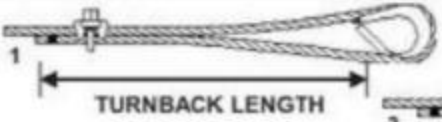


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WIRE ROPE CLIPS

SIZE		EFFICIENCY	NUMBER OF CLIPS	TURNBACK LENGTH MM	TORQUE Nm
INCH	MM				
1/8	3 - 4	80%	2	85	6.1
3/16	5	80%	2	95	10.2
1/4	6 - 7	80%	2	120	20.3
5/16	8	80%	2	133	40.7
3/8	9 - 10	80%	2	165	61
7/16	11	80%	2	178	88
1/2	12 - 13	80%	3	292	88
9/16	14 - 15	80%	3	305	129
5/8	16	80%	3	305	129
3/4	18 - 20	80%	4	460	176
7/8	22	80%	4	480	305
1	24 - 26	90%	5	660	305




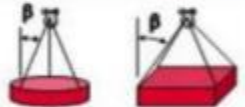
•APPLY U-BOLT OVER DEAD END OF THE WIRE ROPE, LIVE END OF THE ROPE RESTS IN THE SADDLE; **NEVER SADDLE A DEAD HORSE!**
 •USE THE RECOMMENDED NUMBER OF CLIPS AND APPLY THE RECOMMENDED TORQUE AS SPECIFIED IN THE TABLE.
 •A TERMINATION IS ONLY FINISHED WHEN IT HAS BEEN LOADED AT THE REQUIRED WLL AND THE NUTS HAVE BEEN RETORQUED A SECOND TIME.






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Rigging Information

INSPECTION OF HARDWARE	INSPECTION OF WIRE ROPE SLINGS 11										
<p>DEFORMATION</p> <p>REMOVE FROM SERVICE IF ANY SIGNIFICANT DEFORMATION. CHECK THROAT OPENING OF HOOKS.</p> <p>WEAR</p> <p>REMOVE FROM SERVICE IF EXCESSIVE WEAR. WEAR IS EXCESSIVE IF:</p> <ul style="list-style-type: none"> MORE THAN 5% WEAR IN THROAT OR EYE OF HOOK AND OTHER CRITICAL AREAS OF HARDWARE. MORE THAN 10% WEAR IN OTHER AREAS. <p>CRACKS, NICKS, GOUGES</p> <p>REMOVE FROM SERVICE IF CRACKS, NICKS, OR GOUGES ARE DETECTED.</p> <p>MODIFICATION</p> <p>DO NOT WELD, DO NOT SUBSTITUTE SHACKLES PINS OR OTHER COMPONENTS, DO NOT HEAT, BEND OR MODIFY IN ANY MANNER.</p> <p>PROPER FUNCTION</p> <p>IMPROPERLY INSTALLED HARDWARE OR MALFUNCTION IS CAUSE FOR REMOVAL. CHECK FOR LATCHES, SWIVEL BEARINGS, LOCKING DEVICES, AND INSTALLATION OF WIRE ROPE CLIPS AND WEDGE SOCKETS.</p>	<p>ALL SLINGS AND ATTACHMENTS SHALL BE VISUALLY INSPECTED BY THE PERSON HANDLING THE SLING EACH DAY THEY ARE USED. IN ADDITION, A PERIODIC INSPECTION SHALL BE PERFORMED BY A COMPETENT PERSON, AT LEAST ONCE EVERY 6 MONTHS (OR PER LEGAL REQUIREMENTS) AND SHALL INCLUDE A RECORD OF THE INSPECTION.</p> <p>INSPECTION CRITERIA</p> <table> <tr> <td>KINKING</td><td>CORE PROTRUSION</td></tr> <tr> <td>CRUSHING</td><td>CORROSION</td></tr> <tr> <td>UNSTRANDING</td><td>BROKEN OR CUT STRANDS</td></tr> <tr> <td>BIRDCAGING</td><td>BROKEN WIRES</td></tr> <tr> <td>STRAND DISPLACEMENT</td><td></td></tr> </table> <p>BROKEN WIRES</p> <p>REFER TO THE APPLICABLE STANDARDS SUCH AS ISO 4309 WITH SPECIFIC DISCARD CRITERIA AND GUIDANCE REGARDING THE NUMBER OF BROKEN WIRES.</p> <p>DISTORTION OF WIRE ROPE</p> <p>REMOVE FROM SERVICE WIRE ROPE SLINGS THAT HAVE ANY DAMAGE RESULTING IN DISTORTION OF THE WIRE ROPE STRUCTURE SUCH AS KINKING, CRUSHING, UNSTRANDING, BIRD CAGING, STRAND DISPLACEMENT OR CORE PROTRUSION.</p>	KINKING	CORE PROTRUSION	CRUSHING	CORROSION	UNSTRANDING	BROKEN OR CUT STRANDS	BIRDCAGING	BROKEN WIRES	STRAND DISPLACEMENT	
KINKING	CORE PROTRUSION										
CRUSHING	CORROSION										
UNSTRANDING	BROKEN OR CUT STRANDS										
BIRDCAGING	BROKEN WIRES										
STRAND DISPLACEMENT											
Remember - "When buying Crosby, you're buying more than product, you're buying <i>Quality</i> ."											

WIRE ROPE SLING CAPACITIES (t) (refer to standard EN13414-1) 12								
WORKING LOAD LIMITS FOR SLINGS USING STEEL CORED ROPE OF CLASSES 6X19, 6X36 AND 8X36 AND HAVING FERRULE-SECURED EYE TERMINATIONS TENSILE STRENGTH 1770 kN/mm ² DESIGN FACTOR 5 / 1								
WIRE ROPE SIZE		Q&T CARB. SHACKLE MIN. SHACKLE SIZE FOR A Dlg ≥ 1 AT LOAD CONNECTION						
MM	MBL (kN)	SHACKLE SIZE (NCH)	VERTICAL (SINGLE LEG)	CHOKER	TWO LEG SLINGS		THREE AND FOUR LEG SLINGS	
			t	t	0° < β ≤ 45°	45° < β ≤ 60°	0° < β ≤ 45°	45° < β ≤ 60°
8	40.3	3/8	0.75	0.60	1.05	0.75	1.55	1.10
10	63.0	7/16	1.15	0.92	1.60	1.15	2.40	1.70
12	90.7	1/2	1.70	1.36	2.30	1.70	3.55	2.50
13	106	5/8	2.00	1.60	2.80	2.00	4.15	3.00
14	124	5/8	2.25	1.80	3.15	2.25	4.80	3.40
16	161	3/4	3.00	2.40	4.20	3.00	6.30	4.50
18	204	7/8	3.70	2.96	5.20	3.70	7.80	5.65
20	252	7/8	4.60	3.68	6.50	4.60	9.80	6.90
22	305	1	5.65	4.52	7.80	5.65	11.80	8.40
24	363	1-1/8	6.70	5.36	9.40	6.70	14.00	10.00
26	426	1-1/8	7.80	6.24	11.00	7.80	16.50	11.50
28	494	1-1/4	9.00	7.20	12.50	9.00	19.00	13.50
32	645	1-3/8	11.80	9.44	16.50	11.80	25.00	17.50
36	817	1-1/2	15.00	12.00	21.00	15.00	31.50	22.50
RATED CAPACITIES (t) BASED ON PIN DIAMETER OR HOOK NO LARGER THAN THE NATURAL EYE WIDTH (1/2 X EYE LENGTH) OR LESS THAN THE NOMINAL SLING DIAMETER. TURNBACK EFFICIENCY: k = 0.9 FLEMISH EYE TERMINATION OFFERS A HIGHER EFFICIENCY REFER TO EN 13414-1 FOR FULL DETAILS VERTICAL SLING ANGLES GREATER THAN 60° ARE NOT RECOMMENDED!								

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Section 17: Forklifts and Powered Industrial Trucks

A. Policy Statement

The purpose of this program is to establish requirements for the safe operation and use of Powered Industrial Trucks.

B. Scope

This program applies to all Quality Electric employees who operate a Powered Industrial Truck in the scope of their job duties and assignments. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Quality Electric employees and contractors and shall be used on owned premises, or when an operator's program does not exist or is less stringent.


NOTE: All employees are required to be trained and certified prior to operating each specific type of forklift equipment. Quality Electric shall certify all authorized employees regarding competency on all types of equipment.

C. Definitions

1. **Authorized Employee** – A person, at least 18 years of age and who has completed the company's required safety training for the safe operations of forklifts.
2. **Qualified Person** - Individual that possesses the knowledge, skill, and ability either through training or experience to operate equipment included in this policy. They must also successfully demonstrate their practical skills to operate the equipment smoothly and safely.
3. **Powered Industrial Vehicle** - includes but is not limited to fork vehicles, tractors with forks, platform lift vehicles, motorized hand vehicles, and any other specialized industrial vehicle powered by electric motors or internal combustion engines.

D. Key Responsibilities

1. Supervisor Responsibilities:
 - a) Ensure that employees assigned to operate powered industrial vehicles are trained and qualified as outlined in this program.
 - b) Ensure powered industrial vehicles are inspected prior to each use as outlined in this Program.
2. Operator / Employee Responsibilities:
 - a) Adheres to all operating requirements that have been identified in this program.
 - b) Ensure that his/her certification is current prior to any operation of a powered industrial vehicle on a Quality Electric project.
 - c) Inspect forklift at the start of shift and remove from service if defects are found until they are corrected.
 - d) Operate forklift in a safe manner.

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E. General Requirements

All approved forklifts shall have a manufactures identification plate attached showing all specifications of the forklift and that the forklift is accepted by a nationally recognized testing laboratory.

Modifications and additions, that affect 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 reflect the modification or addition.

If the forklift is equipped with front-end attachments other than factory installed attachments, the supervisor shall ensure that the forklift is marked to identify the attachments and show the approximate weight of the forklift and attachment combination at maximum elevation with load laterally centered.

The operator shall see that all nameplates and markings are in place and are maintained in a legible condition.

All forklifts shall be equipped with safety seat belts. All forklifts shall be equipped with a horn, backup alarm, beacon light, headlights, and taillight.

F. Safety Guards

Forklifts shall be fitted with an overhead rollover cage, as per manufactures specifications.

If the type of load presents a hazard to the operator, the forklift shall be equipped with a vertical load backrest extension, as per manufactures specifications.

G. Operator Training


Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video tape, and written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee) and evaluation of the operator's performance in the workplace.

All operator training and evaluation shall be conducted by a certified person who has the knowledge, documented training, and experience to train powered industrial truck operators and evaluate their competence.

Each operator is required to be re-evaluated every three years.

Training shall include the following topics, except in topics for locations where they are not applicable to safe operation of the truck due to type of equipment or facility conditions.

1. Operating instructions, warnings, and precautions for the types of truck the operator will be authorized to operate,
2. Differences between the truck and the automobile,
3. Truck controls and instrumentation: where they are located, what they do, and how they work,

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4. Engine or motor operation,
5. Steering and maneuvering,
6. Visibility (including restrictions due to loading),
7. Fork and attachment adaptation, operation, and use limitations,
8. Vehicle capacity,
9. Vehicle stability,
10. Any vehicle inspection and maintenance that the operator will be required to perform,
11. Refueling and/or charging and recharging of batteries,
12. Operating limitations,
13. Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate,
14. Surface conditions where the vehicle will be operated,
15. Composition of loads to be carried and load stability,
16. Load manipulation, stacking, and unstacking,
17. Pedestrian traffic in areas where the vehicle will be operated,
18. Narrow aisles and other restricted places where the vehicle will be operated,
19. Hazardous (classified) locations where the vehicle will be operated,
20. Ramps and other sloped surfaces that could affect the vehicle's stability,
21. Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust,
22. Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation, and
23. The requirements of CFR 1910.178 (Powered Industrial Trucks).

Mandatory refresher training shall be provided when unsafe operations are observed, after an incident, if operating a different vehicle type, changes in conditions or any time Quality Electric feels an operator requires refresher training.


Operators will be required to retrain under the following conditions:

- a) The operator has been observed operating a powdered industrial vehicle in an unsafe manner.
- b) The operator has been involved in an accident or near miss incident.
- c) The operator is assigned to operate a different vehicle type.
- d) Conditions in the workplace change in a manner that could affect the safe operation of the vehicle.

H. Certifications

Only trained and certified operators, including supervisors, are allowed to operate the device (this includes refresher training requirements).

The trainer shall certify in writing that each operator has been trained and evaluated as required.

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The certification shall include the name of the operator, the date of the training, the date of the evaluation and the identity of the person(s) performing the training and/or evaluation.


I. Operating Procedures

1. General

- All operators shall wear a safety seat belt when operating a forklift.
- Forklifts shall not be driven up to anyone standing in front of a bench or other fixed object.
- No person shall be allowed to stand or pass under the elevated portion of any forklift, whether loaded or empty.
- Unauthorized personnel shall not be permitted to operate forklifts.
- No riders or passengers are permitted.
- It is prohibited for arms or legs to be placed between the uprights of the mast or outside the running lines of the forklift.
- When a forklift is left unattended, load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set.
- Wheels shall be blocked if the forklift is parked on an incline.
- A forklift is unattended when the operator is 25 ft. or more away from the vehicle, which remains in view, or whenever the operator leaves the forklift and it is not in view.
- When the operator of a forklift is dismounted and within 25 ft. of the forklift still in view, the load engaging means shall be fully lowered, controls neutralized, and the brakes set to prevent movement.
- A safe distance shall be maintained from the edge of ramps or platforms while on any elevated dock, or platform or freight car.
- Forklifts shall not be used for opening or closing freight doors.
- Brakes shall be set, and wheel blocks shall be in place to prevent movement of trucks, trailers, or railroad cars while loading or unloading.
- Fixed jacks may be necessary to support a semi-trailer during loading or unloading when the trailer is not coupled to a tractor.
- The flooring of trucks, trailers, and railroad cars shall be checked for breaks and weakness before they are driven onto.
- There shall be sufficient headroom under overhead installations, lights, pipes, sprinkler system, etc.
- An overhead guard (cages) shall be used as protection against falling objects.
- An overhead guard is intended to offer protection from the impact of small packages, boxes, bagged material, etc., representative of the job application, but not to withstand the impact of a falling capacity load.
- Fire aisles, access to stairways, and fire equipment shall be kept clear.

2. Traveling

- The operator shall slow down and sound the horn at cross isles and other locations where vision is obstructed.

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- If the load being carried obstructs forward view, the operator shall be required to travel with the load trailing.
- The operator shall be required to look in the direction of and keep a clear view of the path of travel.
- Grades shall be ascended or descended slowly.
- When ascending or descending grades in excess of 10 percent, loaded forklifts shall be driven with the load up grade.
- On all grades the load and load engaging means shall be tilted back if applicable and raised only as far as necessary to clear the road surface.
- Under all travel conditions the forklift shall be operated at a speed that will permit it to be brought to a stop in a safe manner.
- Stunt driving and horseplay are prohibited.
- The operator shall slow down for wet and slippery floors.
- Dock board or bridge plates shall be properly secured before they are driven over.
- Dock board or bridge plates shall be driven over carefully and slowly, with their rated capacity never exceeded.
- While negotiating turns, speed shall be reduced to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion.
- Except when maneuvering at a very low speed, the hand steering wheel shall be turned at a moderate, even rate.

3. Loading

- Only stable or safely arranged loads shall be handled.
- Caution shall be exercised when handling off-center loads, which cannot be centered.
- Only loads within the rated capacity of the forklift shall be handled.
- Forklifts equipped with attachments shall be operated as partially loaded forklifts when not handling a load.
- A load engaging means shall be placed under the load as far as possible; the mast shall be carefully tilted backward to stabilize the load.
- Extreme care shall be used when tilting the load forward or backward, particularly when high tiering.
- Tilting forward with load engaging means elevated shall be prohibited except to pick up a load.
- An elevated load shall not be tilted forward except when the load is in a deposit position over a rack or stack.
- When stacking or tiering, only enough backward tilt to stabilize the load shall be used.

4. Operation of the Truck

- If at any time a forklift is found to be in need of repair, defective, or in any way unsafe, the forklift shall be taken out of service until it has been restored to safe operating condition.
- Fuel tanks shall not be filled while the engine is running.

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- Spillage of oil or fuel shall be carefully washed away or completely evaporated and the fuel tank cap replaced before restarting engine.
- When fueling with Liquefied Petroleum Gas (LPG), precautions and handling requirements set forth in the “Safe Handling of LPG” program shall be followed.
- No forklift shall be operated with a leak in the fuel system.
- Open flames shall not be used for checking electrolyte level in storage batteries or gasoline level in fuel tanks.
- Operator must verify trailer chocks, supports, and dock plates are secured prior to loading/unloading.

Minimum Voltage Approach Distance

Voltage Range (Phase to Phase)	Minimum Safe Approach Distance (Feet / Meters)
0 to 50 KV	10 (3)
Over 50KV to 200KV	15 (5)
Over 200KV to 250KV	20 (6)
Over 350KV to 500KV	25 (8)
Over 500KV to 750KV	35 (11)
Over 750KV to 1000KV	45 (14)

J. Special Conditions

1. Lifting Hooks:
A “Lift Hook” device is required when conducting lifting operations under the forks. Rigging (slings, chains, chokers, and the like) shall not be directly attached to the forks or tines; also, known as “Free Rigging”.
2. Fork/Jib Attachments:
Jib attachments on forks may only be used after a risk assessment has been performed involving Operations and Safety.
3. The use of attachments greatly affects the dynamics of a forklift. When an attachment is utilized, the following guidelines apply:
 - Job Safety Analysis (JHA) must be completed
 - The attachment safety instructions must be reviewed with the crew and operator
 - The attachment load chart must be strictly adhered to.
4. Personnel Platforms:
 - a) It is strictly prohibited that a powered industrial vehicle is used as a personnel lift unless approved by the lift manufacturer.
 - b) When a personnel platform is utilized, the following guidelines apply:
 - (1) Job Safety Analysis (JSA) must be completed
 - (2) Makeshift devices will not be allowed on site
 - (3) The platform safety instructions must be reviewed with the crew and operator
 - (4) Platforms must be inspected before use

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- (5) The platform must have a positive connection to secure it to the forklift per the manufacturer's recommendations
- (6) Workers in the platform must wear and utilize fall protection
- (7) Workers in the platform are prohibited from tying off to adjacent structures
- (8) All gates and rails must be secured in the proper position
- (9) The worker's feet must stay on the floor of the platform when in use
- (10) Using steps, planks or standing on guardrails to increase reach is prohibited
- (11) The platform must have permanent labeling to indicate the platform's weight and rated load capacity or maximum intended load.

K. Maintenance and Inspection of Forklifts

- Only authorized personnel shall perform maintenance and make repairs.
- Those repairs to the fuel and ignition systems of forklifts, which involve fire hazards, shall be conducted only in locations designated for such repairs.
- Forklifts in need of repairs to the electrical system shall have the battery disconnected prior to such repairs.
- Only parts equivalent with those used in the original design shall replace all parts of any forklift requiring replacement parts.
- Forklifts shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts.
- Additional counter weighting of fork trucks shall not be done unless approved by the truck manufacturer.
- Forklifts shall be inspected daily by the operator before being placed in service and shall not be placed in service if the inspection shows any condition adversely affecting the safety of the forklift.
- Inspection shall be made at least daily – prior to each shift. (visual – non documented)
- Inspection items shall be posted on each forklift. Operators must insure the vehicle is safe prior to operating.
- Where forklifts are used on a round-the-clock basis, they shall be inspected before each shift.
- Defects when found shall be immediately reported to the supervisor and corrected before operating the forklift.
- When the temperature of any part of any forklift is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the forklift shall be removed from service and not returned to service until the cause for such overheating has been eliminated.
- Forklifts shall be kept in a clean condition, free of lint, excess oil, and grease.
- Noncombustible agents, where at all possible, shall be used for cleaning trucks.
- Low flash point (below 100 degrees F.) solvents shall not be used.
- High flash point (at or above 100 degrees F.) solvents may be used if precautions regarding toxicity, ventilation, and fire hazard are mitigated with the agent or solvent used.

L. Annexes


1. Inspections and Checklists:
 - Forklift Daily Inspection Checklist

Forklift Daily Inspection Checklist

Job Name:		Operator:	
Unit #:		Hour Meter Reading	
Company:		Type of Equipment	

<input type="checkbox"/>	R/T Forklift	<input type="checkbox"/>	W/T Forklift	<input type="checkbox"/>	Boom Truck	<input type="checkbox"/>	Skidsteer
M	T	W	TH	F	S	SN	Date:

Daily Inspection Checklist for Week Beginning _____, 20__	Good	Bad	Comments
1. Engine Compartment: Oil Level, Belts, Pulley Tension, Hoses, Leaks or Damaged Wires	<input type="checkbox"/>	<input type="checkbox"/>	
2. Check Fuel Level: Check for Leaks. Report Leaks immediately	<input type="checkbox"/>	<input type="checkbox"/>	
3. Radiator: Check coolant Level	<input type="checkbox"/>	<input type="checkbox"/>	
4. Fluid Leaks: Check Oil, Water and Hydraulics for Leaks	<input type="checkbox"/>	<input type="checkbox"/>	
5. Tires: Check for significant damage; explain in comments section	<input type="checkbox"/>	<input type="checkbox"/>	
6. Mast, Carriage, Forks or Attachment Loose or missing bolts, damage, check adjustments	<input type="checkbox"/>	<input type="checkbox"/>	
7. Body Damage: Check for significant damage; explain in comments	<input type="checkbox"/>	<input type="checkbox"/>	
8. Roll Over Protection (ROPS): Check for damage or broken welds	<input type="checkbox"/>	<input type="checkbox"/>	
9. Operators Compartment: Free of Trash, debris and loose rigging	<input type="checkbox"/>	<input type="checkbox"/>	
10. Leveling Device: Gauge in working order	<input type="checkbox"/>	<input type="checkbox"/>	
11. Operator Controls: Functions labels and operate correctly	<input type="checkbox"/>	<input type="checkbox"/>	
12. Gauges: Check all gauges, Report any unusual readings or damage.	<input type="checkbox"/>	<input type="checkbox"/>	
13. Warning Stickers / Load Chart: All are in place and legible	<input type="checkbox"/>	<input type="checkbox"/>	
14. Fire Extinguisher: Filled and inspected	<input type="checkbox"/>	<input type="checkbox"/>	
15. Safety Equipment: Rotating Lights, back up alarms, horn, seat belt are in good working order.	<input type="checkbox"/>	<input type="checkbox"/>	
16. Brakes: Check brake pedals for travel. Check parking brake	<input type="checkbox"/>	<input type="checkbox"/>	
17. Lift Operations: Report unusual operation or noise	<input type="checkbox"/>	<input type="checkbox"/>	
Flaggers Required <input type="checkbox"/>	Rigging Inspected: <input type="checkbox"/>		Overhead Obstructions <input type="checkbox"/>
Spotters Being Used <input type="checkbox"/>	Load Chart Available <input type="checkbox"/>		Powerlines or Cables <input type="checkbox"/>
Load Chart for Attachment <input type="checkbox"/>	Ground Conditions <input type="checkbox"/>		

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Section 18: Hand and Power Tools

A. Policy Statement

The intent of this policy is to outline proper equipment safeguards and safe operating procedures while using hand and power tools.

B. Definitions


1. **Competent person** - one who can identify 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
2. **Qualified person** - one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project
3. **Fall zone** - the area (including but not limited to the area directly beneath a potential falling object) in which it is reasonably foreseeable that falling objects could fall

C. General Requirements

1. All tools, whether personal or company owned, must be kept in good condition, inspected before use, and maintained.
2. Worn or damaged equipment must be tagged “Out of Service” and replaced immediately.
3. Where conditions warrant, tethers/tool lanyards shall be used to prevent hand or power tools from inadvertently falling to work areas below.
4. Manufacturer guards and T-handles will not be removed during use.
5. Rotating belts, pulleys, shafts, etc. on all equipment shall be guarded to prevent contact either by the worker or by objects carried or worn by the worker.

D. Portable Hand Tool Requirements

1. The correct tool should be utilized for the job and used in a correct manner.
2. If a job requires excessive force or bending of the wrist creating stress, a powered tool or a differently shaped tool should be used.
3. Tools should be kept in good working condition. Damaged, worn, or defective tools can cause injuries and should not be used.
4. Keep tools in a safe place. Do not leave tools on the floor or above work areas.
5. Sharpened tools should not be carried in pockets or left in toolboxes with cutting edges exposed.
6. Appropriate personal protective equipment, such as safety goggles and gloves, should be worn to protect against hazards that may be encountered while using hand tools.
7. Keep impact tools, such as chisels and punches, free of mushroomed heads.
8. Keep wooden handles free of splinters or cracks and assure a tight connection between the tool head and the handle.

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E. Power Tool Requirements


1. Electric power operated tools should either be approved double insulated, be properly grounded, or used with ground fault circuit interrupters.
2. Power tools should not be used until proper instruction has been given and authorization given by a supervisor.
3. Guards on machinery and equipment should not be removed without authorization.
4. The power tool should be off, and motion stopped before the tool is set down.
5. Disconnect the tool from power source before changing bits or blades or attempting any repair or adjustment. Never leave a running tool unattended.
6. Inspect electrical extension cords and other wiring to be certain they are properly insulated and grounded. Do not use frayed or damaged cords.
7. A power tool must never be used with a safety guard removed.
8. All fixed power-driven woodworking tools should be provided with a disconnect switch that can either be locked or tagged in the off position.
9. Only trained employees will be allowed to operate power actuated tools. All power actuated tools will be tested daily before use and defects discovered before and during use will be corrected. Tools will not be loaded until immediately before use.
10. Never operate power actuated tools in, near or around water.

F. Machine Guarding

1. Guards are put on machines for one purpose.....to protect!
2. Machines without guards or suitable safety devices in place must not be operated.
3. Only authorized personnel should remove or adjust guards or safety devices.
4. Be sure the main power switch for the machine is locked and tagged before removing the guard or safety devices.
5. Guards' isolate hazards from workers. Safety devices also save fingers, limbs, and lives. They protect from distractions, impatience and accidents caused by inattention.
6. A guard or safety device not secured or functioning improperly can create an additional hazard. Inspect guards or safety devices regularly and keep them in good repair.
7. Manufacturer installed guards and safety devices may not be enough. Review the working purpose of your machine. If need be, install additional guards or safety devices at point-of-operations at other hazardous areas.
8. Do not bypass guards or safety devices. Trying to speed up production and save time only increases the chance for serious injury. Guard or safety devices are a vital part of any safe environment.

G. Electric Tools

1. Electrical tools must be grounded or double insulated.
2. Power cords must be free of cuts, nicks, or damage.
3. Ground Fault Circuit Interruption must be provided if the tool is connected to temporary power which will include an extension cord plugged into permanent power.

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- Tools must be disconnected before changing attachments or making repairs.

H. Gasoline Tools

- Fuel powered tools must be shut down before refueling.
- Adequate ventilation must be provided when operating in closed areas.
- It is not recommended to use gasoline powered tools indoors or in any area where ventilation is restricted. If gas powered tools must be used indoors, carbon monoxide levels must be monitored.

I. Portable Circular Saws


- Portable circular saws must be equipped with properly functioning guards above and below the base plate or shoe.
- The base or shoe of the saw shall be adjusted for the thickness of the material being cut.

J. Table or Bench Saws

- Upper blade guards and non-kickback attachments must be provided and used.
- A push stick is required when ripping.
- Blade height shall be properly adjusted when cutting and retracted when not in use.
- Belt/pulley guards shall be installed and maintained.

K. Right-Angle Grinders

- Verify that the Grinder is good condition by utilizing the Grinder Inspection Check Sheet. This should be done on a monthly basis.
- 180-degree guards must be installed and utilized.
- Wheels must be inspected regularly, and defective wheels replaced immediately.
- Wheels must match the rated RPM of the tool.
- Adjust the work rest and keep it within 1/8 inch of the wheel. Keep the adjustable tongue on the top side of the grinder adjusted to within 1/4 inch of the wheel.
- Side guards should cover the spindle, nut, flange and 75% of the wheel diameter.
- Bench and pedestal grinders should be permanently mounted.
- Goggles and face shields should always be worn when grinding.
- The maximum RPM rating of each abrasive wheel should be compatible with the RPM rating of the grinder. Before abrasive wheels are mounted, they should be visually inspected, and ring tested.
- Fixed or permanently mounted grinders should be connected to their electrical supply system with metallic conduit or other permanent wiring method, and each should have an individual on and off switch.
- Dust collectors and powered exhausts should be provided on grinders used in operations that produce large amounts of dust.
- Splash guards should be mounted on grinders that use coolant to prevent the coolant from reaching the employees.
- Maintain good housekeeping around grinders.

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L. Pneumatic Tools

1. Air supply lines must be protected, and all connections secured to prevent accidental separation.
2. Hoses may not be used to raise or lower tools.
3. Air hoses with an inside diameter of ½ inch or greater must be equipped with a flow control safety device attached at the source to reduce pressure if the hose fails.

M. Powder-Actuated Tools

1. Only trained employees can operate powder-actuated tools. Proof of training is required.
2. Hearing and eye protection is mandatory.
3. Loaded tools shall not be left unattended.
4. Unfired cartridges must be disposed of per the manufacturer's recommendations.

N. Hand Tools

1. Hand tools must be kept in good condition. Worn or broken tools such as hammers with loose handles, chisels with mushroomed heads, saws with teeth not set, shovels with splintered or split handles, etc. must be repaired or replaced.
2. No homemade tools are allowed.

O. Annexes

- a) Forms
 - Grinder Inspection Check sheet

Grinder Inspection Checklist

Name of Project:	
Area, Department, Jobsite being Inspected:	
Name of Operator or Inspector:	
Date and Time of Inspection:	
Machine / Equipment:	
Size, RPM, Peripheral Speed	
Make / Model No.	
Description of Work:	
Potenital Hazards:	


Required PPE

Type of PPE	Required		Comments
Eye Protection	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Hearing Protection	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Safety Footwear	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Protective Clothing	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Face Sheild	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Welding Mask	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Other	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

Safe Work Procedure Checklist

Pre - Operation	Confirm		Comments
Task is clearly understood	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
The appropriate disk is correctly placed	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Work piece is securely clamped	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Ensure guarding is in place on grinder	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Wheel Guard is securely fastened and aligned	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Face Shield is Clean, Un - scored and In - Place	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Identify ON / OFF switch	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Work Rest within 1/8th inch of wheel and securely clamped	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Frame is securley mounted and has no vibration	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

Date: _____ Inspector's Signature: _____ Dept: _____

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Section 19: Ladders and Stairways

A. Policy Statement

The intent of this policy is to define general information on ladders and stairways and how to inspect and care for each.

B. General Requirements

A ladder is a tool usually consisting of two side rails joined at regular intervals by crosspieces called steps, rungs, or cleats, on which a person may step in ascending or descending. There are variations called step ladder, single ladder, extension ladder, fixed ladder, job-made ladder, platform ladder, and sectional ladder. Ladders are constructed of wood, metal, aluminum, or fiberglass.

1. A stairway or ladder must be provided for all personnel access points with a vertical break in elevation of 19 inches or more.
2. Any manufactured ladder on a Quality Electric job will be at a minimum a Type 1A.

C. Stairs, Pans and Landings

1. Employees are not allowed to walk on pan stairs or platforms which have not been poured unless wood filler or other solid material is fitted to the top edge of each pan and platform.
2. Incomplete stairs (including stairs without pans filled) shall be barricaded at the top and bottom of the landings to prevent use.

D. Stairway Handrails and Guardrails


1. Handrails (30"-37" above tread) must be provided on all open sides of stairs with 4 or more risers or rising more than 30 inches, whichever is less.
2. Guardrails (42" top rail 21" mid rail) must be installed to protect landings.

E. Ladder Inspection and Maintenance

1. Ladders should be inspected by a competent person prior to use. Damaged ladders shall be tagged immediately and removed from service.
2. Rungs should be kept clean to prevent slips.

F. General Ladder Safety

1. Side rails must extend at least 36 inches above the landing surface and the ladder must be secured to prevent movement.
2. Ladders must be placed on a substantial base with a clear access at the top and bottom.
3. Ladders should be pitched at 1 foot out from the support structure for every 4 feet of ladder height.
4. Workers must face the ladder and maintain three points of contact when climbing.
5. A hand line must be available at each access ladder to hoist tools or materials.
6. Ladders should not be placed in front of doors unless the door is locked or blocked.

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7. When utilizing a ladder near an interior or exterior opening, personal fall protection must be utilized when the distance is less than or equal to 1.5 times the height of the ladder.
8. Guardrails protecting ladder landings shall be provided with a gate or offset so that a person cannot walk directly into the ladder way opening.
9. Aluminum ladders are prohibited.

a) Proper Selection

- Select a ladder of proper duty rating to support combined weight of user and materials.
- Ladders are available with duty ratings 300 lbs. (1A) or 375 lbs. (1AA).
- Select a ladder of proper length to safely reach the desired height.

b) Inspection Before Each Use


- Inspect thoroughly for missing or damaged components. Never use a damaged ladder and never make temporary repairs.
- Inspect thoroughly for loose fasteners. Make sure all working parts are in good working order. Lubricate if necessary.
- Clean ladder of all foreign material (wet paint, mud, snow, grease, oil).
- Destroy ladder if damaged, worn, or exposed to fire or chemicals. Bring back the ladder to the shop, tag for inspection; put a note on your daily report and management will make the decision of destruction.

c) Consider Before Each Use

- Metal ladders conduct electricity. Keep away from electrical circuits or wires.
- Consult manufacturer for use in chemical or other corrosive environments.
- Use ladder only as outlined in instructions. Ladders are designed for one person only.
- Do not use in high winds or during a storm.
- Keep shoes clean. Leather shoes should not be used.
- Never leave ladder set-up and unattended.

d) Proper Set – Up and Use

- Use help in setting up ladder if possible.
- Do not place on unstable, loose, or slippery surfaces. Do not place in front of unlocked doors. Ladders are not intended to be used on scaffolds.
- Secure base section before raising ladder to upright position. Do not raise or lower with fly section extended.
- Position ladder against upper support surface. Make sure ladder does not lean to the side. Ladder must make a 75-degree angle with the ground.
- Erect ladder approximately 3 feet beyond upper support point.

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- Check that top and bottom of ladder are properly supported. Make sure rung locks are engaged before climbing.
- Face ladder when climbing up or down. Maintain a firm grip. Use both hands in climbing.
- Keep body centered between side rails. Do not overreach. Get down and move ladder as needed.
- Fly section must have safety shoes if used as a single ladder.

e) Proper Care and Storage

- Hang ladder on racks at intervals of 6 feet for support.
- Never paint a wooden ladder. Treat with wood preservative.
- Protect wooden ladder from exposure to the elements but allow good ventilation.
- Keep away from heat and moisture.

G. Step Ladders


1. Center your body on the ladder and keep belt buckle between the rails while maintaining a firm grip.
2. Do not overreach, lean to one side, or try to move the ladder while you are on it.
3. Do not exceed the maximum load capacity of a ladder.
4. Do not stand on the top step or brace of a step ladder.
5. Do not straddle a ladder and sit on the top or pail shelf.
6. Do not use a stepladder unless the ladder is completely open with the spreaders locked.
7. Do not climb on the back of a ladder.
8. Do not permit more than one person on a single sided step ladder.

H. Extension Ladders

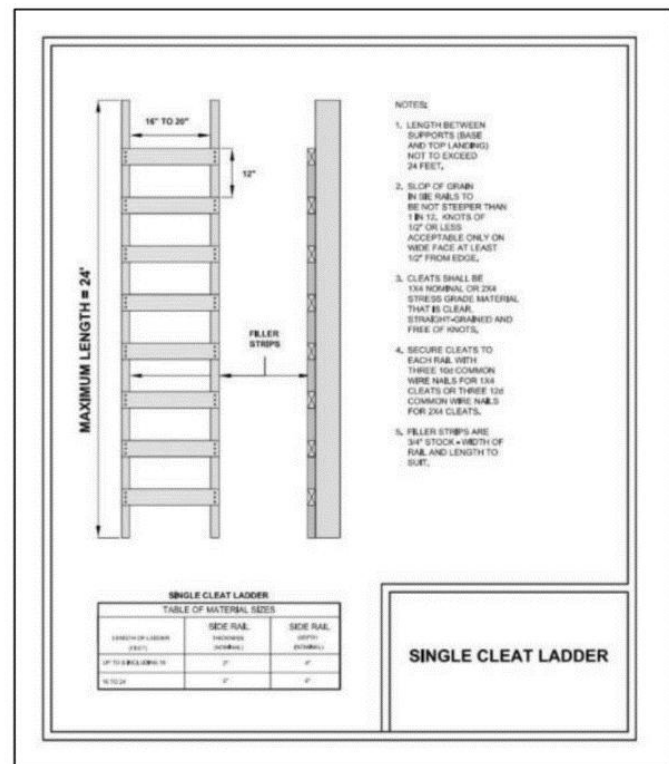
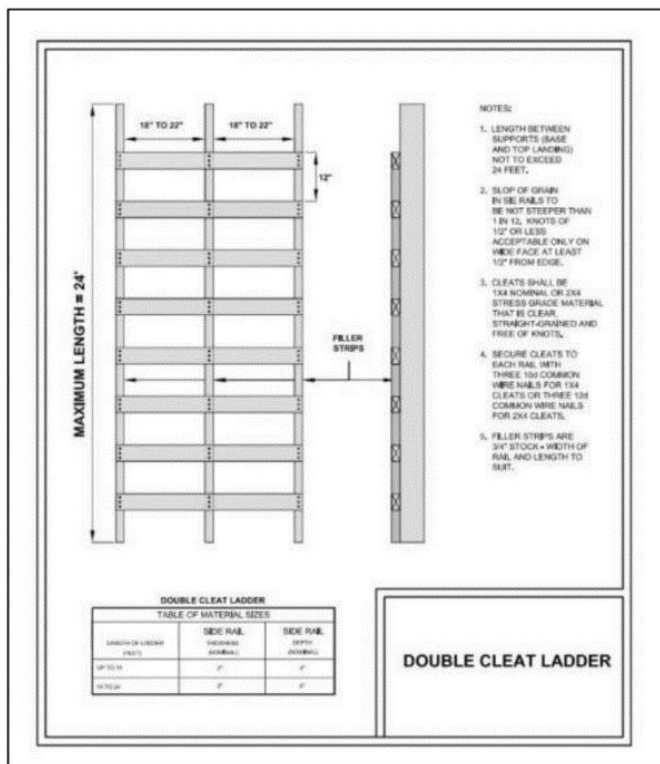
1. Extension ladders shall not be used as the primary point of access or egress.
2. Get help with handling heavy ladders.
3. Secure the ladder or have another person hold the ladder while you are working on it.
4. Center your body on the ladder and keep belt buckle between the rails while maintaining a firm grip.
5. Do not overreach, lean to one side, or try to move the ladder while you are on it.
6. Do not exceed the maximum load capacity of a ladder.
7. Extend and retract fly section only from the ground when no one is on the ladder.
8. Do not overextend. A minimum overlap of section is required as follows:
 - Ladder size up to and including 32 feet---3-foot overlap
 - Over 32 feet up to and including 36 feet---4-foot overlap
 - Over 36 feet up to and including 48 feet---5-foot overlap
 - Sizes over 48 feet---6-foot overlap
9. Extension ladder sections are not to be separated and used individually.

I. Job Built Ladders

1. Single-cleat and Double-cleat ladders must not exceed 24 feet in working length.

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- The width of a single cleat should be between 16 and 20 inches. The width of a double cleat should be between 18 and 22 inches.
- Cleats should be continuous and extend the full width of double cleat ladders. Cleats must be parallel and evenly spaced from the ladder's base to the top bearing point. Spacing must measure 12 inches between the top edges of each cleat. There should be no cleats on side rails that extend above the landing surface.
- Extra cleats should be cut and nailed to the side rail of the ladder as a quick replacement for cleats that become worn or broken.
- Cleat board should be free of knots, holes, checks or splits.
- When job-built ladders are installed where there is an exposure to an interior or exterior unprotected shaft or opening, a side rail shall be installed along the exposed side of the ladder.
- Single-headed nails as specified on drawing shall be used to construct ladder.



J. Annexes

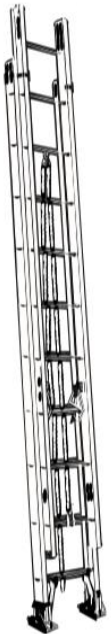
1. Forms

- Platform Ladder Inspection Form
- Extension Ladder Inspection Form
- A Frame Ladder Inspection Form



Extension Ladder Inspection Form

Manufacturer:		Asset #:	
Model:		Company:	Quality Electric
Material:		Name of Inspector:	
Size:		Signature:	
Description:		Date of Inspection:	
Date of Manufacture:		In Service Date:	

 <p>Circle Areas of Damage</p>		Yes	No	
	Rungs:	Loose, Cracked, Bent or Missing	<input type="checkbox"/>	<input type="checkbox"/>
	Rails:	Cracked, Bent, Split or Frayed	<input type="checkbox"/>	<input type="checkbox"/>
	Labels:	Missing or Not Readable	<input type="checkbox"/>	<input type="checkbox"/>
	Rung Locks:	Loose, Bent, Missing or Broken	<input type="checkbox"/>	<input type="checkbox"/>
	Hardware:	Missing, Loose or Broken	<input type="checkbox"/>	<input type="checkbox"/>
	Shoes:	Worn, Broken or Missing	<input type="checkbox"/>	<input type="checkbox"/>
	Rope/Pulley:	Loose, Bent or Broken	<input type="checkbox"/>	<input type="checkbox"/>
	Other:	Bracing Rivets	<input type="checkbox"/>	<input type="checkbox"/>
	General:	Rust, Corrosion or Loose	<input type="checkbox"/>	<input type="checkbox"/>
<u>Actions:</u>		<input type="checkbox"/> Ladder tagged as damaged & removed from use <input type="checkbox"/> Ladder is in good condition		

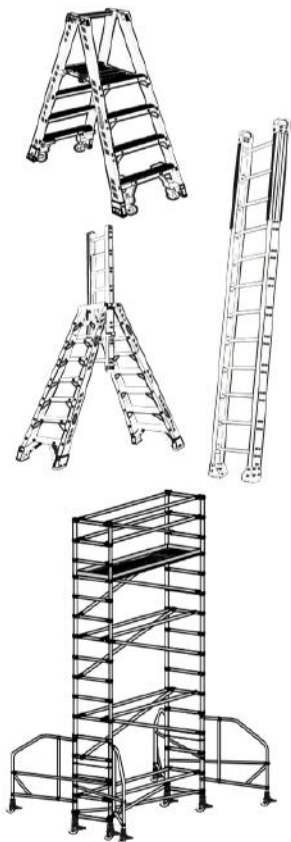
Notes:

Month	Inspector	Date of Inspection	Pass or Fail
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
Notes:			



Specialty Ladder Inspection Form

Manufacturer:		Asset #:	
Model:		Company:	Quality Electric
Material:		Name of Inspector:	
Size:		Signature:	
Description:		Date of Inspection:	
Date of Manufacture:		In Service Date:	



Mark all that apply

		Yes	No
Steps/Rungs:	Loose, Cracked Bent or Missing	<input type="checkbox"/>	<input type="checkbox"/>
Rails:	Cracked, Bent, Split or Frayed	<input type="checkbox"/>	<input type="checkbox"/>
Labels:	Missing or Not Readable	<input type="checkbox"/>	<input type="checkbox"/>
Hardware:	Missing, Loose or Broken	<input type="checkbox"/>	<input type="checkbox"/>
Fasteners:	Rust, Corrosion, Loose or Missing	<input type="checkbox"/>	<input type="checkbox"/>
Top:	Cracked, Loose, or Missing	<input type="checkbox"/>	<input type="checkbox"/>
Spreader:	Loose, Bent or Broken	<input type="checkbox"/>	<input type="checkbox"/>
Outriggers:	Missing, Rust, Corrosion or Loose for scaffolding	<input type="checkbox"/>	<input type="checkbox"/>
General:	Rust, Corrosion or Loose	<input type="checkbox"/>	<input type="checkbox"/>
Hinges:	Loose, Bent or Missing	<input type="checkbox"/>	<input type="checkbox"/>
Locks:	Loose, Bent, Broken or Missing	<input type="checkbox"/>	<input type="checkbox"/>
Bracing			
Front,Rear:	Loose, Bent, Broken or Missing	<input type="checkbox"/>	<input type="checkbox"/>
Rivets:	Rust, Corrosion, Loose, Missing	<input type="checkbox"/>	<input type="checkbox"/>
Shoes:	Worn, Broken or Missing	<input type="checkbox"/>	<input type="checkbox"/>
Platform:	Loose, Bent, Broken or Missing	<input type="checkbox"/>	<input type="checkbox"/>
Rail Shield:	Missing or Loose	<input type="checkbox"/>	<input type="checkbox"/>
Shoulder Bolt:	Rust, Corrosion or Loose	<input type="checkbox"/>	<input type="checkbox"/>
Casters:	Rust, Corrosion or Loose for scaffolding	<input type="checkbox"/>	<input type="checkbox"/>

Actions: ☐ Ladder tagged as damaged & removed from use
☐ Ladder is in good condition

Notes:


Month	Inspector	Date of Inspection	Pass or Fail
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Notes:



Step Ladder Inspection Form


Manufacturer:		Asset #:	
Model:		Company:	Quality Electric
Material:		Name of Inspector:	
Size:		Signature:	
Description:		Date of Inspection:	
Date of Manufacture:		In Service Date:	

 <p>Circle Areas of Damage</p>	Steps:	Loose, Cracked, Bent or Missing	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Rails:	Cracked, Bent, Split or Frayed Rail Shields	<input type="checkbox"/>	<input type="checkbox"/>
	Labels:	Missing or Not Readable	<input type="checkbox"/>	<input type="checkbox"/>
	Pail Shelf:	Loose, Bent, Missing or Broken	<input type="checkbox"/>	<input type="checkbox"/>
	Top:	Cracked, Loose or Missing	<input type="checkbox"/>	<input type="checkbox"/>
	Spreader:	Loose, Bent or Broken	<input type="checkbox"/>	<input type="checkbox"/>
	General:	Rust, Corrosion or Loose	<input type="checkbox"/>	<input type="checkbox"/>
	Other:	Bracing, Shoes, Rivets	<input type="checkbox"/>	<input type="checkbox"/>
Actions:		<input type="checkbox"/> Ladder tagged as damaged & removed from use <input type="checkbox"/> Ladder is in good condition		

Notes:

Month	Inspector	Date of Inspection	Pass or Fail
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Notes:

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LASER SAFETY			Revision No.	1
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Section 20: Laser Safety

A. Policy Statement

The intent of this policy is to provide guidance and protection to workers exposed to lasers on construction projects.

B. General Requirements

1. At a minimum, the use and inspection of lasers, both rotating and stationary, shall comply with: OSHA, ANSI, and the manufacturer's recommendations and requirements.
2. Laser beam or reflected beam can cause injuries to the eyes and skin during use. No laser beam will be directed at any worker. Associated hazards such as electrical, noise, fire, and health should be considered. Lasers must not be left unattended during operation and managed by a competent person.
3. The owner's manual shall be always kept with the equipment and shall be produced upon request.
4. Laser users shall be trained and certified for the class of laser he or she is using. Proof of qualification shall be maintained on the user and shall be produced upon request.
5. Where Class II or more powerful lasers are used, appropriate laser warning placards shall be noticeably posted on the equipment, and laser warning signs shall be posted in the area affected by the beam.
6. Where a certain model or class laser requires the use of a specific eye protection for protection against direct or reflected laser light, this operation shall be conducted only in an area where access is restricted to only the user(s) or shall be done off-hours.
7. Lasers must not be left unattended during operation. Beam shutters or caps will be utilized, or the laser turned off when laser transmission is not actually required.
8. Warning signs must be attached to equipment and in noticeable locations indicating the potential eye hazard associated with the laser and warning against looking into the primary beam or reflections.

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PERSONAL PROTECTIVE EQUIPMENT (PPE)			Revision No.	1
			Next Review Date:	01/01/2023
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Section 21: Personal Protective Equipment (PPE)

A. Policy Statement

The intent of this policy is to establish minimum personal protective equipment requirements while on a project site. With the added objective of protecting employees from the risk of injury by creating a barrier against workplace hazards. Personal protective equipment is not a substitute for good engineering or administrative controls, or good work practices, but should be used in conjunction with these controls to ensure the safety and health of employees. Personal protective equipment will be provided, used, and maintained when it has been determined that its use is required, and that such use will lessen the likelihood of occupational injury and/or illness.

B. Scope

This program addresses only minimum requirements of eye, face, head, foot, hand and/or dermal protection. Separate programs exist for respiratory and hearing protection since the need for participation in these programs is established through industrial hygiene monitoring.

C. Hazard Assessment and Equipment Selection

Quality Electric will, in compliance with Occupational Safety and Health Administration (OSHA) Personal Protective Equipment standards, as found in 29 CFR 1910.132 through 1910.138, conduct inspections of all workplaces to determine the need for PPE and to help in selecting the proper PPE for each task performed.


Management of Quality Electric, in conjunction with supervisors, will evaluate each work area to identify sources of hazards, including impact, penetration, compression, chemical, heat, dust, electrical sources, material handling, and light radiation. A certificate will be completed for each work location listing the findings of the inspection and the specific PPE needed for that location. Each survey will be documented, using the Certification of Hazard Assessment Form, identifying the workplace surveyed, the person conducting the survey, findings of potential hazards, and the date of the survey.

Once the hazards of a workplace have been identified, management of Quality Electric will determine the suitability of the PPE currently available. New or additional PPE will be selected by management, supervisors, and employees that ensure the level of protection greater than the minimum required to protect the employees from identified hazards. Care will be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards will be provided or recommended for purchase.

D. Responsibilities

Management is responsible for the development, implementation, and administration of the Personal Protective Equipment Program. This includes:

- Conducting workplace hazard assessments to determine the presence of hazards that necessitate the use of PPE.
- Conducting periodic workplace reassessments as requested by supervisors and/or as determined by management.

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- c) Maintaining records of hazard assessments.
- d) Providing training and technical assistance to supervisors on the proper use, care, and cleaning of approved PPE.
- e) Providing guidance to the supervisor for the selection and purchase of approved PPE.
- f) Periodically reevaluating the suitability of previously selected PPE.
- g) Reviewing, updating, and evaluating the overall effectiveness of the PPE Program

Employee-owned PPE is not allowed, Quality Electric will provide all required PPE.

Supervisors have the primary responsibility for implementation of the PPE Program in their work area. This involves:

- a) Providing appropriate PPE and making it available to employees.
- b) Ensuring employees are trained on the proper use, care, and cleaning of PPE.
- c) Maintaining records on PPE assignments and training.
- d) Supervising staff to ensure the PPE Program elements are followed and the employees properly use and care for PPE.
- e) Seeking assistance from management to evaluate hazards.
- f) Notifying management when new hazards are introduced or when processes are added or changed.
- g) Ensuring defective or damaged equipment is immediately replaced.

Employees, as users, are responsible for following the requirements of the PPE Program. This involves:


- a) Wearing the PPE as required.
- b) Attending required training sessions.
- c) Informing the supervisor of the need to repair or replace PPE.

E. General Requirements

1. Operations is responsible for ensuring that all personnel are trained, and the policy is strictly enforced and adhered to.
2. Operations is required to conduct a hazard assessment of the workplace and select the proper PPE to protect the employee from the assessed hazards.
3. All personal protective equipment (PPE) used on site must be kept in good working condition.
4. Equipment, either personal or company owned, shall be inspected before use and removed from service if found defective.
5. All workers shall be trained in the proper selection, use and care of all PPE.
6. Employees shall wear the appropriate PPE supplied to them, at all times while working within their assigned tasks. PPE shall be worn within all construction work areas.
7. All PPE must meet ANSI, OSHA, or NIOSH standards.

F. Protective Devices

All PPE will be of safe design and construction for the work to be performed and will be maintained in a sanitary and reliable condition. Only those items of protective clothing and equipment that meet ANSI (American National Standards

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Institute) or NIOSH (National Institute of Safety & Health) standards will be procured or accepted for use. Newly purchased PPE must conform to the updated ANSI standards which have been incorporated into the OSHA PPE regulations, as found in 29 CFR 1910.132 through 1910.138.

Careful consideration will be given to comfort and fit in order to ensure the PPE will be used. Protective devices are generally available in a variety of sizes. Care will be taken to ensure the right size is selected.

a) Eye and Face Protection

Prevention of eye injuries requires all persons who may be in eye hazard areas wear protective eyewear at all times. This includes employees, visitors, contractors, or others passing through an identified eye hazard area. The supervisor of each identified eye hazard area will have a sufficient quantity of goggles and/or plastic eye protectors, which afford the maximum amount of protection possible. General requirements will be as follows;


1. Eye protection must be worn at all times. Safety glasses or prescription glasses with rigid side shields meeting ANSI Z87.1 is required.
2. If prescription glasses do not meet the ANSI Z87.1 standard, then oversized Z87.1 rated safety glasses with rigid side shields shall be worn over the prescription glasses.
3. Dark lens or dark tinted lens eye protection shall not be used in low light conditions.
4. Spoggles or goggles will be worn to protect against exposures where higher risk of airborne particulates may be present (i.e. such as grinding).
5. During certain activities that create potential eye and/or face injuries, a combination of safety glasses and face shield is required (i.e. grinding, metal cutting, chipping, drilling overhead, jackhammering, using compressed air to clean, high pressure injection, placement boom handler, molten metal, acids or caustic liquids, chemical liquids, gases, or vapors, bioaerosols, or potentially injurious light radiation etc.).

If the personnel wear personal glasses, they will be provided with a suitable eye protector to wear over them. OSHA regulations require each affected employee who wears prescription lenses while engaged in operations involving eye hazard will wear eye protection that either incorporates the prescription into its design or wear eye protection worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses. Personnel requiring prescription safety glasses should contact the main office to have their request for prescription safety glasses processed.

Wearers of contact lenses must also wear appropriate eye and face protection devices in a hazardous environment

Emergency eyewash facilities must meet the requirements of ANSI Z358.1 and will be provided in all areas where the eyes of an employee will be exposed to corrosive materials. All emergency eyewash facilities will be located where they are easily accessible in an emergency.

b) Head Protection

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Head protection will be furnished to and used by all employees and contractors engaged in construction work, and in all work, areas identified as required during the hazard assessment of that particular work area. Head protection will be worn when hazards from falling or fixed objects, or electrical shock are present.

1. Hard hats must be worn in conformance with the manufacturer's instructions.
2. The outside shell shall be free of paints, holes, cracks or cuts, and the inside suspension shall be in good working order.
3. A hard hat that accepts the welding hood must be worn by those needing such protection.
4. Criteria for What Color Hard Hat Is Provided to Quality Electric Inc. Employees:

GREEN: Company personnel who represent the field workers:

- Electrical Journeyman
- Indentured Apprentices
- Construction Workers

BLACK: Supervisory Personnel, Leadership:

- General Foreman
- Foreman
- Project Manager
- Executive Leadership
- Superintendent


WHITE: Visitors (not a Quality Electric employee)

c) Foot Protection

Safety shoes will be worn where identified as required during the hazard assessment of each particular work area. Safety shoes or boots, with impact protection, are required to be worn in work areas where carrying or handling materials such as packages, objects, parts, or heavy loads, which could be dropped; and for other activities where objects might fall onto the feet. Safety shoes or boots, with compression protection, are required for work activities involving skid trucks (manual materials handling cars) or other activities in which materials or equipment could potentially roll over the feet of an employee. Safety shoes or boots with puncture protection, are required where sharp objects such as nails, wire, tacks, screws, large staples, or scrap metal can be stepped on by employees.

d) Hand and Arm Protection

Appropriate hand protection must be selected and worn to protect against cuts or lacerations, abrasions, punctures, chemical burns, harmful chemicals, thermal burns, and extreme temperatures. Considerations for selecting the appropriate type of hand protection are based around performance characteristics related to the task, conditions present, duration of use, and the hazards identified. There are many types of gloves available in the market today to protect against a wide variety of hazards which makes the selection process challenging.


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Appropriate gloves for the task are required to be worn by all employees while they are within the construction area on any Quality Electric project. The mandatory glove wearing policy applies to all employees associated with the Quality Electric Team. Keep in mind, gloves should protect employee against the risk of injury. Consider cut, puncture, abrasion, and tear as part of the assessment and selection of “appropriate” glove.

1. Employees are required to wear gloves rated ANSI Level Two or EN Level Three at a minimum.
2. The only exceptions will be:
 - a) Specialty gloves used for certain applications and exposures such as protection against chemicals
 - b) Job tasks that require a higher amount of dexterity and serious hazards are not present, then the task may be carried out without the use of gloves. In each of these instances, a hazard assessment and JHA shall clearly identify that the use of gloves will introduce a risk.
 - c) If an employee needs to temporarily remove his/her glove(s) in the work area and this does not present any type of risk or exposure.
 - d) When operating equipment such as cranes, heavy earth-moving, dump trucks or other similar equipment where exposure to abrasions or cuts/lacerations are low. However, prior to exiting the seat, appropriate gloves will be expected to be worn.
3. Gloves will be provided free of charge to Quality Electric personnel. Any gloves with impaired protective ability should be brought to the Supervisor then discarded and replaced. Furthermore, each employee is responsible for taking reasonable care of his/her protective equipment.
4. Gloves should be inspected before each use to ensure they are not torn, punctured, or made ineffective in any way.
5. In selecting gloves for use during chemical exposure the first consideration will be the exact nature of substances encountered. Read the instructions and warnings found on chemical containers and/or Material Safety Data Sheets (MSDS) prior to working with any chemical. Recommended glove types are usually listed in the section for personal protective equipment.

e) Hearing Protection

1. When it is not possible to reduce noise levels below the permissible exposure limit levels, hearing protection will be worn. When proper hearing protection is in use, noise reduction levels should be maintained below 85 dba per 8-hour work shift.
2. During certain activities that could affect hearing, protection will be required. Tasks include, but are not limited to:
 - Grinding
 - Chipping
 - Scaling
 - Cutting metal studs or track
 - Cutting masonry/block saw
 - Using air blowers
 - Powder actuated tools
 - Working near noise and other noise producing operations.

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3. For most of construction related noise hazards, simple foam ear plugs (e.g. hearing protectors) are adequate for most tasks and will be made readily available onsite. If additional protection is needed, earmuffs worn with ear plugs can provide additional protection. A sufficient supply of hearing protectors must be made available for the workers.
4. Personal radios, iPods, or similar devices that limit your ability to hear are prohibited.

Hearing Tip: As a rule of thumb, if you have to raise your voice above a normal speaking level to be heard, the sound around you are too loud and hearing protection is required.

f) Proper Clothing (Body Protection)


1. Shirts with sleeves shall be worn at all times (4" sleeve minimum).
2. Heavy-duty pants which cover the length of the leg to the boot top must be worn while on site. Free of excessive holes, rips, or tears.
3. Foot Protection:
 - a) Employees must wear appropriate protective footwear for the work they are performing.
 - b) Sturdy, heavy-duty, hard soled work boots are required.
 - c) While recommended, a safety toe or reinforced toe box, i.e. steel toe or the equivalent type of safety boot is not mandatory except when site specific requirements mandate. Protective toe protection must be worn based on risk assessment.
4. High-Visibility Clothing:
 - a) Reflective/high-visibility vests shall be worn by all workers on site for the duration of the project. Shirts or coats that are a high visibility fluorescent in color, worn on the outside, may be worn in lieu of the vests. Shirts and vests that are dirty and faded that have lost their visibility characteristics are prohibited.
 - b) When flagging or exposed to vehicle traffic, DOT approved vests are required.
5. Specialty Clothing:
 - a) Working with welding, burning, cutting, and grinding should include protections adequate to protect the person.
 - b) During the placement of concrete, protective clothing to avoid incidental skin contact is required.
 - c) Kevlar sleeves or equivalent shall be worn when the conditions warrant additional protection beyond normal clothing. An example would be workers performing hand demolition.

g) Respirators

See Respiratory Protection section for details.

h) Cleaning and Maintenance

All PPE will be kept clean and properly maintained. Cleaning is particularly important for eye and face protection, where dirty or fogged lenses could impair vision. PPE should be inspected, cleaned, and maintained at regular intervals so the PPE provides the requisite protection. Personal protective equipment should not be shared between employees until it has been properly cleaned and sanitized. PPE will be distributed for individual use whenever possible.

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i) Training

Any employee who is required to wear PPE will receive training in the proper use and care of the PPE. Initial training will be from instructional materials provided with the PPE by the manufacturer of the product. Periodic retraining will be offered to employees and supervisors as needed. Training will include, but not necessarily be limited to, the following subjects:

- When it is necessary for PPE to be worn.
- What PPE is necessary?
- How to properly don, doff, adjust, and wear PPE.
- The limitations of PPE.
- The proper care, maintenance, useful life, and disposal of the PPE.

After completion of the training employees will be required to demonstrate they understand the components of the Personal Protective Equipment Program, and how to use PPE properly, or they will be retrained.

j) Recordkeeping

Written records will be kept with the names of the persons trained, the type of training provided, and the dates when training occurred. Training records will be maintained on each employee a minimum of 3 years. An evaluation for each work site, as recorded on the Hazard Assessment Certification Form, will be completed at minimum of each 3 years.

G. Annexes

1. Forms:

- Employee Personal Protection Equipment Training
- Pre – Assessment Checklist
- Personal Protective Equipment Certification of Hazard Assessment Form

Employee Personal Protection Equipment Training

When the job warrants, personal protective equipment must be worn and appropriately utilized. This equipment will be provided by Quality Electric and should be maintained and cared for by the employee. Training shall be provided on use, inspection, wear and cleaning, and storage of the personal protective equipment. Management will be responsible for monitoring and enforcing use of the equipment. Employee acknowledges why the equipment is necessary and agree to use it according to OSHA, Quality Electric Inc and Manufacturer's Standards.

Employee Name:	
Department:	
Job:	

PERSONAL PROTECTION EQUIPMENT COVERED IN TRAINING					
Type of Equipment	Manufacturer / Model #	Employee Signature	Trainer Signature*	Date	Check if Applicable
Hard Hats Type:					<input type="checkbox"/>
Gloves Type:					
Safety Glasses Type:					
Face Shield Type:					
Toe Protection Type:					
Full Body Harness					
Shock - Absorbing Lanyard					
Work Positioning Lanyard					
Self - Retracting Lifeline (SRL)					
Restraint Line					
Horizontal Lifeline					
Vertical Lifeline					
Incline Line					
Rope Grab					
Deceleration Device					
Locking Snap Hooks					
Locking Carabineers					
Relief Straps					
Anchorage					
Safety Nets					

PERSONAL PROTECTION EQUIPMENT COVERED IN TRAINING - CONTINUED					
Type of Equipment	Manufacturer / Model #	Employee Signature	Trainer Signature*	Date	Check if Applicable
FP on Aerial Work Platforms (AWP)					
Chemical Safety Gear:					
Other:					
Other:					
Other:					
Other:					
Other:					
Other:					
Other:					
Other:					
Other:					
Other:					
Other:					
Other:					
Other:					
Other:					
Other:					
Other:					
Other:					
Other:					

** I certify that I have trained the employee / worker for the equipment, company programs and / or OSHA standards listed above. I also certify that I am a competent person who is qualified to provide this training. A Competent Person is one who is capable of identifying existing and predictable hazards [OSHA 29 CFR 1926.32(f)]; authorized to take prompt corrective measures to eliminate hazards [OSHA 29 CFR 1926.32(f)]; and qualified to train employees in all aspects of personal protection equipment covered in OSHA Subpart E [29 CFR 1926.95 - 107 (Subpart E)].*

Date:

Complete if employees are subjected to eye, head, hand, foot, and/or dermal exposure.

I. General Policies

- | | | |
|------------------------------|-----------------------------|--|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Has a workplace survey been conducted to determine which PPE items are necessary? |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Is this survey documented? |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Is all the Protective Equipment maintained in a sanitary condition and ready to use? |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Have all employees been trained and tested on how and when to use PPE items? |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Are temporary or rotated shift employees, vendors and visitors advised on the use of PPE |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Are the same groups required to wear PPE while in work area? |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Has Material Safety Data Sheet information been surveyed for required PPE usage? |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Are employee training records maintained accurately and kept up to date? |

II. Use and Disposal

- | | | |
|------------------------------|-----------------------------|---|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Are procedures in place for decontamination / disposal of PPE items? |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Are PPE items for reorder verified for the same level of protection when there is a change in manufacturer. |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Is the compatibility of replacement parts (such as respirator cartridges) also verified? |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Are procedures in place for cleaning up hazardous materials? |

III. Visual Protection

- | | | |
|------------------------------|-----------------------------|---|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Are protective goggles, glasses and face shields provided and worn when there is any danger of flying particles or corrosive materials? |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Are approved safety glasses required to be worn when there is a risk of eye injuries, such as punctures, abrasions, contusions, or burns? |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Are employees who use corrective lenses required to wear approved prescription safety glasses with goggles and face shields? |

IV. Apparel

- | | | |
|------------------------------|-----------------------------|--|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Are protective gloves, aprons, shields, or other precautions (protective cream) provided wherever there is a danger employees could be cut or exposed to corrosive, hazardous or infectious materials? |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Are eyewash facilities and a quick drench shower within any work area where employees are exposed to injurious corrosives? |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Are hard hats inspected periodically for damage to the suspension system and the shell? |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Are employees who work in identified areas required to wear protective footwear? |

V. Respirators and Hearing Protection

- | | | |
|------------------------------|-----------------------------|--|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Are approved respirators provided for regular or emergency use where needed? |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Is protection provided against occupational noise exposure when required? |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | Is hearing testing also provided? |

Personal Protective Equipment Certification of Hazard Assessment Form

Location:		Date:	
Specific Task Performed at this Location:			
Analysis Conducted By:			
I. Overhead Hazards			
Hazards to Consider:			
<ul style="list-style-type: none"> 1 Suspended Loads that could Fall 2 Overhead beams or loads that could be hit against 3 Energized wires or equipment that could be hit against 4 Employees working at elevated sites who could drop objects on others below. 5 Sharp Objects or corners at head level 			
Hazards Identified:			
Equipment Needed:			
Head Protection:	<input type="checkbox"/> Yes <input type="checkbox"/> No	If Yes, Type:	
<input type="checkbox"/> Type G (General) Impact and Penetration resistance, low voltage exposure, proof tested at 2,200 volts. <input type="checkbox"/> Type E (Electrical) Impact and Penetration resistance, high voltage exposure, proof tested at 20,000 volts. <input type="checkbox"/> Type C (Conductive) Impact and Penetration resistance, no electrical exposure.			
II. Eye and Face Hazards			
Hazards to Consider:			
<ul style="list-style-type: none"> 1 Chemical Splashes 2 Smoke and Fumes 3 Lasers and Optical Radiation 4 Projectiles 5 Dust 6 Welding Operations 7 Bioaerosols 			
Hazards Identified:			
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Is Eye Protection Needed? <input type="checkbox"/> Yes <input type="checkbox"/> No </div>			
If yes then indicate below from the following;			
Safety Glasses	<input type="checkbox"/> Yes <input type="checkbox"/> No	If Yes, Type:	
Face Shields	<input type="checkbox"/> Yes <input type="checkbox"/> No	If Yes, Type:	

III. Hand Hazards

Hazards to Consider:

- 1 Chemical
- 2 Temperature Extremes
- 3 Exposed Electrical
- 4 Material Handling
- 5 Sharp Edges, Splinters
- 6 Biological Agents
- 7 Sharp Tools, Machine Parts

Hazards Identified:

Is Hand Protection Needed?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
----------------------------	------------------------------	-----------------------------

If yes then indicate below from the following;

Gloves	
<input type="checkbox"/>	Chemical Resistant
<input type="checkbox"/>	Temperature Resistant
<input type="checkbox"/>	Abrasion Resistant
<input type="checkbox"/>	Other (Explain)

IV. Foot Hazards

Hazards to Consider:

- 1 Heavy Materials handled by employees
- 2 Exposed Electrical Wires
- 3 Wet Conditions
- 4 Sharp Edges or Points (Puncture Risk)
- 5 Unusually Slippery Conditions
- 6 Construction / Demolition

Hazards Identified:

Is Foot Protection Needed?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
----------------------------	------------------------------	-----------------------------

If yes then indicate below from the following;

Safety Shoe Types:	
<input type="checkbox"/>	Toe Protection
<input type="checkbox"/>	Metatarsal Protection
<input type="checkbox"/>	Electrical Insulation
<input type="checkbox"/>	Puncture Resistant
<input type="checkbox"/>	Other (Explain)

IV. Other Identified Safety and or Health Hazards


	Hazards Identified		Recommended Protection
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	
7		7	
8		8	

I certify that the above inspection was performed to the best of my knowledge and ability, based on the hazards present on the evaluated day.

Forman Signature:

Printed Name:

Date:

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Section 22: Respiratory Protection

A. Policy Statement


The intent of this respiratory policy is to specify a standard operating procedure to protect all construction site employees from respiratory hazards that may be encountered in the workplace. This Respiratory Protection Program specifies standard operating procedures to protect all construction site employees from respiratory hazards, according to the requirements of 29 CFR 1926.103 which simply refers to 29 CFR 1910.134. Respirators are to be used only where engineering control of respirator hazards is not feasible, while engineering controls are being installed, or in emergencies.

B. Responsibilities

- a) Operations is responsible for contacting the Program Administrator when respirator use is required.
- b) The Safety Director is the Respiratory Protection Program Administrator. The Program Administrator will develop written detailed instructions covering each of the basic elements in this program and is solely authorized to amend these instructions.

C. Definitions

1. **Air-purifying respirator** - a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element
2. **Assigned protection factor (APF)** - the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this section
3. **Atmosphere-supplying respirator** - a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units
4. **Canister or cartridge** - a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container
5. **Filtering facepiece (dust mask)** - a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium
6. **Immediately dangerous to life or health (IDLH)** - an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere
7. **Oxygen deficient atmosphere** - an atmosphere with an oxygen content below 19.5% by volume
8. **Qualitative fit test (QLFT)** - a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent
9. **Quantitative fit test (QNFT)** - an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator

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D. Administrative Duties

At Quality Electric our Respiratory Protection Program Administrator is Larry Geyer; he is solely responsible for all facets of the program and has full authority to make necessary decisions to ensure success of this program. His authority includes hiring personnel and purchasing equipment necessary to implement and operate the program. The Program Administrator will develop written detailed instructions covering each of the basic elements in this program, and is the sole person authorized to amend these instructions.

He is also qualified, by appropriate training and experience that is commensurate with the complexity of the program, to administer or oversee our Respiratory Protection Program and conduct the required evaluations of program effectiveness. Employees may review a copy of our Respiratory Protection Program. It is located on each jobsite. Our Program Administrator, Larry Geyer, reviews this program periodically to ensure its effectiveness. Only the Program Administrator may amend the written program.

E. General Requirements

1. All respirators used on site must be kept in good working condition.
2. All employees required to wear a respirator will first be medically evaluated and fit tested in the specific brand, model, type, and size of the respirator to be used.
3. Training is required before employees are required to use respirators.
4. The respirator must be appropriate for the hazard present.

F. Medical Evaluations


A medical evaluation to determine whether an employee is able to use a given respirator is an important element of an effective Respiratory Protection Program and is necessary to prevent injuries, illnesses, and even, in rare cases, death from the physiological burden imposed by respirator use.

At Quality Electric, persons will not be assigned to tasks requiring use of respirators nor fit tested unless it has been determined that they are physically able to perform the work and use the respirator.

A PLHCP of St. Luke's Occupational Health will perform medical evaluations using a medical questionnaire found in Sections 1 and 2, Part A of Appendix C of 29 CFR 1910.134.

All medical questionnaires and examinations are confidential and handled during the employee's normal working hours or at a time and place convenient to the employee. The medical questionnaire is administered so that the employee understands its content. All employees are provided an opportunity to discuss the questionnaire and examination results with their physician or other licensed health care professional (PLHCP).

- a) A medical evaluation is mandatory to determine whether an employee is able to use a respirator.
- b) Once workers have been medically evaluated and cleared for respirator use, they will be fit tested.
- c) All medical questionnaires and examinations shall remain confidential and completed during the employee's normal working hours or at a time and place convenient to the employee. The medical questionnaire is

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administered so that the employee understands its content. All employees are provided an opportunity to discuss the questionnaire and examination results with their physician or other licensed health care professional (PLHCP).

- d) Once the examiner determines the eligibility of the employee to wear a respirator, the examiner will provide the company a written recommendation containing only the following information:
1. Limitations on respirator use related to the medical condition of the employee or relating to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator.
 2. The need, if any, for follow-up medical evaluations.
 3. A statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendation.

G. Follow-Up Medical Examination:


A follow-up medical examination will be provided if a positive response is given to any question among questions 1 through 8 in Section 2, Part A of Appendix C of 29 CFR 1910.134 or if an employee's initial medical examination demonstrates the need for a follow-up medical examination. Our follow-up medical examination includes tests, consultations, or diagnostic procedures that the PLHCP deems necessary to make a final determination.

If the respirator is a negative pressure respirator and the PLHCP finds a medical condition that may place the employee's health at increased risk if the respirator is used, our company will provide a powered air-purifying respirator (PAPR) if the PLHCP's medical evaluation finds that the employee can use such a respirator. If a subsequent medical evaluation finds that the employee is medically able to use a negative pressure respirator, then we are no longer required to provide a PAPR.

Additional medical examinations:

Our company provides additional medical evaluations if:

- An employee reports medical signs or symptoms that are related to ability to use a respirator;
- A PLHCP, supervisor, or the respirator program administrator informs the employer that an employee needs to be reevaluated;
- Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation; or
- A change occurs in workplace conditions (e.g., physical work effort, protective clothing, and temperature) that may result in a substantial increase in the physiological burden placed on an employee.
- Contact St. Luke's Occupational Health for a copy of your confidential medical evaluation or questionnaire.

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H. Respirator Selection

Respirators are selected on the basis of respiratory hazards to which the worker is exposed and workplace and user factors that affect respirator performance and reliability. All selections are made by the Program Administrator, Larry Geyer.

The Program Administrator will develop detailed written standard operating procedures governing the selection of respirators using 29 CFR 1910.134(d) and the following guidelines: see below. Detailed procedures will be included as appendices to this respirator program. Outside consultation, manufacturer's assistance, and other recognized authorities will be consulted if there is any doubt regarding proper selection.

Our company's selection procedures include coverage of the following OSHA requirements:

a) Selection Procedure Checklist


When selecting any respirator in general:

- Select and provide respirators based on respiratory hazard(s) to which a worker is exposed and workplace and user factors that affect respirator performance and reliability.
 1. Select a NIOSH-certified respirator. (NIOSH stands for the National Institute for Occupational Safety and Health)
 2. Identify and evaluate the respiratory hazard(s) in the workplace, including a reasonable estimate of employee exposures to respiratory hazard(s) and an identification of the contaminant's chemical state and physical form. Consider the atmosphere to be immediately dangerous to life or health (IDLH) if you cannot identify or reasonably estimate employee exposure.
 - Select respirators from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.

When selecting respirators for IDLH atmospheres:

Provide these respirators:

- A full facepiece pressure demand self-contained breathing apparatus (SCBA) certified by NIOSH for a minimum service life of thirty minutes, or
- A combination full facepiece pressure demand supplied-air respirator Self-contained breathing apparatus (SAR) with auxiliary self-contained air supply.
- Provide respirators NIOSH-certified for escape from the atmosphere in which they will be used when they are used only for escape from IDLH atmospheres.
- Consider all oxygen-deficient atmospheres to be IDLH. Exception: If we can demonstrate that, under all foreseeable conditions, the oxygen concentration can be maintained within the ranges specified in Table II of 29 CFR 1910.134 (i.e., for the altitudes set out in the table), then any atmosphere-supplying respirator may be used.


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When selecting respirators for atmospheres that are not IDLH:

- Provide a respirator that is adequate to protect the health of the employee and ensure compliance with all other OSHA statutory and regulatory requirements, under routine and reasonably foreseeable emergency situations.
- Select a respirator that meets or exceeds the required level of employee protection by using the assigned protection factors (APFs) listed in §1910.134 Table 1. [Effective Nov. 22, 2006]
- For combination respirators (e.g., airline respirators with an air-purifying filter, ensure that the APF is appropriate to the mode of operation in which the respirator is being used. [Effective Nov. 22, 2006]
- Select a respirator for employee use that maintains the employee's exposure to the hazardous substance at or below the maximum use concentration (MUC), when measured outside the respirator. [Effective Nov. 22, 2006]
- Do not apply MUCs to conditions that are immediately dangerous to life or health (IDLH); instead use respirators listed for IDLH conditions in §1910.134(d)(2). [Effective Nov. 22, 2006]
- Set the MUC at the lower limit when the calculated MUC exceeds the IDLH level for a hazardous substance or the performance limits of the cartridge or canister. [Effective Nov. 22, 2006]
- Select respirators appropriate for the chemical state and physical form of the contaminant.
- For protection against gases and vapors, provide:
 - An atmosphere-supplying respirator, or
 - An air-purifying respirator provided that: (1) The respirator is equipped with an end-of-service life indicator (ESLI) certified by NIOSH for the contaminant; or (2) If there is no ESLI appropriate for conditions in our workplace, implement a change schedule for canisters and cartridges that is based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life. Describe in the respirator program the information and data relied upon and the basis for the canister and cartridge change schedule and the basis for reliance on the data.

For protection against particulates, provide:

- An atmosphere-supplying respirator; or
- An air-purifying respirator equipped with a filter certified by NIOSH under 30 CFR part 11 as a high efficiency particulate air (HEPA) filter, or an air-purifying respirator equipped with a filter certified for particulates by NIOSH under 42 CFR 84; or
- For contaminants consisting primarily of particles with mass median aerodynamic diameters (MMAD) of at least 2 micrometers, an air-purifying respirator equipped with any filter certified for particulates by NIOSH.

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Respirator Types and Uses

The following types of respirators are in use in this facility for the following uses:

Types:	Situation Used:
Half Face	Sawing Concrete
Paper Mask	Nuisance Dust

*** Only NIOSH-certified respirators are selected and used. Where practicable, the respirators will be assigned to individual workers for their exclusive use.**

I. Fit Test Procedures


It is axiomatic that respirators must fit properly to provide protection. If a tight seal is not maintained between the facepiece and the employee's face, contaminated air will be drawn into the facepiece and be breathed by the employee. Fit testing seeks to protect the employee against breathing contaminated ambient air and is one of the core provisions of our respirator program.

In general, fit testing may be either qualitative or quantitative. Qualitative fit testing (QLFT) involves the introduction of a gas, vapor, or aerosol test agent into an area around the head of the respirator user. If that user can detect the presence of the test agent through subjective means, such as odor, taste, or irritation, the respirator fit is inadequate.

In a quantitative respirator fit test (QNFT), the adequacy of respirator fit is assessed by measuring the amount of leakage into the respirator, either by generating a test aerosol as a test atmosphere, using ambient aerosol as a test agent, or using controlled negative pressure to measure the volumetric leak rate. Appropriate instrumentation is required to quantify respirator fit in QNFT.

Quality Electric makes sure those employees are fit tested at the following times with the same make, model, style, and size of respirator that will be used:

- Before any of our employees are required to use any respirator with a negative or positive pressure tightfitting facepiece;
- Whenever a different respirator facepiece (size, style, model, or make) is used;
- At least annually;
- Whenever the employee reports, or our company, PLHCP, supervisor, or Program Administrator makes visual observations of changes in the employee's physical condition that could affect respirator fit. Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight; and
- When the employee, subsequently after passing a QLFT or QNFT, notifies the company, Program Administrator, supervisor, or PLHCP that the fit of the respirator is unacceptable. That employee will be retested with a different respirator facepiece.

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Employees must pass one of the following fit test types that follow the protocols and procedures contained in 29 CFR 1910.134 Appendix A:

- QLFT (Only used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less. May be used to test tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators if tested in the negative pressure mode); or
- QNFT (May be used to fit test a tight-fitting half facepiece respirator that must achieve a fit factor of 100 or greater OR a tight-fitting full facepiece respirator that must achieve a fit factor of 500 or greater OR tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators if tested in the negative pressure mode).

Our workplace-specific fit testing procedures include the following:

Determine what type of respirator will be used and this size needed then contact Larry Geyer to schedule a fit test with; Dale Stephenson Ph D., CIH Boise State University College of Health Sciences.

J. Proper Use of Respirators

Once the respirator has been properly selected and fitted, its protection efficiency must be maintained by proper use in accordance with 29 CFR 1910.134(g). Our company ensures with written procedures that respirators are used properly in the workplace. Our proper respirator use procedures are:

Our company has used the following checklist to ensure that proper use procedures include coverage of OSHA requirements:


Once the respirator has been properly selected and fitted, its protection efficiency must be maintained by proper use.

The following checklist shall be used to ensure that proper use procedures include coverage of OSHA requirements:

a) **Face piece Seal Protection:**

Do not permit respirators with tight-fitting face pieces to be worn by employees who have any of the following:

- (1) Facial hair that comes between the sealing surface of the face piece and the face or that interferes with valve function
- (2) Any condition that interferes with the face-to-face piece seal or valve function
- (3) If an employee wears corrective glasses or goggles or other personal protective equipment, ensure that such equipment is worn in a manner that does not interfere with the seal of the face piece to the face of the user
- (4) For all tight-fitting respirators, ensure that employees perform a user seal check each time they put on the respirator using the procedures recommended by the respirator manufacturer.

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b) Continuing Respirator Effectiveness:

- (1) Maintain surveillance of the work area conditions and degree of employee exposure or stress. When there is a change in work area conditions or degree of employee exposure or stress that may affect respirator effectiveness, reevaluate the continued effectiveness of the respirator.
- (2) Ensure that employees leave the respirator use area
- (3) To wash their faces and respirator face pieces as necessary to prevent eye or skin irritation associated with respirator use
- (4) If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece
- (5) To replace the respirator or the filter, cartridge, or canister elements.
- (6) If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece, replace or repair the respirator before allowing the employee to return to the work area.


c) Procedures for IDLH Atmospheres Ensure that:

- One employee or, when needed, more than one employee is located outside the IDLH atmosphere;
- Visual, voice, or signal line communication is maintained between the employee(s) in the IDLH atmosphere, and the employee(s) located outside the IDLH atmosphere;
- The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue;
- The employer or designee is notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue;
- The employer or designee authorized to do so by the company, once notified, provides necessary assistance appropriate to the situation;
- Employee(s) located outside the IDLH atmospheres are equipped with:
- Pressure demand or other positive pressure self-contained breathing apparatuses (SCBAs), or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either:
- Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry; or
- Equivalent means for rescue where retrieval equipment is not required under the bullet item above this one.

d) Procedures for Interior Structural Firefighting

In addition to the requirements set forth in the row above for Procedures for IDLH Atmospheres, in interior structural fires, ensure that:

- At least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times;
- At least two employees are located outside the IDLH atmosphere; and all employees engaged in interior structural firefighting use SCBAs.
-

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Notes:

- One of the two individuals located outside the IDLH atmosphere may be assigned to an additional role, such as incident commander in charge of the emergency or safety officer, so long as this individual is able to perform assistance or rescue activities without jeopardizing the safety or health of any firefighter working at the incident.
- Nothing in this Proper Use Procedures section is meant to preclude firefighters from performing emergency rescue activities before an entire team has assembled.

K. Voluntary Use of a Respirator

Under certain circumstances OSHA allows voluntary use of filtering face piece commonly referred to as a particulate respirator (N95). Voluntary users of filtering face pieces are not required to undergo fit testing. Voluntarily users must insure that they are not jeopardizing their health by wearing the respirator, it is clean, and it is not shared. Supervisors should provide the employee information concerning voluntary respiratory usage.

L. Maintenance and Care Procedures

In order to ensure continuing protection from respiratory protective devices, it is necessary to establish and implement proper maintenance and care procedures and schedules. A lax attitude toward maintenance and care will negate successful selection and fit because the devices will not deliver the assumed protection unless they are kept in good working order.


a) Cleaning & disinfecting

Our company provides each respirator user with a respirator that is clean, sanitary, and in good working order. We ensure that respirators are cleaned and disinfected using the procedures below:

- Remove cartridges and/or filters from the connectors and discard them
- Remove the headband assembly, inhalation connectors, inhalation valves, exhalation valve guard, valve, and valve seat from the facepiece.
- Prepare a solution on cleaner/sanitizer according to the instructions. Wash the facepiece and components in the cleaning solution.
- Rinse all components completely in clean warm water, then air dry in a clean area. Visually all of the components for damage. Replace if necessary.
- For light cleanings. A refresher wipe pad may be used to clean that portion that comes in contact with your face.

b) Respirator type: Are cleaned and disinfected at the following interval:

- Issued for the exclusive use of an employee: As often as necessary to be maintained in a sanitary condition.
- Issued to more than one employee: Before being worn by different individuals
- Maintained for emergency use: After each use
- Used in fit testing and training: After each use

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M. Storage

Storage of respirators must be done properly to ensure that the equipment is protected and not subject to environmental conditions that may cause deterioration. We ensure that respirators are stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they are packed or stored in the respirator storage bag provided with the facepiece to prevent deformation of the facepiece and exhalation valve.

N. Inspection

In order to assure the continued reliability of respirator equipment, it must be inspected on a regular basis. The frequency of inspection is related to the frequency of use. Here are our frequencies for inspection:

Respirator type: Inspected at the following frequencies:

- All types used in routine situations: Before each use and during cleaning
- Maintained for use in emergency situations: At least monthly and in accordance with the manufacturer's recommendations and checked for proper function before and after each use.
- Emergency escape-only respirators: Before being carried into the workplace for use. In order to meet these intervals, we have created the following schedule(s) to be used for each respirator:

Respirators will be inspected before and after each use by checking the following;

- Inhalation and Exhalation valves to ensure there is no debris, such as dirt or hair. Inspect all components of the facepiece and cartridges for damage, such as cracks, scratches, abrasions, deformation, tears, holes, or missing components. Replace any missing or damaged parts or discard the respirator and replace it with a new one.


Any one of our respirator inspections includes a check:

- For respirator function, tightness of connections, and the condition of the various parts including, but not limited to, the facepiece, head straps, valves, connecting tube, and cartridges, canisters or filters; and
- Of elastomeric parts for pliability and signs of deterioration.
- For self-contained breathing apparatus, in addition to the above, monthly, we maintain air and oxygen cylinders in a fully charged state and recharge when the pressure falls to 90% of the manufacturer's recommended pressure level and determine that the regulator and warning devices function properly.

O. Repairs

Respirators that fail an inspection or are otherwise found to be defective are removed from service, and are discarded or repaired or adjusted in accordance with the following procedures:

- Repairs or adjustments to respirators are to be made only by persons appropriately trained to perform such operations and only with the respirator manufacturer's NIOSH approved parts designed for the respirator;

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- Repairs must be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed; and
- Reducing and admission valves, regulators, and alarms must be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

a) Discarding of respirators

Respirators that fail an inspection or are otherwise not fit for use and cannot be repaired must be discarded.

P. Air Quality Procedures

When atmosphere-supplying respirators are being used to protect employees, it is essential to ensure that the air being breathed is of sufficiently high quality. Our company's procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators include coverage of the following OSHA requirements:

a) Compressed Air, Compressed Oxygen, Liquid Air, and Liquid Oxygen Used for Respirators:


- Compressed and liquid oxygen must meet the United States Pharmacopoeia requirements for medical or breathing oxygen.
- Compressed breathing air must meet at least the requirements for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:
- Oxygen content (v/v) of 19.5-23.5%;
- Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;
- Carbon monoxide (CO) content of 10 parts per million (ppm) or less;
- Carbon dioxide content of 1,000 ppm or less; and
- Lack of a noticeable odor.
- Ensure that compressed oxygen is not used in atmosphere-supplying respirators that have previously used compressed air.
- Ensure that oxygen concentrations greater than 23.5% are used only in equipment designed for oxygen service or distribution.

b) Cylinders Used to Supply Breathing Air to Respirators:

- Cylinders must be tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR 173 and 178).
- Cylinders of purchased breathing air must have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air.
- The moisture content in the cylinder must not exceed a dew point of -50 deg. F (-45.6 deg. C) at 1 atmosphere pressure.

c) Compressors:

- Ensure that compressors used to supply breathing air to respirators are constructed and situated so as to:
- Prevent entry of contaminated air into the air-supply system;

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- Minimize moisture content so that the dew point at 1 atmosphere pressure is 10 degrees F (5.56 deg. C) below the ambient temperature;
- Have suitable in-line air-purifying sorbent beds and filters to further ensure breathing air quality. Sorbent beds and filters must be maintained and replaced or refurbished periodically following the manufacturer's instructions; and
- Have a tag containing the most recent change date and the signature of the person authorized by our company to perform the change. The tag must be maintained at the compressor.
- For compressors that are not oil-lubricated, ensure that carbon monoxide levels in the breathing air do not exceed 10 ppm.
- For oil-lubricated compressors, use a high-temperature or carbon monoxide alarm, or both, to monitor carbon monoxide levels. If only high-temperature alarms are used, the air supply must be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm.

d) Breathing Air Couplings:

- Ensure that breathing air couplings are incompatible with outlets for non-respirable worksite air or other gas systems. No asphyxiating substance must be introduced into breathing air lines.

e) Breathing Gas Containers:

- Use breathing gas containers marked in accordance with the NIOSH respirator certification standard, 42 CFR 84.

f) Filters, Cartridges, and Canisters:

- Ensure that all filters, cartridges, and canisters used in the workplace are labeled and color-coded with the NIOSH approval label and that the label is not removed and remains legible.

Respirators shall be inspected on a regular basis:


Respirator type: Inspected at the following frequencies:

- All types used in routine situations: Before each use and during cleaning
- Maintained for use in emergency situations: At least monthly and in accordance with the manufacturer's recommendations and checked for proper function before and after each use.
- Emergency escape-only respirators: Before being carried into the workplace for use. In order to meet these intervals, we have created the following schedule(s) to be used for each respirator:

Respirators will be inspected before and after each use by checking the following;

- Inhalation and Exhalation valves to ensure there is no debris, such as dirt or hair. Inspect all components of the facepiece and cartridges for damage, such as cracks, scratches, abrasions, deformation, tears, holes, or missing components. Replace any missing or damaged parts or discard the respirator and replace it with a new one.

Any one of our respirator inspections includes a check:

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- For respirator function, tightness of connections, and the condition of the various parts including, but not limited to, the facepiece, head straps, valves, connecting tube, and cartridges, canisters or filters; and
- Of elastomeric parts for pliability and signs of deterioration.
- For self-contained breathing apparatus, in addition to the above, monthly, we maintain air and oxygen cylinders in a fully charged state and recharge when the pressure falls to 90% of the manufacturer's recommended pressure level and determine that the regulator and warning devices function properly.

g) Repairs

Respirators that fail an inspection or are otherwise found to be defective are removed from service, and are discarded or repaired or adjusted in accordance with the following procedures:

- Repairs or adjustments to respirators are to be made only by persons appropriately trained to perform such operations and only with the respirator manufacturer's NIOSH approved parts designed for the respirator;
- Repairs must be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed; and
- Reducing and admission valves, regulators, and alarms must be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

h) Discarding of respirators

Respirators that fail an inspection or are otherwise not fit for use and cannot be repaired must be discarded.

Q. Training


The most thorough respiratory protection program will not be effective if employees do not wear respirators, or if wearing them, do not do so properly. The only way to ensure that our employees are aware of the purpose of wearing respirators, and how they are to be worn is to train them. Simply put, employee training is an important part of the respiratory protection program and is essential for correct respirator use.

Our training program provided by Dale Stephenson Ph D., CIH Director and Associate Professor Boise State University College of Health Sciences and Larry Geyer Safety Director Quality Electric Inc. is two-fold; it covers both the:

- Respiratory hazards to which our employees are potentially exposed during routine and emergency situations, and
- Proper use of respirators, including putting on and removing them, any limitations on their use, and their maintenance.

Both training parts are provided prior to requiring an employee to use a respirator in our workplace. However, if an employee has received training within 12 months addressing the seven basic elements of respiratory protection (see "Seven basic elements" below) and Quality Electric and the employee can demonstrate that he/she has knowledge of those elements, then that employee is not required to repeat such training initially.

Yet, we do require all of our employees to be retrained annually and when the following situations occur:


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- Changes in the workplace or the type of respirator render previous training obsolete;
- Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill; or
- Any other situation arises in which retraining appears necessary to ensure safe respirator use.

a) Seven basic elements:

Our employees are trained sufficiently to be able to demonstrate knowledge of at least these seven elements:

- Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator.
- What the limitations and capabilities of the respirator are.
- How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions. Respirators do malfunction on occasion, or emergency situations occur which require different respirators for the exposure levels involved, if this is the case remove yourself from the environment and contact your immediate supervisor so that your work area can be re-assessed.
- How to inspect, put on, remove, use, and check the seals of the respirator.
 1. Putting on the respirator; your respirator should only be put on in an area with uncontaminated air. Visually check the respirator to make sure all major. The safety department shall ensure workers that utilize respirators are trained. The training shall include components are in place and in working condition. Verify the correct cartridges and or filters are being used and they are securely attached to the facepiece. Remove eyewear, hard hat, or other head gear before putting on the respirator and replace after you put on the respirator. Adjust the respirator head straps to the full outward position. With one hand holding the respirator, place your chin inside the chin cup and the top of the respirator over your nose. With the other hand, position the plastic straps so they are centered on your head. Remove any slack in the upper straps by pulling the two end tabs, back and toward your ears. Do not tighten. Fasten the bottom elastic straps behind your neck and under your hair. Remove any slack in the bottom straps by pulling the end tabs. Do not tighten. Tighten the upper head straps in small equal increments to ensure the top half of the respirator is tightened evenly and it is snug, comfortable, and centered on your face. Tighten the lower head straps in small equal increments to ensure the respirator is tightened evenly and it is snug, comfortable and centered on your face. Pull the respirator away from your face and maneuver it to assure it's centered, comfortable and snug. A final small adjustment may be made, by again tightening the upper and lower straps. Use the plastic loops to slide back and hold any loose strap material.
 2. Face to Facepiece seal check; this should be performed in an uncontaminated area. Place the palm of your hand over the opening in the exhalation valve guard and exhale normally. If the facepiece bulges slightly and no air leaks between the facepiece and the face, an effective seal has been obtained. If air leaks out between the facepiece and the face, reseal the facepiece and/or adjust the tension of the head straps to eliminate the leakage. This check must be repeated until an effective seal of the facepiece to face is obtained.

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3. To Remove the Respirator; before removing the respirator, go to a safe area with uncontaminated breathable air. Unhook the clip on the bottom strap and remove the respirator.
- Maintenance and Storage of the Respirator; Respirators will be inspected before and after each use by checking the following; Inhalation and Exhalation valves to ensure there is no debris, such as dirt or hair. Inspect all components of the facepiece and cartridges for damage, such as cracks, scratches, abrasions, deformation, tears, holes, or missing components. Replace any missing or damaged parts or discard the respirator and replace it with a new one. Each respirator shall be stored in a clean, dry area in the respirator storage bag provided with the facepiece.
 - How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators. If you experience shortness of breath, dizziness, or trouble breathing; remove yourself from the contaminated area and check your equipment.
 - The general requirements of 29 CFR 1910.134. Develop a written program; Properly select respirators; Evaluate respirator use; Correct deficiencies in respirator use; Conduct medical evaluations; Provide for the maintenance, storage, and cleaning of respirators; and Retain and provide access to specific records.

b) Information for employees using respirators when not required under the standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

- Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirator's limitations.
- Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
- Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
- Keep track of your respirator so that you do not mistakenly use someone else's respirator.

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R. Program Evaluation

It is inherent in respirator use that problems with protection, irritation, breathing resistance, comfort, and other respirator-related factors occasionally arise in most respirator protection programs. Although it is not possible to eliminate all problems associated with respirator use, we try to eliminate as many problems as possible to improve respiratory protection and encourage employee acceptance and safe use of respirators. By having our program administrator, Larry Geyer, thoroughly evaluate and, as necessary, revise our Respiratory Protection Program, we can eliminate problems effectively.

At Quality Electric, program evaluation, performed as needed by our program administrator, involves the following:

- Conducting evaluations of the workplace as necessary to ensure that the provisions of the current written program are being effectively implemented and that it continues to be effective.
- Regularly consulting employees required to use respirators to assess their views on program effectiveness and to identify any problems. Any problems that are identified during this assessment must be corrected. Factors to assess include, but are not limited to:
- Respirator fit (including the ability to use the respirator without interfering with effective workplace performance)
- Appropriate respirator selection for the hazards to which the employee is exposed
- Proper respirator use under the workplace conditions the employee encounters
- Proper respirator maintenance
- Effectiveness of the program

S. Appendices


a) Appendix 1—References

The following documents are helpful references:

- 29 CFR 1910.134, Respiratory Protection, and Appendices,
- 42 CFR 84, Approval of Respiratory Protective Devices,
- ANSI Z88.2, Respiratory Protection,
- NIOSH Guide to Industrial Respiratory Protection-1987
- NIOSH Guide to the Selection and Use of Particulate Respirators Certified Under 42 CFR 84 (4/23/96).

b) Appendix 2 Information for Employees Using Respirators When Not Required Under the Standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

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You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirator's limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.
 - Pre-use inspections
 - Use of equipment
 - Storage of the respirator
 - Inspections of respirators.

T. Record Keeping

Project teams are required to keep records. Those records include:

- Respiratory Program
- Fit Testing
- Medical Evaluation

U. Annexes

- a) Forms and Permits:
 - Medical Questionnaire
 - Voluntary Respirator Usage Notification

OSHA Respirator Medical Evaluation Questionnaire (Mandatory) – Sec. 1910.134, Appendix C

Insert Patient Label Here

To the employer: Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee: Can you read? ☐ Yes ☐ No

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print)

1. Today's date: _____ Your SS#: _____		2. Your name: _____	
3. Your date of birth: _____	4. Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female	5. Your height: _____ ft. _____ in.	6. Your weight: _____ lbs.
7. Your job title: _____		7a. Employer: _____	
8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code): _____		9. The best time to phone you at this number: _____	
10. Has your employer told you how to contact the health care professional who will review this questionnaire? <input type="checkbox"/> Yes <input type="checkbox"/> No			
11. Check the type of respirator you will use (you can check more than one category): <input type="checkbox"/> a. N, R, or P disposable respirator (filter-mask, non- cartridge type only). <input type="checkbox"/> b. Half- or full-facepiece type, powered-air purifying, supplied-air. <input type="checkbox"/> c. Self-contained breathing apparatus (SCBA).			
12. Have you worn a respirator? (circle one): <input type="checkbox"/> Yes <input type="checkbox"/> No If "yes," what type(s): _____			

Part A. Section 2. Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator.

<input type="checkbox"/> Y <input type="checkbox"/> N 1. Do you currently smoke tobacco, or have you smoked tobacco in the last month?	<input type="checkbox"/> Y <input type="checkbox"/> N n. Any other symptoms that you think may be related to lung problems
<input type="checkbox"/> Y <input type="checkbox"/> N 2. Have you ever had any of the following conditions? <input type="checkbox"/> a. Seizures (fits) <input type="checkbox"/> a. Seizures (fits) <input type="checkbox"/> b. Diabetes (sugar disease) <input type="checkbox"/> c. Allergic reactions that interfere with your breathing <input type="checkbox"/> d. Claustrophobia (fear of closed-in places) <input type="checkbox"/> e. Trouble smelling odors	<input type="checkbox"/> Y <input type="checkbox"/> N 5. Have you ever had any of the following cardiovascular or heart problems? <input type="checkbox"/> a. Heart attack <input type="checkbox"/> b. Stroke <input type="checkbox"/> c. Angina <input type="checkbox"/> d. Heart failure <input type="checkbox"/> e. Swelling in your legs or feet (not caused by walking) <input type="checkbox"/> f. Heart arrhythmia (heart beating irregularly) <input type="checkbox"/> g. High blood pressure <input type="checkbox"/> h. Any other heart problem that you've been told about
<input type="checkbox"/> Y <input type="checkbox"/> N 3. Have you ever had any of the following pulmonary or lung problems? <input type="checkbox"/> a. Asbestosis <input type="checkbox"/> b. Asthma <input type="checkbox"/> c. Chronic bronchitis <input type="checkbox"/> d. Emphysema <input type="checkbox"/> e. Pneumonia <input type="checkbox"/> f. Tuberculosis <input type="checkbox"/> g. Silicosis <input type="checkbox"/> h. Pneumothorax (collapsed lung) <input type="checkbox"/> i. Lung cancer <input type="checkbox"/> j. Broken ribs <input type="checkbox"/> k. Any chest injuries or surgeries <input type="checkbox"/> l. Any other lung problem that you've been told about	<input type="checkbox"/> Y <input type="checkbox"/> N 6. Have you ever had any of the following cardiovascular or heart symptoms? <input type="checkbox"/> a. Frequent pain or tightness in your chest <input type="checkbox"/> b. Pain or tightness in your chest during physical activity <input type="checkbox"/> c. Pain or tightness in your chest that interferes with your job <input type="checkbox"/> d. In the past two years, have you noticed your heart skipping or missing a beat <input type="checkbox"/> e. Heartburn or indigestion that is not related to eating. <input type="checkbox"/> f. Any other symptoms that you think may be related to heart or circulation problems
<input type="checkbox"/> Y <input type="checkbox"/> N 4. Do you currently have any of the following symptoms of pulmonary or lung illness? <input type="checkbox"/> a. Shortness of breath <input type="checkbox"/> b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline <input type="checkbox"/> c. Shortness of breath when walking with other people at an ordinary pace on level ground <input type="checkbox"/> d. Have to stop for breath when walking at your own pace on level ground <input type="checkbox"/> e. Shortness of breath when washing or dressing yourself <input type="checkbox"/> f. Shortness of breath that interferes with your job <input type="checkbox"/> g. Coughing that produces phlegm (thick sputum) <input type="checkbox"/> h. Coughing that wakes you early in the morning <input type="checkbox"/> i. Coughing that occurs mostly when you are lying down <input type="checkbox"/> j. Coughing up blood in the last month <input type="checkbox"/> k. Wheezing <input type="checkbox"/> l. Wheezing that interferes with your job <input type="checkbox"/> m. Chest pain when you breath deeply	<input type="checkbox"/> Y <input type="checkbox"/> N 7. Do you currently take medication for any of the following problems? <input type="checkbox"/> a. Breathing or lung problems <input type="checkbox"/> b. Heart trouble <input type="checkbox"/> c. Blood pressure <input type="checkbox"/> d. Seizures (fits) <input type="checkbox"/> Y <input type="checkbox"/> N 8. If you've used a respirator, have you ever had any of the following problems? (If you've never used a respirator, check the following space and go to question 9:) <input type="checkbox"/> a. Eye irritation <input type="checkbox"/> b. Skin allergies or rashes <input type="checkbox"/> c. Anxiety <input type="checkbox"/> d. General weakness or fatigue <input type="checkbox"/> e. Any other problem that interferes with your use of a respirator <input type="checkbox"/> Y <input type="checkbox"/> N 9. Would you like to talk to the health care professional who will review and discuss your answers to this questionnaire?

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

☐ Y ☐ N 10. Have you ever lost vision in either eye (temporarily or permanently) ?

☐ Y ☐ N 11. Do you currently have any of the following vision problems?

- ☐ Y ☐ N a. Wear contact lenses
☐ Y ☐ N b. Wear glasses
☐ Y ☐ N c. Color blind
☐ Y ☐ N d. Any other eye or vision problem

☐ Y ☐ N 12. Have you ever had an injury to your ears, including a broken ear drum?

☐ Y ☐ N 13. Do you currently have any of the following hearing problems?

- ☐ Y ☐ N a. Difficulty hearing
☐ Y ☐ N b. Wear a hearing aid
☐ Y ☐ N c. Any other hearing or ear problem

☐ Y ☐ N 14. Have you ever had a back injury?

15. Do you currently have any of the following musculoskeletal problems?

- ☐ Y ☐ N a. Weakness in any of your arms, hands, legs, or feet
☐ Y ☐ N b. Back pain
☐ Y ☐ N c. Difficulty fully moving your arms and legs
☐ Y ☐ N d. Pain or stiffness when you lean forward or backward at the waist
☐ Y ☐ N e. Difficulty fully moving your head up or down
☐ Y ☐ N f. Difficulty fully moving your head side to side
☐ Y ☐ N g. Difficulty bending at your knees
☐ Y ☐ N h. Difficulty squatting to the ground
☐ Y ☐ N i. Climbing a flight of stairs or a ladder carrying more than 25 lbs
☐ Y ☐ N j. Any other muscle or skeletal problem that interferes with using a respirator

Part B. Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

☐ Y ☐ N 1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen? If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions?

2. List any second jobs or side businesses you have: _____

3. List your previous occupations: _____

4. List your current and previous hobbies: _____

☐ Y ☐ N 5. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications)?
 If "yes," name the medications if you know them:

6. Will you be using any of the following items with your respirator(s)?

- ☐ Y ☐ N a. HEPA Filters
☐ Y ☐ N b. Canisters (for example, gas masks)
☐ Y ☐ N c. Cartridges

7. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:

- ☐ Y ☐ N a. Escape only (no rescue)
☐ Y ☐ N b. Emergency rescue only
☐ Y ☐ N c. Less than 5 hours per week
☐ Y ☐ N d. Less than 2 hours per day
☐ Y ☐ N e. 2 to 4 hours per day
☐ Y ☐ N f. Over 4 hours per day

8. During the period you are using the respirator(s), is your work effort:

- ☐ Y ☐ N a. Light (less than 200 kcal per hour)
 If "yes," how long does this period last during the average shift: _____ hrs. _____ mins.
 Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.

☐ Y ☐ N b. Moderate (200 to 350 kcal per hour)
 If "yes," how long does this period last during the average shift: _____ hrs. _____ mins.

Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

☐ Y ☐ N c. Heavy (above 350 kcal per hour)
 If "yes," how long does this period last during the average shift: _____ hrs. _____ mins.

Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

☐ Y ☐ N 9. Will you be wearing protective clothing and / or equipment (other than the respirator) when you're using your respirator? If "yes," describe this protective clothing and / or equipment: _____

☐ Y ☐ N 10. Will you be working under hot conditions (temperature exceeding 77 deg. F)?

☐ Y ☐ N 11. Will you be working under humid conditions?

12. Describe the work you'll be doing while you're using your respirator(s): _____

13. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases): _____

14. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security): _____



Voluntary Respirator Usage Notification

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by the labor law standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:


1. Read and heed all instructions provided by the manufacturer on appropriate wear and use, maintenance, cleaning/care, and warnings regarding the respirator's limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. The National Institute for Occupational Safety and Health, NIOSH, of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fume or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.
5. Nuisance masks are not to be considered respirators and should be used only for nuisance dusts and debris. Nuisance masks are made up of single strap units which can be made available to protect against high dust conditions.

Print Name

Signature

Company

Date

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Section 23: Scaffolds

A. Policy Statement


The intent of this policy is to establish clear and consistent practices for the safe erection, inspection, maintenance, dismantling, and use of a scaffold system.

B. Scope

This program is applicable at every work area where scaffolding is erected. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Quality Electric employees and contractors and shall be used on owned premises, or when an operator's program does not exist or is less stringent.

C. Definitions

1. **Bearer** - A horizontal member of a scaffold upon which the platform rests and which may be supported by ledgers.
2. **Boatswains' chair** - a single-point adjustable suspension scaffold consisting of a seat or sling designed to support one employee in a sitting position
3. **Brace** - A tie that holds one scaffold member in a fixed position with respect to another member
4. **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
5. **Coupler** - A device for locking together the components of a tubular metal scaffold which shall be designed and used to safely support the maximum intended loads.
6. **Double pole or independent pole scaffold** - A scaffold supported from the base by a double row of uprights, independent of support from the walls and constructed of uprights, ledgers, horizontal platform bearers, and diagonal bracing.
7. **Fabricated frame scaffold** - a scaffold consisting of a platform(s) supported on fabricated end frames with integral posts, horizontal bearers, and intermediate members
8. **Guardrail** - A rail secured to uprights and erected along the exposed sides and ends of platforms.
9. **Heavy Duty Scaffold** - A scaffold designed and constructed to carry a working load not to exceed 75 pounds per square foot
10. **Ledger (stringer)** - A horizontal scaffold member which extends from post to post and which supports the putlogs or bearer forming a tie between the posts.
11. **Light Duty Scaffold** - A scaffold designed and constructed to carry a working load not to exceed 25 pounds per square foot.
12. **Manually Propelled Mobile Scaffold** - Manually propelled mobile scaffold.
13. **Maximum intended load** - The total of all loads including the working load, the weight of the scaffold, and such other loads as may be reasonably anticipated.
14. **Medium duty scaffold** - A scaffold designed and constructed to carry a working load not to exceed 50 pounds per square foot.
15. **Mid-Rail** - A rail approximately midway between the guardrail and platform, used when required,

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and secured to the uprights erected along the exposed sides and ends of platforms.

17. **Mobile scaffold** - a powered or unpowered, portable, caster or wheel-mounted supported scaffold
18. **Putlog** - A scaffold member upon which the platform rests.
19. **Runner** - The lengthwise horizontal bracing or bearing members or both.
20. **Qualified person** - one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project
21. **Scaffold** - Any temporary elevated platform (supported or suspended) and its supporting structure (including points of anchorage), used for supporting employees, materials, or both
22. **Self-contained adjustable scaffold** - a combination supported and suspension scaffold consisting of an adjustable platform(s) mounted on an independent supporting frame(s) not a part of the object being worked on, and which is equipped with a means to permit the raising and lowering of the platform(s). Such systems include rolling roof rigs, rolling outrigger systems, and some masons' adjustable supported scaffolds.
23. **Suspension scaffold** - one or more platforms suspended by ropes or other non-rigid means from an overhead structure(s)
24. **System scaffold** - A scaffold consisting of posts with fixed connection points that accept runners, bearers, and diagonals that can be interconnected at predetermined levels
25. **Toe board** - A barrier secured along the sides and ends of a platform, to guard against the falling of material.
26. **Tube and coupler scaffold** - An assembly consisting of tubing, which serves as posts, bearers, braces, ties, and runners, a base supporting the posts, and special couplers which serve to connect the uprights and to join the various members.
27. **Tubular welded frame scaffold** - A sectional, panel, or frame metal scaffold substantially built up of prefabricated welded sections that consist of posts and horizontal bearer with intermediate members. Panels or frames shall be braced with diagonal or cross braces.
28. **Working Load** - Load imposed by men, materials, and equipment.

D. Key Responsibilities

Supervisors

- Responsible for ensuring that scaffolds are erected by a qualified person, that set up inspections are performed, and all daily inspections are performed before work starts for the day.
- Responsible for ensuring that all employees, and/or contractors have been trained in the use and inspection methods for scaffolds. Only qualified and competent personnel are allowed to use or modify scaffolding systems.
- Responsible for ensuring that all employees and contractors are aware that if an inspection discovers a defect, the scaffold cannot be used until repairs are made.


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Employees

- Responsible for following this program by inspecting the scaffolds daily and report any damages or repairs that may be needed to their supervisor.

E. General Requirements

- Scaffolds shall be furnished and erected in accordance with applicable standards for persons engaged in work that cannot be done safely from the ground or from solid construction. Except that ladders used for such work shall conform to ladder safety standards.
- Scaffolds shall only be erected by a qualified third party, who is competent to certify the scaffolding safe to use.
- The footing or anchorage for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose boards shall not be used to support scaffolds or planks.
- Scaffolds and their components shall be capable of supporting without failure at least four times the maximum intended loads. Scaffold components must meet OSHA requirements 29 CFR 1910.28 and 29 CFR 1926.451.
- Wood scaffold planks must be cross-supported every 8 feet. Scaffold deck boards shall be cleated, wired, or nailed into place.
- All working levels of scaffolds will be floored completely except where internal ladders require space for ladder openings.
- Scaffolds and other devices mentioned or described in this program shall be maintained in safe condition. Scaffolds shall not be altered or moved horizontally while they are occupied.
- Any scaffold damaged or weakened from any cause shall be immediately repaired and shall not be used until repairs have been completed.
- Scaffolds shall not be loaded in excess of the working loads for which they are intended.
- Bolts used in the construction of scaffolds shall be of adequate size and in sufficient numbers at each connection to develop the designed strength of the scaffold.
- All platforms shall be overlapped (minimum 12 inches) and secured from any movement.
- An access ladder or equivalent safe access shall be provided.
- Scaffold planks shall extend over their end supports not less than 6 inches or more than 18 inches.
- The poles, legs, or uprights of scaffolds shall be plumb, and securely and rigidly braced to prevent swaying and displacement.
- Materials being hoisted onto a scaffold shall have a tag line.
- Overhead protection shall be provided for workers on a scaffold exposed to overhead hazards.
- Toe boards and guardrails shall be installed if a scaffold or platform is erected to a height of 6 feet or more. Scaffolds shall be provided with a screen between the toe board and the guardrail, extending along the entire opening, consisting of No. 18 gauge wire one-half inch mesh or the equivalent, where workers are required to work or pass under the scaffolds.
- Work shall not be performed on a scaffold during storms or high winds.
- Work shall not be performed on scaffolds that are covered with snow or ice unless all snow and ice has been removed and all planking has been sanded to prevent slipping.

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t) Tools, material, and debris shall not be allowed to accumulate in quantities to cause a hazard.

F. Scaffold Erection

1. All scaffolds shall be erected or dismantled under the direct supervision of a designated competent person.
2. All scaffolds shall be capable of supporting, without failure, its own weight and at least four times the maximum intended load.
3. Scaffolds will be designed by a qualified person. The scaffold shall be constructed and loaded in accordance with that design. The designer must address non-typical loading due to wind and winter protection and netting.
4. The mixing of scaffold parts and components is prohibited unless physical dimensions and strength characteristics are equal, or unless approval has been given in writing by the manufacture.
5. Scaffolding greater than 125 feet high must be designed by a registered Professional Engineer.
6. Scaffold installers/dismantlers shall utilize fall protection when exposed to a fall of greater than six feet.


G. Inspection

Scaffolding shall be inspected, by a qualified person, in conjunction with the manufactures required recommendations. The competent person must also insure scaffolds are safe prior to and during scaffold use.

- At a minimum, the following shall be inspected by the competent person after erection, before the start of the day or beginning of a shift change to ensure scaffolds are safe prior to and during use:
 - i. Ground or surface footing shall be inspected to ensure that there is no settling.
 - ii. All main supports and cross braces shall be inspected for any signs of damage, missing pins, bolts, and any locks and/or safety keepers.
 - iii. All walking surfaces and/or planks shall be inspected for damage and proper placements and any possible movement.
 - iv. All walkways and planks must be secure to prevent any movement.
- Inspection shall be made to ensure that the scaffold is stable, and any movement is prevented.
- If during the inspection, a defect or damage to the scaffold is discovered, the scaffold shall be tagged out by the competent person, complied with and use prohibited until needed repairs are made.

H. Mandatory Signs and Tags for Defects Found

1. A daily inspection of the scaffold is to be performed by the designated competent person prior to employees accessing the scaffold system.
2. The designated competent person shall determine whether the scaffold is safe to use. A scaffold tagging system shall be used to identify the stage of scaffold readiness.
3. Scaffold tags shall be placed in access points or other highly visible location and shall bear the date of the last inspection and the initials of the inspector.
4. A green tag is attached by the competent person to scaffolds that are considered complete. This would include the installation of all structural components, tiebacks, decking and a guardrail system. A green tag would tell the user that the scaffold is safe to use.

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5. A yellow tag placed on a scaffold indicates the scaffold was constructed in a manner outside the norm to meet specific work conditions or requirements. All attempts should be made to restore a yellow tag to a green tag as soon as is practical. A yellow tag also informs the user that a fall protection system may be required.
6. A red tag indicates the scaffold is being dismantled, not yet completely erected, or for some reason not safe and shall not be used.
7. Scaffolds that are not tagged or current on inspection shall not be used.
8. If there are any changes or alterations to conditions or the scaffold, the competent person shall re-inspect the scaffold and tag accordingly.
9. All employees are to be properly trained in the use of scaffolds, fall protection, and hazards associated with them prior to accessing the scaffold system.
10. Danger signs shall be used only where an immediate hazard exists. Danger signs must be posted around the immediate area of the scaffold, to alert other workers of possible danger from falling objects from the scaffold.
11. Caution Signs and/or barricade tape shall be used to mark off a larger area around scaffolding warning other workers to use caution.

I. Modifications

Modification and repairs shall be performed by a qualified person, who is competent to certify the scaffolding safe to use to ensure non-qualified personnel do not create additional hazards.


Employees shall not perform any modifications or repairs, unless they have been trained and certified, and failure to comply may result in disciplinary action and or termination.

J. Work Requirements

1. No scaffold shall be constructed within 10' of an electrical hazard without prior approval from the safety department.
2. Scaffolds covered with snow, ice, or other slippery material must be cleared prior to work being conducted.
3. Work on or from scaffolds is prohibited during storms or high winds unless a competent person has determined that it is safe for all employees.
4. Debris, material, and tools shall not be allowed to accumulate on platforms.
5. No type of makeshift devices, material, or equipment will be used to increase working height of employees on scaffolds, including but not limited to ladders.
6. Hoists, lifts, piping, etc., shall not be added to a scaffold without the scaffold manufacturer's approval.

K. Guardrails

1. Standard guardrails consisting of a top rail (39-42 inches), mid rail (21 inches) and toe boards (4 inches) shall be installed on all open sides of the scaffolding.
2. Cross bracing is not acceptable in place of a top rail or mid rail.
3. Guardrails must meet 200-pound force requirement.

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L. Work Platform

1. Scaffolds will be fully planked or decked between the front uprights and the guardrail supports with spacing no greater than 1 inch around the uprights and between planks.
2. The front edge of all platforms will not be more than 14 inches from the face of the work unless guardrail systems are erected along the front edge and/or personal fall arrest systems are used.
3. The maximum distance from the face for plastering and lathing operations will be 18 inches.
4. Each end of the plank or platform, unless cleated or otherwise restrained by hooks, shall extend over the center line of the support at least 6 inches but not more than 12 inches.
5. Planking overlap shall not be less than 12 inches unless planks are nailed together or restrained to prevent movement.

M. Bracing and Tiebacks


1. All scaffolds that meet the 4:1 ratio (height to base) is required to be tied-off, braced, or supported by other means.
2. Tiebacks and braces must be installed:
 - a) Vertically:
 - Every 20 feet or less for scaffolds less than three feet wide
 - Every 26 feet or less for scaffolds more than three feet wide.
 - b) Horizontally:
 - At each end at intervals not to exceed 30 feet from one end.

N. Foundation

Supported scaffolds poles, legs, posts, frames, and uprights shall bear on base plates. Mud sills capable of supporting the load must be used unless there are other adequate firm foundations. Footings shall be level, sound, rigid, and capable of supporting scaffold without settling or displacement.

O. Scaffold Access

1. When scaffold platforms (of any type of scaffold) are more than 2 feet above or below a point of access, safe means of access will be provided (i.e. step, ramp, stair, etc.).
2. Direct access to or from another surface shall be used only when the scaffold is not more than 14 inches horizontally and not more than 24 inches vertically from the other surface. Other means may be allowed when approved by the safety department.
3. Cross braces will not be used as means of access.
4. Hook-on and attachable ladders shall be specifically designed for use with the type of scaffold used. Step ladders and extension ladders must be approved for use on all scaffolds.
5. When hook-on or attachable ladders are used, the maximum free climbing height shall be limited to 35 feet measured from the base of the scaffold. Alternate means such as a stair scaffold shall be utilized when exceeding that height.

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- Hook-on ladders will be positioned no more than 24 inches from the ground and extend a minimum of 36 inches above the working surface or landing.

P. Counterweight


- Counterweights will be made of a solid material.
- Sand, gravel, and similar material will not be allowed as counterweights.
- Counterweights, if used, will be secured by mechanical means to the outrigger beams to prevent accidental movement.

Q. Scaffold Overhead Falling Object Protection

- When employees are working on scaffolding and are exposed to work above, they shall be protected with one or more of the following means:
 - Approved overhead protection installed on the scaffold
 - Toe boards, vertical netting, on every open-sided floor above the scaffold
 - Catch platforms or horizontal debris netting between the work above and the scaffold work platform
 - Securing of material and/or equipment on the upper floors (good housekeeping)
 - Staggering of work schedule to eliminate the exposure.
- When employees are working on a scaffold and there is a potential of exposure below due to falling objects, one or more of the following means shall be implemented:
 - Barricades and signage shall be set up to keep workers out of the area
 - Extended toe boards and/or vertical netting shall be installed on the back of the scaffold
 - A ground person shall be in place to direct traffic and/or personnel movement
 - Approved overhead protection must be installed at access points
 - Tool tethers/lanyards.

R. Boatswains Chair

- Only properly trained employees shall be permitted to use this equipment.
- Equipment must be a manufactured system.
- Equipment must be inspected and documented daily before each use.
- Must be used in conjunction with a personal fall arrest system connected to an independent anchorage point separate from the point being used to support or suspend platforms and capable of supporting at least 5,000 pounds.
- Personal fall arrest systems shall consist of a full body harness, appropriate length rope and rope grab, with a lanyard not more than 3-feet in length.
- Suspension ropes shall be protected from damage by heat or sharp edges.
- The combined weight of the person as well as any tools and materials must be taken into consideration when looking at the overall weight capacity.
- Written rescue/retrieval plan is required prior to use.

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S. Suspension Scaffold


1. Suspension scaffold shall be installed per manufacturer's recommendations.
2. Each employee working from a suspension scaffold shall be protected by both a personal fall arrest system and a guardrail system.
3. Personal fall arrest systems shall consist of a full body harness, appropriate length rope and rope grab, with a lanyard not more than 3-feet in length.
4. Anchorage points used for attachment of personal fall arrest equipment shall be independent of any anchorage point being used to support or suspend platforms and capable of supporting at least 5,000 pounds.
5. Suspension wires and ropes shall be protected from damage by heat or sharp edges.
6. Two-point and multi-point suspension scaffolds shall be tied or otherwise secured to prevent movement.
7. 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 four times the load imposed on them.
8. Suspension scaffold outrigger beams, when used, will be made of structural metal or equivalent strength material, and will be restrained to prevent movement.
9. Outrigger beams shall have stop bolts installed at each end of the beam.
10. Outrigger beams which are not stabilized by bolts or other direct connections to the floor or roof will be secured by tiebacks.
11. Outrigger tiebacks shall be installed perpendicular to the face of the building or at opposing angles to a structurally sound anchorage.
12. Suspension scaffolds require a rescue/retrieval plan prior to use.
13. Occupants must be fitted with suspension straps while on the scaffold.

T. Self-Contained Adjustable Scaffolding

1. Access ladder platform shall be installed on all units where it is feasible to do so.
2. Employees working from platforms with open sides and ends must be guarded with guardrails or utilize a personal fall arrest system.
3. Employees shall only connect to approved anchor points on the scaffold system.
4. The combined weight of the person as well as any tools and materials must be taken into consideration when looking at the overall weight capacity.
5. Scaffold shall be tied back to a structural member of a building or designed by an engineer.
6. Ensure that outriggers and jacks are set up on, firm, properly graded and drained soil.
7. Outriggers and jacks shall bear on mud sills capable of supporting all implied loads.
8. Outriggers and jacks shall not be adjusted while tie backs are in place.
9. Only use manufacturer specified fasteners during assembly.
10. All guards and safety switches are in place and in good working order.
11. Follow all manufacturer's recommended wind restrictions.

U. Mobile Scaffolds

1. Scaffolds shall be braced by cross or horizontal braces to prevent racking or collapse.
2. The casters or wheels shall be locked to prevent movement while in use.

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3. Personnel, tools, equipment, and supplies shall not be allowed on scaffolds while they are being moved from one location to another.
4. Mobile scaffolds are not allowed on stairs and must bear on baseplates.

V. Special Considerations

During wintertime operations where scaffolds are tarped and heated the following hazards shall be addressed:

1. Scaffold tiebacks should be engineered to address additional loading due to wind.
2. Carbon monoxide must be continually monitored.
3. Additional housekeeping should be conducted to ensure that combustibles and debris is not allowed to accumulate around the heat source.
4. Tarps must be of the flame-retardant type.

W. Training Requirements


Quality Electric is required to train all employees that work on scaffolds regarding hazards by "qualified" persons. The supervisor shall have each employee who performs work while on a scaffold trained by a person qualified in the subject matter to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards. The training shall occur before use and include the following areas:

- Basic safety information and duties of a competent person assembling/disassembling scaffolding (see below). Basic safety information must be provided prior to use and when conditions change.
- Hazards including fall protection, electrical safety, falling object protection (see below).
- Tags – types and the requirement to comply with.
- The proper use of the scaffold, and the proper handling of materials on the scaffold.
- The correct procedures for dealing with electrical hazards and for erecting, maintaining, and disassembling the fall protection systems and falling object protection systems being used.
- The maximum intended load capacity of the scaffolds used.

The supervisor shall have each employee who is involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting a scaffold trained by a competent person to recognize any hazards associated with the work in question.

- The training shall include the following topics, as applicable:
- The nature of scaffold hazards.
- The correct procedures for erecting, disassembling, moving, operating, repairing, inspecting, and maintaining the type of scaffold in use.
- The design criteria, maximum intended load-carrying capacity and intended use of the scaffold.

When the employer has reason to believe that an employee lacks the skill or understanding needed for safe work involving the erection, use or dismantling of scaffolds, the employer shall retrain each employee so that the requisite proficiency is regained. Retraining is also required in at least the following situations:

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- Where changes in scaffolding at the worksite present a hazard about which an employee has not been previously trained.
- Where changes in the types of scaffolds, fall protection, falling object protection, or other equipment present a hazard about which an employee has not been previously trained.
- Where inadequacies in an affected employee's work involving scaffolds indicate that the employee has not retained the requisite proficiency.

Hazards Associated with the Use of Scaffolds

- Nearby electrical lines or source of electrical hazards
- Poor foundation – scaffold shall be erected on a firm and stable base.
- Damaged scaffold components.
- Overload of scaffold components (load capacity).
- Unstable, incomplete, or incorrect use of scaffold.
- Base frames not adequately braced, tied or supported.
- Scaffold exceeds height to base dimensions ratio.
- Inappropriate access or egress points.
- Slips and falls.
- Falling objects.
- Manual handling.
- Movement of plant and machinery – all cranes and mobile machinery shall keep within designated areas and away from scaffolding.

X. Duties of a Competent Person Assembling/Disassembling Scaffolding

a) General


- To select and direct employees who erect, dismantle, move, or alter scaffolds.
- To determine if it is safe for employees to work on or from a scaffold during storms or high winds and to ensure that a personal fall arrest system or wind screens protect these employees. (Note: Windscreens should not be used unless the scaffold is secured against the anticipated wind forces imposed.)

For Training

- To train employees involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting scaffolds to recognize associated work hazards.

b) For Inspections

- To inspect scaffolds and scaffold components for visible defects before each work shift and after any occurrence which could affect the corrective actions.
- To inspect ropes on suspended scaffolds prior to each work shift and after every occurrence which could affect the structural integrity and to authorize prompt corrective actions.
- To inspect manila or plastic (or other synthetic) rope being used for top rails or mid rails.

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c) For Suspension Scaffolds

- To evaluate direct connections to support the load.
- To evaluate the need to secure two-point and multi-point scaffolds to prevent swaying.

d) For Erectors and Dismantlers

- To determine the feasibility and safety of providing fall protection and access.
- To train erectors and dismantlers to recognize associated work hazards.


e) For Scaffold Components

- To determine if a scaffold will be structurally sound when intermixing components from different manufacturers.
- To determine if galvanic action has affected the capacity when using components of dissimilar metals.

Y. Annexes

a) Forms

- Tube and Coupler Scaffolds Reference Tables
- Scaffolding Inspection Checklist
- Non – Stop Scaffolding Inspection Checklist

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Tube And Coupler Scaffolds - Light Duty

Uniformly distributed load		Not to exceed 25 p.s.f.
Post Spacing (longitudinal)		10 ft. 0 in.
Post Spacing (transverse)		6 ft. 0 in.
Working Levels	Additional Planked Levels	Maximum Height
1	8	125 ft.
2	4	125 ft.
3	0	91 ft. 0 in.

Tube And Coupler Scaffolds - Medium Duty

Uniformly distributed load		Not to exceed 50 p.s.f
Post spacing (longitudinal)		8 ft. 0 in.
Post spacing (transverse)		6 ft. 0 in.
Working Levels	Additional Planked Levels	Maximum Height
1	6	125 ft.
2	0	78 ft. 0 in.

Non - Stop Scaffolding Inspection Checklist

"The Quality Way"
Our People, Our Customers, Our Community

Competent Person:		Date:	
Project Name:		Time:	
Project Location:		Job No.:	
Weather Conditions:		Rainfall (inches):	

	Yes	No	N/A
Be sure no other personnel are working above or below the scaffold.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Be sure the foundation is solid and undisturbed, especially after rain. Clear away snow or debris blocking your view of the base. Be sure the jacks adequately supported.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Be sure the scaffold structure is plumb.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Be sure the scaffolding has not been altered in any way. Especially check x - bracing, wall tie-ins, and guardrails.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check winches to be sure that the holding dog is in place. Check winches for proper up and down operation. Check cables to insure they have not been damaged.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check all planking to insure it is installed properly and has not been altered. Be sure planks extend at least 6 inches and no more than 12 inches past the center of their supports. Be sure toe boards are installed as required. Be sure that all planks subject to longitudinal movement are cleated or restrained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Be sure the scaffold is not overloaded. Land no more than 3500 pounds of materials in every other bay. Land materials in every other bay. Do not exceed the capacity of the planks for the span used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Be sure the scaffold is tied in at 24 foot vertical increments, measured from the ground to the laborers' platform. Tie at 14 foot horizontal increments.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Be sure that all persons who work on the scaffold have read and understood the assembly and use manual. Be sure a manual is available on the site.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This checklist is not all inclusive. Read the Assembly and Use Manual. When in doubt, ask the competent person. Visit www.nonstopscaffolding.com for more information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Be sure all decals are legible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Be sure the safety catch is in place on every elevating carriage and that it moves freely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Be sure that no parts are bent or damaged.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Be sure that walkways are not unnecessarily obstructed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Be sure the area around the scaffold is cordoned off as required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If any one item above remains unchecked, do not work on the scaffold until cleared by the competent person.

This checklist is not intended to be all inclusive. Read the Assembly and Use Manual. When in doubt about anything, ask the competent person before proceeding.


Competent Person Signature	
Competent Person Printed Name:	
Date:	

Scaffolding Inspection Checklist

Competent Person:		Date:	
Project Name:		Time:	
Project Location:		Job No.:	
Weather Conditions:		Rainfall (inches):	

	Yes	No	N/A
Site Condition:			
Has this work location been examined before the start of work operations and have all the appropriate precautions been taken? (e.g. Checking for overhead objects, falling or tripping hazards, uneven ground)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has the scaffold been setup according to manufacturer's instructions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General Rules for all Scaffolds			
Scaffold Components can support at least four times their maximum intended load?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scaffold is fully planked with no more than 1" gap between planks.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Platform is at least 18 inches wide.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Guardrails are used if work height is > 10 feet. Guardrail system includes; <input type="checkbox"/> Toprail <input type="checkbox"/> Midrail <input type="checkbox"/> Toeboard <input type="checkbox"/> Posts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scaffold is 14" or less from face of work (if guardrails are removed)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Planks do not extend past the ends of the scaffold frames more than 6" unless cleated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Work platform is free of clutter, mud, oil or any tripping hazard.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If any piece of scaffold is defective, it has been removed from service and tagged.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scaffolding is more than 10' from any powerline.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rules for Supported Scaffolds			
Height to base with ratio is less than 4:1 (no braces required)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If ratio is more than 4:1, scaffolds are restrained from tipping by tying or bracing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All scaffold frames and uprights use base plates, (mudsills if on dirt).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Footings are level, sound and rigid. No settling has occurred.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unstable objects such as blocks, bricks, buckets, etc. are not used as work platforms or to support scaffolds.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General Rules for Access:			
End frames used for access have rungs lined up vertically for the entire height of the scaffold.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is no more than 2' step up or down a 14" step across to get on or off a platform.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
First rung of the ladder is not more than 24" above the ground.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ladder's rung length is at least 8".	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cross braces are not used for climbing up or down from the scaffold.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Competent Person Signature	
Competent Person Printed Name:	
Date:	

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Section 24: Excavation and Trenching

A. Policy Statement


The intent of this policy is to ensure that excavations are conducted in a safe manner and in compliance with applicable regulations.

B. Definitions


1. **Competent Person** - one who can identify 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
2. **Excavation** - any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal
3. **Ramp** - an inclined walking or working surface that is used to gain access to one point from another, and is constructed from earth or from structural materials such as steel or wood
4. **Registered Professional Engineer** - a person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a "registered professional engineer" within the meaning of this standard when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.
5. **Tabulated Data** - tables and charts approved by a registered professional engineer and used to design and construct a protective system
6. **Stable Rock** - natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the side or sides of the excavation is secured against caving-in or movement by rock bolts or by another protective system that has been designed by a registered professional engineer.

C. General Requirements

1. It is the responsibility of the contractor performing excavation and trenching work to adhere to the requirements in this program as well as OSHA, Federal, State and Local rules, and regulations.
2. Each contractor performing excavation work is responsible for providing a competent person at the jobsite regardless of type or depth.
3. Each contractor performing excavation work is responsible for initiating and maintaining the One Call or other utility locates as required by local, state, and federal entities.
4. Daily inspections of excavations, the adjacent areas and protective systems shall be made by a competent person prior to the start of work and as needed throughout the shift. If evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres or other hazardous conditions are found, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.
5. Additional mandatory guidelines:
All excavations 5 feet or more in depth must have an OSHA approved protective system installed. These may include:
 - a) Trench Boxes
 - b) Shoring

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- c) Sloping
 - d) Benching
 - e) Any combinations of the above
 - f) If none of the above is feasible, excavations must be designed by a registered Professional Engineer with expertise in soils and protective systems.
 - g) Excavations greater than 20 feet in depth must be designed by a registered Professional Engineer with expertise in soils and protective systems.
6. Ladders or ramps must be provided when the excavation is 4 feet or more in depth. Ladders or ramps must be within 25 feet of all workers in the excavation. Ladders must be located inside the trench box, shoring or other protective device when used.
 7. Spoil piles must be kept at least 2 feet from the top edge of the excavation. Equipment and materials must be kept at least 2 feet from the edge of the excavation. Additional distance may be required to prevent surcharge at the top edge of the excavation.
 8. All loose rock or soil must be removed from the sides or top of excavations before workers are allowed to enter an excavation.
 9. All excavations must be barricaded for visibility. Barricades that are used for fall protection shall be at least 6 feet from the edge of excavations. Additional distance may be required depending on the depth and other site conditions at the discretion of the competent person, JE Dunn supervisor or safety department.
 10. Fall protection must be installed when workers are exposed to a fall hazard greater than six feet.
 11. Work in excavations with standing water or in excavations where water is accumulating is prohibited. Dewatering systems must be used as needed.
 12. Workers are not allowed to work under suspended loads.
 13. When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system shall be utilized such as barricades, hand, or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.
 14. Never touch a piece of excavation machinery while it is in operation.
 15. Always stand in view of the machine operator, and out of the way. Never stand at the edge of the excavation
 16. When excavation work can affect footings, piers, utility lines, or other adjacent structures, the competent person must ensure that steps are taken to ensure the stability of the structures. Operations shall determine if a structural engineer should be hired to evaluate the stability of existing buildings or adjacent structures as needed.
 17. The Excavation Checklist must be completed by the competent person prior to starting work and submitted to the Quality Electric site supervision daily.
 18. In locations where oxygen deficiency or gaseous conditions are possible, the air in excavations shall be tested.
 19. Unattended excavations must be lighted and barricaded. Keep non-workers away from the trench, particularly at night.

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D. One Call


1. Locates must be completed before the commencement of any excavation or dirt work. The contractor performing the work is responsible for calling locates. Locates must be maintained during all excavation activities.
2. All utilities that are uncovered during excavation work must be properly supported.

E. Soil Testing and Classification

1. Four Types of Soil

Employees who work on excavations must be trained in the four soil classifications: Stable Rock, Type A, Type B and Type C. In general, stable rock is not common because we disturb it by excavating, leaving us with the following three soil types to gauge our excavations.

- a) Type A: This is the most stable of the soil classifications and implies that you have a slope angle of a 3/4:1 ratio, which means that for every foot of depth, the sides of the excavation will slope back three-quarters of a foot or a 53-degree angle. Type A soils are cohesive with an unconfined compressive strength of 1.5 tons per square foot (tsf) or greater. Examples include clay, silty clay, sandy clay and clay loam. Type A soil may also be “benched,” or set at specific angles for employee protection. Benching creates a stair-step condition; the soil comes up 5 feet vertically from the bottom of the excavation, and cuts back 4 feet horizontally at 90-degree angles on the sides. This is repeated to the top of the excavation.
 - b) Type B: This soil is less stable than Type A type soil but is very cohesive and still quite stable. The slope angle for a Type B excavation is a 1:1 ratio or a 45-degree angle. For every foot of depth, the sides of the excavation must slope back 1 foot. Type B soil is cohesive with an unconfined compressive strength greater than 0.5 tsf, but less than 1.5 tsf. Other examples include granular non cohesive soils such as angular gravel, which is similar to crushed rock; silt; silt loam; sandy loam; previously disturbed soils except those that would otherwise be classified as Type C soil; soil that meets the unconfined compressive strength or cementation requirements for Type A but is fissured or subject to vibration; and dry rock that is not stable. Type B soil may also be benched, coming up 4 feet vertically from the bottom of the excavation and 4 feet horizontally at 90-degree angles on the sides, repeating to the top of the excavation.
 - c) Type C: Of all the soil types, this is the least stable and most hazardous, and must be sloped at a 1-1/2:1 ratio or a 34-degree angle. Depending on water saturation or seepage, the angles may need to be greater than 34 degrees for employee safety. Type C soil is cohesive with an unconfined compressive strength of 0.5 tsf or less. Examples include granular soils such as gravel, sand, and loamy sand; submerged soil or soil from which water is freely seeping; and submerged rock that is not stable. Benching Type C soil is unacceptable and shall not be done.
1. At least one manual and one visual test must be performed by the competent person to determine soil type. Based on these tests and site conditions the competent person shall classify the soil type as either B or C. The classification of type ‘A’ or “Stable Rock” must be documented by a soils engineer.
 2. The competent person must test and classify excavations:
 - a) Each Day or work shift before workers are allowed to enter the excavation
 - b) Following rain or other weather condition which may change the classification of the excavation

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c) Following any other event that could change the safe working conditions of the excavation.

F. Protective Measures

Sloping and Benching shall be accomplished in accordance with the following table based on the soil type as determined by the competent person.

a) Slope Angle Calculations

Determining your slope angle is not complicated; in fact. This simple equation will tell you the proper opening width: (depth x 2) x type slope ratio + width of original excavation = top width. As an example, let us calculate the slope angle of a simple trench that is 6 feet deep by 2 feet wide, factoring in the type of soil.


- Type A: (6 feet x 2) x .75 + 2 feet = 11 feet wide at the top.
- Type B (6 feet x 2) x 1 + 2 feet = 14 feet wide at the top.
- Type C (6 feet x 2) x 1.5 + 2 feet = 20 feet wide at the top.

Maximum Allowable Slopes

Soil Type	Maximum Allowable Slopes (H:V) for Excavation Less Than 20 Feet Deep
Type B	1:1 (45°)
Type C	1-1/2:1 (34°)

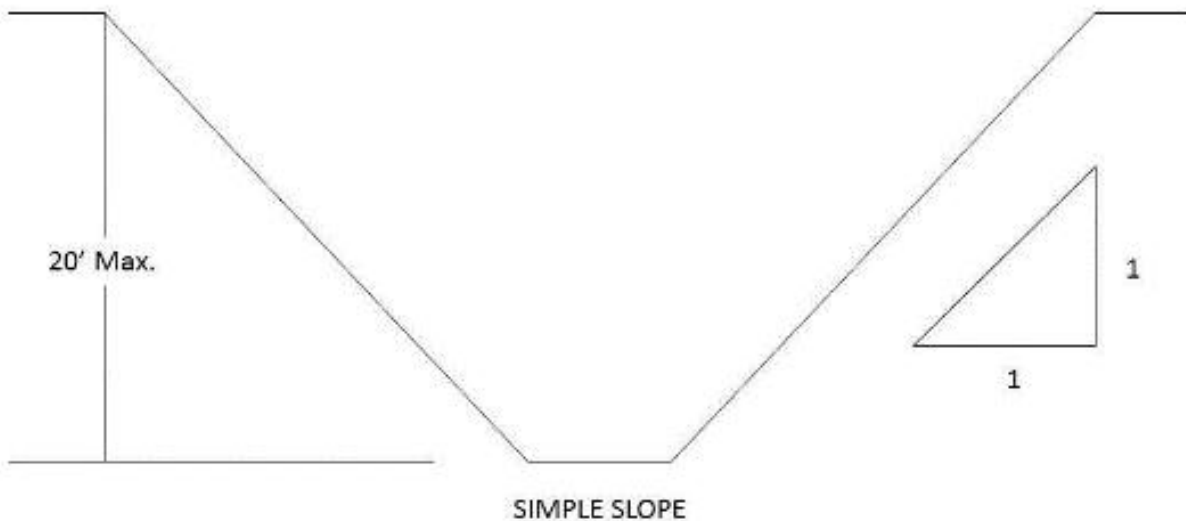
As you can see, there is a significant difference in the width at the top of the excavations, so proper soil classification is a must for employee protection when using sloping or benching techniques. Remember, when classifying soil, one visual and one physical test must be performed at minimum. Physical tests may include a ribbon or thumb test or the use of a penetrometer to determine soil type.

Depending on the situation, shoring may become a viable option. It may be portable or permanent, but all shoring must be designed by a professional engineer and accompanied by tabulated data that references how many tons per square foot the shield will resist. This means you cannot go to the local hardware store and buy plywood and timber – an engineer must run the numbers regarding the strength of the installed shield. A shoring system can be installed by a qualified person who, by experience or degree, recognizes the hazards of an excavation and is under the supervision of a competent person. When installing shoring systems, keep in mind both the ends and the sides of the excavations.

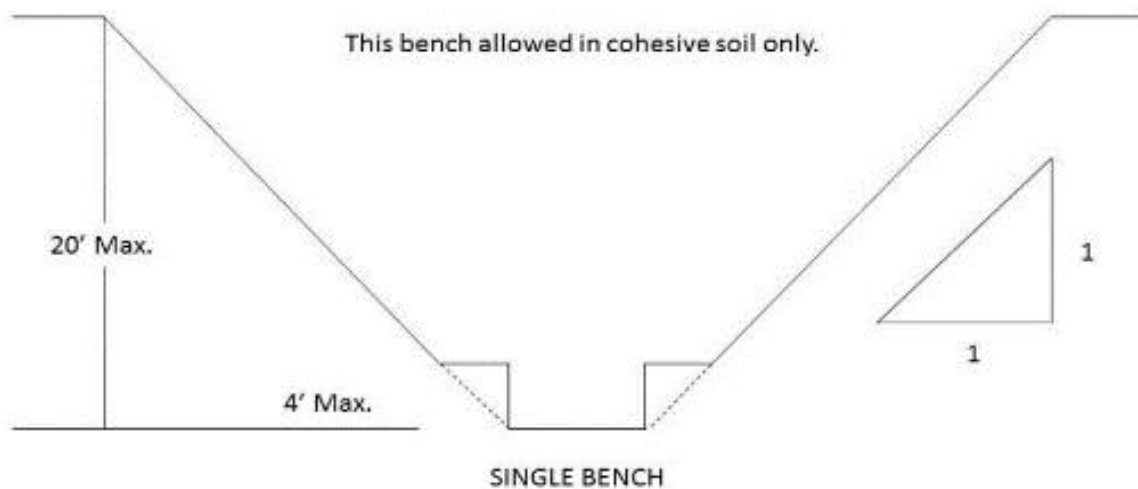
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EXCAVATIONS MADE IN TYPE B SOIL

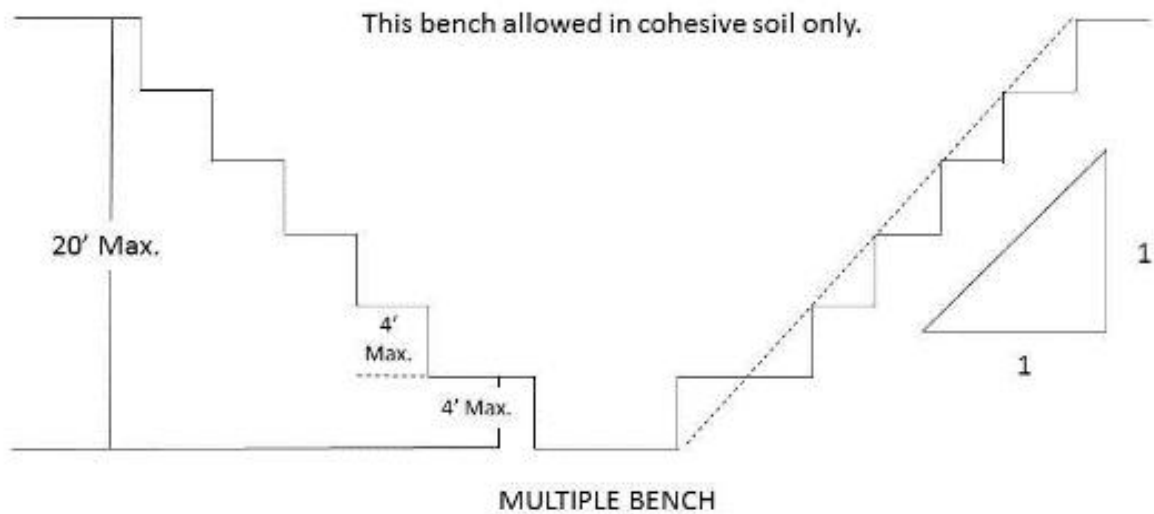
- a) All simple excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1:



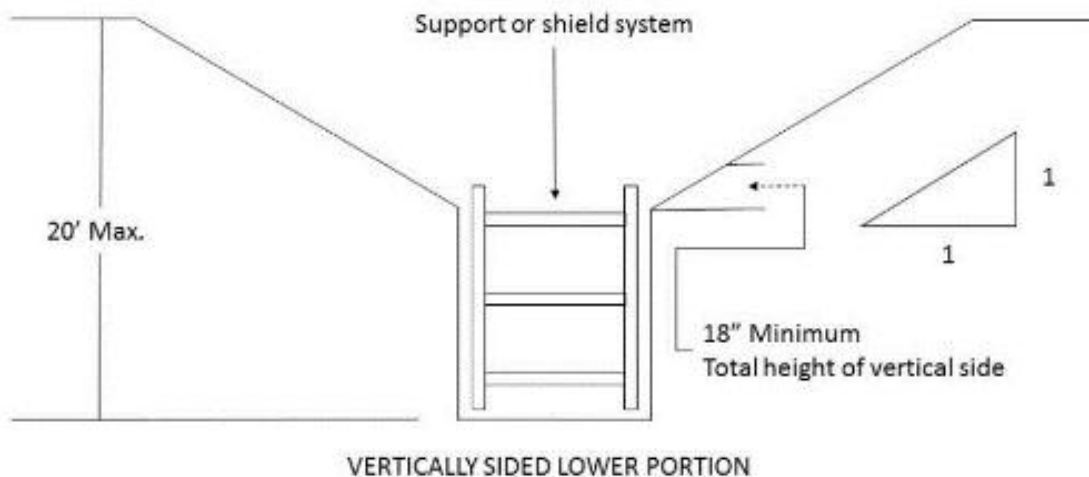
- b) All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1 and maximum bench dimensions as follows:




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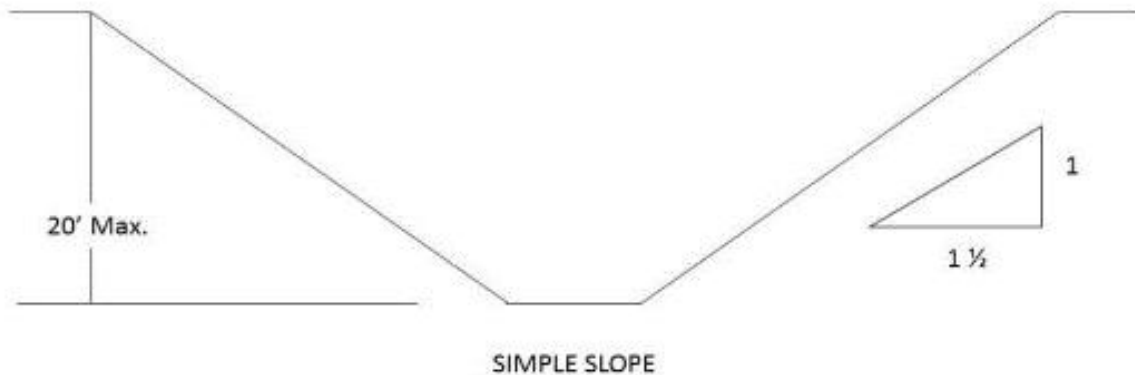
- c) All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1:1;



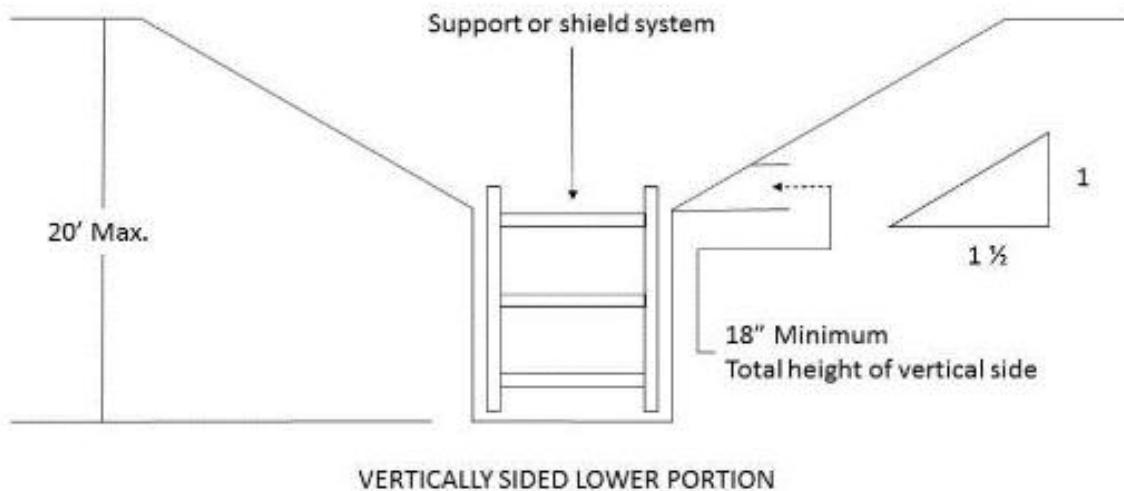
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EXCAVATIONS MADE IN TYPE C SOIL

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



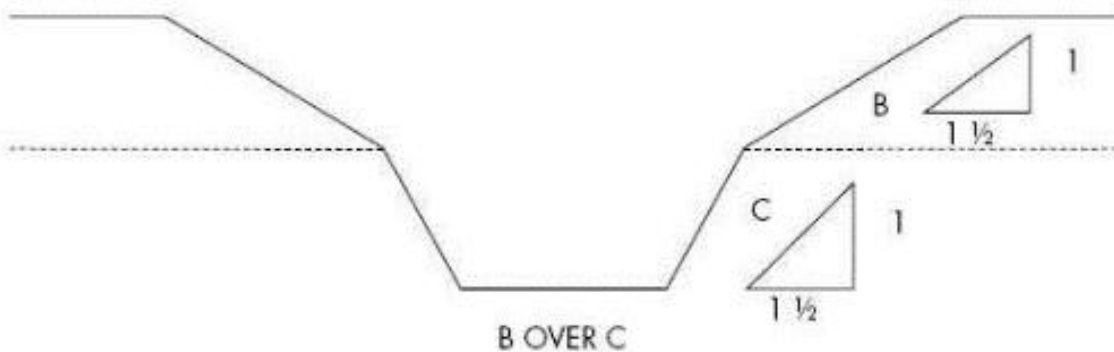
- e) All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1½:1:



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Excavations Made in Layered Soils

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



G. Public Protection

1. Operations must notify the safety department when excavations pose a threat to public safety.
2. They must be protected by fencing/street plates/barricades and traffic barriers appropriate for the conditions and exposure.
3. All excavations that are not completely protected by a site fence must have sufficient protection installed around the excavation at the end of each workday or at all times when the public is exposed to excavation work.
4. Pedestrian Protection
 - a) Excavations with limited exposure or no pedestrian traffic may be protected with 42-inch orange barrier fence placed at least 6 feet away from the edges of the excavation.
 - b) Excavations in areas with significant pedestrian traffic must be enclosed with 6-foot-tall chain link fence.
 - c) Appropriate signage must be placed to warn the public of the hazards and to re-route pedestrian traffic as needed.
5. Vehicular Traffic
 - a) All signage and barricades installed to warn and re-route traffic away from the work area must be installed per the Manual of Uniform Traffic Control Devices.
 - b) Small excavations that are exposed to minimal traffic may be protected by traffic delineators such as cones and barrels with appropriate traffic control signs.
 - c) Large excavations or those that are exposed to significant or high-speed traffic must be protected by delineators and concrete barriers. Concrete barriers must be placed far enough away from the edge of the excavation to prevent surcharging the excavation but should never be closer than 2 feet from the excavation. Where this is not feasible an engineered excavation that includes these barriers must be provided.

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H. Pier Hole Entry Procedures

1. Entering pier holes should be avoided. If entrance is required, the following must be met:
 - a) Pier holes that must be entered shall be cased. The casing shall extend a minimum of 18 inches above the elevation of the surrounding soil.
 - b) Each company that allows workers to enter a pier hole must have a written confined space program.
 - c) A competent person shall be designated to fulfill the requirements of the confined space program and to monitor the operation until the worker is removed from the pier hole.
 - d) Before a worker enters and works within the confines of the pier, the following is required:
 - (1) Atmospheric conditions must be tested and monitored during the work. A four-gas air monitor must be used to monitor the oxygen, combustible atmosphere, carbon monoxide, and hydrogen sulfide levels at various elevations within the pier. When an extension hose is used on the testing equipment, the monitor must be allowed to run a sufficient time to allow the air to reach the sensors.
 - (2) Workers shall not be allowed to enter the pier until it can be established that all readings are within acceptable levels.
 - (3) Atmospheric condition testing must continue to be monitored at all times while occupied.
 - (4) Fresh air should be blown into the pier while occupied whenever feasible.
 - (5) If the atmosphere becomes hazardous the worker shall be removed from the pier immediately.
 - e) Safe access must be provided. Whenever feasible a boatswains' chair should be used.
 - f) Fall protection in the form of a positioning device, or personal fall arrest device must be used during entry.
 - g) The worker shall have an independent lifeline attached to their personal fall arrest equipment that can be used if retrieval is required. A method for retrieval must be readily available. This may be a tripod and winch or a second load line on the drilling equipment.
 - h) All workers involved in this operation must be trained in confined space procedures, entrance requirements, and retrieval methods before the start of pier hole entry work. Copies of this training must be provided to Quality Electric.

I. Annexes

1. Inspections and Checklists:
 - Excavation Site Checklist and Daily Field Report
 - Excavation Competent Person Evaluation

Excavation Competent Person Evaluation

Employee Name:		Date:	
Job Title(s)		Years in Job:	
Department		Years in Department:	
Phone Number		Total Years in Service:	

Description of Evaluation Item:			
Does the designated individual have training and knowledge of:	Yes	No	Comments
The requirements of 1926 Subpart P?	<input type="checkbox"/>	<input type="checkbox"/>	
The use of protective systems?	<input type="checkbox"/>	<input type="checkbox"/>	
Soils analysis and classification?	<input type="checkbox"/>	<input type="checkbox"/>	
The use of the soil classification worksheet?	<input type="checkbox"/>	<input type="checkbox"/>	
Hazardous environments?	<input type="checkbox"/>	<input type="checkbox"/>	
Does the designated individual have the authority to:	Yes	No	Comments
Take prompt corrective measures to eliminate existing and predictable hazards?	<input type="checkbox"/>	<input type="checkbox"/>	
To stop work?	<input type="checkbox"/>	<input type="checkbox"/>	
Does the designated individual have the knowledge and authority to conduct inspections:	Yes	No	Comments
Of the jobsite on a daily basis?	<input type="checkbox"/>	<input type="checkbox"/>	
Of adjacent areas?	<input type="checkbox"/>	<input type="checkbox"/>	
Of protective systems?	<input type="checkbox"/>	<input type="checkbox"/>	
Prior to the start of work?	<input type="checkbox"/>	<input type="checkbox"/>	
As needed throughout the work shift?	<input type="checkbox"/>	<input type="checkbox"/>	
After a rainstorm or hazard - increasing occurrence?	<input type="checkbox"/>	<input type="checkbox"/>	
Of excavation safety equipment used in protective systems?	<input type="checkbox"/>	<input type="checkbox"/>	
Using the excavation site checklist and Daily Field Report?	<input type="checkbox"/>	<input type="checkbox"/>	
Additional Comments:			


Supervisor Signature	
Supervisor Printed Name:	
Date:	

Excavation Site Checklist and Daily Field Report

Competent Person:		Date:	
Project Name:		Time:	
Project Location:		Job No.:	
Weather Conditions:		Rainfall (inches):	

Description of Inspection Item:	Yes	No	Comments
Have all utilities marked their locations?	<input type="checkbox"/>	<input type="checkbox"/>	
Have all affected parties been notified?	<input type="checkbox"/>	<input type="checkbox"/>	
Is Proper traffic control in place?	<input type="checkbox"/>	<input type="checkbox"/>	
Has the soil been classified?	<input type="checkbox"/>	<input type="checkbox"/>	
Has a protective system been selected by the competent person?	<input type="checkbox"/>	<input type="checkbox"/>	
Has the competent person inspected the excavation / trench prior to start of each work period?	<input type="checkbox"/>	<input type="checkbox"/>	
Has the work plan been discussed with all employees?	<input type="checkbox"/>	<input type="checkbox"/>	
Are all employees protected from cave-ins when entering and exiting the excavation?	<input type="checkbox"/>	<input type="checkbox"/>	
Have hazardous objects around the excavation been removed or supported?	<input type="checkbox"/>	<input type="checkbox"/>	
Are all spoils maintained at least 2 feet back from the edge of the excavation?	<input type="checkbox"/>	<input type="checkbox"/>	
Are ladders used for access and egress? If so, are they installed correctly?	<input type="checkbox"/>	<input type="checkbox"/>	
Are employees wearing proper safety equipment?	<input type="checkbox"/>	<input type="checkbox"/>	
Is the excavation / trench free of standing or seeping water?	<input type="checkbox"/>	<input type="checkbox"/>	
Are there evidences of shrinkage cracks in the face of the trench wall?	<input type="checkbox"/>	<input type="checkbox"/>	
Were there evidences of sloughing of soil from the trench face since the last inspection?	<input type="checkbox"/>	<input type="checkbox"/>	
If a support sytem has been installed, was it installed in accordance with recommendations?	<input type="checkbox"/>	<input type="checkbox"/>	
Is heavy equipment kept away from the edge of the excavation?	<input type="checkbox"/>	<input type="checkbox"/>	
Are any changed conditions properly noted?	<input type="checkbox"/>	<input type="checkbox"/>	
Additional Comments on Safety:			

Competent Person Signature	
Competent Person Printed Name:	
Date:	

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Section 25: Underground Utilities

A. Policy Statement

The intent of this policy is to provide clear direction on the procedures for contacting the proper organizations for underground utility locates.

B. Contact Information

Dig Line 342-1585


1-800-342-1585

Fax 342-8907

Quality Electric Contractor ID number is 45

C. General Requirements

1. The Supervisor is responsible for ensuring all requirements of this procedure are implemented and followed.
2. The Supervisor is also responsible for ensuring that all employees follow the guidelines for the final location of underground utilities near their work.
3. Time notice will be two full working days before you can dig. Contact your local 811 operators for more state specific information.
4. When you contact the service for a locate, you must provide the following information:
 - a) Quality Electric, ID number is 45.
 - b) Caller name and telephone number
 - c) Excavator information:
 - Office phone number
 - Recording device
 - Mailing address
 - Email address
 - Fax number
 - d) Onsite contact information:
 - First and last name
 - Mobile phone number
 - e) Excavation information:
 - Type of work
 - Type of equipment
 - Work done for
 - Trenchless excavation or explosives
 - Will you be digging within 10 feet of overhead power lines?
 - Is the dig site marked with white flags or paint?
 - Depth (in feet)
 - f) Location information:
 - County and city
 - Entire job is within city limits?

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- Address or street work is on or along
- Nearest intersecting street
- Second intersecting street
- Location of work
- Start date and time

5. The Supervisor should ask the locating service if there are any utilities in the area that they do not represent. If a utility is not represented by the location service listed, the utility company shall be contacted directly.
6. Upon contact with anyone - call service you will be provided a confirmation Dig Line ticket number that shall be logged in your project log along with the time, date, and the name of the contact person. If contacting a utility directly, log in the time, date, and person's name.

D. Locates


1. The location must be provided as promptly as practical but not more than two working days from the time you called in your request. The location will be an "approximate location" which by law is the width of the utility plus two feet on each side.
2. If the owner of the line provides a depth, it is, at best, approximate and should not be relied on.
3. Regardless of marking, excavations must be made in a careful, prudent manner around utilities. This will require a combination of hand digging, probing, and pot holing. If a line is incorrectly marked, notify the owner immediately.
4. Remember, depending on the state requirements, locates are only good for short period of time. Normally 3-10 days. Check with your local service to determine what that period is and schedule callbacks for the locating service if work was not completed within that time frame.
5. Caution shall be used when performing excavations where buildings have been demolished. Often there are abandoned service lines that have been branched off the main line and capped at the building line. These lines may still be active and are often not marked by the line locator.
6. In the event underground utilities are contacted, immediately notify the owner of the utility or emergency response personnel, based on the presented hazard commonly associated with gas and electrical utilities.

E. Private Utility Lines

There are times when we are on private property and dealing with the property owner's private lines. Many utilities will not locate these lines due to their liability. The Supervisor should meet with the owner to try to locate these lines through as-builts or other means. There are private locating services that could also be hired that could assist in these line locations.

F. Locate Color Coding

1. Most Utilities will use a standardized color-coding system to identify the location of underground lines.
2. Underground lines will be marked with the standard color codes as follows:
 - a) White: Proposed Excavation Line
 - b) Fluorescent Pink: Temporary Survey Markings
 - c) Red: Electric
 - d) Yellow: Gas/Oil/Steam/Petroleum

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- e) Orange: Communications CATV
- f) Blue: Water
- g) Green: Sewer and Drain Lines
- h) Purple: Reclaimed Water

G. What to Do if you Hit an Underground Facility

Protect life and property-in that order, if leaking gas or high voltage is involved, call 911. Call the local utility damaged to report the damage and arrange for repair Document that gives details of the utilities that were hit, include your dig line ticket number, where the marks were and where you hit the line, the safeguard you took and any other evidence you will need to support your claim that you did all that was required prior to the incident as the contractor. Inform Quality Electric, Inc as soon as possible of the incident and turn in all the pertinent documentation once incident is mitigated.

H. Emergency Phone Numbers

1. US West Repair 800-954-1211
2. United Water 208-371-7827
3. Intermountain Gas Co.
 - Boise 208-377-6800
 - Nampa 208-468-6700
4. Idaho Power 208-388-2050

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Section 26: Electrical Safety

A. Policy Statement


Electrical hazards are a leading cause of injury and death in the construction industry. The purpose of this policy is to establish the minimum requirements for the installation and use of temporary electrical panels, lighting and electrical hand and power tools.

B. Definitions

1. **Bonding** - The permanent joining of metallic parts to form an electrically conductive path which will assure electrical continuity and the capacity to conduct safely any current likely to be imposed
2. **Dead front** - Without live parts exposed to a person on the operating side of the equipment
3. **Enclosure** - The case or housing of apparatus, or the fence or walls which will prevent persons from accidentally contacting energized parts
4. **Ground** - A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of the earth
5. **Ground-fault circuit interrupter** - A device for the protection of personnel that functions to de-energize a circuit or portion thereof within an established period of time when a current to ground exceeds some predetermined value that is less than that required to operate the overcurrent protective device of the supply circuit
6. **Qualified** - One familiar with the construction and operation of the equipment and the hazards involved.

C. General Requirements

1. This policy applies to all employees and sub-contractors who perform work on Quality Electric projects.
2. Each worker is responsible for a daily visual check of their tools and cords before first use. Damaged or defective tools or cords shall be tagged and removed from service immediately.
3. Each Foreman is responsible for ensuring that all electrical tools and equipment are suitable for their intended use.
4. The installation of any temporary electrical shall be installed in accordance with applicable state, local and federal regulations as well as the requirements in this program.
5. All temporary 120 volt, 15- or 20-amp receptacles used during construction shall have a Ground Fault Circuit Interrupter (GFCI) installed for personnel protection.
6. During construction activities, if an extension cord is plugged into the existing buildings outlet, a portable ground fault circuit interrupter is required.
7. Ground fault circuit interrupters must be tested before each use. Testing can be achieved by pushing the “push to test” button available on the outlet. The electrician should be notified of any outlets that fail to trip during this test.
8. All electrical tools and equipment must be grounded or double insulated.
9. Temporary electrical cords must be covered or elevated in locations where they present a tripping hazard or may be subject to damage.

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10. Energized wiring in outlets, switches, junction boxes, circuit breaker panels, etc., must be covered at all times to prevent unauthorized access to live parts.
11. Extension cords shall be three wire grounded type “heavy duty” with an S, SO, SJ, ST or SJO rating.
12. Extension cords must be a minimum of 14 gauge and must be protected from damage.
13. Power strips also known as surge protectors shall not be used unless they are approved for hard service.

D. Temporary Panels and Outlets


1. All electrical devices and components must be UL listed for use in the conditions in which they are being installed.
2. All electrical installations, whether temporary or permanent, must be installed per NEC, NFPA and all requirements of this program.
3. All temporary branch circuit panels and related electrical installations must be inspected by a qualified electrician monthly. These inspections should be documented, and the documentation posted at each panel.
4. All circuit breakers must be labeled to properly identify what each breaker feeds.
5. The installation and alteration of all electrical systems must be accomplished under the direct supervision of a qualified electrician.
6. Holes in electrical boxes or panels must be covered with approved devices.
7. Gaps between breakers in branch circuit panels must be covered with approved blanks.
8. All splices must be contained in an electrical box.
9. Weather resistant boxes, cords and raceways are required in all applications where the structure is not dried in with a roof and building envelope.
10. All temporary panels should be closed and secured.
11. All conductors that feed branch circuit boxes or temporary panels must be approved for that use and rated for hard or extra hard usage or must be completely encased in conduit. The use of exposed single conductor wires and triplex, Romex or similar conductors are not allowed.

E. Electrical Rooms

1. Electrical installations in rooms, closets or vaults with live circuits shall be guarded from accidental contact by cabinets or other forms of enclosures. These enclosures should be accessible only by authorized employees.
2. Entrances to rooms and other guarded locations containing exposed live parts shall be marked with conspicuous warning signs prohibiting unauthorized access.
3. Doors with locks shall be installed to prevent unauthorized access.

F. Temporary Lighting

1. Temporary lights shall consist of the molded light strands or be protected by conduit and electrical boxes as appropriate for site conditions. The use of exposed single conductor wires or Romex type light strings is not allowed.
2. Temporary lights must be suspended by their sockets.
3. Light strings shall not have an attachment plug at the end where someone could plug a tool or cord into.
4. Light stands are allowed for task lighting only and may not be used for temporary lighting.
5. All lights shall be provided with protective covers to prevent accidental contact.

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Minimum Illumination Intensities in Foot – Candles

Foot Candles	Area of Operation
Temporary lighting shall meet the following minimum illumination intensities:	
5	General Construction area lighting
3	General Construction areas, concrete placement, excavation and waste area, access ways, active storage areas, loading platforms, refueling and field maintenance areas.
5	Indoors; warehouses, corridors, hallways and exit ways.
5	Tunnels, shafts and general underground work areas, (Exception: minimum of 10 foot – candles is required at tunnel and shaft heading during drilling, mucking and scaling. Bureau of Mines approved cap lighting shall be acceptable for use in tunnel heading.)
10	General Construction plant and shops (e.g. batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active storerooms, barracks or living quarters, locker or dressing rooms, mess halls and indoor toilets and workrooms.)
30	First aid stations, infirmaries, and offices.


G. Live Electrical Circuits (Energized Work)

All electrical equipment greater than 50 volts should be de-energized and Locked out/Tagged out before work is performed. Workers performing work on these circuits/equipment must be trained, qualified, and authorized in such work. All work must be in conformance within OSHA and NFPA 70E requirements. If work must be performed on energized electrical circuit(s), the following must take place:

1. A pre-task planning meeting must be conducted with the Employees, Supervisor and Safety Supervisor to explain the nature of the work and why this work must be performed live.
2. The Supervisor must provide a written energized electrical hazard assessment and/or energized electrical work plan. This electrical hazard assessment and/or energized work plan and permit shall include:
 - a) Identification of shock risk boundary, limited approach boundary, arc flash boundary, electrical exposure, incident energy
 - b) Required protective equipment including Personal Protective Equipment.
3. Proof of energized work training for all persons associated with the task.
4. Flame resistant clothing that is appropriate for the potential arc flash per NFPA 70E must be worn at all times when live panels are open.
5. The area that energized work are taking place must be barricaded to prevent access by unauthorized workers not directly involved with the task.
6. If the location or nature of the task that is being performed changes, the pre-task planning meeting must be revisited.

H. Overhead Power Lines

1. Whenever feasible overhead lines at or near the jobsite should be removed or de-energized and visibly grounded.

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2. All overhead power lines at the jobsite or near the jobsite must be identified as to the voltage by the owner of the lines before cranes, lifts, earth moving equipment, scaffolds or similar equipment can mobilize at the jobsite.
3. Safe distances from live power lines must be maintained at all times.

I. Annexes

1. Forms and Permits:
 - Energized Electrical Work Permit
 - Energized Electrical Work Audit



QUALITY ELECTRIC INC.

Energized Electrical Work Audit

Project Description:		Date:	
Project/Work Order Number:		Building Number:	
Location (Room, Col. #):		Supervisor Name:	

SECTION A – DETAILS

EQUIPMENT INFORMATION

Equipment Name:		Power Source:	
Hazard/Risk Category:		Minimum Arc Rating:	
Flash Hazard/Risk Boundary:			

DESCRIPTION OF TASK

SECTION B – INSPECTION RESULTS

CHECK ITEM		CHECKED	COMMENTS
1	Energized Electrical Work Permit (EEWP) Filled Out Correctly	<input type="checkbox"/>	
2	Job Briefing Completed Before Work is Performed	<input type="checkbox"/>	
3	Barricades Used to Establish the Appropriate Flash/Hazard Boundary	<input type="checkbox"/>	
4	Spotters Used in Areas Where the Flash/Hazard Boundary Exceeds the Available Space in Front of the Panel/Equipment	<input type="checkbox"/>	
5	Appropriate PPE Used in Accordance with Shock and Flash Hazard Analysis	<input type="checkbox"/>	
6	All Tools and PPE Inspected Prior to Use	<input type="checkbox"/>	
7	Thermal Scan of Equipment Complete	<input type="checkbox"/>	
8	Guarding such as Mylar/Shielding In-Place	<input type="checkbox"/>	
9	Torque Specifications Met and Torque Seal Applied	<input type="checkbox"/>	
10	Breaker Settings and Rating Plugs Correct	<input type="checkbox"/>	
11	All Tools and Material Removed Before Closing Equipment Doors	<input type="checkbox"/>	
12	All Doors and Covers are Closed and Screws in Place	<input type="checkbox"/>	
13	Labelling and Panel Schedules Updated with Correct Info and Details	<input type="checkbox"/>	
14	Hot Cart Put Away and Work Area Cleaned	<input type="checkbox"/>	

SECTION C – NOTES

Notes:

SECTION D – VERIFICATION

TITLE	NAME	SIGNATURE	DATE
Qualified Person:			
Qualified Person:			
Safety Foreman:			

Energized Electrical Work Authorization Form

This Authorization must be available at the work location. This authorization is only valid for one shift.

Part I (To be Completed by Requestor)

1. Location / Space		
Building :	Location:	
Date:		
2. Work to be Preformed		
Description of Task:		
Equipment Panel Label and Panel Location:		
Power Source / Location:	Voltage:	
Personnel Performing the Work:		
1		
2		
Requestor:		
Print Name	Signature	Date

Part II: Safety Precautions (Completed by Electrically Qualified Persons Doing the Work)

Standard Hazard Risk Category Ratings with Arc Ratings in cal/cm²

N = Not Recommended, Y = Required, AN = As Needed, NA = Not Acceptable, AR = Arc Rated, VR = Voltage Rated

Category 0 = 0 - 1.1 cal / cm²

Category 1 = 1.2 - 4 cal / cm²

Category 2 = 5 - 8 cal / cm²

Category 3 = 9 - 25 cal / cm²

Category 4 = 26 - 40 cal / cm² (Cat 4 work is Prohibited)

Reference for when Incident Energy Levels are Unknown

Table 130.7(C)(15)(A)(A&B) For tasks not listed, refer to NFPA 70E Tables 130.7(C)(15)(A&B)

Task	120/208				277/480		
	ARC Flash PPE Category	VR Rated Gloves	VR Rated Tools		ARC Flash PPE Category	VR Rated Gloves	VR Rated Tools
Breaker on Fused Switch Operation with Cover on	N/A	N	N		N/A	N	N
Breaker or Fuseed Switch with the Cover off	1	N	N		2	Y	N
Work on Energized Parts, Incuding Amp & Voltage testing	1	Y	Y		2	Y	Y
Remove or install of breakers or fused switches	1	Y	Y		2	Y	Y
Removal of bolted covers (to expose bare energized parts)	1	N	N		2	N	N
Open Hinged cover (to expose bare energized parts)	1	N	N		2	N	N
MCC Bucket removal or insertion	N/A	N/A	N/A		4	Y	Y

PPE Category Requirements

Category	Min Arc Rating	AR Pants or Coverall	AR Long Sleeve Shirt	VR Gloves	Leather Gloves Protector	Hard Hat w/ Face Shield	Balaclava	AR Coat	AR Bibs	AR Switching Hood	Leather Boots	Hearing Protection	Safety Glasses	Cotton Long Sleeve Shirt
0	N/A	N	N	AN	Y	N	N	N	N	N	AN	Y	Y	Y
1	4	Y	Y	AN	Y	Y	N	N	N	N	AN	Y	Y	N/A
2	8	Y	Y	AN	Y	Y	Y	AN	AN	AN	Y	Y	Y	N/A
3	25	AN	AN	Y	Y	N/A	N/A	Y	Y	Y	Y	Y	Y	N/A
4	40	AN	AN	Y	Y	N/A	N/A	Y	Y	Y	Y	Y	Y	N/A

Shock Hazard and Incident Energy Analysis	Arc Flash PPE Category		Minimum Arc Rating
Shock Assessment (Feet or Inches)	Limited Approach Boundary (NFPA 70E Table 130.4D (A))		
	Restricted Access Boundary (NFPA 70E Table 130.4D (A))		
	Voltage:		
Arc Flash Risk Assesement	ARC Flash PPE Category (From Equipment Label or Table 130.7(C)(15)(A)(b))		
	ARC Flash Boundary (From Equipment Label or Table 130.7(C)(15)(A)(b))		
	cal/cm ² incident energy at		inches.

Energized Electrical Work Authorization Form

This Authorization must be available at the work location. This authorization is only valid for one shift.

Safe Work Practices to be used while performing the tasks above shall conform to NFPA 70E Work Practices					
How are unqualified persons restricted from the work area?	Locked Access Door Barrier Tape		Safety Watch Required Stanchions		Hazard Signs Other
Has the job briefing / discussion been conducted (as appropriate) to discuss hazards? (Check when Complete)					<input type="checkbox"/>
Is a Standby Person have a current First Aid / CPR, required training, PPE, and emergency commuicaton capability?					<input type="checkbox"/>
Description of Safe Work Practices being employed:		Proper Associated PPE		Correctly Rated Hot Gear	
<input type="checkbox"/> Signage	Use of Two Authorized Personnel	Use of a Spotter		Barriers for Work Area	
If Terminating or demoing conductors, has the equipment ground wire been isolated in the field?				N/A	
Method of Isolation:					
3. Notification					
Personnel who may be in or near the area, and may be impacted, have been informed. (Include other tradesmen)					
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Names:			
4. Additional Permits					
Check as Appropriate:					
<input type="checkbox"/> Hot Work		<input type="checkbox"/> Permit Confined Space		<input type="checkbox"/> Other	
Part III: Approvals (Responsible Supervisor, Safety Representative and Contractor Representative)					
<input type="checkbox"/> Electrical System Construction	<input type="checkbox"/> Shutdown causes additional hazard or increased risk <input type="checkbox"/> Shutdown infeasible due to equipment design or Operational Limitations		Electrical Supervisor / Lead / Contractor Employee Foreman or Safety Champion Signature:		
<input type="checkbox"/> Electrical System Maintenance	<input type="checkbox"/> Shutdown causes additional hazard or increased risk <input type="checkbox"/> Shutdown infeasible due to equipment design or		Electrical Supervisor Signature:		
A. Contact CUP Control with Micron (66400) (208.368.4131)					
B. Live work on this equipment is: <input type="checkbox"/> Approved <input type="checkbox"/> Not Approved					
	Print Name:	Signature:	Date:		
Supervisor					
Safety Representative:					
General Contractor:					
5. Safety Agreement					
Do you agree the above described work can be done safely? <input type="checkbox"/> Yes <input type="checkbox"/> No (If not then do not perform work)					
Name of qualified person(s) doing the work:					
Print:		<div style="background-color: #ccc; width: 50px; height: 50px; margin: 0 auto;"></div>	Signature:		
Pre - Task Checklist	Post - Task Checklist (If applicable)	Prepare for Emergency			
Is portable lighting needed to perform tasks? Equipment in working order? All Hazards and control methods ID'd and discussed? Guarding such as mylar / shielding in place? All Tools and PPE inspected prior to use? Discussed all Task Steps and Hazards with all personnel involved?	Torque specifications met / torque seal applies? Breakers settings / rating plugs correct? Housekeeping? All tools / materials removed? Shielding removed (if not permanent?) All doors, covers, closed and screws in place? Labeling and panel scheduled updated with info / details? Return of all tools and equipment to correct	Emergency Equipment Available? Do you know Emergency Numbers? Fire Alarm Location; Where is the Fire Extinguisher? Where is the Telephone or radio location?			
Part IV: Work Completion:					
Electrical Work Complete:		Date:		Time:	
Yes	No				

TABLE 130.4(D)(a) Shock Protection Approach Boundaries to Exposed Energized Electrical Conductors or Circuit Parts for Alternating - Current Systems

1	2	3	4
<i>Nominal System Voltage Range, Phase to Phase^a</i>	Limited Approach Boundary^{a,b}		Restricted Approach Boundary^{a,b}; Includes Inadvertent Movement Adder
	<i>Exposed Movable Conductor^c</i>	<i>Exposed Fixed Circuit Part</i>	
Less than 50V	Not Specified	Not Specified	Not Specified
50V - 150V ^d	3.0m (10 ft 0 in)	1.0m (3ft 6in)	Avoid Contact
151V - 750V	3.0m (10 ft 0 in)	1.0m (3ft 6in)	0.3m (1ft 0in)
751V - 15kV	3.0m (10 ft 0 in)	1.5m (5ft 0 in)	0.7m (2ft 2in)
15.1kV - 36kV	3.0m (10 ft 0 in)	1.8m (6ft 0 in)	0.8m (2ft 9in)
36.1kV - 46kV	3.0m (10 ft 0 in)	2.5m (8ft 0in)	0.8m (2ft 9in)
46.1kV - 72.5kV	3.0m (10 ft 0 in)	2.5m (8ft 0in)	1.0m (3ft 6in)
72.6kV - 121kV	3.3m (10ft 8 in)	2.5m (8ft 0in)	1.0m (3ft 6in)
138kV - 145kV	3.4m (11 ft 0 in)	3.0m (10 ft 0 in)	1.2m (3ft 10in)
161kV - 169kV	3.6m (11ft 8in)	3.6m (11ft 8in)	1.3m (4ft 3in)
230kV - 242kV	4.0m (13ft 0in)	4.0m (13ft 0in)	1.7m (5ft 8in)
345kV - 362kV	4.7m (15ft 4in)	4.7m (15ft 4in)	2.8m (9ft 2in)
500kV - 550kV	5.8m (19ft 0in)	5.8m (19ft 0in)	3.6m (11ft 8in)
765kV - 800kV	7.2m (23ft 9in)	7.2m (23ft 9in)	4.9m (15ft 11in)

Notes:

1. For arc flash boundary see 130.5(A)
2. All dimensions are distance from exposed energized electrical conductors or circuit part to the employee.
- a. For single - phase systems above 250 volts, select the range that is equal to the system's maximum phase-to-ground voltage multiplied by 1.732
- b. See definition in Article 100 and text in 130.4(D)(2) and Informative Annex C for elaboration.
- c. Exposed movable conductors describes a condition in which the distance between the conductor and a person is not under the control of the person.
The term is normally applied to overhead line conductors supported by poles
- d. This includes circuits where the exposure does not exceed 120 Volts nominal.

Table 130.4(D)(b) Shock Protection Approach Boundaries to Exposed Energized Electrical Conductors or Circuit Parts for Direct-Current Voltage

1	2	3	4
<i>Nominal Potential Difference</i>	Limited Approach Boundary		Restricted Approach Boundary^{a,b}; Includes Inadvertent Movement Adder
	<i>Exposed Movable Conductor[*]</i>	<i>Exposed Fixed Circuit Part</i>	
Less than 50V	Not Specified	Not Specified	Not Specified
50V - 300V	3.0m (10 ft 0 in)	1.0m (3ft 6in)	Avoid Contact
301V - 1kV	3.0m (10 ft 0 in)	1.0m (3ft 6in)	0.3m (1ft 0in)
1.1kV - 5kV	3.0m (10 ft 0 in)	1.5m (5ft 0 in)	0.5m (1ft 5in)
5kV - 15kV	3.0m (10 ft 0 in)	1.5m (5ft 0 in)	0.7m (2ft 2in)
15.1kV - 45kV	3.0m (10 ft 0 in)	2.5m (8ft 0in)	0.8m (2ft 9in)
45.1kV - 75kV	3.0m (10 ft 0 in)	2.5m (8ft 0in)	1.0m (3ft 6in)
75.1kV - 150kV	3.3m (10ft 8 in)	3.0m (10 ft 0 in)	1.2m (3ft 10in)
150.1kV - 250kV	3.6m (11ft 8in)	3.6m (11ft 8in)	1.6m (5ft 3in)
250.1kV - 500kV	6.0m (20ft 0in)	6.0m (20ft 0in)	3.5m (11ft 6in)
500.1kV - 800kV	8.0m (26ft 0in)	8.0m (26ft 0in)	5.0m (16ft 5in)

Notes: All dimensions are distance from exposed energized electrical conductors or circuit parts to worker.

^{*}Exposed movable conductor describes a condition in which the distance between the conductor and a person is not under the control of the person. The term is normally applied to overhead line conductors supported by poles.

Table 130.7(C)(15)(a) Arc - Flash PPE Categories for Alternating Current (ac) Systems

Equipment	Arc - Flash PPE Category	Arc - Flash Boundary
Panelboards or other equipment rated 240 Volts and below		
Parameters; Maximum of 25kA available fault current; maximum of 0.03 sec (2 cycles) fault clearing time; minimum working distance 455 mm (18in)	1	485mm (19 in.)
Panelboards or other equipment rated greater than 240 Volts and up to 600 volts.		
Parameters; Maximum of 25kA available fault current; maximum of 0.03 sec (2 cycles) fault clearing time; minimum working distance 455 mm (18in)	2	900mm (3 ft)
600 - volt class motor control centers (MCCs)		
Parameters; Maximum of 65kA available fault current; maximum of 0.03 sec (2 cycles) fault clearing time; minimum working distance 455 mm (18in)	2	1.5 m (5 ft)
600 - volt class motor control centers (MCCs)		
Parameters; Maximum of 42kA available fault current; maximum of 0.33 sec (20 cycles) fault clearing time; minimum working distance 455 mm (18in)	4	4.3 m (14 ft)
600 - volt class switchgear (with power circuit breakers or fused switches) and 600 - volt class switchboards		
Parameters; Maximum of 35kA available fault current; maximum of 0.5 sec (30 cycles) fault clearing time; minimum working distance 455 mm (18in)	4	6 m (20 ft)
Other 600 - volt class (277 volts through 600 volts, nominal) equipment		
Parameters; Maximum of 65kA available fault current; maximum of 0.03 sec (2 cycles) fault clearing time; minimum working distance 455 mm (18in)	2	1.5 m (5 ft)
NEMA E2 (fused contactor) motor starters, 2.3 kV through 7.2 kV		
Parameters; Maximum of 35kA available fault current; maximum of 0.24 sec (15 cycles) fault clearing time; minimum working distance 910 mm (36in)	4	12 m (40 ft)
Metal - clad switchgear, 1 kV through 15kV		
Parameters; Maximum of 35kA available fault current; maximum of 0.24 sec (15 cycles) fault clearing time; minimum working distance 910 mm (36in)	4	12 m (40 ft)
Arc - resistant switchgear 1 kV through 15 kV [for clearing times of less than 0.5sec (30 cycles) with an available fault current to exceed the arc - resistant rating of the equipment], and metal-enclosed interrupter switchgear, fused or unfused of arc resistant type construction, 1 kV through 15kV.	N/A (doors closed)	N/A (doors closed)
Parameters; Maximum of 35kA available fault current; maximum of 0.24 sec (15 cycles) fault clearing time; minimum working distance 910 mm (36in)	4 (doors open)	12 m (40 ft)
Other equipment 1 kV through 15kV		
Parameters; Maximum of 35kA available fault current; maximum of 0.24 sec (15 cycles) fault clearing time; minimum working distance 910 mm (36in)	4	12 m (40 ft)

Note: For equipment rated 600 volts and below and protected by upstream current - limiting fuses or current - limiting circuit breakers sized at 200 amperes or less, the arc flash PPE category can be reduced by one number but not below arc flash PPE category 1.

Informational Note to Table 130.7(C)(15)(a): The following are typical fault clearing times of over - current protective devices:

- 0.5 cycle fault clearing time is typical for current limiting fuses when the fault current is within the current limiting range
- 1.5 cycle fault clearing time is typical for molded case circuit breakers rated less than 1000 volts with an instantaneous integral trip.
- 3.0 cycle fault clearing time is typical for insulated case circuit breakers rated less than 1000 volts with an instantaneous integral trip or relay operated trip.
- 5.0 cycle fault clearing time is typical for relay operated circuit breakers rated 1 kV to 35 kV when the relay operates in the instantaneous range (i.e. "no intentional delay")
- 20 cycle fault clearing time is typical for low voltage power and insulated case circuit breakers with a short time fault clearing delay for motor inrush.
- 30 cycle fault clearing time is typical for low-voltage power and insulated case circuit breakers with a short time fault clearing delay without instantaneous trip.

Informational Note No. 1: See table 1 of IEEE 1584TM, *Guide for Performing Arc Flash Hazard Calculations*, for further information regarding Notes b through d.

Informational Note No. 2: An example of a standard that provides information for arc-resistant switchgear referred to in Table 130.7(C)(15)(a) is IEEE C37.20.7, *Guide for testing Metal Enclosed Switchgear Rated Up to 38 kV for Internal Arcing Faults*.

Table 130.7(C)(15)(b) Arc - Flash PPE Categories for Direct Current (dc) Systems

Equipment	Arc - Flash PPE Category	Arc - Flash Boundary
Storage batteries, dc switchboards and other dc supply sources		
Parameters: Greater than or equal to 100V and less than or equal to 250V		
Maximum arc duration and minimum working distance: 2 sec @ 455 mm (18in)		
Available fault current less than 4 kA	2	900 mm (3 ft)
Available fault current greater than or equal to 4 kA and less than 7 kA	2	1.2 m (4 ft)
Available fault current greater than or equal to 7 kA and less than 15kA	3	1.8 m (6 ft)
Storage batteries, dc switchboards and other dc supply sources		
Parameters: Greater than 250V and less than or equal to 600V		
Maximum arc duration and minimum working distance: 2 sec @ 455 mm (18in)		
Available fault current less than 1.5kA	2	900 mm (3 ft)
Available fault current greater than or equal to 1.5kA and less than 3 kA	2	1.2 m (4 ft)
Available fault current greater than or equal to 3 kA and less than 7 kA	3	1.8 m (6 ft)
Available fault current greater than or equal to 7 kA and less than 10kA	4	2.5 m (8ft)

Notes:

- Apparel that can be expected to be exposed to electrolyte must meet both of the following conditions:

- Be evaluated for electrolyte protection

Informational Note: ASTM F1296, *Standard Guide for Evaluating Chemical Protective Clothing*, contains information on evaluating apparel for protection from electrolyte.

- Be arc rated

Informational Note: ASTM F1891, *Standard Specifications for Arc Rated and Flame Resistant Rainwear*, contains information on evaluating arc rated apparel.

- A two-second arc duration is assumed if there isn't no overcurrent protection device (OCPD) or if the fault clearing time is not known. If the fault clearing time is not known. If the fault clearing time is known and is less than 2 seconds, an incident energy analysis could provide a more representative result.

Informational Note No. 1: When determining available fault current, the effects of cables and any other impedances in the circuit should be included.

Power system modeling is the best method to determine the available short-circuit current at the point of the arc. Battery cell short-circuit current can be obtained from the battery manufacturer. See Informative Annex D.5 for the basis for table values and alternative methods to determine dc incident energy. Methods should be used with good engineering judgment.

Informational Note No. 2: The methods for estimating the dc arc-flash incident energy that were used to determine the categories for this table are based on open air incident energy calculations. Open-air calculations were used because many battery systems and other dc process systems are in open areas or rooms. If the specific task is within an enclosure, it would be prudent to consider additional PPE, protection beyond the value shown in this table. Research with ac arc flash has shown a multiplier of as much as 3x for arc-in-a-box [508 mm (20 in) cube] versus open air. Engineering judgment is necessary when reviewing the specific conditions of the equipment and task to be performed, including the dimensions of the enclosure and the working distance involved.

Table 130.7(C)(15)(c) Personal Protective Equipment (PPE)

Table 130.7(C)(15)(c) Is not applicable to evaluations conducted using the incident energy analysis method. For arc flash PPE clothing requirements for the incident energy analysis method, see 130.5(G) and 130.7(C)(1) through (C)(14).

AN: As needed (optional) AR: As required SR: Selection Required

[a] Arc rating is defined in Article 100

[b] Face shields are to have wrap-around guarding to protect not only the face but also the forehead, ears and neck, or, alternatively, an arc rated arc flash suit hood is required to be worn

[c] Other types of hearing protection are permitted to be used in lieu of or in addition to ear canal inserts provided they are worn under an arc - rated arc flash suit hood.

[d] If rubber insulated gloves with leather protectors are used, additional leather or arc - rated gloves are not required. The combination of rubber insulating gloves with leather protectors satisfies the arc flash protection requirement.

Arc - Flash PPE Category	PPE
1	<p>Arc - Rated Clothing, Minimum Arc Rating of 4 cal / cm² (16.75 J / cm²) [a]</p> <p>Arc - rated long sleeve shirt and pants or arc rated overall</p> <p>Arc - rated face shield [b] or arc flash suit hood</p> <p>Arc - rated jacket, parka, rainwear, or harhat liner (AN)</p> <p>Protective Equipment</p> <p>Har hat</p> <p>Safety Glasses or safety goggles (SR)</p> <p>Hearing protection (ear canal inserts) [c]</p> <p>Heavy duty leather gloves [d]</p> <p>Leather footwear (AN)</p>
2	<p>Arc - Rated Clothing, Minimum Arc Rating of 8 cal / cm² (33.5 J / cm²) [a]</p> <p>Arc - rated long sleeve shirt and pants or arc rated overall</p> <p>Arc - rated suit hood or arc rated face shield [b] and arc rated balaclava</p> <p>Arc - rated jacket, parka, rainwear, or harhat liner (AN)</p> <p>Protective Equipment</p> <p>Har hat</p> <p>Safety Glasses or safety goggles (SR)</p> <p>Hearing protection (ear canal inserts) [c]</p> <p>Heavy duty leather gloves [d]</p> <p>Leather footwear (AN)</p>
3	<p>Arc - Rated Clothing, Selected so that the System Arc Rating Meets the Required Minimum Arc Rating of 25 cal / cm² (104.7 J / cm²) [a]</p> <p>Arc - rated long sleeve shirt</p> <p>Arc - rated pants (AR)</p> <p>Arc - rated coverall (AR)</p> <p>Arc - rated arc flash suit jacket (AR)</p> <p>Arc - rated arc flash suit pants (AR)</p> <p>Arc - rated arc flash suit hood</p> <p>Arc - rated gloves [d]</p> <p>Arc - rated jacket, parka, rainwear, or harhat liner (AN)</p> <p>Protective Equipment</p> <p>Har hat</p> <p>Safety Glasses or safety goggles (SR)</p> <p>Hearing protection (ear canal inserts) [c]</p> <p>Heavy duty leather gloves [d]</p> <p>Leather footwear (AN)</p>

4

Arc - Rated Clothing, Selected so that the System Arc Rating Meets the Required Minimum Arc Rating of 40 cal / cm² (167.5 J / cm²) [a]

Arc - rated long sleeve shirt

Arc - rated pants (AR)

Arc - rated coverall (AR)

Arc - rated arc flash suit jacket (AR)

Arc - rated arc flash suit pants (AR)

Arc - rated arc flash suit hood

Arc - rated gloves [d]

Arc - rated jacket, parka, rainwear, or raincoat liner (AN)

Protective Equipment

Hard hat

Safety Glasses or safety goggles (SR)


Hearing protection (ear canal inserts) [c]

Heavy duty leather gloves [d]

Leather footwear (AN)

The arc - rated clothing and protective equipment shown in Table 130.7(C)(15)(c) are only to be used with Table 130.7(C)(15)(a) for ac systems and Table 130.7(C)(15)(b) for dc systems. Table 130.7(C)(15)(c) is not to be used to select PPE as a result of an incident energy calculation. The PPE listed in these tables protect only from an arc flash hazard. Arc - rated clothing is available in many constructions, and arc flash PPE rated in cal/cm² is suitable for that incident energy level. Table 130.7(C)(15)(c) suggests acceptable combinations of clothing items to achieve a desired arc flash PPE category. Other combinations are possible.

Table 130.7(C)(15)(c) provides general information that can help an employee understand the process for selecting clothing based on arc flash PPE category designation, but it does not describe any required combination or construction of a protective system. The manufactured system can differ from what is described in the table; the clothing manufacturer needs to be consulted. See Informational Note No. 3 to 130.7(C)(15)(c).

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LOCKOUT – TAGOUT (LOTO) OR CONTROL OF HAZARDOUS ENERGY (COHE)			Next Review Date:	01/01/2023
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Section 27: Lockout/Tagout (LOTO) or Control of Hazardous Energy (CoHE)

A. Policy Statement


The intent of this policy is to provide electrical safety related work practices for nonqualified person(s) with limited exposure [those with little or no training], workers expected to be exposed to hazards in the normal course of their duties, and qualified person(s) [those who have specific training in avoiding the electrical hazards of working on or near exposed energized parts] in an effort to avoid on-the-job injuries and property damage through the control of energy sources when installing, adjusting, commissioning, and servicing machinery, equipment or services.

B. Scope

This program covers all such equipment servicing and/or maintenance activities on Quality Electric property and projects and shall include the work of outside contractors to the degree described here after. Also, certain routine adjusting, cleaning or setup activities performed by employees may be subject to these procedures.

C. Definitions


1. **Affected Employees** - one whose job requires him/her to operate or use a machine or equipment on which servicing, commissioning, or maintenance is being performed under LOTO, or whose job requires him/her to work in an area in which such servicing, commissioning, or maintenance is being performed. Affected employees must always be under the visual supervision of an authorized employee.
2. **Authorized Employee** - an employee that has been properly trained in the lockout/tagout policy and by training has been authorized to apply/remove their assigned lock during the performance of their work. They will be familiar with the equipment and/or electrical systems that are being put under LOTO. These employees may also be allowed to conduct energy verification activities, or other tasks that involve energized electrical work.
3. **Barricade** - an erected barrier used to limit or control access to a designated area
4. **Capable of Being Locked Out** - an energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out if LOTO can be achieved without the need to dismantle, rebuild, or replace the energy-isolating device or permanently alter its energy control capability.
5. **CoHe (Control of Hazardous Energy)** – the procedure of blocking multiple sources of energy (chemical, pneumatic, gases, mechanical, electrical) to a machine, process piping or piece of equipment, and keeping it out, to perform maintenance or repairs. Lockout is accomplished by placement of a lockout device at the power source of equipment so that the equipment powered by the source cannot be operated until lockout device is removed.
6. **De-Energized** - When all energy sources are disconnected or in a released state
7. **Designated (Qualified) Person** - A trained person, competent to safely perform specific duties as determined by responsible employer
8. **Energized** - Connected to an energy source or containing residual or stored energy
9. **Energy Isolating Device** - A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following:

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- (1) a manually operated electrical circuit breaker
- (2) a disconnect switch
- (3) a manually operated switch in which the conductors of a circuit can be disconnected from all ungrounded
- (4) supply conductors, and, in addition, no pole can be operated independently
- (5) a line valve
- (6) a block
- (7) any similar device used to block or isolate energy

(NOTE: Push buttons, selector switches and other control circuit type devices are not energy isolating devices.)

10. **Energy Source** - Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy
11. **Group Lockout/Tagout Program** - This procedure can be used when there are projects that require a group of authorized employees to perform work on the machine or piece of equipment locked out by an authorized employee in charge
12. **Live-Dead-Live** - Verification of de-energization using a calibrated digital voltmeter, when applicable and High/Medium voltage proximity testers when digital volt meters cannot be used. Procedure consists of testing proper meter operation at a known live source (Live), the moving leads to de-energized source for verification (Dead), and transfer back to known live source verifying proper meter operation (Live).
13. **Lockout** - the procedure of blocking the source of energy to a machine or piece of equipment, and keeping it out, to perform maintenance or repairs. Lockout is accomplished by placement of a lockout device at the power source of equipment so that the equipment powered by the source cannot be operated until lockout device is removed.
14. **LOTO** – Lockout/Tagout
15. **Lockout/Tagout Supervisor** - An authorized employee who has been designated as having the primary responsibility for a set number of employees working under the protection of a LOTO procedure to ensure coordination of the work group and ensure continuity of protection for employees
16. **Multiple Energy Sources** – When more than one energy source is present and poses a potential hazard
17. **Multiple Locking Hasp** - A manufactured device designed to accommodate a number of locks (usually 6) to allow more than one person, craft, etc., to secure an Energy Isolation Device
18. **One-Line Drawing** – A document that illustrates all the energy sources that feed into a specified piece of equipment or electrical device
19. **Other Employee** - Employees whose work operations are or may be in an area where energy controls procedures may be utilized
20. **Safe Position** - The position or state of an energy isolating device after the equipment has been isolated from the energy source
21. **Tagout** - the procedure of placing a tag on the power source. It is a special tag that acts as a warning to others the dangers of starting up the equipment. It is not a physical restraint. Tags must be applied by hand and clearly state that they equipment being controlled cannot be operated until tag is removed.
22. **Zero Energy State** - A machine condition where every power source that can produce movement of the machine, or its parts, has been isolated; and where all stored energy has been released

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D. Key Responsibilities

1. Employer Responsibilities:


- Ensures that all authorized and affected employees, as well as the designated LOTO supervisor(s), are properly trained and instructed in the LOTO policy and procedure.
- Enforces compliance with LOTO policy and procedures by all personnel, which includes the use of disciplinary action where warranted.
- Ensures that all authorized employees are knowledgeable in and able to demonstrate the necessary skills and techniques to safely work on or near equipment or machinery.
- Ensures that only authorized employees perform the LOTO procedure. Maintains a roster of all authorized employees.

2. LOTO Supervisor Responsibilities:

- Ensures compliance with the policy and procedures by observing LOTO on an ongoing basis.
- Ensures that all personnel have been properly trained and instructed in LOTO policy and procedures prior to starting any work.
- Ensures that the proper safety equipment and tools are available and are inspected, tested, and maintained in safe and reliable condition and utilized by all authorized employees.
- Enforces the LOTO safety program and issues disciplinary action if the LOTO procedures are not strictly followed.
- Ensures the procedure for transfer of LOTO status at shift changes is strictly followed.
- Before starting each job, the LOTO Supervisor and Foreman shall conduct a job briefing, with employees involved. The briefing shall cover:
 - (8) Hazards associated with the job
 - (9) Work procedures involved
 - (10) Special precautions
 - (11) Energy source controls
 - (12) Personal Protective Equipment requirements
 - (13) Information on the energized electrical work permit
 - (14) Additional job briefing will be held if changes which may affect safety occur
 - (15) Roles will be clearly defined for all authorized/affected employees at this meeting.

3. Authorized Employee Responsibilities:

- Must have successfully completed LOTO training.
- Designated by their employer as qualified based on training, experience, and knowledge of electrical hazards and systems.
- Must obtain and care for safety equipment required to comply with the LOTO policy and procedure.
- Must implement--without exception--the LOTO procedure established when working on equipment.
- Must consult with their Foreman whenever there are questions concerning the LOTO policy and procedure.
- Must immediately report any violation of the LOTO policy and procedure to their Foreman.

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- g) Follow the daily work plan and do not deviate from the plan without first consulting with their Foreman/Supervisor.
- h) Restrict access to areas that are under the custody and control of their LOTO devices.
- i) Performs Live-Dead-Live verifications and any other verifications needed to verify zero energy state, prior to commencing any activities involving LOTO.

4. *Affected and Other Areas:*

- a) Does not attempt to start or energize a piece of equipment that is or has been locked and/or tagged out.
- b) Does not attempt to remove a lock or a tag from any machine or energy control source.
- c) Does not place any part of their body into an area on a machine where work is performed on the material being processed or where an associated danger zone exists during a machine operating cycle.
- d) Does not enter any area that has been barricaded off from the hazards associated with LOTO without properly receiving training and applying their own LOTO devices under the direction of an Authorized Employee.
- e) No persons, authorized or not, shall cross any barricaded area without first having their own LOTO device installed on equipment that is under active lockout/tag-out.


E. Locks and Tags

1. Standardized Locks:

- a) After successfully completing an authorized employee LOTO training course, each qualified person will be assigned an individually keyed lock (one key) as needed for a LOTO procedure. The LOTO Supervisor will maintain a roster or log of lock assignments. The roster shall include at a minimum the employee's name, the numerical code of the lock assigned, the date, equipment to be put under LOTO, location of such equipment in the facility, and their supervisors name and contact information.
- b) After completion of the LOTO procedure, or the need for a LOTO procedure is no longer necessary, the employee shall return the assigned lock to the Foreman or LOTO Supervisor. The Foreman/LOTO Supervisor will then document the return of the lock and the completion of the LOTO procedure on the LOTO roster or log.

F. Standardized Identification Tags

- 1. Each authorized/affected employee will receive one tag for each lock they have been issued.
- 2. This tag will have printed on it, the individuals name, the company name, and the date and location in which the tag was applied, as well as a contact phone number.
- 3. This tag will also have a statement prohibiting unauthorized operation and removal of the tag. A statement, such as "DANGER – DO NOT OPERATE" will be required on the tag.
- 4. This tag will have either a reinforced hole large enough for the shank of the lock to pass through or shall have a tag attachment device which is non-reusable that is attached by hand which is self-locking and non-releasable with a minimum of 50 lbs. opening strength. An all-environment nylon cable tie is acceptable.

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G. Training

All employees shall be trained in the recognition of and compliance with the warning system.

Authorized employees training shall consist of the following:

1. Qualified persons shall be trained in accordance with the components detailed in 29 CFR 1910.331-335 and NFPA 70 E as they pertain to respective job assignments.
2. Qualified persons shall, at a minimum, be trained in and familiar with the skills and techniques necessary to distinguish exposed live parts from other parts of electrical equipment

All necessary lockout device and warning tags will be issued after training is completed.

Employees will be trained in safety related work practices that pertain to their respective job assignments.

1. Frequency of Training:

Individual employee training/retraining is required when:

- a) The employee is introduced to the LOTO policy and procedures
- b) There is a change in the LOTO policy and procedure
- c) It is determined by the safety department, LOTO Supervisor or any other authority, there are deviations or inadequacies in the employee's knowledge or use of the LOTO program
- d) Any employee who is found to have violated this policy, is involved in an electrical incident, or that cannot demonstrate competency/knowledge of this program, will require re-training.

2. Documentation of Training:


Training and re-training is documented to certify that the employee has completed the required training.

Documentation will include:

- a) Employee's name
- b) Employee's employee number or other unique identification number
- c) Date of training
- d) Reason for training (regular training/re-training as required)
- e) Trainer's name
- f) Documentation will be maintained in compliance with company procedures.

3. Training Elements:

- a) Training of authorized employees must include:
 - (1) The purpose and use of the LOTO procedures
 - (2) The type and magnitude of the energy available in the workplace
 - (3) The recognition of applicable hazardous energy sources
 - (4) Responsibilities of the individual and group as it relates to the LOTO program
 - (5) The method of notification that must be used when the LOTO procedures are being applied and removed
 - (6) Prohibitions relating to attempting to restart or re-energize equipment or machines
 - (7) The basic steps of the LOTO program

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- (8) The disciplinary action associated with violations of the LOTO program
- (9) PPE requirements while performing energy verification status
- (10) Barricading requirements and distances based on the most current NFPA 70E standards or a site-specific arc flash analysis of the onsite electrical equipment
- (11) Emergency procedures to follow in the event of an electrical incident.

b) Training of other affected employees shall include:

- (1) The purpose and use of the LOTO program and when it must be used
- (2) The method of notification that will be used when the LOTO program is being applied and removed
- (3) Employee responsibilities during a LOTO procedure and the prohibitions relating to attempting to restart or re-energize equipment or machines
- (4) A visual observation of the locks and tags used in the LOTO procedure
- (5) The disciplinary action associated with violation of the LOTO program
- (6) Barricading requirements and distances based on the most current NFPA 70E standards or a site-specific arc flash analysis of the onsite electrical equipment
- (7) Emergency procedures to follow in the event of an electrical incident.

Retraining is required when there is a change in job assignments, in machines, a change in energy control procedures or a new hazard is introduced.

H. Personal Protection Safeguards

Authorized employees working in areas where there are potential hazards must be provided with the appropriate personal protective equipment, isolation devices, and equipment.

I. Lockout/Tagout or CoHE and Energized Work Procedures


General Statement Tagout/lockout and safety-related work practices shall be employed to protect all employees from electrical shock or other injuries resulting from either direct or indirect electrical contacts when work is performed near or on equipment or circuits which are or may be energized. The specific-related work practices shall be consistent with the nature and extent of the associated electrical hazards.

DO NOT WORK ON ANY EQUIPMENT THAT IS ENERGIZED, live parts **shall always** be placed in an electrically safe work condition (as defined by NFPA-70(E) before an employee work on or near them, unless work on energized components can be **justified** according to NFPA-70E 130.2(A) 1, 2, 3, 4 and Informational notes.

1. Three Levels of Potential Staff Exposure Designation

a. Non-Qualified Person:

- (1) As determined by their supervisor, person(s) NOT required to perform electrical work. A “non-qualified person” is an individual whose duties (i.e. Administrative/Office Staff, Other Specialty Craftsperson), as determined by their supervisor, do not require exposure to electrical hazards through their normal duties. Due to their normal work duties, these persons have little training and do not require specific training in avoiding possible electrical hazards that may be encountered while working on or near

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exposed energized parts. These persons may also include those who are unfamiliar with the equipment or systems on which work is to be performed. These person(s) are considered to have no training.

- (2) This person is NOT authorized to perform work on exposed energized or potentially exposed energized parts.

b. Exposed Worker NOT performing Electrical Work:

- (1) Person(s) with minimal training, as determined by their supervisor whose duties require exposure to electrical hazards through their normal duties but are NOT actually performing the electrical work. This person may have been trained in accordance with 29 CFR 1910 parts 331 – 335. However, they have not received training with NFPA 70 E for avoiding electrical hazards of working on or near exposed energized electrical parts.

c. Qualified Person:


- (2) As determined by their supervisor, person(s) required to perform electrical work.
- (3) A “qualified person” is an individual who has been trained in accordance with 29 CFR 1910 parts 331 – 335 and NFPA 70 E. This individual has received training for avoiding electrical hazards and for working on or near exposed energized electrical parts. This individual is familiar with the electrical and electronic construction, operation, and hazards of a piece of equipment or system that they are working on. They know the proper use of precautionary work procedures, personal protective equipment, insulating and shielding materials and techniques, and the proper insulated tools required to work on energized circuitry.
- (4) This person is authorized to perform work on exposed energized or potentially exposed energized parts ONLY if documented VALID training and license IS ON FILE.

2. Labeling

a. Equipment Labeling:

- (1) Electrical equipment such as switchboards, panelboards, industrial control panels, meter socket enclosures and motor control centers that are in other than dwelling units and that are likely to require examination, adjustment, servicing or maintenance while energized shall be marked containing all the following information:
 - Nominal system voltage
 - Arc Flash Boundary
 - At least one of the following:
 - Available incident energy and the corresponding working distance, or the arc flash PPE category in Table 130.7(C)(15)(a) or Table 130.7(C)(15)(b) for the equipment, but not both
 - Minimum arc rating of clothing
 - Site-specific level of PPE

Exception No. 1: Unless changes in electrical distribution system(s) render the label inaccurate, labels applied prior to the effective date of this edition of the standard shall be acceptable if they complied with the requirements for equipment labeling in the standard in effect at the time the labels were applied.

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Exception No. 2: In supervised industrial installations where conditions of maintenance and engineering supervision ensure that only qualified persons monitor and service the system, the information required in 130.5(H)(1) through 130 (H)(3) shall be permitted to be documented in a manner that is readily available to persons likely to perform examination, servicing, maintenance, and operation of the equipment while energized.

The method of calculating and the data to support the information for the label shall be documented. The data shall be reviewed for accuracy at intervals not to exceed 5 years. Where the review of the data identifies a change that renders the label inaccurate, the label shall be updated.

The owner of the electrical equipment shall be responsible for the documentation, installation, and maintenance of the marked label.

b. Location/Placement of Labels

- (1) Equipment in locations accessible to the public: Labels shall be adhered to the inside of the panelboard door or placed in a durable clear plastic envelope fastened to the inside of the panelboard door.
- (2) Equipment in locations not accessible to the public: Labels shall be adhered to the equipment in a location that allows service personnel to readily see and read the label


3. Lockout / Tagout Preparation:

Make a survey to locate and identify all isolating devices to be certain which switch(s), valve(s) or other energy isolating devices apply to the equipment to be locked or tagged out. More than one energy source (electrical, mechanical, others) may be involved. Please make sure all stored energy has been released.

For any conduits that lead to medium (2000V to 30,000V) or high (30,000V and higher) voltage where the system has not been completed, the conduits shall be capped at both ends with a ridged means, tagged, and identified dangerous high voltage with contact information of competent personnel.

Lockout Tagout Procedure shall be as Follows:


- a) LOTO procedures should only be carried out by authorized employees.
- b) Before implementing the LOTO procedure, you must fully understand:
 - (1) Who is responsible for identifying and determining the de-energization procedure.
 - (2) The number, type, and magnitude of the energy to be controlled
 - (3) The necessary PPE to be used
 - (4) All points of energy isolation
 - (5) The methods and means of controlling the hazardous energy sources.
- c) Each Feeder disconnect will be locked out with a 6-hole hasp and a company lock and a tag will be placed on the lockout with the supervisor's name and date.
 - (1) Any individual working on a locked-out feeder shall place their personal lock and tag on the 6 – hole hasp with their name, date, and time.

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- d) Before any supervisor removes a company, lockout and energizes a feeder, he will verify that the feeder is clear and ready to be energized, notify all affected employees and label equipment “HOT” after power is turned on.
- e) All equipment that is capable of being locked out will be subject to the lockout procedure.
- f) All branch circuit panels that have no provisions for lock – outs will not be subject to the lock – out procedure, but one of the following methods will be used.
 - (1) Remove wire from breaker and tag
 - (2) Safe off at a junction box
 - (3) Label breaker and lock panel door.

Once again it is everyone’s responsibility to assure that they are working in a safe situation. Always treat all electrical circuits as energized until proven de – energized, isolated, or locked out. Equipment that has been locked out will be checked by operating the controls to verify isolation.

- a) Notification:
Before the application of the LOTO devices, notify all affected personnel of the energy control procedure that is being used and reasons why.
- b) Shutdown:
Shut down equipment in an orderly manner. This may mean simply turning off the equipment. When the equipment is part of a production or manufacturing process, all parts of the operation must be considered. An orderly shutdown will avoid increased hazards when the equipment is de-energized.
- c) Isolation:
 - (1) Locate all energy isolating devices. Often times there are multiple energy sources. When the LOTO Supervisor determines that a piece of equipment needs to be locked out, that supervisor is responsible to ensure that all energy sources are identified and locked out. Reference available posted one-line drawings and electrical diagrams to understand all the sources of energy for a complete shutdown. If the LOTO Supervisor has any doubt whether all sources have been identified, no LOTO procedure shall be implemented until the safety department is notified and all parties have been assured that all potential energy sources have been identified.
 - (2) Operate the energy isolating devices so that the equipment is completely isolated from the energy source. When complete, all devices will be in the “safe” or “off” position.
- d) Application of Locks and Tags:
 - (1) Securely attach locks and/or tags to the energy isolating device so the device is held in the “safe” or “off” position. Separate locks or tags must be used for each authorized employee.
 - (2) If using group lockbox, hasps, etc. all authorized and affected workers must lockout. \

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e) Controlling of Stored and Residual Energy:

- (1) Relieve, disconnect, and restrain all stored or residual energy. Remember, hazardous energy can also be found in springs, elevated machine members, capacitors, rotating flywheels, hydraulic systems, air, gas, steam, and water pressure.
- (2) This energy must be dissipated or restrained. Operator's and service manuals can assist you in safely controlling the specific energy hazards. Common methods to restrain or dissipate stored energy are repositioning, blocking, and bleeding down systems.
- (3) Install equipment grounding devices (i.e. grounding clusters) to dissipate stored energy or when the potential exists for unexpected re-energization.
- (4) Know in advance the tools and equipment needed to control each hazard. Be sure they are in proper working order and able to perform the tasks you expect of them.

f) Shutdown verification:


- (1) Check to be sure that all personnel are in a safe location and any needed barricades are in place. Verify that the equipment is properly isolated, and all hazardous energy is safely controlled. Operate push buttons and other controls to verify isolation. Check circuits with proper electrical meters. Inspect springs, pressure gauges and the location of moving parts and other sources of stored energy. Be sure to return operating controls to the neutral or off position after the test. Each machine and piece of equipment is different. Follow the instructions found in the operator's and service manual. Once you are absolutely sure that the energy is isolated and safely controlled, proceed with the maintenance and service activities.
- (2) Live-Dead-Live Test - Treat all systems as "live" until the verification is complete and shows a zero-energy state on the equipment. This means wearing necessary PPE while performing verification tests/checks.
- (3) Use properly rated PPE before testing electrical meters on a known energy source to verify tester is functioning properly.
- (4) Test the equipment that is being placed under LOTO to verify it is at a zero-voltage state.
- (5) Re-test the same known energy source as before to ensure tester is still functioning properly.
- (6) All authorized and affected employees that will be working in the area of the arc flash boundary or hazard zone of the energy source, must witness the energy verification checks.

WARNING: Some machinery and equipment can re-accumulate stored energy even after the system has been de-energized. If there is a possibility of stored energy building to a hazardous level, continue verification until maintenance or service is completed or until the possibility of accumulation no longer exists.

4. Procedures for Working on Energized, Hazardous Voltage, Electrical Circuitry

a. Guidelines

- 1) Only "qualified persons" are permitted to work on energized electrical equipment such as electrical panels, wiring and switches. They shall follow all safe practices and procedures for the area and equipment/processes being worked on. Personal protective equipment (PPE) such as gloves, safety shoes, hard hats, eye/face protection, insulated fuse pullers, insulated hand tools and non-conductive


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ropes and hand lines should meet industry standards (NFPA-70E Article 250.2, subsection A) for electrical work as required. All personal jewelry (i.e., rings, earrings, watches, necklaces, etc.) will be removed before working on or around energized electrical equipment.

- 2) Live parts to which an employee may be exposed shall be de-energized and red tagged/locked out before the employee works on or near them, unless it can be demonstrated that de-energizing introduces additional or increased hazards or is not feasible due to equipment design or operational limitations. All electrical parts and components are assumed to be energized until tested and verified to be de-energized. Live parts that operate at less than 50 volts to ground need not be de-energized if there will not be increased exposure to electrical burns or to explosion due to electric arcs.
- 3) If the exposed live parts are not de-energized and red tagged/locked, specific permission from the respective Foreman must be obtained prior to proceeding further (i.e., for reasons of increased or additional hazards or infeasibility), other safety-related work practices shall be used to protect employees who may be exposed to the electrical hazards involved. Such work practices shall protect employees against contact with energized circuit parts directly with any part of their body or indirectly through some other conductive object.
- 4) Anytime work is to be done on energized electrical circuitry, a Safety Watch will be employed. **Safety Watch: An individual who is trained in and familiar with the hazards and the methods of the work being performed. This individual's only responsibility is to ensure that safe work procedures are followed, to summon rescue help, and assist in rescue efforts when help arrives.**
- 5) Safe distances, spacing, and other required barriers shall be observed.
- 6) At least one or more persons per "crew" should be trained in CPR and should NOT be the person performing the work.
- 7) All electrical equipment shall be considered energized, until proven otherwise.
- 8) De-energize all circuits before beginning work. The use of Lockout/Tagout procedures will be accomplished to prevent electrical circuits from inadvertent energization.
- 9) Use double insulated or grounded electrical tools to protect employees. Use Ground Fault Circuit Interrupters (GFCI's) in wet or damp environments and/or with extension cords. Do not render electrical interlocks inoperative by removal, modification, or destruction.
- 10) High voltage or areas with exposed live parts must have a sign stating "Danger – Keep Out." "Qualified persons" who work on exposed energized parts must barricade/secure the area prior to leaving it.
- 11) All disconnects, circuit breakers, and control boxes shall be clearly labeled to identify the corresponding equipment they control. All voltage and amp ratings shall be clearly identified as specified by the National Electric Code (NEC).
- 12) Use non-conductive ladders when working near electrical equipment or energized electrical conductors.
- 13) Use protective equipment/devices such as rubber mats and blankets to provide insulation from other electrical energy and/or grounding sources. Other personal protective equipment is available as required.

b. Personal Protective Equipment and Care

- (1) Persons working in areas where there are potential electrical hazards shall be provided with, and shall use, electrical protective equipment that is appropriate for the specific parts of the body to be protected and for the work to be performed.
- (2) Gloves and mats shall be rated for the voltage(s) involved. Minimum voltage rating on gloves and mats shall be 1,000 volts.

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- (3) The user of rubber insulating gloves shall perform a visual and a roll up pressure inspection of the gloves prior to each use to ensure they are free from defects (cuts, tears, holes, foreign objects, etc.)
- (4) All work on energized equipment will be conducted while standing on an insulated floor mat rated for the voltages involved, except when performing measurements of calibration of equipment at or below 600 volts-to-ground or phase-to-phase. Rubber insulating blankets and mats have specific requirements to ensure that they are free from defects (cuts, tears, holes, foreign objects, etc.)
- (5) All personal protective equipment shall be maintained in a safe, reliable condition and shall be annually (NFPA-70E Article 250.2, subsection-B) inspected and tested.
- (6) Non-conductive protective head gear shall be worn wherever there is a danger of head injury from electrical shock or burns due to contact with exposed energy parts.
- (7) Protective eye and face wear shall be worn whenever danger exists of eye or facial injuries from electrical arcs or flashes or from flying objects resulting from an electrical explosion

c. Working on or Near Exposed De-Energized Parts

- (1) Conductors and parts of electric equipment that have been de-energized but have not been locked or tagged out shall be treated as energized. This applies to work being performed on exposed de-energized parts or near enough to them to expose employees to any electrical hazard present.
- (2) A Lockout/Tagout Program has been established by Quality Electric. Whenever possible and the electrical equipment allows for it, the lockout/tagout program will be followed in isolating de-energized electrical equipment. Work on energized electrical components that does not employ the use of the lockout/tagout program will only be done after the written approval of the appropriate General Foreman or Foreman.
- (3) This applies to work being performed on electric circuit parts or equipment that has not been de-energized. Such person(s) shall be qualified as defined above to work safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.


d. Illumination

- (1) “Qualified person(s)” shall not enter or place parts of their body into spaces containing exposed energized unless illumination is provided that enable them to perform the work safely.
- (2) Where lack of illumination or an obstruction precludes observation of the work to be performed, “qualified person(s)” shall not perform tasks near exposed energized parts. They shall not reach blindly into areas which may contain energized parts.

e. Confined Space or Enclosed Workspaces

- (1) A confined space entry permit must be obtained and safety backup in place prior to a “qualified person” working in a confined or enclosed space (such as a manhole or vault) that contains exposed energized parts.
- (2) They shall be provided with and shall use protective shields, protective barriers, or insulating materials as necessary to avoid inadvertent contact with these parts. Doors, hinged panels, and similar items shall be secured to prevent their swinging into and causing the person to contact exposed energized parts.

f. Conductive Materials and Equipment Conductive materials and equipment that are in contact with any part of a “qualified person’s” body shall be handled in a manner that will prevent them from contacting exposed

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energized conductors or circuit parts. If long dimensional conductive objects (such as ducts and pipes) must be handled in areas with exposed live parts, work practices (such as the use of insulation, guarding, and materials handling techniques) shall be employed eliminating or minimizing the hazard.

- g. Portable Ladders Portable ladders shall have non-conductive siderails if they are used where the qualified person(s) or the ladder could contact exposed energized parts.

h. Housekeeping

- (1) Where live parts present an electrical contact hazard, qualified persons may not perform housekeeping duties at such distances to the parts that there is a possibility of contact, unless adequate safeguards (such as insulating equipment or barriers) are utilized.
- (2) Electrically conductive cleaning materials shall not be used in proximity to energized parts unless procedures are followed which will prevent electrical contact.

5. Sequence of Process Events

a. Application

This application applies to work performed on exposed live parts (involving either direct contact or by means of tools or materials) or near enough to them for qualified person(s) to be exposed to any hazard they present.

- (1) Only qualified persons may work on electric circuit parts or equipment that has not been de-energized under the lockout/tagout program. Such persons shall be qualified as defined above to work safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.
- (2) Preparation for “Hot Work” Qualified persons must review the Energized Parts Work Permit (Attachment A) “Required Precautions Checklist” and ensure compliance with the established authorized process.
- (3) Energized Parts Work Permit (Attachment A) The qualified person will verbally notify the appropriate foreman or supervisor of the need for an Energized Parts Work Permit. The appropriate foreman will complete the Energized Parts Work Permit (Attachment A). The foreman will review all aspects of the Energized Parts Work Permit and process to determine if there is a way for Lockout. If lockout cannot be applied, appropriate actions shall be taken to ensure all affected personnel are notified and safe practices implemented. At that time, the appropriate foreman will authorize the energized work process.

NOTE - A permit will be issued only for the duration of the work process to be performed.


6. Accountability

Foremen are responsible for ensuring compliance of these Procedures.

7. Clean Room Energized Electrical Work

This policy will clarify the procedure for working on energized electrical equipment in clean rooms.

a) Category 0 – 1 Energized Electrical Work in Clean Rooms

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- (1) Electricians will gown inside fab bootie room or service entry with 6 cal. Arc rated (white) clean room suit and hood wearing no hair net or beard cover underneath.
- (2) Transport voltage rated gloves inside Ziplock bag to work location.
- (3) Immediately after energized electrical work is complete personnel will return to bootie room and remove 6 cal. Arc rated (white) clean room suits.
- (4) Return items to hot work cart inside fab or remove from clean room.
- (5) Laundering of arc rated clean room suits will be performed on a regular basis.

b) Category 2 Energized Electrical Work in Clean Rooms

- (1) Electricians will gown inside fab bootie room or service entry with 6 cal. Rated (white) clean room suit and hood wearing no hair net or beard cover underneath.
- (2) Transport 8 cal. Arc rated non-clean room coveralls, balaclava, arc rated face shield / hardhat and voltage rated gloves in zip lock bag to work location inside clean room. The 8 Cal coverall will be put on over the 6 Cal cleanroom coverall.
- (3) Immediately after work is complete, remove 8 cal. Non-clean room arc rated suit, balaclava and arc rated face shield / hardhat.
- (4) Return items to hot work cart inside fab or remove from clean room.
- (5) After 8 cal. Non- clean room suit has been removed and properly stored, personnel will promptly return to bootie room to remove 6 Cal. Arc rated (white) clean room suit.

c) Category 3 Energized Electrical Work in Clean Rooms


- (1) Electricians will gown inside fab bootie room or service entry with 6 Cal. Arc rated (white) clean room suit and hood wearing no hair net or beard cover underneath.
- (2) Transport 25 Cal. Arc rated non-clean room bibs, jacket, arc flash hood and voltage rated gloves in appropriate clean room approved container or bag to work location inside clean room. The 25 Cal bib and jacket will be put on over the 6 Cal cleanroom overall.
- (3) Immediately after work is complete personnel will remove 25 cal. Arc rated gear, place in clean room approved container or bag.
- (4) Personnel will then promptly proceed to bootie room to remove 6 cal. Arc rated (white) clean room suit.

d) Fab / Subfab Areas that require Frock, Hair Net and Beard Covers Only

- (1) At energized work location, remove frock, hair net and beard cover before donning appropriate arc rated PPE as per Micron's EEWP form.
- (2) Immediately after energized work is complete, remove arc rated clothing and re-gown accordingly.

J. Tagout Procedures

1. The tagout procedure follows the same steps and has the same requirements for insuring de-energization as the lockout procedure. However, because tagout does not provide the same level of security that is present with lockout, the conditions listed below must be met:

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- a) Tagout procedures cannot be used in lieu of lockout.
- b) Tagout shall only be implemented when there is no physical engineered accommodation for lockout and the employee(s) performing the work can maintain continuous line of sight monitoring of the tag locations(s).
2. Tagout requires the use of completed "DANGER-DO NOT OPERATE" tag(s).


K. Group Lockout/Tagout or CoHE Procedures

In the preceding steps, if more than one individual is required to lockout or tagout equipment, each shall place their own personal lockout device or tagout device on the energy isolating device(s). When an energy isolating device cannot accept multiple locks or tags, a multiple lockout or tagout device (hasp) may be used. Each employee will then use their own lock to secure multiple lockout devices. As each person no longer needs to maintain their lockout protection, that person will remove their lock from the device.

1. This procedure can be used when there are projects that require a group of authorized employees to perform work on the same machine or piece of equipment that is locked out by the LOTO supervisor in charge.
2. There are two types of group LOTO:
 - a) With the use of a lockbox (Complex Lockout)
 - b) Without the use of a lockbox (Simple Lockout)
3. With the use of a lockbox:
 - a) The LOTO Supervisor oversees the group LOTO procedure
 - b) The LOTO Supervisor must complete each step of the appropriate LOTO procedure and secure locks and tags on all energy isolating devices
 - c) The keys for the locks of the equipment are then placed in a lockbox
 - d) Each employee then secures their lock and properly completes the tag on the lockbox
 - e) After an employee is finished with his/her service or maintenance work, the employee removes his/her lock and tag from the lockbox
 - f) After all employees' locks are removed from the lockbox, the LOTO supervisor removes the key(s) from inside and follows the re-energizing procedure.
4. Without the use of a lockbox:
 - a) The LOTO Supervisor oversees the group LOTO procedure
 - b) The LOTO Supervisor must complete each step of the appropriate LOTO procedure and secure locks and tags on all energy isolating devices using a multiple locking hasp when necessary
 - c) Service or maintenance work can now be performed, but only by the employees who have affixed their locks to the lockout device "hasp" and verified zero energy
 - d) After employee is finished with his/her service or maintenance work, the employee removes his/her lock from the device
 - e) After all employees' locks are removed from the LOTO device, the LOTO Supervisor removes his/her lock and follows the re-energizing procedure.

L. Shift or Personnel Change

1. If the work is incomplete at the end of the shift, the authorized person(s) at the end of shift will:
 - a) Contact the LOTO Supervisor for permission to maintain LOTO status for shift rotation at the shift change

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- b) The shift-end LOTO Supervisor will notify the on-coming LOTO Supervisor that an authorized employee has a piece of equipment locked and tagged out on which the work is incomplete
- c) The on-coming LOTO Supervisor will ensure that an on-coming authorized employee(s) accompanies the initial authorized employee who has locked the equipment out to the location of the lockout/tagout
- d) The shift-end authorized employee will remove his/her lock and tag from the isolating device in the presence of the on-coming authorized employee
- e) The on-coming authorized employee will place his/her lock and tag on the isolating device, and complete all steps of the LOTO procedure, including energy verification.

M. Restoring Equipment to Services (Releasing Energy Controls)

1. When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the following steps shall be taken:
 - a) Inspect the work area. Ensure all non-essential items such as tools, parts and cleaning supplies have been removed. Check to be sure that all machine and equipment components and safety guards are ready for operation. Be certain all employees have been safely positioned or removed. Verify all controls are in neutral, off or stop position.
 - b) Notify all affected employees that the LOTO devices are being removed.
 - c) Remove Locks and Tags:
 - (1) After a thorough inspection of the equipment is conducted and the authorized employee is confident that the equipment can be safely returned to service, the lock and tag can be removed by the authorized employee that installed it. Removal of a safety lock or tag not belonging to you is strictly prohibited without the LOTO Supervisor's implementation of the emergency lock removal procedures.
 - (2) Sign the lock back into the logbook for tracking purposes by the LOTO Supervisor before leaving the facility.

N. Emergency Lock Removal

1. When an authorized employee who applies a lock and tag to a machine or piece of equipment and is not available to remove them, they may be removed at the direction of the LOTO Supervisor under the following circumstances:
 - a) Verification that the authorized employee who applied the LOTO devices is not at the facility
 - b) After all reasonable efforts are made to contact the authorized employee to inform him/her that their LOTO devices are being removed. If contact is made, mark time of contact and location of worker during contact
 - c) And that the authorized employee who applied the LOTO devices is informed before resuming work that the LOTO devices were removed
 - d) The safety department must be contacted in the event a lock must be removed, and a separate form documenting this must be completed by the LOTO Supervisor and submitted to the safety department for approval.

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O. Exceptions

LOTO program does not apply to the following:

1. Servicing or maintenance of a machine or equipment in which the electrical wiring and/or electrical components are not a factor in the job to be performed and safety measures provided by the mechanical lockout/tagout policy and procedure ensures full employee protection.
2. Work on plug connected electrical equipment where the controlling of energy is accomplished by unplugging the equipment and the plug is under the exclusive control of the employee performing the work.

P. Compliance/Enforcement of this Program

1. Employees are responsible for adhering to the requirements of this program. The employee must understand the importance of this program and that ignoring these requirements could result in an accident that could inflict serious bodily harm to themselves or their fellow worker.
2. Employees must also understand that failure to follow these requirements or knowingly bypassing or ignoring any of these written procedures could result in discipline up to and including removal from the project.

Q. Annexes

1. Forms and Permits:
 - Emergency LOTO Removal Form
 - Roster of Lockout / Tagout Assignments
 - Energized Workflow and Apprentice Guidelines
2. Inspections and Checklists:
 - Lockout/Tagout Authorization and Checklist

Emergency LOTO Removal Form

Project Name:			Job #	
Date of Removal Request:				
Employee Requesting Removal:				
Employee(s) Affected by Removal:		Affected Employer		

1 Reason for Removal Request:

2 In order to remove the person's lock device, you must verify the following conditions:

Have you verified the employee is not onsite? Yes No

Have you made every attempt to make contact with employee and their supervisor? Yes No

Have / will you brief the employee when they return to work? Yes No

If you answered 'No' to any of the above questions, please explain:

Supervisor Approval:

(Print Name)

(Signature)

(Date)

General Foreman Approval:

(Print Name)

(Signature)

(Date)

Safety Approval:

(Print Name)

(Signature)

(Date)



LOTO Roster Form

[illegible]

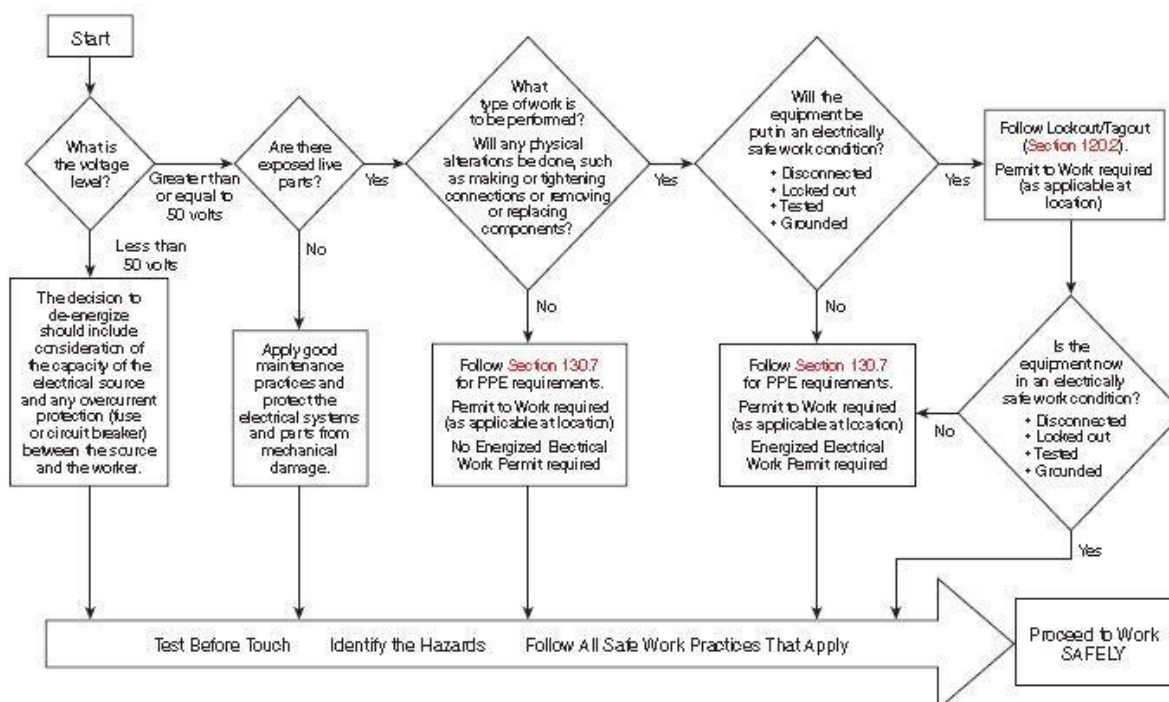
Licensed Apprentices Hot Work Procedures

This is just a guideline and should be held as the minimum standard, each apprentice should be evaluated for where they are currently and how comfortable the JW is with their skills according to the chart. If they feel they are more capable or less capable they can assess and have a conversation with their Foreman.

Years as an Apprentice	Outside Arc Flash Boundary *	Inside Arc Flash Boundary *	Limited Approach Boundary (3' 6")	Restricted Approach Boundary (1')
CW	NO	NO	NO	NO
First	YES	NO	NO	NO
Second	YES	Yes (Category 0 – 2)	Yes (Category 0 – 2)	NO
Third	YES	Yes (Category 0 – 2)	Yes (Category 0 – 2)	NO
Fourth	YES	Yes (Category 0 – 2)	Yes (Category 0 – 2)	?
Fifth	YES	Yes (Category 0 – 3)	Yes (Category 0 – 3)	Yes (Category 0 – 3)

* Default to 48" in flash protection boundary on arc flash label is less than 48"

Energized Electrical Work Permit Flow Chart





Group Lockout Tagout Permit Form


"The Quality Way"
Our People, Our Customers, Our Community

Primary Authorized Team Member (Print Name):	
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Date:		Energy Sources		
System / Equipment:		Electricity (AC/DC)	Pneumatic	Hydraulic
Work Order Number:		Mechanical	Chemical	Thermal
SIPP Number (if applicable):		Stored (Gravity)	Other	
Description of Work:				
Lockbox Number:				

Red Personal Locks					
Tag / Lock ID	Isolation Device Location	Locked Out (Initial/Date)	Energy Isolation Verification (Initial)	Print Name	Lockout Removal (Initials /Date)

[illegible]

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Section 28: Medium Voltage Safety Program

A. Policy Statement

The purpose of this program is to prevent injuries due to electrical exposure to medium voltage for employees and contractors. Quality Electric considers any voltage between 600V and 72.5KV to be medium voltage. As well as set forth procedures for the safe use of medium voltage electrical equipment, tools, and appliances at Quality Electric.

B. Scope

This program is applicable at every work area where medium voltage electrical exposure may occur. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Quality Electric employees and contractors and shall be used on owned premises, or when an operator's program does not exist or is less stringent.

C. Key Responsibilities

1. Managers/Supervisor

The Safety Manager will develop electrical safety programs and procedures in accordance with OSHA requirements and/or as indicated by events and circumstances.

The Operations Manager and Supervisors are responsible for ensuring that only qualified employees and or qualified contractors perform electrical repairs or installations on Medium voltage

Supervisors are responsible for ensuring all applicable electrical safety programs are implemented and maintained at their locations.


Employees are responsible to use electrical equipment, tools, and appliances according to this program, for attending required training sessions when directed to do so and to report unsafe conditions to their supervisor immediately.

2. General Requirements for Medium Voltage Systems

a. Safe Access to Electrical Equipment

All work locations shall be safely accessible whenever work is to be performed. Sufficient access and working space shall be provided and maintained about all electric equipment to permit ready and safe operation and maintenance of such equipment. Illumination shall be provided as needed to perform the work safely.

- A clear working space must be maintained in the front, back and on each side of all electrical enclosures and around electrical equipment for a safe operation and to permit access for maintenance and alteration.
- A minimum of three feet working floor space in front of panels and enclosures
- Employees may not enter spaces containing exposed energized parts unless adequate illumination is provided. Illumination shall be provided as needed to perform the work safely.
- Housekeeping in distribution rooms must receive high priority to provide a safe working and walking area in front of panels and to keep combustible materials to the minimum required to perform maintenance operations.

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- All enclosures and distribution rooms must have “Danger: High Voltage – Authorized Personnel Only” posted on the front panel and on entrance doors.
- Flammable materials are strictly prohibited inside distribution rooms (Boxes, rags, cleaning fluids, etc.)
- When an employee works in a confined or enclosed space that contains exposed energized parts, the employee shall isolate the energy source and turn off the source and lock and tag out the energy source (Only qualified electricians can work on an exposed energy source).
- Protective shields, protective barriers or insulating materials as necessary shall be provided.

3. Quality Electric Responsibilities

Quality Electric shall furnish such safety devices and safeguards as may be necessary to make the employment or place of employment as free from danger to the safety and health of employees as the nature of the employment reasonably permits. Quality Electric shall examine or test each safety device at such intervals as may be reasonably necessary to ensure that it is in good condition and adequate to perform the function for which it is intended. Any device furnished by Quality Electric found to be unsafe shall be repaired or replaced.

Tools used for electrical work must be inspected before use. Employees shall be instructed to inspect each safety device, tool or piece of equipment, each time it is used and to use only those in good condition. Quality Electric shall require the use of safety devices and safeguards where applicable. Defective equipment and tools shall be tagged and placed out of service.

4. Insulated Equipment Is Provided for Electrical Work

Insulating equipment designed for the voltage levels to be encountered shall be provided and employees shall be instructed to use the equipment. No person, firm, or corporation, or agent of same, shall require or permit any employee to perform any function in proximity to energized medium-voltage lines; to enter upon any land, building or other premises and there engage in any excavation, demolition, construction, repair or other operation; or to erect, install, operate or store in or upon such premises any tools, machinery, equipment, materials or structures (including scaffolding, house moving, well drilling, pile driving or hoisting equipment) unless and until danger from accidental contact with high-voltage lines has been effectively guarded against..


5. Electrical Work May Only Be Performed by Qualified Workers

Only qualified electrical workers shall work on energized conductors or equipment connected to energized medium-voltage systems. Except for replacing fuses, operating switches or other operations that do not require the employee to contact energized high-voltage conductors or energized parts of equipment, clearing "trouble" or in emergencies involving hazard to life or property, no such employee shall be assigned to work alone. Employees in training, who are qualified by experience and training, shall be permitted to work on energized conductors or equipment connected to high-voltage systems while under the supervision or instruction of a qualified electrical worker.

6. Observers

During the time work is being done on any exposed conductors or exposed parts of equipment connected to high-voltage systems, a qualified electrical worker, or an employee in training, shall be in close proximity at each work location to:

- Act primarily as an observer for the purpose of preventing an accident, and
- Render immediate assistance in the event of an accident.

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D. Suitable Temporary Barriers or Barricades

Covers or barriers must be installed on boxes, fittings, and enclosures to prevent accidental contact with live parts. Suitable temporary barriers or barricades shall be installed when access to opened enclosures containing exposed energized equipment is not under the control of an authorized person.

In locations where electric equipment is likely to be exposed to physical damage, enclosures or guards shall be so arranged and of such strength as to prevent such damage.

Entrances to rooms and other guarded locations containing exposed live parts shall be marked with conspicuous warning signs forbidding unqualified persons to enter.

E. Placement of Warning Signs Near Overhead Power Lines

Quality Electric will post and maintain in plain view of the operator and driver on each crane, derrick, power shovel, drilling rig, hay loader, hay stacker, pile driver or similar apparatus, a durable warning sign legible at 12 feet reading: "Unlawful to Operate This Equipment Within 10 Feet of High-Voltage Lines of 50,000 Volts or Less." The erection, operation or dismantling of any boom-type lifting or hoisting equipment, or any part thereof, closer than the minimum clearances from energized overhead high-voltage lines set forth shall be prohibited.

F. Overhead and Energized High-Voltage Power Lines

Safeguards shall be in place when working on or near overhead power lines. Quality Electric nor any person, firm, or corporation, or agent of same, shall require or permit any employee to perform any function in proximity to energized medium-voltage lines; to enter upon any land, building, or other premises and there engage in any excavation, demolition, construction, repair, or other operation; or to erect, install, operate, or store in or upon such premises any tools, machinery, equipment, materials, or structures (including scaffolding, house moving, well drilling, pile driving, or hoisting equipment) unless and until danger from accidental contact with said high-voltage lines has been effectively guarded against.

G. Safe Clearance Distance During Operations of Boom-Type Lifting or Hoisting Equipment from Overhead Power Lines

The erection, operation or dismantling of any boom-type lifting or hoisting equipment, or any part thereof, closer than the minimum clearances from energized overhead medium-voltage lines set forth is strictly prohibited.


1. Safe Limit of Approach Distance

A safe limit of approach distance is maintained by workers. When performing work with live line tools, minimum clear distances shall be maintained. Conductor support tools, such as link sticks, strain carriers, and insulator cradles, shall be permitted to be used provided that the clear insulation is at least as long as the insulator string or the minimum distance specified for the operating voltage. When performing work with live line tools, minimum clear distances in CCR 2940.2 shall be maintained.

H. Requirements Before Work is Performed on Exposed Energized Parts of Equipment or Systems

Work shall not be performed on exposed energized parts of equipment or systems until the following conditions are met:

- Responsible supervision has determined that the work is to be performed while the equipment or systems are energized.

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- A JHA has been filled out briefing all involved personnel have received instructions on the work techniques and hazards involved in working on energized equipment.
- Suitable personal protective equipment and safeguards (i.e., approved insulated gloves or insulated tools) are provided and used.

Conductive measuring tapes, ropes or similar measuring devices and conductive fish tapes shall not be used when working on or near exposed energized conductors or parts of equipment. Conductive fish tapes shall not be used in raceways entering enclosures containing exposed energized parts unless such parts are isolated by suitable barriers.

I. Inspections

- Employees shall be instructed to inspect each safety device, tool or piece of equipment, each time it is used and to use only those in good condition.
- Quality Electric requires the use of safety devices and safeguards where applicable.
- Defective insulating equipment is removed from service. Insulating equipment found to be defective or damaged shall be immediately removed from service. A system, such as tagging, must be in place to ensure defective equipment must not be used by other workers.

1. Marking of Insulated Equipment and/or PPE with The Latest Test Date or The Next Required Testing Date

- Insulated gloves, sleeves and blankets must be visually inspected and electrically re-tested periodically at prescribed intervals or when found to be damaged or defective. Gloves, sleeves and blankets shall be marked to indicate compliance with the re-test schedule and shall be marked with either the date tested, or the date the next test is due.

J. Repairs


- Only qualified electricians shall be allowed to make repairs to medium voltage electrical equipment and wiring systems.
- Employees shall not enter spaces containing exposed energized parts unless qualified and proper illumination exists to enable employees to work safely.
- Employees shall not wear conductive apparel such as rings, watches, jewelry, etc. (unless they are rendered non-conductive by covering, wrapping, or other insulating means) while working on or near open energized equipment this includes batteries on trucks, forklifts, phone backup systems or other such equipment.

K. Ladders

- Only approved, non-conductive ladders, may be used when working near or with medium voltage electrical equipment.
- Ladders must be either constructed of wood, fiberglass, or have non-conductive side rails.
- Wood ladders should not be painted, which can hide defects, except with clear lacquer.
- When using ladders, they shall be free from any moisture, oils, and greases.

L. Switches, Circuit Breakers and Disconnects

- All electrical equipment and tools must have an on and off switch and may not be turned on or off by plugging or unplugging the supply cord at the power outlet.
- Circuit breaker panel boxes and disconnects must be labeled with the voltage rating.
- Each breaker within a breaker panel must be labeled for the service it provides.
- Disconnect switches providing power for individual equipment must be labeled accordingly.

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M. Contractors

- Only approved, certified, electrical contractors may perform construction and service work on Quality Electric or client property.
- It is the Manager/Supervisors responsibility to verify the contractor's certification.

N. Fire Extinguishers

- Approved fire extinguishers must be provided near medium voltage electrical breaker panels and distribution centers.
- Water type extinguishers shall not be located closer than 50 feet from electrical equipment.


O. Training

All affected employees will be trained in medium voltage electrical safety requirements and the training shall be documented.

Safe work practices shall be employed to prevent electric shock or other injuries resulting for either direct or indirect electrical contacts when work is performed near or on equipment or circuits which are or may be energized.

P. Electric Shock-CPR

- If someone is discovered that has received an electric shock and is unconscious, first check to see if their body is in contact with an electrical circuit. Do not touch a person until you are sure there is no contact with an electrical circuit.
- When it is safe to make contact with the victim, begin CPR if the person's heart has stopped or they are not breathing.
- Call 911 for help immediately.

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Section 29: Compressed Air, Gas Cylinders, Welding and Cutting

A. Policy Statement

The intent of this policy is to provide guidelines while working with compressed air/gas (fuel) cylinders and activities associated with welding and cutting.

B. General Requirements

1. Fuel/Gas Cylinder content must be identified by visible readable labels. Cylinder colors shall not be used to identify the cylinder content.
2. Users of compressed gas cylinders must be trained in the proper use, storage and hazards associated with these cylinders.
3. Cylinders not in use shall be fitted with valve protection cap and secured in an upright position.
4. Do not tamper with or alter cylinders, valves, or safety relief devices. Do not tighten connection or leaking fittings or attempt other repairs while the cylinder is under pressure.
5. Before connecting a regulator to a cylinder valve, the valve shall be opened momentarily and closed immediately.

Note: This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might otherwise enter the regulator.


6. Fire extinguishers must be readily available. Reference the Fire Protection and Prevention section for specific distance requirements.

C. Safe Handling

1. All fuel/gas cylinders shall be secured in an upright position.
2. When cylinders are hoisted, always use proper carriers. Cylinders should never be choked or lifted by their valve protection cap.
3. Cylinders shall not be dropped, struck, or permitted to strike objects in a manner that may damage the cylinder, valve or safety device.
4. Empty cylinders shall not be treated any differently than full cylinders.
5. Do not place cylinders next to a heat source or direct an open flame at any part of cylinder.
6. Oxygen shall not be used as a substitute for compressed air.
7. Oxygen shall not be used to remove dust from clothing, to create pressure, or to ventilate areas.
8. Jets of oxygen shall not be permitted to strike an oily surface or greasy clothes or to enter fuel oil or other storage tanks.
9. Never use oily or greasy hands, gloves, or rags to handle oxygen cylinders.
10. Acetylene cylinder valves shall not be opened more than 1-1/2 of a turn.

D. Storage

1. All flammable compressed gas cylinder storage areas shall be located outside of the building or structure.
2. Valve protection caps shall be placed on all cylinders when not in use.

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3. Gauges shall be removed, and cylinders capped at the end of the day.
4. Oxygen or fuel/gas cylinder shall be used and stored in an upright position.
5. Different gases shall be stored at least 20 feet apart or separated by a 5-foot-tall noncombustible firewall with a fire-resistance rating of at least one-half hour.
6. Storage areas shall be posted with 'No Smoking or Open Flame' signage.

E. Compressed Air

1. Key Responsibilities

a. Managers/Supervisors

- Shall ensure that all employees are aware of the proper handling, storage and use requirements for compressed air.
- Shall ensure that initial training is conducted for all new employees and that retraining is conducted when employee behaviors suggest that retraining is warranted.

b. Employees

- Shall follow all requirements regarding the safe handling and use of compressed air and related equipment.

2. Procedure

a. Hazards of Using Compressed Air

Compressed air is extremely forceful. Depending on its pressure, compressed air can dislodge particles. These particles are a danger since they can enter eyes or abrade skin. There have also been reports of hearing damage caused by the pressure of compressed air and by its sound.


Compressed air itself is also a serious hazard. On rare occasions, some of the compressed air can enter the blood stream through a break in the skin or through a body opening. The consequences of even a small quantity of air or other gas in the blood can quickly be fatal.

Horseplay has been a cause of some serious workplace accidents caused by individuals not aware of the hazards of compressed air or proper work procedures.

b. General Precautions

To prevent injury when working with compressed air:

- A compressed-air tool operator must wear eye protection and other appropriate personal protective equipment.
- Before operating an air hose, examine all connections to make sure they are tight and will not come loose under pressure. A loose air hose can make a dangerous bullwhip.
- Check the air hose carefully to make sure it is in good condition before opening the valve to let air into the hose; when the job is finished, turn off the valves on both the tool and the airline.
- Hold the nozzle when turning the air on or off.
- Before turning on the air pressure, make sure that dirt from machinery will not be blown onto other workers.

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- Do not kink the hose to stop the airflow; always turn off the air and the control valve.
- Continuously check the condition of a compressed air tool and the air hose for damage or signs of failure.
- Never point a compressed air hose nozzle at any part of your body or another person.
- Never use compressed air for a practical joke.
- Never look into the "business end" of a compressed air tool.
- Never use compressed air for cleaning work clothes or machinery.
- Keep air hoses out of aisle ways where they can be damaged by traffic or be a tripping hazard

c. Equipment Requirements

Every air receiver shall be equipped with an indicating pressure gauge. Every air receiver shall be equipped with an indicating pressure gauge, so located as to be readily visible, and with one or more spring-loaded safety valves. The total relieving capacity of such safety valves shall be such as to prevent pressure in the receiver from exceeding the maximum allowable working pressure of the receiver by more than 10 percent.

Safety valves are tested. All safety valves shall be tested frequently and at regular intervals to determine whether they are in good operating condition. Safety valves, indicating/controlling devices and other safety appliances need to be constructed, located, and installed so they cannot be rendered inoperative by any means.


Quality Electric requires frequent draining of the receiver. The drain valve on air receivers shall be opened and the receiver completely drained frequently and at such intervals as to prevent the accumulation of excessive amounts of liquid in the receiver.

d. Using Compressed Air for Cleaning

Quality Electric has specific requirements to prohibit employees from using compressed air for cleaning unless the pressure is reduced to less than 30 p.s.i. Compressed air shall not be used for cleaning purposes except where the pressure is reduced to less than 30 p.s.i. and effective chip guarding and personal protective equipment is implemented.

e. Inspection of Compressed Air Cylinders

Compressed air cylinders must be visually inspected. Quality Electric shall determine that compressed gas cylinders under their control are in a safe condition to the extent that this can be determined by visual inspection. These visual inspections shall be conducted as prescribed in the Hazardous Materials Regulations, as they pertain to the type of the compressed cylinders under Quality Electric control.

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F. Compressed Gas Cylinders

1. Key Responsibilities

a. Managers/Supervisors

- Shall ensure that all employees are aware of the proper handling, storage and use requirements for compressed gas cylinders.
- Shall ensure that initial training is conducted for all new employees and that retraining is conducted when employee behaviors suggest that retraining is warranted.

b. Employees

- Shall follow all requirements regarding the safe handling, storage and use of compressed gas cylinders.

2. Procedure

a. General

Cylinders shall not be accepted, stored, or used if evidence of denting, bulging, pitting, cuts, neck or valve damage is observed. If damage is observed:

- The cylinder must be taken out of service.
- The cylinder's owner shall be notified to remove the cylinder from the premises.
- If owned, the cylinder shall be de-pressured and inspected as required by this program.

b. Cylinder Identification

Gas identification shall be stenciled or stamped on the cylinder or a label used. No compressed gas cylinder shall be accepted for use that does not legibly identify its content by name.

c. Handling


- Valve caps must be secured onto each cylinder before moving or storage.
- Secure the cylinder in a blanket when being lifted by mechanical means. Slings, ropes, or electromagnets are prohibited to be used for lifting compressed gas cylinders.
- The preferred means to move compressed gas cylinders is with a cart, carrier or with a helper.
- Compressed gas cylinders must not be allowed to strike each other.
- When a cylinder cap cannot be removed by hand the cylinder shall be tagged "Do Not Use" and returned to the designated storage area for return to vendor.

d. Storing

All cylinders must be secured upright in a safe, dry, well-ventilated area that limits corrosion and deterioration.

- Cylinders must be secured by means that will prevent the cylinder from falling.
- When securing the cylinder, the restraints shall not be attached to electrical conduit or process piping.

Empty and non-empty cylinders shall be stored separately. All stored cylinders shall be capped.

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Oxygen cylinders must be stored a minimum of 20 feet from combustible gas cylinders or areas where there may be open flame or arcing. Cylinders may also be stored where the oxygen is separated from combustible gas cylinders by a 5 foot or higher wall with a fire resistance rating of 30 minutes.

Storage areas for full and empty cylinders must be designated and labeled. Cylinders should be stored in definitely assigned places away from elevators, stairs, or gangways.

e. Use

- Cylinders must be equipped with the correct regulators. Regulators and cylinder valves should be inspected for grease, oil, dirt, and solvents. Only tools provided by the supplier should be used to open and close cylinder valves.
- Never force or modify connections.
- Only regulators and gauges shall be used within their designated ratings.
- The use of a pressure-reducing regulator is required at the cylinder unless the total system is designed for the maximum cylinder pressure.
- Valves must be closed when cylinders are not in use.
- Cylinders shall not be used as rollers or supports.
- Cylinders shall not be placed where they can come in contact with electrical circuits.
- Cylinders must be protected from sparks, slag, or flame from welding, burning, or cutting operations.
- Empty cylinders must be returned to designated storage areas as soon as possible after use.


f. Inspection of Compressed Gas Cylinders

Quality Electric shall determine that compressed gas cylinders under its control are in a safe condition to the extent that this can be determined by visual inspection. Visual and other inspections shall be conducted as prescribed in the Hazardous Materials Regulations of the Department of Transportation (49 CFR parts 171-179 and 14 CFR part 103). Where those regulations are not applicable, visual, and other inspections shall be conducted in accordance with Compressed Gas Association Pamphlets C-6-1968 and C-8-1962. Some elements include, but are not limited to:

- Hoses and connections should be inspected regularly for damage. Hoses should be stored in cool areas and protected from damage.
- These owned cylinders shall be visually inspected prior to charging before each use and at least annually.
- All inspections and testing must be documented.

High Pressure Cylinders are those cylinders marked for service pressures of 900 psi and greater.

- High pressure cylinders shall be taken out of service and submitted for re-qualification testing when any of the following conditions are identified by visual inspection.
- Cuts, dings, gouges, dents bulges, pitting, neck damage or evidence of exposure to fire.
- The cylinders shall be inspected and retested according to the requirements stated in 49 CFR 180.205 and .209.
- Re-qualification of non-damaged cylinders shall be conducted per the schedule in 49 CFR 180.209.

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Low Pressure Cylinders are those cylinders marked for service pressures of less than 900 psi.

- Low pressure cylinders fall into two categories, those requiring requalification and those that do not require re-qualification.
- Low pressure cylinders that do not require re-qualification shall be taken out of service and condemned when any of the following conditions are identified during inspection:
- The tare weight of the cylinder is less than 90% of the stamped-on weight of the cylinder.
- Observed pitting, dents, cuts, bulging, gouges or evidence of exposure to fire.
- Low pressure cylinders subject to re-qualification shall be taken out of service, inspected and retested when visual inspection identifies any of the following conditions; dents, bulges, pitting or neck damage.
- Re-qualification of non-damaged cylinders shall be conducted per the schedule in 49 CFR 180.209.

g. Leaking Cylinders

Leaking cylinders should be moved promptly to an isolated, well-ventilated area, away from ignition sources. Soapy water should be used to detect leaks. If the leak is at the junction of the cylinder valve and cylinder, do not try to repair it. Contact the supplier and ask for response instructions.

h. Transportation

Cylinders must be transported in a vertical secured position using a cylinder basket or cart and must not be rolled. Regulators should be removed, and cylinders capped before movement. Cylinders should not be dropped or permitted to strike violently, and protective caps are not used to lift cylinders.

i. Empty Cylinder Marking


Cylinders should be marked as "MT" and dated when empty. Never mix gases in a cylinder and only professionals should refill cylinders. Empty cylinders must be handled as carefully as when filled.

j. Engineering Controls

Engineering controls such as emergency shutoff switches, gas cabinets and flow restrictors should be used wherever possible to control hazards. Emergency eyewash facilities should be present where corrosive gases or materials are used.

G. Liquid Propane Gas (LPG) Tanks

1. All Liquid Propane Gas (LPG) supply hoses and connections must be installed per local codes and statutes.
2. All hoses and tanks must be protected from damage.
3. No more than three (3) 100-pound propane tanks shall be connected via manifold.
4. Portable tanks shall be fitted with a Hackney collar.
5. Large bulk tanks (1000 gallons or larger) shall be located a minimum of 20 feet away from any buildings or structures and be protected by barricading. Jersey barriers or equivalent must be used when the bulk tanks are exposed to vehicle or equipment traffic.

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H. Welding and Cutting

1. Scope

This program is applicable to all employees directly involved or assisting in the welding, cutting and hot work operations. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Quality Electric employees and contractors and shall be used on owned premises, or when an operator's program does not exist or is less stringent. Operators of equipment should report any equipment defect or safety hazards and discontinue use of equipment until its safety has been assured. Repairs shall be made only by qualified personnel.


If fire hazards cannot be taken to a safe place or guards cannot be used to confine heat, sparks, slag and protect the immovable fire hazards, the welding and cutting shall not be performed.

2. Definitions

- Welding/Hot Work Procedures** - any activity which results in sparks, fire, molten slag, or hot material which has the potential to cause fires or explosions.
- Examples of Hot Work** - Cutting, Brazing, Soldering, Thawing Pipes, Grinding, using an electric tool in a hazardous area and Welding.
- Special Hazard Occupancies** - any area containing Flammable Liquids, Dust Accumulation, Gases, Plastics, Rubber and Paper Products.
- Hazards** - includes, but not limited to the following; fires and explosions, skin burns, welding "blindness", and respiratory hazards from fumes and smoke

3. Key Responsibilities

- Supervisors**
 - Determine if its property is safe for welding and cutting operations.
 - Establish safe areas for welding and cutting operations.
 - Provide training for all employees whose task includes heat, spark or flame producing operations such as welding, brazing, or grinding.
 - Develop and monitor effective hot work procedures.
 - Provide safe equipment for hot work.
 - Provide proper and effective PPE for all hot work.
 - Monitor all hot work operations.
 - Ensure all hot work equipment and PPE are in safe working order.
 - Allow only trained and authorized employees to conduct hot work and conduct inspections of the hot work area before operations begin.
 - Ensure permits are used for all hot work outside authorized areas.
 - Employees
 - Follow all hot work procedures.
 - Properly use appropriate hot work PPE.
 - Inspect all hot work equipment before use.
 - Report any equipment problems or unsafe conditions

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4. Procedures

a) General

A hot work permit must be completed before performing hot work. Precautions that are to be taken shall be in the form of a written permit. Before cutting or welding is permitted the area shall be inspected and a written permit shall be used to authorize welding and cutting operations.

Where practicable all combustibles shall be relocated at least 35 feet from the work site. Where relocation is impractical, combustibles shall be protected with flameproof covers, shielded with metal, guards, curtains, or wet down the material to help prevent ignition of material.

Ducts, conveyor systems, and augers that might carry sparks to distant combustibles shall be protected or shut down.

Where cutting or welding is done near walls, partitions, ceilings, or openings in the floor (grating, manholes, etc.), fire-resistant shields or guards shall be provided to prevent ignition.

If welding is to be done on a metal wall, partition, ceiling, or solid decking/flooring, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation of heat. Where combustibles cannot be relocated on the opposite side of the work, a fire watch person shall be provided on the opposite side of the work.

Welding shall not be attempted on a metal partition, wall, and ceiling or decking/flooring constructed of combustible sandwich panels.


Cutting or welding on pipes or other metal in contact with combustible walls, partitions, floors, ceilings, or roofs shall not be undertaken if the work is close enough to cause ignition by combustion.

Cutting or welding shall not be permitted in the following situations:

- In areas not authorized by management.
- In sprinkled buildings while such protection is impaired.
- In the presence of potentially explosive atmospheres, e.g. flammables.
- In areas near the storage of large quantities of exposed, readily ignitable materials.
- In areas where there is dust accumulation of greater than 1/16 inch within 35 feet of the area where welding/hot work will be conducted.
- All dust accumulation shall be cleaned up before welding or hot work is permitted.

Whenever welding or cutting is performed in locations where other than a minor fire might develop or any of the conditions mentioned above cannot be met, a fire watch shall be provided.

- The fire watch shall be provided during and for a minimum of 1/2 hour past the completion of the welding project.
- The fire watch shall be trained in the use of fire extinguishers and the facility's alarm system.

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- During this time the fire watch will have appropriate fire extinguishers readily available.
- Suitable extinguishers shall be provided and maintained ready for instant use.
- A hot-work permit will be issued on all welding or cutting outside of the designated welding area.

b) Fire Prevention Measures

A designated welding area shall be established to meet the following requirements:

- Floors swept and cleaned of combustibles within 35 feet of work area.
- Flammable and combustible liquids and material will be kept 35 feet from work area.
- Adequate ventilation providing 20 air changes per hour.
- At least one 10-pound dry chemical fire extinguisher shall be within access of 35 feet of the work area.
- Protective dividers such as welding curtains or noncombustible walls will be provided to contain sparks and slag to the combustible free area.

Requirements for welding conducted outside the designated welding area:

- Portable welding curtains or shields must be used to protect other workers in the welding area.
- A hot-work permit must be completed and complied with prior to initiating welding operations.
- Respiratory protection is mandatory unless an adequate monitored airflow away from the welder and others present can be established and maintained.
- Plastic materials must be covered with welding tarps during welding procedures.
- Fire Watch must be provided for all hot-work operations.

After welding operations are completed, the welder shall mark the hot metal or provide some other means of warning other workers.


c) Confined Space

- A space that is large enough and so configured that an employee can bodily enter and perform assigned work;
- Has limited or restricted means for entry or exit (for example, tanks, vessels, coolers, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and
- Is not designed for continuous occupancy.

Refer to Quality Electric's Confined Space Program before commencing any welding, cutting, and/or brazing operations in an area meeting the requirements of a confined space.

Ventilation is a prerequisite to work in confined spaces.

When welding or cutting is being performed in any confined spaces, the gas cylinders and welding machines shall be left on the outside. Before operations are started, heavy portable equipment mounted on wheels shall be securely blocked to prevent accidental movement.

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When a welder must enter a confined space through a manhole or other small opening, means shall be provided for quickly removing him in case of an emergency.

- When safety belts and lifelines are used for this purpose, they shall be so attached to the welder's body that it cannot be jammed in a small exit opening.
- An attendant with a preplanned rescue procedure shall be stationed outside to observe the welder at all times and be capable of putting rescue operations into effect.

When arc welding is to be suspended for any substantial period of time, such as during lunch or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur, and the machine shall be disconnected from the power source.

In order to eliminate the possibility of gas escaping through leaks of improperly closed valves, when gas welding or cuffing, the torch valves shall be closed and the fuel-gas and oxygen supply to the torch positively shut off at some point outside the confined area whenever the torch is not to be used for a substantial period of time, such as during lunch hour or overnight. If practical, the torch and hose shall also be removed from the confined space.


When welding must be performed in a space entirely screened on all sides, the screens shall be so arranged that no serious restriction of ventilation exists. It is desirable to have the screens so mounted that they are about 2 feet (0.61 m) above the floor unless the work is performed at so low a level that the screen must be extended nearer to the floor to protect nearby workers from the glare of welding.

A fixed enclosure shall have top and not less than two sides which surround the welding or cutting operations, and a rate of airflow sufficient to maintain a velocity away from the welder of not less than 100 linear feet (30 m) per minute.

All welding and cutting operations carried on in confined spaces shall be adequately ventilated to prevent the accumulation of toxic materials or possible oxygen deficiency. This applies not only to the welder, but also to helpers and other personnel in the immediate vicinity. All air withdrawn will be replaced with air that is clean.

In circumstances for which it is impossible to provide such ventilation, airline respirators or hose masks approved for this purpose by the National Institute for Occupational Safety and Health (NIOSH) will be provided. In areas immediately hazardous to life, a full-face piece, positive pressure, self-contained breathing apparatus or a combination full-face piece, positive pressure supplied-air respirator with an auxiliary, self-contained air supply approved by NIOSH must be used.

Where welding operations are carried on in confined spaces and where welders and helpers are provided with hose masks, hose masks with blowers or self-contained breathing equipment, a worker shall be stationed on the outside of such confined spaces to ensure the safety of those working within.

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d) Fumes, Gases and Dust

Fumes produced by some welding processes can be toxic and may require source extraction. An assessment of the work to be performed must be completed before each job is undertaken. Fumes generally contain particles from the material being welded. Welding fumes can have an acute effect on the respiratory system.

Any welding, cutting or burning of lead base metals, zinc, cadmium, mercury, fluorides, beryllium or exotic metals or paints not listed here that could produce dangerous fumes shall have proper ventilation or respiratory protection. This includes inert-gas metal-arc welding or oxygen cutting of stainless steel.

Welders and helpers will refer to Quality Electric's Respiratory Protection Program to determine the appropriate respiratory protection to be used during welding operations.

All welding and cutting operations shall be adequately ventilated to prevent the accumulation of toxic materials. This applies not only to the welder, but also to helpers and other personnel in the immediate vicinity.

e) Personal Protection

Helmets and hand shields shall be made of a material, which is an insulator for heat and electricity. Helmets, shields, and goggles shall not be readily flammable and shall be capable of withstanding sterilization.

Helmets and hand shields shall be arranged to protect the face, neck, and ears from direct radiant energy from the arc.

Helmets shall be provided with filter plates and cover plates designed for easy removal.


All parts shall be constructed of a material, which will not readily corrode or discolor the skin.

Goggles shall be ventilated to prevent fogging of the lenses as much as practicable.

All glass for lenses shall be tempered, substantially free from scratches, air bubbles, waves and other flaws. Except when a lens is ground to provide proper optical vision correction, the front and rear surfaces of lenses and windows shall be smooth and parallel.

Lenses shall bear some permanent distinctive marking which may readily identify the source and shade.

The following is a guide for the selection of the proper shade numbers. These recommendations may be varied to suit the individual's needs.

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Welding Operation		Shade Number
Shielded metal — arc welding 1/16, 3/32, 1/8-5/32 inch electrodes		10
Gas-shielded arc welding (nonferrous) 1/16, 3/32, 5/32 inch electrodes		11
Gas-shielded arc welding (ferrous) 1/16, 3/32, 1/8, 5/32 electrodes		12
Shielded metal arc welding: 3/16	7/32, 1/4 inch electrodes	12
	5/16, 3/8-inch electrodes	14
Atomic hydrogen welding		10 – 14
Carbon arc welding		14
Soldering		2
Torch brazing		3 or 4
Light cutting, hp to 1 inch		3 or 4
Medium cutting, 1 inch to 6 inches		4 or 5
Heavy cutting, 6 inches or over		5 or 6
Gas welding (light) up to 1/8 inch		4 or 5
Gas welding (medium) 1/8 - 1/2 inch		5 or 6
Gas welding (heavy) 1/2 inch or over		6 or 8

NOTE:


In gas welding or oxygen cutting where the torch produces a high yellow light, it is desirable to use a filter or lens that absorbs the yellow or sodium line in the visible light of the operation. All filter lenses and plates shall meet the test for transmission of radiant energy prescribed in ANSI Z87.1 — 1968 — American National standard Practice for Occupational and Educational Eye and face Protection. Where the work permits the welder to be enclosed in an individual booth painted with a finish of low reflectivity such as zinc oxide (an important factor for absorbing ultraviolet radiation) and lamp black, or shall be enclosed with noncombustible screens similarly painted. Booths and screens shall permit circulation of air at floor level. Workers or other persons adjacent to the welding areas shall be protected from the rays by noncombustible or flameproof screens or shields or shall be required to wear appropriate goggles.

Adequate hand protection and clothing must be used to protect the body from welding hazards.

f) Cleaning Compounds

In the use of cleaning materials, because of their possible toxicity or flammability, appropriate precautions such as manufacturer instructions shall be followed.

- Degreasing and other cleaning operations involving chlorinated hydrocarbons shall be so located that no vapors from these operations will reach or be drawn into the atmosphere surrounding any welding operation.
- In addition, trichloroethylene and perchloroethylene shall be kept out of atmospheres penetrated by the ultraviolet radiation of gas-shielded welding operations.

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Oxygen cutting, using a chemical flux, iron powder or gas shielded arc cutting for stainless steel shall be performed using mechanical ventilation adequate to remove the fumes generated.

g) Cylinders

Compressed gas cylinders shall be DOT-approved and legibly marked near the shoulder of the cylinder for the purpose of identifying the gas content with either the chemical or trade name of the gas.

- All compressed gas cylinder connections must comply with ANSI B57. 1-1965 Standards.
- Compressed gas cylinders shall be secured in an upright position at all times except, if necessary, for short periods of time while cylinders are actually being hoisted or carried.

All cylinders shall be kept away from sources of heat and from radiators and piping systems that may be used for grounding purposes. Cylinders and cylinder valves including couplings and regulators shall be kept free from oily or greasy substances and must not be handled with gloves or rags in the same condition.

Stored oxygen cylinders shall be kept at least 20 feet from the fuel gas cylinders or combustible materials, especially oil or grease, or separated by a non-combustible barrier at least 5 feet high with a fire rating of at least one-half hour. All empty cylinders shall have closed valves. Valve protection caps shall always be in place and hand-tight except when cylinders are in use or connected for use.

Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards.

Fuel gas cylinders stored inside buildings shall be limited to a total capacity of 2000 cubic feet (300 pounds) of liquefied petroleum gas, except for those in actual use or attached ready for use.


All acetylene cylinders shall be stored valve-end up.

Assigned storage spaces shall be located where cylinders cannot be knocked over or damaged by falling objects or subject to tampering by unauthorized persons.

- Back flow protection shall be provided by an approved device that will prevent oxygen from flowing into the fuel-gas system or fuel from flowing into the oxygen system.
- An approved device that will prevent flame from passing into the fuel-gas system shall provide flashback protection.
- An approved pressure-relief device set at the appropriate pressure shall provide backpressure protection.

Special care must be taken when transporting gas cylinders:

- Cylinders must be secured with valve cap installed.
- Cylinders shall not be lifted by the valve protection caps, the regulators must be removed, and cylinders shall not be dropped or permitted to strike each other.
- Removed regulators must be carried in the cab of the vehicle.
- Cylinders shall not be tampered with nor should any attempt be made to repair them.

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- They shall be handled carefully - rough handling, knocks, or falls are liable to damage the cylinder, valve or safety device and cause leakage.

Safety devices shall not be tampered with

h) Arc Welding and Cutting

All personnel operating, installing, and maintaining welding equipment shall be qualified or trained to operate and maintain such equipment.

- All workmen assigned to operate or maintain equipment shall be familiar with and electrical welding equipment shall be chosen for safe operation and comply with applicable Requirements for Electric Arc Welding Standards to include: 29 CFR 1910.254, 29 CFR 1910.252 (a)(b) (c) and if gas shielded arc welding is done the must be familiar with the American Welding Society Standard A6-1-1966.
 - Arc welding equipment must be designed to meet conditions such as exposure to corrosive fumes, excessive humidity, excessive oil vapor, flammable gasses, abnormal vibration or shock, excessive dust and seacoast or shipboard conditions.
 - It shall be operated at recommended voltage in accordance to the manufacturer recommendations.
 - All leads shall be periodically inspected and replaced if insulation is broken, or splices are unprotected.
 - Leads shall not be repaired with electrical tape.
- All ground connections shall be checked to determine that they are mechanically strong and electrically adequate for the required current.


A disconnecting switch or controller shall be provided at or near each welding machine along with over current protection.

All direct current machines shall be connected with the same polarity and all alternating current machines connected to the same phase of the supply circuit and with the same polarity.

- To prevent electrical contact with personnel, all electrode holders shall be placed where they do not make contact with persons, conducting objects or the fuel of compressed gas tanks.
- All cables with splices within 10 feet of the holder shall not be used.

If the object to be welded or cut cannot readily be moved, all moveable fire hazards should be removed.

If an object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards shall be used to confine the heat sparks and slag and to protect the immovable fire hazards.

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i) Resistance Welding

All personnel operating, installing, and maintaining welding equipment shall be qualified or trained to operate and maintain such equipment.

- Voltage, interlocks, guarding, grounding and shields shall be in accordance with manufacturer recommendations.
- Precautions such as flash guarding, ventilation and shields shall be provided to control flashes, toxic elements, and metal fumes.

If the object to be welded or cut cannot readily be moved, all moveable fire hazards should be removed.

j) Transmission Pipeline

When arc welding is performed in wet conditions, or under conditions of high humidity, special protection against electric shock shall be supplied.

Pressure testing:

- In pressure testing of pipelines, the workers and the public shall be protected against injury by the blowing out of closures or other pressure restraining devices.
- Protection shall be provided against expulsion of loose dirt that may have become trapped in the pipe.

The welded construction of transmission pipelines shall be conducted in accordance with the Standard for Welding Pipelines and Related Facilities, API Std. 1104-1998.

k) Oxygen Fuel Gas Welding and Cutting

Only approved apparatuses such as torches, regulators or pressure-reducing valves, setting generators and manifolds shall be used:


- Mixtures of fuel gases and air or oxygen may be explosive and must be guarded against.
- All hoses and hose connections shall comply with the Compressed Gas Association and Rubber Manufacturers' Associations' applicable standards.
- Workers in charge of the oxygen or fuel-gas supply equipment, including generators, shall be instructed and judged competent by the Supervisor before being left in charge.

If the object to be welded or cut cannot readily be moved, all moveable fire hazards should be removed.

l) Fire Watch Requirements

A fire watch shall be under these conditions as a minimum and when welding, cutting, brazing and/or soldering is performed near combustible materials and/or locations where fire may develop:

- Locations where other than a minor fire might develop.
- Combustible materials are closer than 35 feet to the point of operation.
- Combustibles that are 35 feet or more away but are easily ignited.
- Wall or floor openings within a 35 feet radius of exposed combustible materials.

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- Combustible materials are adjacent to the opposite side of metal partitions, ceilings, or roofs.

Fire watch personnel shall be maintained at least a half an hour after welding or cutting operations have been completed and fire watchers shall have fire extinguishers readily available.

m) First Aid Equipment

First aid equipment shall be available at all times. All injuries shall be reported as soon as possible for medical attention. First aid shall be rendered until medical attention can be provided.


n) Training

Training shall include:

- Position Responsibilities
- Cutters, welders, and their supervisors must be suitably trained in the safe operations of their equipment and the safe use of the process.
- Fire Watch Responsibilities - specifically, the fire watch must know:
 - That their ONLY duty is Fire Watch.
 - When they can terminate the watch.
 - How to use the provided fire extinguisher(s).
 - Be familiar with facilities and how to activate fire alarm if fire is beyond the incipient stage.
 - Operator Responsibilities
 - Contractor Responsibilities
 - Documentation requirements
 - Respirator Usage requirements
 - Fire Extinguisher training.

5. Torches:

- Boxes used for the storage of gas hose shall be ventilated.
- Hoses, cables, and other equipment shall be kept clear of passageways, ladders and stairs.
- Clogged torch tip openings shall be cleaned with suitable cleaning wires, drills, or other devices designed for such purpose.
- Flash back arrestors must be provided on all regulators.
- Torches in use shall be inspected at the beginning of each working shift for leaking shutoff valves, hose couplings, and tip connections. Defective torches shall not be used.
- Torches shall be lighted by friction lighters or other approved devices, and not by matches or from hot work.
- Oxygen and fuel gas pressure regulators, including their related gauges, shall be in proper working order while in use.
- Oxygen cylinders and fittings shall be kept away from oil or grease. Cylinders, cylinder caps and valves, couplings, regulators, hose, and apparatus shall be kept free from oil or greasy substances and shall not be

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handled with oily hands or gloves. Oxygen shall not be directed at oily surfaces, greasy clothes, or within a fuel oil or other storage tank or vessel.

- i) Never allow acetylene gas pressure to exceed 15 pounds.


6. *Arc Welding and Cutting:*

- a) Only manual electrode holders which are specifically designed for arc welding and cutting and are of a capacity capable of safely handling the maximum rated current required by the electrodes, shall be used.
- b) Any current-carrying parts passing through the portion of the holder which the arc welder or cutter grips in his hand, and the outer surfaces of the jaws of the holder, shall be fully insulated against the maximum voltage encountered to ground.
- c) All arc welding and cutting cables shall be of the completely insulated, flexible type, capable of handling the maximum current requirements of the work in progress, considering the duty cycle under which the arc welder or cutter is working.
- d) Only cable free from repair or splices for a minimum distance of 10 feet from the cable end to which the electrode holder is connected shall be used, except that cables with standard insulated connectors or with splices whose insulating quality is equal to that of the cable are permitted.
- e) When it becomes necessary to connect or splice lengths of cable one to another, substantial insulated connectors of a capacity at least equivalent to that of the cable shall be used. If connections are effected by means of cable lugs, they shall be securely fastened together to give good electrical contact, and the exposed metal parts of the lugs shall be completely insulated.
- f) Cables in need of repair shall not be used. When a cable, other than the cable lead becomes worn to the extent of exposing bare conductors, the portion exposed shall be protected by means of rubber and friction tape or other equivalent insulation and meet all requirements of the standard.
- g) A ground return cable shall have a safe current carrying capacity equal to or exceeding the specified maximum output capacity of the arc welding or cutting unit which it services. When a single ground return cable services more than one unit, its safe current-carrying capacity shall equal or exceed the total specified maximum output capacities of all the units which it services.
- h) Ventilation for welding and cutting operations shall comply with OSHA requirements.
- i) When electrode holders are to be left unattended, the electrodes shall be removed, and the holders shall be so placed or protected that they cannot make electrical contact with employees or conducting objects

I. **Hot Work Procedure and Permits**

1. Fire Prevention for hot work operations:

- a) When practical, objects to be welded, cut, or heated shall be moved to a designated safe location or, if the objects to be welded, cut, or heated cannot be readily moved, all movable fire hazards in the vicinity shall be taken to a safe place, or otherwise protected.
- b) If the object to be welded, cut, or heated cannot be moved and if all the fire hazards cannot be removed, positive means shall be taken to confine the heat, sparks, and slag, and to protect the immovable fire hazards from them. Fire blankets and similar devices are required and must be installed to direct all potential slag to safe location free of combustible and flammable material.

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- c) No welding, cutting, or heating shall be done where the application of flammable paints or the presence of other flammable compounds, or heavy dust concentrations creates a hazard.
- d) Suitable fire extinguishing equipment shall be immediately available in the work area and shall be maintained in a state of readiness for instant use.
- e) Fire Watch - When the welding, cutting, or heating operation is such that combustibles cannot be removed or slag and sparks cannot be completely contained, a fire watch shall be assigned to guard against fire while the actual hot work operation is being performed, and for a minimum of thirty minutes following the completion of the hot work. Fire watch personnel shall:
 - (1) Be instructed as to the specific anticipated fire hazards, how the firefighting equipment provided is to be used and emergency procedures for the project.
 - (2) Be posted at the welding operation and on the other sides of walls, floors, or any other space where sparks, slag or fire could travel.
 - (3) Have a fire extinguisher in each area.

2. Hot Work Permits:

- a) A hot work permit is required for any operations involving work producing flames, sparks, or heat. Hot Work includes, but is not limited to: Cutting, welding, brazing, grinding, sawing, soldering, thawing frozen pipes, applying roof covering, sealing plastic shrink-wrap by torch, and using a plumber's torch.
- b) Hot work permits will not exceed one work shift.
- c) Permits must be completed by the responsible supervisor and reviewed by a Quality Electric Supervisor.
- d) A separate permit must be developed for each instance of hot work. Permits may not cover multiple hot work events or areas of the building.
- e) Supervisors must review the permit with the work crew before the start of work. Each worker must sign the back of the permit.
- f) A completed copy of the hot work permit must be posted in the area where hot work is taking place.
- g) Permits must be closed out each shift following the completion of the hot work and fire watch by the supervisor. Permits must be retained in the jobsite file.

J. Annexes

1. Forms and Permits:

- Hot Work Permit

Hot Work Permit

WARNING!

Hot Work In Progress Watch for Fire!

This Hot Work Permit is required for any operation involving open flames or producing heat and / or sparks. This includes, but is not limited to: Brazing, Cutting, Grinding, Soldering, Thawing Pipe, Torch - Applied Roofing, and Welding.

Note: The Required Precautions are not optional. They are required for fire - safe hot work. Please explain all "No" responses below.


WHO, WHEN, WHERE?

Hot Work Being Done By (Company Name):	
Date:	Project Name and Job #:
Location / Building and Floor:	
Brief Description of Hot Work	
Person Doing Hot Work: Name:	
Phone #:	
Time Started: AM PM	Time Finished: AM PM
THIS PERMIT IS GOOD FOR:	
Name of Assigned Fire Watch:	
I verify the above location had been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for work.	
Signed:	_____ (Person Doing the Hot Work)
Signed:	_____ (Fire Watch)
Signed:	_____ (Supervisor)
Signed:	_____ (Safety Representative)

REQUIRED PRECAUTIONS CHECKLIST

Assess 35 ft radial "sphere" of work for potential fire hazards:	
Floors: work level and below, cleaned or protected.	
All other combustibles removed or shielded from sparks:	
1	Clean horizontal surfaces (e.g. building structures, equipment, ducts, cable trays, ect.) above and below where possible.
2	Remove flammable liquids, dust, lint, combustible waste, oil deposits, ect., where possible.
3	If removal / cleaning is impracticable, protect with fire-retardant covers, or shield with retardant guards and / or curtains.
Transmission or conveying of sparks to adjacent areas eliminated or protected:	
1	Tightly cover wall / floor openings with fire - retardant material
2	Where openings cannot be sealed, suspend fire - retardant tarps are hung to help protect areas
3	Isolate or shut down fans, air intakes, and conveyors to prevent the capturing and conveying smoke and sparks to other areas.
Work on walls, ceilings or enclosed equipment:	
Construction materials verified as noncombustible and w/o combustible covering or insulation.	
Combustibles on other side of walls relocated or protected.	
Enclosed equipment cleaned and protected from all combustibles.	
Containers purged of flammable liquids and vapors.	
Fire watch / hot work area monitoring requirements:	
Continuous fire watch provided during and for at least 1 hour after hot work, including all breaks.	
Fire Watch is supplied with an extinguisher, and / or water pump can, also making use of either extinguishers located throughout area.	
Fire watch is trained in use of this equipment and familiar with location of sounding alarm.	
Fire watch is required for opposite side of walls, above and below floors and ceilings.	
Other precautions that may be required:	
Confined Space or LOTO required / used.	
Area smoke or heat detection devices disabled to eliminate false trip. Fire alarm system has been put in test if required.	
Fire Sprinkler heads are covered or protected from being set off or damaged. Sprinkler system has been shut down if required.	
Other: _____	
Comments:	_____

Fire Watch End of Shift Sign Off: _____ Time / Date: _____

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Section 30: Confined Space Entry Program

A. Policy Statement

The purpose of this policy is to provide the information to our employees for conducting safe confined space entry operations.

All employees of Quality Electric are prohibited from entering a confined space until a confined space entry permit is issued and signed by the client's entry supervisor in charge of that confined space work area.


B. Definitions

Confined space - a) Is large enough and so configured that an employee can bodily enter it, b) has limited or restricted means for entry or exit, and c) is not designed for continuous employee occupancy.

Examples of locations where confined spaces may occur include, but are not limited to the following:

- Pits (such as elevator, escalator, pump, valve, or other equipment)
 - Manholes (such as sewer, storm drain, electrical, communication, or other utility)
 - Tanks (such as fuel, chemical, water or other liquid, sold or gas)
 - Concrete pier columns, sewers
 - Transformer vaults
 - Heating, ventilation, and air-conditioning (HVAC) ducts
 - Storm drains
 - Water mains,
 - Precast concrete and other pre-formed manhole units
 - Drilled shafts
 - Enclosed beams
 - Lift stations
 - Step up transformers
 - Chillers
1. **Acceptable entry conditions** - the conditions that must exist in a permit space before an employee may enter that space, to ensure that employees can safely enter, and safely work within, the space
 2. **Attendant** - an individual stationed outside one or more permit spaces who monitors and assesses the authorized entrants and who must perform those duties
 3. **Authorized entrant** - an employee who is authorized by the entry supervisor to enter a permit space
 4. **Competent person** - one who can identify existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them
 5. **Controlling Contractor** - the employer that has overall responsibility for construction at the worksite.

Note: If the controlling contractor owns or manages the property, then it is both a controlling employer and a host employer

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6. **Early-warning system** - the method used to alert authorized entrants and attendants that an engulfment hazard may be developing. Examples of early-warning systems include, but are not limited to: alarms activated by remote sensors; and lookouts with equipment for immediately communicating with the authorized entrants and attendants
7. **Engulfment** - the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing, or suffocation
8. **Entry** - the action by which a person passes through an opening into a permit-required confined space. Entry includes work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space, whether or not such action is intentional, or any work activities are actually performed in the space
9. **Entry Employer** - any employer who decides that an employee it directs will enter a permit space

Note: An employer cannot avoid the duties of the standard merely by refusing to decide whether its employees will enter a permit space, and OSHA will consider the failure to so decide to be an implicit decision to allow employees to enter those spaces if they are working in the proximity of the space.

10. **Entry permit** - the written or printed document that is provided by the employer who designated the space a permit space to allow and control entry into a permit space and that contains the information specified in this written program
11. **Entry rescue** - occurs when a rescue service enters a permit space to rescue one or more employees
12. **Entry supervisor** - the qualified person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this standard.


Note: An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required by this standard for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during an entry operation.

13. **Hazardous atmosphere** - an atmosphere that may expose employees to the risk of death, incapacitation, and impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:
 - a) Flammable gas, vapor, or mist more than 10 percent of its lower flammable limit (LFL)
 - b) Airborne combustible dust at a concentration that meets or exceeds its LFL
 - c) Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent
 - d) Carbon Monoxide concentration levels greater than 35ppm
 - e) Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published, and which could result in employee exposure more than its dose or permissible exposure limit
 - f) Any other atmospheric condition that is Immediately Dangerous to Life or Health (IDLH).
14. **Host employer** - the employer that owns or manages the property where the construction work is taking place.

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Note: If the owner of the property on which the construction activity occurs has contracted with an entity for the general management of that property, OSHA will treat the contracted management entity as the host employer for as long as that entity manages the property. Otherwise, OSHA will treat the owner of the property as the host employer. In no case, will there be more than one host employer.


15. **Immediately Dangerous to Life or Health (IDLH)** - any condition that would interfere with an individual's ability to escape unaided from a permit space and that poses a threat to life or that would cause irreversible adverse health effects
16. **Inerting** - displacing the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible. Note: This procedure produces an IDLH oxygen-deficient atmosphere
17. **Limited or restricted** - for entry or exit means a condition that has a potential to impede an employee's movement into or out of a confined space. Such conditions include, but are not limited to, trip hazards, poor illumination, slippery floors, inclining surfaces, and ladders
18. **Lower flammable limit or lower explosive limit** - the minimum concentration of a substance in air needed for an ignition source to cause a flame or explosion
19. **Monitor or monitoring** - the process used to identify and evaluate the hazards after an authorized entrant enters the space. This is a process of checking for changes that is performed in a periodic or continuous manner after the completion of the initial testing or evaluation of that space
20. **Non-entry rescue** - occurs when a rescue service, usually the attendant, retrieves employees in a permit space without entering the permit space
21. **Non-permit confined space** - a confined space that meets the definition of a confined space but does not meet the requirements for a permit-required confined space, as defined in this subpart
22. **Permit-required confined space** - a confined space that has one or more of the following characteristics:
 - a) Contains or has potential to contain a hazardous atmosphere
 - b) Contains a material that has the potential for engulfing an entrant
 - c) 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
 - d) Contains any other recognized serious safety or health hazard.
23. **Permit-required confined space program** - the employer's overall program for controlling, and, where appropriate, for protecting employees from permit space hazards and for regulating employee entry into permit spaces
24. **Physical hazard** - an existing or potential hazard that can cause death or serious physical damage. Examples include, but are not limited to: explosives, mechanical, electrical, hydraulic and pneumatic energy, radiation, temperature extremes, engulfment, noise, inwardly converging surfaces, and chemicals
25. **Prohibited condition** - any condition in a permit space that is not allowed by the permit during the period when entry is authorized. A hazardous atmosphere is a prohibited condition unless the employer can demonstrate that personal protective equipment (PPE) will provide effective protection for each employee in the permit space and provides the appropriate PPE to each employee
26. **Qualified person** - one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project

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27. **Rescue** - retrieving, and providing medical assistance to, one or more employees who are in a permit space
28. **Rescue service** - the personnel designated to rescue employees from permit spaces
29. **Retrieval system** - the equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces
30. **Test or testing** - the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space
31. **Ventilate or ventilation** - controlling a hazardous atmosphere using continuous forced-air mechanical systems

C. Program Requirements

1. **Atmospheric testing** - Before a permit space is first entered, the internal atmosphere must be tested with a calibrated direct-reading instrument for oxygen content, flammable gases and vapors, and potential toxic air contaminants.
2. **Before work begins** - A competent person identifies all confined spaces where employees may work and identifies each space that is a permit space by considering and evaluating the elements of that space, including testing as needed.
3. **Continuous monitoring** - Permit space atmospheres must be continuously monitored unless equipment for continuous monitoring is not commercially available or periodic monitoring is sufficient. All monitoring must ensure continuous forced air ventilation prevents accumulation of a hazardous atmosphere.
4. **Employees designated to rescue** - Each employee must be provided with PPE needed to conduct rescues safely and trained in the use of the PPE; each employee must be trained to proficiently perform assigned rescue duties as authorized entrants; train each employee in basic first aid and CPR; employee team must practice rescues before attempting an actual rescue, and at least once every 12 months, in simulated rescues removing dummies, manikins or actual persons; practice rescue is not required when employees have properly performed a rescue during the past 12 months in the same permit space.
5. **Entry employers** - Entry employers must give the controlling contractor info about their entry program and hazards encountered in the space.
6. **Hazard detected** - Employees must leave the space immediately; space must be evaluated to determine how the hazard developed; employer must implement measures to protect employees from the hazard before any reentry takes place.
7. **Host employers** - Host employers must provide info about permit spaces to the controlling contractor, who passes it on to employers whose employees will enter the spaces.
8. **Information loop** - Trade Partners must give the controlling contractor info about their entry program and hazards encountered in the space; the controlling contractor passes this info to other Trade Partners and back to the host
9. **Monitoring alert** - Continuous monitoring equipment must have an alarm to notify all entrants if a specified atmospheric threshold is achieved, or an employee must check the monitor frequently enough to ensure entrants have time to escape.
10. **Multiple roles** - An entry supervisor may serve as an attendant or authorized entrant if that person is trained and equipped for each role he or she assumes.
11. **Non-entry rescue** - Is required unless the retrieval equipment would increase the risk of entry or would not contribute to the rescue of an entrant; retrieval systems must include use of a chest or full body harness,

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retrieval line, and mechanical device that must be able to retrieve personnel from a vertical permit space more than 5 feet deep.


12. **Primary point of contact** - The controlling contractor – not the host employer – is the primary point of contact for information about confined spaces at the work site.
13. **Required equipment** - Testing and monitoring equipment; ventilating equipment; communications equipment; personal protective equipment when feasible engineering and work practice controls don't adequately protect employees; lighting equipment; barriers and shields; ladders or other means of safe entry and exit; rescue and emergency equipment.
14. **Rescue service** - Must be selected based on; 1) being able to reach victim(s) within a time frame appropriate for the hazard identified; 2) possessing equipment and proficiency in using equipment for the needed rescue; and 3) agreeing to notify the employer immediately if the rescue service becomes unavailable.
15. **Training** - Must result in an understanding of the hazards in the permit space; methods to isolate, control or in other ways protect entrants from hazards; and for employees not authorized to perform rescues, the dangers of attempting such rescues.
16. **Write a permit** - You must write a permit specifying what safety measures must be taken and who can go in a permit space before workers assigned and trained to work in a permit space can enter it.

D. General Requirements


1. Before work begins the Safety Supervisor must be notified to ensure that a competent person identifies all confined spaces and identifies each space that is a permit space, through consideration and evaluation of the elements of that space, including testing as necessary.
2. Providing explosion proof lighting inside the confined space (12 volt or battery powered/or with ground fault interrupters).
3. Testing the atmosphere inside the confined space, before each shift change and after each work interruption, to ensure the following ranges: oxygen 19.5% to 22.0%, hydrogen sulfide 0%, and explosive vapors 0%.
4. Quality Electric Employees do not work in areas that are immediately dangerous to life and health (IDLH).
5. Requiring personnel entering confined spaces to wear a safety body harness with lifeline attached, to permit rapid exit or rescue;
6. Ensuring all electrical power has been locked out and tagged out, and all process lines, including sewer and drain connections have been discontinued or otherwise plugged;
7. If the workplace contains one or more permit spaces, the Supervisor who identifies, or who receives notice of, a permit space must:
 - a) Inform exposed employees by posting danger signs

Note: A sign reading “DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER” would satisfy the requirement for a sign.


- b) Inform, in a timely manner and in a manner other than posting, its employees' authorized representatives and the controlling contractor of the existence and location of, and the danger posed by, each permit space. This will be done through a tailgate safety meeting, with all workers to be involved in the confined space entry. It will review the job to be performed and what safety concerns may be present.

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8. If Quality Electric Inc. does not authorize employees to work in a confined space, then effective measures must be taken to prevent those employees from entering that permit space, in addition to complying with all other applicable requirements of this standard.
9. Each Supervisor that directs its employees to enter a permit space must have a written permit space program implemented at the worksite site. The written program must be made available prior to and during entry operations for inspection by employees and their authorized representatives.
10. Supervisor may use the alternate procedures for entering a permit space under the following conditions:
 - a) Can demonstrate that all physical hazards in the space are eliminated or isolated through engineering controls so that the only hazard posed by the permit space is an actual or potential hazardous atmosphere
 - b) Can demonstrate that continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry, and that, in the event the ventilation system stops working, entrants can exit the space
 - c) Develops monitoring and inspection data that supports the demonstrations required by the applicable OSHA industry standard
 - d) The following requirements apply for entry into permit spaces:
 - (1) Any conditions making it unsafe to remove an entrance cover shall be eliminated before the cover is removed
 - (2) When entrance covers are removed, the opening shall be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space
 - (3) Before an employee enters the space, the internal atmosphere must be tested, with a calibrated direct-reading instrument, for oxygen content, flammable gases and vapors, and for potential toxic air contaminants, in that order. Any employee, who enters the space, or that employee's authorized representative, must be provided an opportunity to observe the pre-entry testing required by this paragraph.
 - (4) No hazardous atmosphere is permitted within the space whenever any employee is inside the space.
 - (5) Continuous forced air ventilation must be used, as follows:
 - An employee must not enter the space until the forced air ventilation has eliminated any hazardous atmosphere
 - The forced air ventilation must be so directed as to ventilate the immediate areas where an employee is or will be present within the space and must continue until all employees have left the space
 - The air supply for the forced air ventilation must be from a clean source and must not increase the hazards in the space.
 - (6) The atmosphere within the space must be continuously monitored.
 - (7) If a hazard is detected during entry:
 - Each employee must leave the space immediately
 - The space must be evaluated to determine how the hazard developed; and
 - Supervisor must implement measures to protect employees from the hazard before any subsequent entry takes place.
 - (8) Supervisor must ensure a safe method of entering and exiting the space.

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- (9) Entry supervisor must verify that the space is safe for entry and that the pre-entry measures have been taken, through a written permit that contains the date, the location of the space, and the signature of the person providing the permit.
11. When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants, or some indication that the initial evaluation of the space may not have been adequate, each entry Supervisor must have a competent person re-evaluate that space and, if necessary, reclassify it as a permit-required confined space.
 12. A space classified by a supervisor as a permit-required confined space may only be reclassified as a non-permit confined space when a competent person determines that all applicable requirements have been met:
 - a) If the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated or isolated without entry into the space (unless the Supervisor can demonstrate that doing so without entry is infeasible), the permit space may be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated or isolated;
 - b) The entry Supervisor must eliminate or isolate the hazards without entering the space, unless it can demonstrate that this is infeasible. If it is necessary to enter the permit space to eliminate or isolate hazards, such entry must be performed under the guidelines of this written program. If testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated or isolated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated or isolated.
 - c) The entry Supervisor must document the basis for determining that all hazards in a permit space have been eliminated or isolated, through a permit that contains the date, the location of the space, and the signature of the person making the determination. The permit must be made available to each employee entering the space; and
 - d) If hazards arise within a permit space that has been reclassified as a non-permit space the workers must exit the space. The entry Supervisor must then re-evaluate the space and reclassify it as a permit space as appropriate in accordance with all other applicable provisions of this standard.
 13. Permit Space Entry Communication and Coordination:
 - a) Before entry operations begin, the host employer must provide the following information, if it has it, to the controlling contractor:
 - (1) The location of each known permit space
 - (2) The hazards or potential hazards in each space or the reason it is a permit space
 - (3) Any precautions that the host employer or any previous controlling contractor or entry employer implemented for the protection of employees in the permit space.
 - b) Before entry operations begin, the controlling contractor must:
 - (1) Obtain the host employer's information about the permit space hazards and previous entry operations; and
 - (2) Provide the following information to each entity entering a permit space and any other entity at the worksite whose activities could foreseeably result in a hazard in the permit space:
 - The information received from the host employer
 - Any additional information the controlling contractor has about the subjects; and
 - The precautions that the host employer, controlling contractor, or other entry employers implemented for the protection of employees in the permit spaces.


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- c) Before entry operations begin, each entry employer must:
 - (1) Obtain the controlling contractor's information regarding permit space hazards and entry operations; and
 - (2) Inform the controlling contractor of the permit space program that the entry employer will follow, including any hazards likely to be confronted or created in each permit space.
- d) The controlling contractor and entry employer(s) must coordinate entry operations when:
 - (1) More than one entity performs permit space entry at the same time
 - (2) Permit space entry is performed while any activities that could foreseeably result in a hazard in the permit space are performed.
- e) Post entry operations:
 - (1) The controlling contractor must debrief each entity that entered a permit space regarding the permit space program followed and any hazards confronted or created in the permit space(s) during entry operations;
 - (2) The entry employer must inform the controlling contractor in a timely manner of the permit space program followed and of any hazards confronted or created in the permit space(s) during entry operations; and
 - (3) The controlling contractor must inform the host employer of the information exchanged with the entry entities pursuant to this subparagraph.
 - (4) If there is no controlling contractor present at the worksite, the requirements for, and role of, controlling contractor, must be fulfilled by the host employer or other employer who arranges to have employees of another employer perform work that involves permit space entry.

E. Permit-Required Confined Space Program


Supervisors must:

1. Implement the measures necessary to prevent unauthorized entry.
2. Identify and evaluate the hazards of permit spaces before employees enter them.
3. Develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to, the following:
 - a) Specific acceptable entry conditions
 - b) Providing each authorized entrant with the opportunity to observe any monitoring or testing of permit spaces
 - c) Isolating the permit space and physical hazard(s) within the space
 - d) Purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards. When an employer is unable to reduce the atmosphere below 10 percent LFL, the employer may only enter if the employer inertes the space to render the entire atmosphere in the space noncombustible, and the employees use PPE to address any other atmospheric hazards (such as oxygen deficiency), and the employer eliminates or isolates all physical hazards in the space.
 - e) Determining that, in the event the ventilation system stops working, the monitoring procedures will detect an increase in atmospheric hazard levels in sufficient time for the entrants to safely exit the permit space
 - f) Providing pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards
 - g) Verifying that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry, and ensuring that employees are not allowed to enter into, or remain in, a permit space

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with a hazardous atmosphere unless the employer can demonstrate that personal protective equipment (PPE) will provide effective protection for each employee in the permit space and provides the appropriate PPE to each employee; and

- h) Eliminating any conditions that could make it unsafe to remove an entrance cover.
4. Employer shall provide equipment at no cost to each employee, maintain that equipment properly, and ensure that each employee uses that equipment properly:
 - Testing and monitoring equipment
 - Ventilating equipment needed to obtain acceptable entry conditions
 - Communications equipment
 - Personal protective equipment
 - Lighting equipment that is explosion proof
 - Barriers and shields as applicable
 - Equipment needed for safe ingress and egress by authorized entrants
 - Rescue and emergency equipment.
5. Evaluate permit space conditions:
 - a) Test conditions in the permit space to determine if acceptable entry conditions exist before changes to the space's natural ventilation are made, and before entry is authorized to begin, except that, if an employer demonstrates that isolation of the space is infeasible because the space is large or is part of a continuous system (such as a sewer), the employer must:
 - (1) Perform pre-entry testing to the extent feasible before entry is authorized; and,
 - (2) If entry is authorized, continuously monitor entry conditions in the areas where authorized entrants are working.
 - (3) Provide an early-warning system that continuously monitors for non-isolated engulfment hazards. The system must alert authorized entrants and attendants in sufficient time for the authorized entrants to safely exit the space.
 - b) When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.
 - c) Provide each authorized entrant or that employee's authorized representative an opportunity to observe the pre-entry and any subsequent testing or monitoring of permit spaces.
 - d) Reevaluate the permit space in the presence of any authorized entrant or that employee's authorized representative who requests that the employer conduct such reevaluation because there is some indication that the evaluation of that space may not have been adequate.
6. Provide at least one attendant outside the permit space into which entry is authorized for the duration of entry operations.
 - a) Attendants may be assigned to more than one permit space provided the duties can be effectively performed for each permit space.
 - b) Attendants must have clear visibility of all entry points.
7. If multiple spaces are to be assigned to a single attendant, include in the permit program the means and procedures to enable the attendant to respond to an emergency affecting one or more of those permit spaces without distraction from the attendant's responsibilities.

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8. Designate each person who is to have an active role in entry operations, identify the duties of each such employee, and provide each such employee with the training required by this written program.
9. Develop and implement procedures for summoning rescue and emergency services for rescuing entrants from permit spaces, for providing necessary emergency services to rescued employees, and for preventing unauthorized personnel from attempting a rescue.
10. Develop and implement a system for the preparation, issuance, use, and cancellation of entry permits as required by this standard, including the safe termination of entry operations under both planned and emergency conditions.
11. Coordinate multiple entry sites with all employers.
12. Develop and implement procedures necessary for concluding the entry after entry operations have been completed.
13. Quality Electric is required to perform a single annual review of the program covering all entries performed during a 12-month period. If no entry is performed during a 12-month period, no review is necessary.


F. Permitting Process

1. Before entry, the entry supervisor shall authorize and document the pre-entry requirements using an entry permit.
2. The completed permit must be made available at the time of entry to all authorized entrants or their authorized representatives, by posting it at the entry point.
3. The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit.
4. The entry supervisor must terminate entry and take the following action when any of the following apply:
 - a) Cancel the entry permit when the entry operations covered by the entry permit have been completed
 - b) Suspend or cancel the entry permit and fully reassess the space before allowing reentry when a condition that is not allowed arises.
5. The entry employer must retain each canceled entry permit for at least 1 year to facilitate the review of the permit-required confined space program. Any problems encountered during an entry operation must be noted on the pertinent permit so that appropriate revisions to the permit space program can be made.

G. Entry Permit

The entry permits that documents compliance with this section and authorizes entry to a permit space must identify the following:

1. The permit space to be entered
2. The purpose of the entry
3. The date and the authorized duration of the entry permit
4. The authorized entrants within the permit space
5. Means of detecting an increase in atmospheric hazard levels in the event the ventilation system stops working
6. Each person, by name, currently serving as an attendant
7. The individual, by name, currently serving as entry supervisor, and the signature or initials of each entry supervisor who authorizes entry
8. The hazards of the permit space to be entered
9. The measures used to isolate the permit space and to eliminate or control permit space hazards before entry

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10. The acceptable entry conditions
11. The results of tests and monitoring performed
12. The rescue and emergency services that can be summoned and the means (such as the equipment to use and the numbers to call) for summoning those services
13. The communication procedures used by authorized entrants and attendants to maintain contact during the entry
14. Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment, to be provided for compliance with this standard
15. Any other information necessary, given the circumstances of the particular confined space, to ensure employee safety
16. Any additional permits, such as for hot work, that have been issued to authorize work in the permit space.

Note: If work is stopped or interrupted by a change in conditions, the original permit must be canceled, and a new permit issued following the standard procedure.


H. Training

1. Quality Electric must provide training to each employee whose work is regulated by this standard, at no cost to the employee, and ensure that the employee possesses the understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this standard.
2. Training required by this section must be provided to each affected employee:
 - a) In both a language and vocabulary that the employee can understand
 - b) Before the employee is first assigned duties under this standard
 - c) Before there is a change in assigned duties
 - d) Whenever there is a change in permit space entry operations that presents a hazard about which an employee has not previously been trained
 - e) Whenever there is any evidence of a deviation from the permit space entry procedures or there are inadequacies in the employee's knowledge or use of these procedures.
3. The training must establish employee proficiency in the duties required and must introduce new or revised procedures.
4. Quality Electric must maintain training records to show that the training required has been accomplished.
5. The training records must contain each employee's name, the name of the trainers, and the dates of training.

I. Duties of Authorized Entrants

Quality Electric must ensure that all authorized entrants:

1. Are familiar with and understand the hazards that may be faced during entry.
2. Properly use equipment as required by this written program.
3. Shall witness and verify calibrated air monitoring data and if approved, sign off, before entry is made.
4. Is entitled to request additional monitoring at any time. Communicates with authorized entrants as necessary to assess entrant status and to alert entrants of the need to evacuate the space.
5. Maintain effective communication with the attendant.

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6. Alert the attendant whenever:
 - a) There is any warning sign or symptom of exposure to a dangerous situation
 - b) The entrant detects a prohibited condition.
7. Exit from the permit space as quickly as possible whenever:
 - a) An order to evacuate is given by the attendant or the entry supervisor
 - b) There is any warning sign or symptom of exposure to a dangerous situation
 - c) The entrant detects a prohibited condition
 - d) An evacuation alarm is activated.

J. Duties of Attendants


Quality Electric must ensure that each attendant:

1. Is familiar with and understands the hazards that may be faced during entry.
2. Is aware of possible behavioral effects of hazard exposure in authorized entrants.
3. Continuously maintains an accurate count of authorized entrants in the permit space.
4. Remains outside the permit space during entry operations until relieved by another attendant.
5. Assesses activities and conditions inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions:
 - a) If there is a prohibited condition
 - b) If the behavioral effects of hazard exposure are apparent in an authorized entrant
 - c) If there is a situation outside the space that could endanger the authorized entrants
 - d) If the attendant cannot effectively and safely perform all the duties required under this written program.
6. Summons's rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards.
7. Takes the following actions when unauthorized persons' approach or enter a permit space while entry is underway:
 - a) Warns the unauthorized persons that they must stay away from the permit space
 - b) Advises the unauthorized persons that they must exit immediately if they have entered the permit space
 - c) Informs the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.
8. Performs non-entry rescues as specified by Quality Electric's rescue procedure.
9. Performs no duties that might interfere with the attendant's primary duty to assess and protect the authorized entrants.

K. Duties of Entry Supervisors

Quality Electric must ensure that each entry supervisor:

1. Conducts a tailgate safety meeting, with all workers to be involved in the confined space entry and review the job to be performed and what safety concerns may be present.
2. Shall confirm that all isolation, Lock/out and Tag/outs have been completed prior to entry into a confined space.
3. Shall ensure that the requirements of this program are followed and maintained.
4. Is familiar with and understands the hazards that may be faced during entry.

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5. Verifies, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted.
6. Terminates the entry and cancels or suspends the permit.
7. Verifies that rescue services are available.
8. Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations.
9. Determines, whenever responsibility for a permit space entry operation is transferred, and at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

L. Rescue and Emergency Services

1. Quality Electric must:
 - a) Select a rescue team or service that:
 - (1) Has the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified
 - (2) Is equipped for, and proficient in, performing the needed rescue services
 - (3) Agrees to notify Quality Electric immediately in the event that the rescue service becomes unavailable.
 - a) Inform each rescue team or service of the hazards they may confront when called on to perform rescue at the site.
 - b) Provide the rescue team or service selected with access to all permit spaces.
2. Quality Electric will designate employees to provide permit space rescue and/or emergency services, and will take the following measures and provide all equipment and training at no cost to those employees:
 - a) Provide each affected employee with the personal protective equipment (PPE) needed to conduct permit space rescues safely and train each affected employee so the employee is proficient in the use of that PPE.
 - b) Train each affected employee to perform assigned rescue duties.
 - c) Train each affected employee in basic first aid and cardiopulmonary resuscitation (CPR).
 - d) Ensure that affected employees practice making permit space rescues before attempting an actual rescue, and at least once every 12 months.
3. Non-entry rescue is required unless the retrieval equipment would increase the overall risk. Emergency assistance must be available in the event that non-entry rescue fails. Retrieval systems must meet the following requirements:
 - a) Each authorized entrant must use a full body harness.
 - b) The other end of the retrieval line must be attached to a mechanical device or fixed point outside the permit space. A mechanical device must be able to retrieve personnel from vertical type permit spaces more than 5 feet deep.
4. If an injured entrant is exposed to a substance for which a Safety Data Sheet (SDS) or other similar written information is required to be kept at the worksite, that SDS or written information must be made available to the medical facility treating the exposed entrant.

M. Document Retention

Refer to Records Management section for appropriate document retention policy.

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N. Annexes

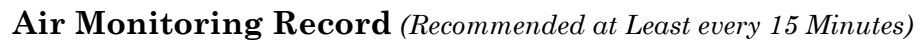
1. Forms and Permits:

- Confined Space Entry Permit
- Confined Space Log

Confined Space Inventory Log

Confined Space Permit

Date of Entry		Building and Room:	
Confined Space Location:		Area:	
Location Description:			
Purpose of Entry			
Hot Work Permit: Yes <input type="checkbox"/> No <input type="checkbox"/> <i>(All tasks that produce heat, smoke or odor require a supervisor to be notified)</i>			
I. Personnel			
Initial Entry Supervisor:		Signature:	
<i>Authorized Entrants (E) and Attendants (A)</i>			
Name:	Type E and A:	Trade:	
	A		
	E		
Communications Procedures: <input type="checkbox"/> Verbal <input type="checkbox"/> Radio <input type="checkbox"/> Visual <input type="checkbox"/> Other			
Notify Supervisor for Pre - Entry / Rescue Review			Initials
<i>(Standby for Supervisor to Determine Permit Requirements)</i>			
II. Space Evaluation Air Sample Readings			
Acceptable Condition	Oxygen (19.5% - 23.5%)	Flammability < 10% LEL	Carbon Dioxide < 25 ppm
			Hydrogen Sulfide < 10 ppm
Time			Other (Specify)
Supervisor:		Date Evaluated:	
<p>Verify JHA / PTP is current and present</p> <p>Review for Hazards</p> <p>Review Pre - Entry Evaluation and Rescue Plan for Accuracy</p> <p>Has the space changed since the pre - entry evaluation? Yes No</p>			
If yes, please document changes below:			
Does the space meet permit requirements? <input type="checkbox"/> Yes <input type="checkbox"/> No			
<i>(If Yes, instruct the Entry Supervisor to complete the remainder of the permit)</i>			
* Criteria for a permit required confined space:			
1	Must be large enough to bodily enter, not designated for continuous occupancy, AND have limited means of entry / exit AND ALSO INCLUDE ONE OR MORE OF THE FOLLOWING		
2	<u>Contains or has the potential to contain a hazardous atmosphere</u>		
3	<u>Contains a material that has the potential to engulf an entrant</u>		
4	<u>Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or floor, which sloped downward and tapers to a small cross section; or</u>		
5	<u>Contains any other recognized serious safety or health hazard.</u>		




Air Unit Type		Unit Number	
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Acceptable Conditions	Oxygen (19.5% - 23.5%)	Flammability < 10% LEL	Carbon Dioxide < 25 ppm	Hydrogen Sulfide < 10 ppm	Other (Specify)
Pre - Entry Time:					
Time:					
Time:					
Time:					
Time:					
Time:					
Time:					
Time:					
Time:					
Time:					
Time:					
Time:					
Time:					
Time:					
Time:					
Time:					
Closing Readings					
Time:					

Closing Entry Supervisor:	Name:	Signature:	Date and Time:
Notify Supervisor at Time of Closing:		Initial:	

Upon Closure of the Confined Space Entry, attach Pre - Entry Evaluation and Rescue Plan to the Permit and Return the completed forms to your supervisor so that it can be sent into the shop for record keeping.

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Section 31: Fall Protection

A. Policy Statement

Construction is a hazardous industry where workers are exposed to varied hazards. Each operation or jobsite presents its own peculiar problems; thus no two jobs are alike. Therefore, it is not possible to formulate one set of rules to cover all the hazards that may be encountered in construction work. Ideally, the best way to protect against potential falls is to eliminate the hazards, which are present. When the hazard cannot be eliminated, a comprehensive fall management program can protect against most, if not all fall related incidents.

Regular surveys of project operations and conditions should be conducted to identify principal sources and causes of possible injury and losses due to unsafe methods and conditions. A focus on fall hazards should be increased in the following general areas and conditions:


Steel Erection	Excavations
Bridges	Use of Ladders
Pre-Fabrication	Scaffolds
Heavy Equipment Access / Egress	Elevating Equipment
Hoist Wat Enclosures	Uneven / Cluttered Surfaces
Unsecured Materials, Tools and Equipment	Roofs and Skylights
Open Sides, Floor Coverings and Stairs	

This information supports compliance with Occupational Safety and Health Administration (OSHA) Fall Protection Standard as found in 29 CFR 1926.500, 501, 502, and 503, general requirements for scaffolds in 29 CFR 1926.451, use of safety nets where other forms of fall protection are impractical in 29 CFR 1926.105, and fall protection for steel erectors working two stories or more above the ground or floor in 29 CFR 1926.750. This information applies to all company employees who work in areas where fall hazards of 6 feet or greater are possible.

The purpose of this policy is to outline the proper use of fall protection systems to guard against fall hazards.

B. Definitions

1. **Anchorage** - a secure point of attachment for lifelines, lanyards, or deceleration devices
2. **Body harness** - straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with means for attaching it to other components of a personal fall arrest system
3. **Fall Restraint System (FRS)** – may allow worker to approach the edge or fall hazard, but at no time will it allow a worker to reach the edge or fall hazard
4. **Free fall** - the act of falling before a personal fall arrest system begins to apply force to arrest the fall
5. **Free fall distance** - the vertical displacement of the fall arrest attachment points on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline/lanyard elongation, but includes any deceleration

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device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.


6. **Lanyard** - a flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage
7. **Leading edge** - the edge of a floor, roof, or formwork for a floor or other walking/working surface (such as the deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed. A leading edge is considered to be an "unprotected side and edge" during periods when it is not actively and continuously under construction.
8. **Personal Fall Arrest System (PFAS)** - a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these

C. General Requirements

1. Fall protection systems should be used in the following order:
 - a) Guardrails and/or Safety Nets on Outrigger Platforms
 - b) Personal Fall Arrest System
 - c) Warning Line or Controlled Access Zone
2. Fall protection is required when on a walking or working surface (vertical or horizontal surface) 6 feet or more above a lower level, regardless of the trade at work or the task being performed.
3. Fall protection systems, equipment and design must allow for 100% fall protection.
4. The use of a Safety Monitor System and a Controlled Decking Zone as a primary means of fall protection is prohibited.
5. All elevated floors, platforms, decks, or formwork must support at least 2 times the maximum intended load.
6. A structural engineer must verify the safe capacity of the floor for all equipment that will be used on the floor.
7. Anytime a personal fall arrest system is used, a rescue plan must be in place and may include self-rescue.
8. Responsibilities:
 - a) The Supervision team is responsible for the implementation of the project fall protection program.
 - b) The Supervision team is to provide the appropriate equipment, training and supervision needed to accomplish fall protection at the jobsite.
 - c) Each Foreman is responsible for:
 - (1) Providing and ensuring that the fall protection being used is appropriate for the application.
 - (2) Training each of his workers on the proper installation, use, maintenance, inspection, and limitations of their fall protection equipment.
 - (3) Retraining immediately following an unsafe fall protection observation for his crew.

D. Guardrails

1. Guardrail Construction Specifications:
 - a) All guardrails must consist of a top rail, midrail, and a toe board
 - b) Top rails must be 42 inches from the working surface
 - c) Top rails must support 200 pounds of force in a downward and outward direction

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- d) Mid-rails must support 150 pounds
- e) Toe boards must be capable of resisting, without failure, 50 pounds of force without failure (see Falling Object Protection)
- f) Wire rope guardrails must not be installed around interior floor openings and on stairs
- g) Ladder-ways with offset rails must be provided at all access/egress points.

2. Receiving bays should be designed and installed in at least one area at each level where hoisting will take place.

3. Wire Rope Guardrail Requirements:

- a) Structural support stanchions must be installed every 10 feet
- b) Wire rope must have a minimum breaking strength of 5000 pounds
- c) Wire rope rails must not deflect more than 3 inches in any direction when a 200-pound force is applied
- d) Wire rope rails should be terminated by wrapping around columns or other structural supports at each inside and outside corner
- e) Runs should not exceed 90 feet
- f) Terminations must consist of three drop-forged cable clamps made in the USA installed per manufacturer's requirements
- g) Cables must be flagged with visible material every 6 feet (bright colored duct tape may be used to help maintain 6-foot distances)
- h) Turnbuckles should be installed at each section to provide easy maintenance.

4. Wood Guardrail Requirements:

- a) Structural support stanchions must be installed every 8 feet
- b) Sixteen penny nails should be used to build wood rails. Duplex or form nails should not be used as they may pose a snagging hazard or may damage the lumber.


E. Duty to Have Fall Protection

The Fall Protection Standard prescribes the duty for employers to provide fall protection, sets the criteria and practices for fall protection systems, and requires training. It covers hazard assessment, fall protection, and safety monitoring systems.

F. Fall Hazard Control

Each job and each jobsite should be thoroughly analyzed for potential hazards. A written program should be developed which specifies the means of dealing with identified hazards. If a hazard can be eliminated by a new work procedure, this new procedure should be specified and implemented.

The written program should indicate what types of personal protective equipment are required for the job, wherever elimination of potential hazards is impossible. The program should also indicate how the equipment is to be used and maintained. Work procedures, clearly written and communicated, should be developed detailing how each type of work is to be performed. The written program does not need to be elaborate, but should cover the

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basics, with essential elements clearly communicated and understood by all jobsite personnel. Fall hazard control can be broken down into fall prevention and fall protection, both being considered independently.

G. Fall Prevention

Fall prevention lessens the worker's exposure to a fall by minimizing potentially hazardous situations. Fall prevention planning requires forethought and supervision to assure the plan to minimize fall hazards will be executed. It is important the written policy be continuously monitored and updated during the construction project. Listing known fall hazards helps in predicting how they can be controlled. Eliminating potential fall hazards and correcting existing hazards helps to protect against accidents. Fall prevention measures include proper work area access, good housekeeping, required protection, and specially required procedures.

H. Fall Protection


Fall protection is a means of minimizing or protecting workers from experiencing accidental falls from elevations. Fall protection is required when, during the jobsite evaluation, a potentially hazardous condition cannot be adequately or fully minimized is recognized. Fall protection minimizes the consequences of an accident and are either passive or active.

- **Passive** - Passive fall protection consists of systems and components that are installed before work is started on the jobsite. An example of passive protection is a safety net. Protection is achieved whether or not workers are wearing any fall arrest equipment. No action is required on the part of the worker to stop a fall. If passive fall protection is properly installed and maintained workers are protected 100% of the time.
- **Active** - Active fall protection consists of components and systems which require specific action by the worker to achieve specific protection. Active equipment should be recognized as a means to minimize, control, or limit injuries from a fall. Active fall protection is a substitute measure, which does not actually prevent a fall.

Active fall protection products fit into four functional categories:

1. **Fall Arrest** - the purpose of a fall arresting system is not only to arrest the fall, but also to assure the energy gained by the body during the fall is distributed to minimize injury to the wearer.
2. **Positioning** - a personal positioning system holds workers in place, using positioning belts, while keeping hands free to work. A fall arrest system should be used in conjunction with the personal positioning system.
3. **Suspension** - the personal suspension system lowers and supports workers while allowing a hands-free work environment. A fall arrest system should be used in conjunction with the personal suspension system.
4. **Retrieval/Rescue** - Retrieval/rescue efforts are more effective when time is minimized between the time of the fall and the arrival of medical attention. Rescue procedures should be reviewed on a regular basis.

The latest types of fall protection equipment should be made available to employees. The complete system should be the most suitable for each particular project. The uniqueness of each jobsite requires knowledgeable supervising

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personnel who will make the appropriate decisions. If workers are properly trained and properly supervised, and if they use the correct equipment properly, they should be able to work at maximum efficiency at any height.

I. Personal Fall Arrest System (PFAS)

1. Personal fall arrest systems must protect the employee from a fall greater than 6 feet and prevent contact with any objects.
2. All employees using fall protection PPE shall be trained on the proper use, fit and wear before donning the equipment.
3. Personal fall arrest equipment shall be inspected prior to each use for wear, damage, and other deterioration. Defective equipment shall be tagged and removed from service.
4. Equipment must be used per manufacturer's recommendations.
5. Anchor points for PFAS must support 5,000 pounds per worker and be designed to limit free fall distance to 6 feet.
6. No shop made devices such as hooks, brackets or attachments are allowed.
7. Personal fall arrest systems shall not be attached to guardrail systems
8. Any component subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse.
9. Lifelines and lanyards shall be used only for employee safeguarding.

J. Lanyards


1. Shock absorbing lanyards will be a minimum of ½ inch nylon, or equivalent, with a maximum length to provide for a fall of no greater than 6 feet.
2. The lanyard shall have a nominal breaking strength of 5,400 pounds.
3. Lanyards shall not be extended in any way.
4. Lanyards shall not be hooked back to themselves.
5. Lanyards shall not be attached to retractable lifelines (yo-yos) to extend reach.

K. Fall Restraint Systems (FRS)

1. Fall Restraint System (FRS) shall be installed per applicable ANSI standards.
2. An FRS must consist of a full body harness, a lifeline (capable of fall arrest) and anchorage point.
3. Anchor points for FRS must support 1,000 lbs. per worker attached.
4. Specialized training must be provided to use a Fall Restraint System. This training shall be documented and shall consist of the following:
 - a) The installation, maintenance and limitation of the FRS and its components
 - b) The proper use of the FRS

L. Safety Nets

1. Safety nets shall be installed as close as possible under the walking/working surface on which employees are working, but in no case, more than 30 feet below such level.

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- Safety nets shall extend outward from the outermost projection of the work surface as follows:

Minimum Required Distance for Safety Nets

Vertical Distance from Working Level to Horizontal Plane of Net	Minimum Required Horizontal Distance of Outer Edge of Net from Edge of Working Surface
Up to 5 Feet	8 Feet
5 Feet to 10 Feet	10 Feet
More than 10 Feet	13 Feet

- Safety nets shall be installed with sufficient clearance under them to prevent contact with the surface.

M. Warning Lines


- Warning lines may be used for roofing operations or any other situation where temporary fall protection must be provided for an unprotected side or edge.
- Warning lines may not be utilized as a primary means of fall protection. They are used to keep unauthorized workers out of an area that is not protected by other means. Additional means of fall protection must be used when workers are located between the warning line and the unprotected roof edge or open sided floor. These systems may include:
 - Personal Fall Arrest
 - Guardrails
 - Safety Nets
 - Or combination of the above
- Warning lines must encompass the entire work area on all sides.
- Warning lines must be installed a minimum of 15 feet away from the roof edge or unprotected side or edge.

(Note: During roofing work, a warning line may be erected 6 feet from the edge of a roof in certain situations.)

- Points of access, materials handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines.
- Warning lines must:
 - Be flagged with high visibility material every 6 feet
 - Be maintained at a height of 34-39"
 - Rope and stanchions must be able to withstand a force of 16 pounds
 - Warning line material must have a minimum tensile strength of 500 pounds

N. Controlled Access Zones (CAZ)

- Controlled Access Zones (CAZ) primarily used for precast and decking operations may be used for leading edge work but shall not be utilized as a primary means of fall protection.

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2. Other means of fall protection must be utilized when workers are located between the control line and the leading edge or other fall hazard.
3. These systems may include:
 - Personal Fall Arrest
 - Guardrails
 - Safety Nets
 - Or combination of the above
4. Controlled Access Zone lines shall consist of:
 - a) Control lines shall be erected not less than 6 feet or more than 25 feet from unprotected or leading edge
 - b) Precast Only: Control lines shall be erected not less than 6 feet or more than 60 feet from unprotected or leading edge
 - c) Has to extend along the entire length of unprotected or leading edge
 - d) Control lines shall be connected on each side to guardrail system or wall
 - e) Be flagged with high visibility material every 6 feet
 - f) Be maintained at a height of 39-45"
 - g) Warning line material must have a minimum tensile strength of 500 pounds


O. Vertical Lifelines

1. A minimum of 5/8 inch polyester/polypropylene, with a minimum breaking strength of 5,400 pounds shall be used.
2. Lifelines shall be secured above the point of operation to an anchorage point capable of supporting a minimum dead weight of 5,400 pounds.
3. When vertical lifelines are used, each employee shall be attached to a separate lifeline.
4. No knots will be used to secure rope to an anchor point.
5. Lifelines shall be protected against being cut or abraded.

P. Horizontal Lifelines

Horizontal lifelines shall be designed, installed, and used, under the supervision of a competent person, as part of a complete personal fall arrest system and shall be designed to a safety factor of twice the designed load.

1. Procedure:
 - a) The horizontal lifeline system must be designed by a qualified person
 - b) All materials used in the horizontal lifeline system design must be capable of sustaining a minimum breaking strength of 5,000 pounds. The materials listed below are capable of sustaining a minimum load of 5,000 pounds if installed properly
 - c) No more than two workers shall be tied off to the same run of lifeline.
2. Cast-in-Place Buildings:
 - a) The wire rope used for lifelines shall be galvanized aircraft cable a minimum of 5/16" in diameter
 - b) Lifeline connections must consist of three drop-forged cable clamps made in the USA installed per manufacturer's requirements

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- c) Cable runs shall not exceed 90 feet with each dead end of the cable wrapping a column (Intermediate supports should be provided every 10 feet to meet minimum perimeter guardrail requirements.)
- d) Cable splices are not allowed in cable runs between column anchors.
- e) Chaffing or softening pads shall be used on the sharp corners of the column.

3. Structural steel buildings:

- a) The wire rope used for lifelines shall be galvanized aircraft cable a minimum of 5/16" in diameter.
- b) Lifeline connections must consist of three drop-forged cable clamps made in the USA installed per manufacturer's requirements
- c) Cable runs shall not exceed 90 feet with each dead end of the cable wrapping a column. (Intermediate supports should be provided every 10 feet to meet minimum perimeter guardrail requirements.)
- d) Cable splices are not allowed in cable runs between column anchors.
- e) Washers may be welded to columns, or columns may be punched, to provide intermediate support for lifelines. Wire rope shall be terminated whenever there is a change in direction. Washers or column punches shall not be utilized for changes in direction.
- f) Chaffing or softening pads shall be used on the sharp corners of the column.

4. Testing:

Drop tests shall be conducted on the system if no current test data is available or the system design has changed. Contact the safety department for assistance/direction in performing these tests.

Q. Full Body Harness


- 1. Full body harnesses are required for all personal fall protection applications.
- 2. Leg and chest straps must be properly buckled when utilizing the harness for fall protection.

R. Fall Protection Plan


A Fall Protection Plan should be developed and evaluated on a site-by-site basis by a qualified person with the stated purpose of prevention of injuries associated with falls. A Fall Protection Plan should contain:

- 1. Location of the job, Company Name, date of preparation or modification of the plan, name of plan preparer, name of plan approver, and Name of plan supervisor;
- 2. Statement of Company Policy;
- 3. Fall protection systems to be used on this project;
- 4. How the Fall Protection Plan is to be implemented;
- 5. Other Fall Protection measures considered for this job;
- 6. Enforcement;
- 7. Accident investigation;
- 8. Changes to the plan.

Quality Electric will assess the workplace to determine if the walking/working surfaces have the strength and structural integrity to safely support workers. Employees are not permitted to work on those surfaces until determining the

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surfaces have the strength and structural integrity for support. Once employers have determined that the surface is safe for employees to work on, the employer must select one of the options listed in "Construction Fall Protection Requirements" for the work operation if a fall hazard is present.

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CONSTRUCTION FALL PROTECTION REQUIREMENTS


	Type of Protection Required (29CFR 1926 Subpart M)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Unprotected Sides & Edges	x	x	x												
Leading Edges	x	x	x												x*
Hoisting Areas	x		x												
Holes	x		x	x											
Formwork/Reinforcing Steel		x	x		x										
Ramps, Runways, other Walkways	x														
Excavations	x					x	x								
Excavations (wells, pits, shafts)	x			x		x	x								
Dangerous Equipment (less than 6 feet)	x							x							
Dangerous Equipment (more than 6 feet)	x	x	x												
Overhand Bricklaying	x	x	x						x						
Overhand Bricklaying (reaching 10" below)	x	x	x												
Roofing Work (low slope)	x	x	x							x	x	x	x	x**	
Steep Roofs	x	x	x												
Pre-cast Concrete Erection	x	x	x												x*
Residential Construction	x	x	x												x*
Wall Openings	x	x	x												
Other Walking/ Working Surfaces	x	x	x												

*Must show unfeasibility or greater hazard

**Roof width less than 50 feet

TYPE OF PROTECTION REQUIRED

- | | |
|---------------------------------|--|
| 1. Guardrail Systems | 9. Controlled Access Zone |
| 2. Safety Net Systems | 10. Warning Line System/Guardrail |
| 3. Personal Fall Arrest Systems | 11. Warning Line/Safety Net System |
| 4. Covers | 12. Warning Line/Safety Personal Fall Arrest |
| 5. Positioning Devices | 13. Warning Line System/Safety Monitor |
| 6. Fences | 14. Safety Monitor |
| 7. Barricades | 15. Fall Protection Plan |
| 8. Equipment Guards | |

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S. Training

Training provisions found in 29 CFR 1926.503 supplement and clarify the training requirements of 29 CFR 1926.21 regarding the hazards in Subpart M. The training program must enable each employee to recognize the hazards of falling and also train each employee in the procedures to be followed in order to minimize these hazards.

1. Supervisors must assure that a competent person provides training and retraining to employees:
 - a) Immediately prior to using a fall protection system.
 - b) Each time a new crew or crew member is added to a crew.
 - c) Each time that a worker is observed using fall protection improperly or in an unsafe manner.
 - d) Anytime that the equipment or methods of fall protection change.
2. Training shall include:
 - a) The nature of fall hazards in the work area.
 - b) The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used.
 - c) The use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, and other protection to be used.
 - d) The correct procedures for the handling and storage of equipment and materials and the erection of overhead protection.
 - e) The roles and responsibilities of each worker in fall protection plans.
 - f) All applicable state federal and local fall protection standards.
3. Training must be documented and include:
 - a) The date of the training and the name of the project being inspected.
 - b) A description of the topics discussed and details including the fall protection methods, proper use, inspection, installation, maintenance, and any project specific requirements as applicable.
 - c) A sign-in sheet with all attendees.
 - d) The name of the person giving the training and the responsible foreman (if different).
4. Copies of the training shall be available upon request.

T. Annexes

1. Inspections and Checklists:
 - Inspection Checklist - Anchorage Point
 - Inspection Checklist - Full Body Harness
 - Inspection Checklist – Horizontal Lifeline
 - Inspection Checklist - Lanyards
 - Inspection Checklist - Self-Retracting Lifelines
 - Inspection Checklist – Vertical Lifeline

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2. Forms:

- Employee Fall Protection Training
- Fall Protection Jobsite Checklist
- Fall Hazard Mitigation Form
- Fall Protection Rescue Plan



Anchorage Connector Inspection Form

Manufacturer:		Asset #:	
Model:		Company:	Quality Electric
Description:		Name of Inspector:	
Serial:		Signature:	
Lot:		Date of Inspection:	
Date of Manufacture:		In Service Date:	

	P	F	Note #
D-RING			
Signs of Deformity			
Body of D-Ring			
Corrosion			
Pitting			
Nicks			
TERMINATION			
Termination (stitch or splice or swage)			
CABLE			
Signs of Damage			
Kinks or Caging			
Broken Strands or Fibers			
WEBBING			
Termination to Connector			
Cuts			
Soiled			
Burns			
Melting			
Deterioration			
BODY OF ANCHORAGE			
Bars, Shafts, Housing			
Signs of Damage			
Corrosion or Pitting			
Impact Indicators			
LABELS & MARKINGS			
Legible Label			
Appropriate ANSI/CSA/OSHA Markings			
Date of First Use			

Anchorage Connectors

- Roofing
- Concrete
- Pipe and I-Beam
- Steel
- Fixed vs. mobile
- Permanent, temporary or reusable



Notes:

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Month	Inspector	Date of Inspection	Pass or Fail
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
Notes:			

Employee Fall Protection Training

This Company has a written fall protection program that details its responsibilities under Occupational Safety and Health Administration (OSHA) fall protection requirements: 29CFR 1926 Subparts E (Personal Protective Equipment 1926.105 - 106), L (Scaffolding 1926.450 - 454 and Appendices A - E), M (Fall Protection 1926.500 - 503 and Appendices A - E), R (Steel Erection 1926.760 - 761 and Appendices D and G) and CC (Cranes and Derricks 1926.1423). All employees will be trained by a competent person* who is qualified to any job assignment where fall protection is required. The training will enable each employee to recognize fall hazards and to follow appropriate procedures that minimize the hazards. This record certifies the following employees have been trained to recognize fall hazards and to use appropriate fall protection systems and methods to minimize exposures to the hazards, as required in 1926.503(b).

Employee Name:

FALL PROTECTION EQUIPMENT COVERED IN TRAINING				
Type of Equipment	Manufacturer / Model #	Employee Signature	Trainer Signature*	Date
Full Body Harness				
Shock - Absorbing Lanyard				
Work Positioning Lanyard				
Self - Retracting Lifeline (SRL)				
Restraint Line				
Horizontal Lifeline				
Vertical Lifeline				
Incline Line				
Rope Grab				
Deceleration Device				
Locking Snap Hooks				
Locking Carabineers				
Controlling Descent / Self - Rescue				
Relief Straps				
Anchorage				
Safety Nets				
FP on Aerial Work Platforms (AWP)				
FP on Crane - Supported Personnel Platforms				
Other				
Other				

Warning Access Zones and Safety Monitors: For Leading edge work [29 CFR 1926.501(b)(2)] and precast concrete [29 CFR 1926.501(b)(12)] work where the employer can demonstrate that it is infeasible or creates a greater hazard to utilize conventional fall protection equipment, the employer may decide to use controlled access zones and safety monitors. The OSHA position is that it is feasible and the employer has the burden to provide proof that it is infeasible and to prepare a site specific plan in accordance with 29 CFR 1926.502(k). The Quality Electric Inc. position is that the conventional method of fall protection is feasible in these activities.

OSHA STANDARD / COMPANY PROGRAM COVERED IN TRAINING	Employee Signature	Trainer Signature*	Date
Company's Written Fall Protection Program			
Company's Written Fall Protection Rescue Plan			
Trained to Perform Rescue of Fallen Worker Suspended by Fall Arrest			
Subpart E (Safety Nets) 29 CFR 1926.105			
Subpart E (Working Over Water) 29 CFR 1926.106			
Subpart L (Scaffolds / Aerial Lifts) 29 CFR 1926.450 - 454 and Appendix A - E			
Subpart M (Fall Protection) 29 CFR 1926.500 - 503 Appendix B - E			
Subpart R (Steel Erection) 29 CFR 1926.750 - 761 and Appendix A - H			
Subpart CC (Crane Standard) 29 CFR 1926.1423 and 1431			

** I certify that I have trained the employee / worker for the equipment, company programs and / or OSHA standards listed above. I also certify that I am a competent person who is qualified to provide this training. A Competent Person is one who is capable of identifying existing and predictable hazards [OSHA 29 CFR 1926.32(f)]; authorized to take prompt corrective measures to eliminate hazards [OSHA 29 CFR 1926.32(f)]; and qualified to train employees in all aspects of fall protection covered in OSHA Subpart M [29 CFR 1926.503 (Subpart M)].*



Fall Hazard Mitigation Form

Task or Job Title:		Department:	
--------------------	--	-------------	--

Describe the method of access and egress to elevated work: (Ladder, Scaffold, MEWP, ect)

What Personal Fall Protection System(s) (PFAS) will be used?

How will workers be protected as they enter/leave the elevated work area?

Explain how PFAS will be installed and how workers will be protected during the installation:

How will PFAS be Maintained 100% of the time workers are exposed to falls?

Fall Hazard Mitigation Form

Describe the work (What is the work, where is it, who is working around you, ect?)	

Can all Fall Hazards be Eliminated? ☐ Yes ☐ No

If no, explain why / if yes, explain why they have not been eliminated:

By signing I am acknowledgng that all the hazards associated with this task are addressed and mitigated in the best manner possible.

Foreman Signature: _____

Safety Signature: _____

Employee Signatures:

Print Name:	Signature:	Date:

Fall Protection Rescue Plan

Date:		Job Description:	
--------------	--	-------------------------	--

Title:	Name:	*Method of Contact
Designated Competant Person		
Lead Rescue Person		
Assistant Rescuer(s)		
Emergency Contact(s)		

**Denotes: Verbal (face-to-face), Radio Channel (specify channel), phone number or other forms of communication.*

Onsite Rescue Equipment (indicate a yes or no for each box)

<input type="checkbox"/> Yes <input type="checkbox"/> No	Ladder	<input type="checkbox"/> Yes <input type="checkbox"/> No	Pulley System
<input type="checkbox"/> Yes <input type="checkbox"/> No	Rescue Poles	<input type="checkbox"/> Yes <input type="checkbox"/> No	Brake - Tube System
<input type="checkbox"/> Yes <input type="checkbox"/> No	Rescue Rope	<input type="checkbox"/> Yes <input type="checkbox"/> No	Winch System
<input type="checkbox"/> Yes <input type="checkbox"/> No	Crane as Anchorage Point	<input type="checkbox"/> Yes <input type="checkbox"/> No	Controlled Descent
<input type="checkbox"/> Yes <input type="checkbox"/> No	Crane with Personnel Platform	<input type="checkbox"/> Yes <input type="checkbox"/> No	Rope Ladder
<input type="checkbox"/> Yes <input type="checkbox"/> No	Scaffold	<input type="checkbox"/> Yes <input type="checkbox"/> No	Skiff
<input type="checkbox"/> Yes <input type="checkbox"/> No	Aerial Work Platform	<input type="checkbox"/> Yes <input type="checkbox"/> No	Life Ring with 90 Feet of Rope
<input type="checkbox"/> Yes <input type="checkbox"/> No	Vertical Rescue & Escape System	<input type="checkbox"/> Yes <input type="checkbox"/> No	First Aid Kit
<input type="checkbox"/> Yes <input type="checkbox"/> No	Self - Retractable Lifeline	<input type="checkbox"/> Yes <input type="checkbox"/> No	Stokes basket

Pre-Planning for Rescue and Fall Protection Equipment

Rescue and Fall Protection Planning		
<input type="checkbox"/> Yes <input type="checkbox"/> No	Have alternatives to using fall arrest equipment been considered?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Has rescue equipment been inspected and found in servicable condition?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Is equipment adequate for the rescue plan?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Have communications devices been identified, located and tested?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Are all rescuers familiar with the use of the rescue equipment?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	If working over water, is there a skiff and life rings?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	Are PFDs worn by worker when working over water?	

Describe tasks to be done prior to work to prevent a fall and the step-by-step process to be followed in the event of a fall

Comments:

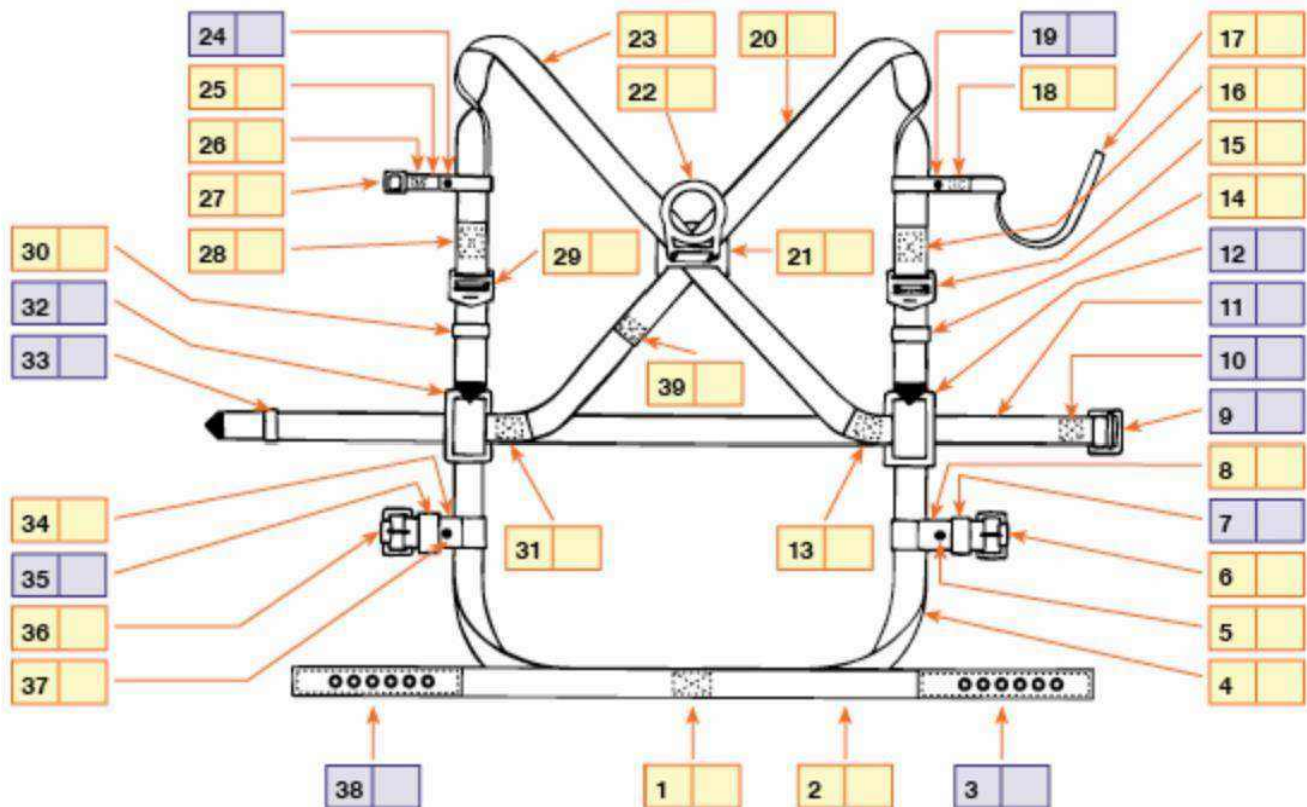
Pre - Work Tasks and Response Procedures

#	Pre - Work Task	#	Response Procedure
1	JHA (Job Hazard Analysis) and PTP (Pre Task Plan)	1	Call 911
2	Perform trail Test of rescue equipment	2	Notify Emergency Fall Rescue Team
3		3	Notify First Aid / CPR Personnel
4		4	Notify Site Management
5		5	
6		6	



Harness Inspection Form

Manufacturer:			
Model:		Company:	
Description:		Name of Inspector:	
Serial:		Signature:	
Lot:		Date of Inspection:	
Date of Manufacture:		In Service Date:	



Legend

 Priority 1 item

 Priority 2 item

P = Pass
F = Fail
R = Repair

Summary

	number of fails	max allowed	Pass or Fail
Priority 1 items	_____	0	_____
Priority 2 items	_____	2	_____

Overall Assessment

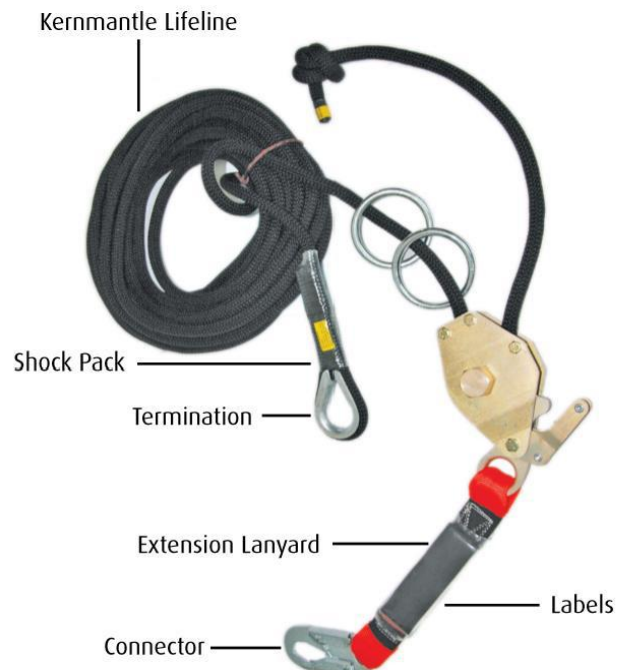
Pass only if both priority 1 and priority 2 items pass _____

Month	Inspector	Date of Inspection	Pass or Fail
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
Notes:			



Horizontal Lifeline Inspection Form

	P	F	Note #
CONNECTORS			
Function of Connector Locking Gate			
Body of Hook			
Corrosion			
Pitting			
Nicks			
TERMINATION			
Broken, Missing, or Loose Stitching			
Termination (stitch or splice or swage)			
LIFELINE (rope or wire rope)			
Cuts			
Fraying			
Excessive Wear			
Impact Indicator			
Kinks			
Caging			
Broken Strands or Fibers			
Melting			
SHOCK PACK (if supplied)			
Integrity of Cover			
Signs of Deployment			
Signs of Damage			
LABELS & MARKINGS			
Legible Label			
Appropriate ANSI/CSA/OSHA Markings			
Date of First Use			



Notes:

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Month	Inspector	Date of Inspection	Pass or Fail
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Notes:

Location:		Date:	
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Fall Hazard Identification Checklist			
Hoist Areas	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Hoists	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Formwork	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Ramps	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Runways	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Excavations	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Dangerous Equipment	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Overhand Bricklaying	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Roof Sheathing	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Roofing	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Wall Openings	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Falling Objects	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

Alternative Fall Protection Systems Checklist			
Alternative Fall Protection			
When it is used	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Controlled Access Zones			
Who can enter	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Demarcation procedures	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Warning line systems	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Safety Monitor System			
When it is used	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Fall Protection Plan			
Procedures	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Role of each Employee	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

Conventional Fall Protection Systems Checklists					
	Installation	Maintenance	Inspection	Disassembly	N/A
Guardrails	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PFAS (Personal Fall Arrest Systems)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety Nets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Covers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Print Name:	
Signature:	



Lanyard Inspection Form

Manufacturer:		Asset #:	
Model:		Company:	Quality Electric
Description:		Name of Inspector:	
Serial:		Signature:	
Lot:		Date of Inspection:	
Date of Manufacture:		In Service Date:	

	P	F	Note #
WEBBING			
Broken, Missing, or Loose Stitching			
Termination (stitch or splice or swage)			
Webbing Length			
Cuts			
Burns			
Holes			
Deterioration			
Paint Damage			
SHOCK PACK			
Integrity of Cover			
Signs of Deployment			
Signs of Damage			
CONNECTORS & D-RINGS			
Function of Connector Locking Gate			
Body of Hook or Rivets			
Corrosion			
Pitting			
Nicks			
LABELS & MARKINGS			
Legible Label			
Appropriate ANSI/CSA/OSHA Markings			
Date of First Use			



Notes:

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Month	Inspector	Date of Inspection	Pass or Fail
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Notes:



Self Retracting Lifeline Inspection Form

Manufacturer:		Asset #:	
Model:		Company:	Quality Electric
Description:		Name of Inspector:	
Serial:		Signature:	
Lot:		Date of Inspection:	
Date of Manufacture:		In Service Date:	

	P	F	Note #
HOUSING			
Anchorage Point			
Nuts or Bolts or Rivets			
Swivels			
Evidence of Damage			
CONNECTORS & D-RING(S)			
Function of Connector Gate & Lock			
Impact Indicator			
Body of Hook or Rivets			
Corrosion			
Pitting			
Nicks			
LIFELINE (Webbing, Cable, Synthetic)			
Termination (stitch or splice or swage)			
Cuts			
Fraying			
Excessive Wear			
Cable Separating			
Entire Length Retracts Smoothly			
Reserve Lifeline Deployed			
SHOCK PACK			
Integrity of Cover			
Signs of Damage			
Impact Indicator			
Lanyard or Webbing Length			
LABELS & MARKINGS			
Legible Label			
Appropriate ANSI/CSA/OSHA Markings			
Date of First Use			
Last Manufacturer Recertification			

Lifeline Material:

WEB ☐

STAINLESS STEEL ☐

GALVANIZED STEEL ☐

Length: _____



Notes:

Month	Inspector	Date of Inspection	Pass or Fail
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

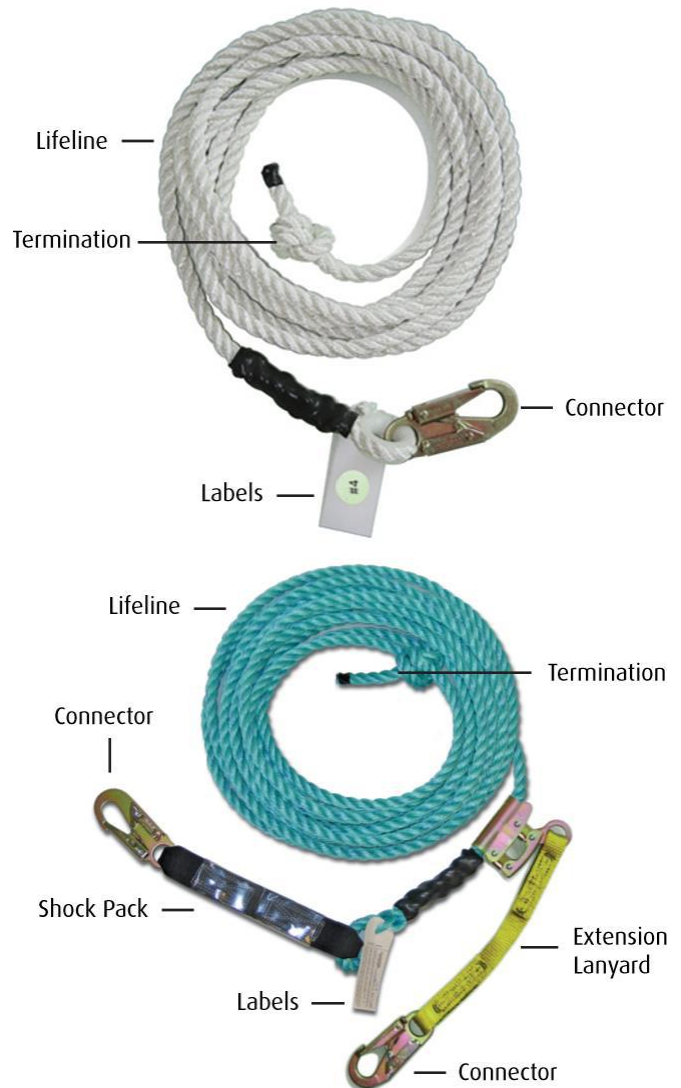
Notes:



QUALITY ELECTRIC INC.

Vertical Lifeline Inspection Form


	P	F	Note #
CONNECTORS			
Function of Connector Locking Gate			
Body of Hook			
Corrosion			
Pitting			
Nicks			
TERMINATION			
Broken, Missing, or Loose Stitching			
Termination (stitch or splice or swage)			
LIFELINE (rope or wire rope)			
Cuts			
Fraying			
Excessive Wear			
Impact Indicator			
Kinks			
Caging			
Broken Strands or Fibers			
Melting			
SHOCK PACK (if supplied)			
Integrity of Cover			
Signs of Deployment			
Signs of Damage			
LABELS & MARKINGS			
Legible Label			
Appropriate ANSI/CSA/OSHA Markings			
Date of First Use			



Notes:

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Month	Inspector	Date of Inspection	Pass or Fail
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
Notes:			

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FLOOR HOLES AND OPENINGS			Next Review Date:	01/01/2023
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Section 32: Floor Holes and Openings

A. Policy Statement

The purpose of this policy is to establish minimum policy requirements for protecting holes and openings in floors, roofs, and other walking/working surfaces:

- Workers falling through openings
- Materials and objects falling through openings onto workers below

B. Definitions


1. **Floor Hole** - Any gap or void measuring 12" or less at its largest dimension, but more than 1" at its smallest dimension, in any floor, roof or platform (walking working surface) through which materials, but not persons may fall. Examples include pipe opening, slot type opening, etc.
2. **Floor Opening** - Any gap or void measuring 12" or more at its smallest dimension in any roof, floor, or platform (+walking working surface) which a person could fall
3. **Floor Hole/Opening Covers** - Floor hole/opening covers are used to protect holes and openings in floors, platforms, and walking/working surfaces. These covers must be capable of supporting two times the potential load of which they may be subjected. The cover must completely overlay the hole/opening and be secured against accidental displacement. Covers must be marked in hi-vis color (Orange).

HOLE COVER – DO NOT REMOVE (CUBIERTA DE HOYA – NO REMOVER)

C. Standards for Floor Holes and Openings

1. Cover or protect floor holes and openings immediately and / or as soon as they are created.
2. All floor holes greater than 1" must be covered or protected to prevent falling objects.
3. At a minimum, floor covers shall be constructed out of ¾ inch exterior grade plywood or the equivalent. Manufactured floor covers meeting the strength requirements of intended loads may be used.
4. Covers must completely cover the opening and be constructed so they will effectively support two times the weight of employees, equipment and materials that may be imposed on cover at any one time. Where floor covers cannot be constructed to accommodate such equipment or materials, curbs, or bumpers of sufficient strength with a minimum of 3 inches in height shall be installed around the opening to prevent access unless cable guardrails and toe boards are installed.
5. All types of floor cover in excess of 1'x1' will extend a minimum of 4 inches over the edge of the floor opening being covered.
6. Covers not supported on all sides or intended for other than foot traffic shall be designed by a qualified person.
7. When equipment such as an aerial/scissor lift is operating near an opening or drop in floor elevation, a rail or bumper block of sufficient strength (i.e. min. bumper block: 2- 2x4's or equivalent) must be installed to prevent the equipment from accidentally driving off the edge.
8. Covers must be marked in hi-vis color (Orange).

HOLE COVER – DO NOT REMOVE (CUBIERTA DE HOYA – NO REMOVER)

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D. 1'x1' Floor Hole or Less

1. Must meet the General requirements, e.g. covered / protected, and secured from accidental displacement by wind, equipment, or employee.
2. Floor cover must meet 2x intended load requirements.
3. Floor hole covers smaller than 1'x1' or 144" can be secured by cleating the underside.
4. Floor holes narrower than 6" in one direction may exceed the 144" rule.

E. Greater than 1'x1' / 144" and less than 40" Opening at narrowest dimension

1. Floor openings greater than 1'x1' (144") must include a cover which is mechanically secured, anchored or fastened to avoid accidental displacement by use of sufficient bracing nails or screws. (Do not use double headed nails.)
2. In cases where the floor opening is greater than 12", but equal to or less than 24" at its narrowest dimension, only one support brace will be required to extend the entire length of the floor opening cover.
3. All floor openings 40" or less at their narrowest dimensions are to be covered and secured using 3/4" exterior grade plywood or the equivalent. Note, for normal foot traffic, a 4x8 sheet of 3/4" exterior grade plywood is sufficient to cover a 3'x7' floor opening.

F. 40" Opening or Greater

1. When a floor opening exceeds 40" at its narrowest dimension, it will require temporary flooring of sufficient strength for the anticipated loads. Temporary flooring can be solid 2-inch lumber positively secured to prevent displacement from personnel. Temporary flooring can be 3/4" exterior-grade plywood as long as it is properly supported. In any case, the cover shall be designed by a qualified person.
2. Stairwells, elevator shafts, chases and similar large type openings must be decked solid on every other floor unless alternate protection is approved by the Safety Director.

G. Floor Cover Removal

Whenever any type of floor cover in this procedure must be removed, the employee(s) removing it must have authorization from their supervisor in addition to the following:


1. Any Floor Cover over 1'x1' in size shall require a Supervisor's approval. The Supervisor must inspect, authorize, and approve the removal and protections required.
2. If a Floor Cover must be removed for an extended period of time, a substantial guardrail system must be erected and anchored to afford adequate fall protection.

H. Floor Cover Modifications


If floor covers must be modified, or cut, to accept piping, conduit, etc., the Supervisor responsible for the work must be contacted to verify compliance with safety regulations.

I. Inspection / Verification Process

1. An assessment and/or survey shall be made (keep current) using available resources, such as: BIM modeling, drawings, etc.

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2. Regular inspections shall be made by the project team to ensure all existing and potential floor hole and openings + covers are positively identified, marked, and meet the intent of this procedure. The expectation of “regular” inspections is 1x per week and anytime conditions change.

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Section 33: Fire Protection and Prevention

A. Policy Statement


The purpose of this policy is to outline Fire Prevention, Hot Work procedures and Temporary Heat requirements to be followed on each JE Dunn project. This program applies to all Trade Partners, lower tier Trade Partners, and vendors.

B. General Requirements

1. Operations is responsible for the implementation of the project fire protection program.
 - a) Check with local fire marshal regarding compliance with NFPA requirements including temporary standpipes.
 - b) If temporary standpipes are required, the standpipes shall be installed when the progress of construction is not more than 35 feet in height above the lowest level of the fire department access. Standpipes shall be provided with fire department hose connections and outlets at accessible locations adjacent to usable stairs. The standpipe system shall be extended as construction progresses to within one floor of the highest point of construction having secured decking or flooring. Each floor shall be provided with a 2½-inch valve outlet for fire department use. Where construction height requires installation of a Class III standpipe, fire pumps and water main connections shall be provided to serve the standpipe.
2. Trade Partners are to provide the appropriate equipment, manpower, training, and supervision needed to accomplish fire protection at the jobsite. Equipment may include; fire extinguishers, fire blankets, fire watch, water pump sprayer, laser thermometer.
3. Each Trade Partner's Foreman is responsible for:
 - a) Providing and ensuring that the fire prevention procedures are being used
 - b) Training all workers on the proper installation, use, maintenance, inspection, and limitations of their fire protection equipment

C. Fire Extinguishers

1. All site workers must be trained in the proper use, maintenance, and limitations of fire extinguishers.
2. Extinguishers will be inspected monthly or more often when circumstances warrant. Additionally, all extinguishers will be certified annually. The inspections should be documented on the extinguisher and should include:
 - a) A visual inspection of the extinguisher components such as the extinguisher housing, nozzle, pin, handle, label, and inspection tag
 - b) Verify that the extinguisher is charged with the needle in the green
 - c) Each extinguisher will have a durable tag or sticker securely attached showing the signature and company that completed the previous yearly inspection
 - d) Extinguishers that show any sign of damage or defects must be removed from service, placed in a designated location, and replaced until serviced and re-inspected by an authorized provider
3. A fire extinguisher rated not less than 2A 10B: C, shall be provided for each 3,000 square feet of the protected building area. Travel distance from any point of the protected area to the nearest fire extinguisher shall not exceed 75 feet.
4. Any flammable or combustible liquid storage, shall have a fire extinguisher, rated no less than 20-B: C.

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5. Fueling areas shall be provided with at least one fire extinguisher having a rating of not less than 20-B:C located so that an extinguisher will be no less than 25 feet or more than 75 feet from each pump, dispenser, underground fill pipe opening, and lubrication or service area.
6. A fire extinguisher rated not less than 2A 10B: C, should be provided for each 3,000 square feet of the protected building area or major fraction thereof. Travel distance from any point of the protected area to the nearest fire extinguisher shall not exceed 75 feet.
7. One or more fire extinguishers should be provided for each floor. In multi-story buildings, at least one fire extinguisher should be posted adjacent to the stairway.
8. Fire extinguishers should be conspicuously located and readily accessible at all times.
9. They are subjected to monthly visual inspections and an annual maintenance check.
10. Carbon tetrachloride and other toxic vaporizing liquid fire extinguishers are prohibited.
11. Each fire extinguisher is considered professional equipment and its effectiveness in protecting property depends on knowing: What it can and cannot do how to use it, where to install it, how to maintain it, knowledge of classes or types of fires, what class, or classes of fire the extinguisher is capable of extinguishing.
12. Training should be provided to familiarize employees with the general principles of fire extinguisher use and the hazards involved in incipient stage firefighting. Training will be conducted prior to initial assignment and at least annually thereafter.

CLASSES OF FIRES

1. Class A-Fires in ordinary combustible materials (wood, paper, cloth)
2. Class B-Fires involving flammable liquids, gases and greases.
3. Class C-Fires which involve energized electrical equipment.
4. Class D-Fires in combustible metals.


D. Flammable and Combustibles Storage and Handling

1. General Information

A flammable liquid is defined as any liquid whose flash point, the temperature at which vapors can ignite when there is a spark, flame, or static electricity, is below 100 degrees F. At higher concentrations and higher temperatures the vapors of the liquid can ignite or explode without a spark. Most flammable liquids are volatile, evaporate quickly and reach a concentration in the air that could lead to an explosion. Some highly volatile flammable liquids are gasoline, acetone, and alcohol. Containers with these flammable liquids must be marked with a red label indicating the hazard. To work safely with flammable liquids the three potential hazards: temperature, concentration of vapor and ignition sources must be controlled. A combustible liquid is defined as any liquid whose flash point is at or above 100 degrees F.

2. General Storage Requirements:


- a) It shall be designed that it will safely relieve internal pressure when subjected to fire exposure.

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- b) Areas where flammable and combustible materials are stored shall be kept free of trash, weeds and debris, or other combustible material.
- c) Areas where flammable and combustible liquids are stored shall be marked with signs that read: Flammable – No Smoking or Open Flame within 50 feet.
- d) Appropriate fire extinguishers shall be mounted within 50 feet of outside areas containing flammable liquids and within 10 feet of any inside storage area for such materials.
- e) Flammable or combustible liquids shall not be stored in areas used for exits, stairways, or normally used for the passage of people.
- f) Flammable liquids shall be kept in closed containers when not in use.
- g) All equipment engines shall be shut off prior to being fueled.
- h) Only approved metal fuel containers with flash arrestors and self-closing lids are permitted.
- i) Smoking shall be prohibited when fueling equipment.
- j) All spills of flammable or combustible liquids shall be cleaned up promptly.
- k) Flammable liquids shall be stored separately from other chemicals, especially reactive such as oxidizers
- l) All containers containing a flammable or combustible liquid shall be labeled correctly and clearly.

3. Indoor Storage:

- a) Inside storage rooms for flammable and combustible liquids shall be of fire resistive construction, have self-closing fire doors at all openings, 4-inch sills or depressed floors, a ventilation system that provides at least six air changes within the room per hour, and electrical wiring and equipment approved for Class I, Division 1 locations.
- b) No more than 25 gallons of flammable or combustible liquids shall be stored in a building, outside of an approved storage cabinet.
- c) No more than 60 gallons of flammable or combustible liquids shall be stored in any one storage cabinet. No more than three storage cabinets may be located in a single storage area.
- d) Storage in containers outside buildings shall not exceed 1,100 gallons in any one pile or area. The storage shall be graded to divert possible spills away from building or other exposures or shall be surrounded by a curb or dike. Storage areas shall be located at least 20 feet from any building and shall be free from weeds, debris, and other combustible materials not necessary to the storage.
- e) A 1-hour fire resistant barrier must segregate non-compatible materials that may create a fire hazard.
- f) Clearance shall be maintained around light and heating units to prevent ignition.
- g) No more than 60 gallons of flammable or 120 gallons of combustible liquids shall be stored in any one cabinet. No single storage area shall have more than three storage cabinets.
- h) Cabinets shall be conspicuously labeled, “Flammable – Keep Fire Away”.
- i) Fuel shall not be stored within 20 feet of a building.
- j) Drums containing Class I flammable liquids shall be grounded and bonded before and during dispensing into containers.
- k) Above ground storage tanks shall have spill containment.
- l) Storage tanks shall be protected from vehicle traffic.
 - All storage tanks shall be vented to prevent the development of excessive vacuum or pressure as a result of filling, emptying or atmospheric changes.

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- All storage tanks shall have an automatic shut off on dispensing hoses.

m) All flammable or combustible liquid storage tanks shall be equipped with emergency venting that will relieve excessive internal pressure caused by fire exposure.

4. Liquid Petroleum (LP) and Fuel Gas:

- LP bottles must be stored outside or in a well-ventilated area. Storage areas must be protected from equipment and other activities that could damage the bottles.
- Storage outside of buildings, for containers awaiting use, shall be located from the nearest building or group of buildings, in accordance with the following


Liquid Petroleum and Fuel Gas Storage Distance Requirements

Quantity of LP – Gas Stored	Distance (Feet)
0 – 500 pounds	0 feet
500 – 999 pounds	10 feet
1,000 – 5,999 pounds	20 feet
6,000 pounds or greater	25 feet

- Danger “NO Smoking” signs should be posted in bulk LP gas storage areas.
- In locations where tanks may be exposed to crane loads or other potential falling objects, overhead protection designed for the exposure, must be provided.
- Gasoline, diesel and other flammable or combustible fuels should not be stored with LP tanks.

5. LP bottles <100 Pounds:

- Bottles must be secured in an upright position at all times. Three bottles may be tied together to accomplish this requirement.
- Bottles may not be located within exits, stairways, or other areas that may affect safe egress.
- All bottles must have a hackney collar installed.
- O rings, hoses, couplings, regulators, and similar devices must be inspected daily. Leaking or damaged devices may not be used.
- Bottles with dents, weld burns or other damage shall not be used.
- Bottles must be stored and used in the upright position.
- No more than three (3), 100-pound tanks may be connected via manifold.
- When multiple manifolds are used on the same floor, such manifolds must be separated by at least 20 feet.
- Torches or other heat producing devices may not be used to thaw bottles.
- Bottles must be a minimum of 6 feet from heaters.
- Bottles may be tilted and rolled on end for short distance. A cart or dolly should be used for long distances to avoid muscular skeletal or back injuries.
- When dollies or carts are used the bottles must be secured in an upright position.
- Bottles may not be hoisted by choking the bottle or the hackney collar.
- Material baskets that allow the bottles to be supported in an upright position may be used to hoist bottles.
- When transporting bottles on any hoist, smoking is prohibited.

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6. Large LP tanks >1,000 gallons:

- When tanks measuring 2,000 gallon (cumulative) or more are placed at a single site, the fuel gas supplier and the regional safety department should be contacted to help facilitate the safe placing and use prior to placing the tanks.
- Hoses from large tanks must be placed in areas where they will not come into contact with equipment or construction activities that could result in damage. Hoses should be run overhead when it is safe to do so.
- Hoses must be placed away from ignition and heat sources including temporary lighting overhead electrical installations.
- Hot work may not take place near LP gas hoses or tanks.
- Fuel gas hoses, regulators and other accessories shall have a rated working pressure of 250 psig and be approved for LPG use.

7. LP Gas System Safety Devices and Design Recommendations:

- Systems must be designed by a competent person.
- Every container and shall be provided with one or more approved safety relief valve(s) or device(s).
- 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 such that full required capacity flow through the safety relief device is always afforded.
- In addition to the standard fire protection requirements an additional 20ABC fire extinguisher per temporary heater is required.
- Concrete blankets, plastic sheeting and other material that could blow into heaters must be secured or weighted down.
- Trash and other combustibles must not be allowed to accumulate in areas where heaters are being used.
- LPG is heavier than air. Any significant leak will move downwards and stay on the ground. It will accumulate in any low-lying area such as depressions in the ground, drains or pits. If a leak is detected the area should be ventilated and heat sources extinguished.


E. Fuel or Lubricant Spill

The best way to reduce the possibility of a fuel or oil spill is to take preventative steps to minimize the chance that a spill will occur. Preventative steps include: (1) proper storage and handling of fuel and oils and; (2) regular maintenance and inspection of equipment. In spite of taking these steps to minimize spills, accidents do occur. Even though most spills tend to happen unexpected, you should be prepared to handle a fuel or oil spill at any time during the year. Should an accidental spill occur, be prepared to respond quickly. Clean-up preparedness requires:

- prior training in clean-up procedures;
- immediate availability of clean-up (spill kit) materials. Following the recommended practices will insure safety and reduced environmental risk.

a) Recommended Practices

Equipment Maintenance and Preventative Measures:

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Always use correct lubricants, fuels and fluids in all equipment. Machinery subjected to high use should have annual replacement of hoses, fittings, seals, and hydraulic lines. Machinery subjected to low annual use should have components changed every 3 years. Pay particular attention to proper installation of seals, fittings, etc. Consult an equipment/parts supplier to determine the appropriate maintenance schedule for equipment use. During Weekly vehicle and equipment inspections check all fuel, oil, or fluid-containing fittings, hoses and seals for leaks. Also during machinery operation watch for leaks. Use DRYSORB, portable containment pad or construct a temporary earthen dike around equipment that is found leaking. In the event of a fluid leak remove the equipment from the site as soon as possible. Any fluid that has leaked should be dug up from the soil that has spilled on the ground, removed from site and disposed of properly. As soon as possible contact shop to notify them of leaking equipment to arrange for repair. In the event of a hose rupture, turn equipment off to stop the flow of oil to reduce spill. Start to contain the leaked fluid as soon as possible.

b) *Spill Clean Up Materials and Supplies*

A supply of fuel/oil clean-up materials should be readily available at all times. A well-stocked kit contains:

- 1) ABSORBENT MATERIALS to clean up the fuel or oil;
- 2) a CONTAINER to store soiled materials prior to disposal;
- 3) ADDITIONAL SUPPLIES to aid in the clean-up process and;
- 4) an ACTION PLAN. Dispose of contaminated absorbent material after use and purchase a new clean absorbent material for the spill kit. Have a sufficient quantity of absorbent materials on hand to absorb the fuel or oil that can leak from a truck or piece of equipment. The absorbent material must come in direct contact with the oil or fuel, so placement of the absorbent material is critical. Hydrophobic absorbent materials are best for fuel or oil spills because they absorb only fuel or oil, not water. Loose granular or particulate absorbents work faster than pillows or pads. Promptly remove soiled clean-up materials. Spill kit containers will be rigid plastic barrels or buckets. The container serves both for storage of clean materials and for disposal of soiled materials.


c) *Action Plan*

1. At first sign of leaking stop equipment and assess the situation.
2. After finding the source of the leak, if possible, stop the leak from continuing.
3. If leak cannot be stopped do what can be done to mitigate the leak and contain the fluid.
4. Call the shop to notify Jeremy or Carl of the situation and arrange for the equipment to be removed from the site for repair.
5. After spill is stopped and equipment is removed to shop for repair, remove all spilled fluid from location by means required and dispose of offsite.

Examine the spill kit at least annually, but especially prior to start of work on any new job site. After any spill event restock the kit with material used so it is ready to be used again.

F. Heaters

1. A fire watch is required when using temporary heat unless a variance is approved by Safety. At least one competent person must be present to maintain and inspect all heating units. The fire watch must also inspect

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the project for potential fire hazards relating to the use of heaters. A full-time fire watch is not required when using steam heaters that are tapped into existing building systems.

2. Heaters must be inspected before use and following any incident that may have resulted in damage to the heater. Damaged heaters may not be used.
3. The following OSHA requirements regarding minimum clearances must be maintained:

Minimum Heater Clearances

Heater Appliances	Minimum Clearances (Inches)		
	Sides	Rear	Chimney Connector
Room Heater (Circulating Type)	12 inches	12 inches	18 inches
Room Heater (Radiant Type)	36 inches	36 inches	18 inches

4. Gasoline, diesel and other flammable or combustible liquids shall not be placed near heaters.
5. Housekeeping must be maintained throughout the day. Trash shall not be allowed to accumulate.
6. Trash or combustible material such as wood, cardboard and insulation must not be stored near heaters.
7. Fuel fired heaters that produce Carbon Monoxide gas must be used only in well-ventilated areas.
8. Carbon monoxide levels must be monitored when using equipment indoors or in any area where ventilation is restricted.
9. LP Heater Use:
 - a) Heaters may not be directed at LPG bottles.
 - b) Cylinder valves must be closed when heaters are not in use.
10. Electrical Heaters:
 - a) A qualified electrician must install electrical heaters when connections must be made within electrical boxes.
 - b) Heaters must have a three-wire grounding type plug.
 - c) Electrical cords must not be placed where they pose a trip hazard or where they may be damaged by equipment and construction activities.
11. Training:
 - a) All employees should be trained in the care, maintenance and handling of bottles and heaters.
 - b) All employees should be trained in the use of fire protection equipment and emergency fire procedures.
 - c) Employees who act as fire watch must be familiar with the crisis management, emergency action, and emergency contact list for the project.

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Section 34: Hazard Communication (Hazcom and SDS)

A. Policy Statement

To protect workers from hazards presented by hazardous chemicals in the workplace, Quality Electric has developed a comprehensive hazard communication program which aligns with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). This program includes a written hazard communication program for the workplace, a list of all hazardous chemicals present at the workplace, proper labeling of all containers of chemicals in the workplace, a file of all Safety Data Sheets (SDS) maintained at the workplace and provide all employees with information and training on all hazardous chemicals at their workplace. This program supports compliance with the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard as found in 29 CFR 1910.1200. This program applies to all company employees.

B. Definitions

1. **Container** - any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers
2. **Label** - an appropriate group of written, printed or graphic information elements concerning a hazardous chemical that is affixed to, printed on, or attached to the immediate container of a hazardous chemical, or to the outside packaging
3. **Pictogram** - a composition that may include a symbol plus other graphic elements, such as a border, background pattern, or color, that is intended to convey specific information about the hazards of a chemical. Eight pictograms are designated under this standard for application to a hazard category
4. **Precautionary statement** - a phrase that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical, or improper storage or handling
5. **Signal word** - a word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. "Danger" is used for the more severe hazards, while "warning" is used for the less severe.
6. **Safety data sheet (SDS)** - written or printed material concerning a hazardous chemical

C. Hazard Determination


The Company will not make a determination if a chemical is hazardous. They will rely on the evaluation performed by the manufacturer or material supplier and follow the recommendations from the Safety Data Sheets (SDS).

D. Chemical Lists

A list of all chemicals used or stored in the workplace will be maintained and upgraded as needed. This list will be maintained and kept with the SDS.

E. Safety Data Sheets (SDS)

1. Copies of the SDS for materials or chemicals used are available upon request and in a specified location specified by management.
2. The Hazard Coordinator will be responsible for obtaining and maintaining the data sheet system for Quality Electric.

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- The Hazard Coordinator will review incoming data sheets for new and significant health/safety information. The Hazard Coordinator will see that any new information is passed on to the affected employees.
- SDS will be reviewed for completeness by the Hazard Coordinator.
- SDS's will be made available to all employees and Supervisor's for review.
- If a SDS cannot be found for a chemical or product, call the Safety Department for assistance.
- The Hazard Coordinator shall request for SDS's on all purchases. SDS's shall be forwarded to the safety department. If SDS's are not sent with the shipment, a letter shall be sent to the manufacturer requesting the SDS. A file shall be maintained for follow-up on SDSs request letters.

F. Labels and Other Forms of Warning

It is the policy of Quality Electric that no container of hazardous substances will be released for use until the following information is verified:

- Containers are clearly labeled as to the contents.
- Appropriate hazard warnings are noted.
- The name and address of the manufacturer are listed.

The responsibility has been assigned to the coordinator. To help ensure that employees are aware of the hazards of material used in their work areas, it is our policy to label all secondary containers.


The supervisor in each department will help ensure that all secondary containers are labeled with either an extra copy of the original manufacturer's label or with generic labels which have a block for identity and blocks for the hazard warning.

Guidelines:

- Each container, regardless of size, shall be labeled, tagged, or otherwise marked to show the identity of the hazardous chemicals and the appropriate warnings.
- Field supervisors shall be responsible for seeing that all portable containers used in their work areas are labeled with identity and hazard warnings. If the chemical is transferred to another container, that container must be properly labeled with its contents and appropriate hazards. For help with labeling, please contact the safety department.
- All incoming materials shall be checked for the following:
 - Name of the chemical/product identifier
 - Signal word
 - Pictograms
 - Appropriate hazard warnings
 - Precautionary statement
 - Name and address of the responsible party

G. Employee Training and Other Information

- The Superintendent shall be responsible for ensuring that every employee is trained in the following subjects:
 - Explanation of the Hazard Communication Standard, including their rights under the regulations.

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- Introduction to the written Hazard Communication Program.
- Availability and interpretation of Hazard Communication Program and SDS.
- Labeling procedures and how to interpret them.
- Physical and health hazards of chemicals in the workplace.
- Proper protective measures to undertake when exposed to the hazard.
- Where and how to obtain additional information.
- The safety department, upon request, will assist the Superintendent in the training of employees.

2. Posters shall be placed on site informing workers of the location of the written program and the SDS's. The superintendent shall be made aware of the location of that program. If Quality Electric employees are potentially exposed to chemicals used by other trades, they shall be trained in the hazards associated with those chemicals.


H. Process Safety Management

1. Purpose

The purpose of Process Safety Management is to prevent or minimize consequences of catastrophic releases of toxic, reactive, flammable or explosive chemicals in various industries such as Refineries, Manufacturing, etc.

Quality Electric is required to recognize and participate as a contract employer at client locations with PSM Programs in place. Quality Electric as a contractor has certain obligations to fulfill in order to comply with established PSM programs. Contract employer responsibilities are as follows:

- Quality Electric has a responsibility (as the contractor) to train all employees necessary to perform their job. Quality Electric shall assure that each contract employee is trained in the work practices necessary to safely perform his/her job.
- Quality Electric (the contract employer) shall assure that each contract employee is instructed in the known potential fire, explosion or toxic release hazards related to his/her job and the process and the applicable provisions of the emergency action plan. Quality Electric shall assure that each contract employee is instructed in the known potential fire, explosion, or toxic release hazards related to his/her job and the process, and the applicable provisions of the emergency action plan.
- Training shall be documented. Records which contain the identity of the contract employee, the date of training and the means used to verify that the employee understood the training must be maintained.
- Employee Evaluation Program – All employees will be evaluated to ensure required training, participation and knowledge of the client's PSM requirements are completed and documented.
- Quality Electric shall assure that each contract employee follows the safety rules of the facility including the safe work practices required with 1910.119(f)(4).
- Quality Electric (the contract employer) shall advise the host employer of any hazards found or unique hazards presented by the contract employer's work. Quality Electric shall advise the host employer of any unique hazards presented by the contract employer's work, or of any hazards found by the contract employer's work.

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- Trade secret information and confidentiality of trade secret information - All contract employers must respect the confidentiality of trade secret information when the process safety information is released to them.

2. Process Safety Information

Quality Electric employees shall participate in all as directed client PSM requirements, including:

Employee Participation	Process Safety Information (PSI)
Process Hazards Analysis (PHA)	Operating Procedures
Training / Employee Evaluation	Contractors
Pre – Startup Safety Review (PSSR)	Mechanical Integrity
Hot Work Permits	Management of Change (MOC)
Incident Investigation	Emergency Planning and Response
Compliance Audit	Trade Secrets

3. Quality Electric Duties

The host employer's safe work practices must be followed during operation such as lockout/tagout, confined space entry, opening process equipment or piping and control over entrance to facility. Quality Electric employees shall abide by the host employers safe work practices during operations such as lockout/tagout, confined space entry, opening process equipment or piping and controls over entrance to facility.

To comply with 1910.119(f)(4) Quality Electric employees are required to complete all required documentation for any permit-required activities.

Hot work permits and hot work shall not be performed until hot work permit is obtained from the employer. Contract employees shall not perform hot work until a hot work permit is obtained from host employer. The permit shall document that the fire prevention and protection requirements in have been implemented prior to beginning the hot work operations.


In the event Quality Electric becomes the sole operator of a facility, the existing PSM Program for that facility may be amended and adopted or, in the absence of a PSM Program, an assessment will be required prior to assuming operating responsibilities.

4. Reporting Incidents and Near Misses

Quality Electric employees must immediately report all accidents, injuries and near misses. An incident investigation shall be initiated within 48 hours. Resolutions and corrective actions must be documented and maintained 5 years.

I. Work Performed in Other Facilities

- If work is performed in an active facility, that owner has a responsibility to provide Quality Electric the following:

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- The facilities Hazard Communication Program
 - A list of hazardous materials we may encounter along with the proper SDS's
 - The system they use for identifying chemicals, pipes, tanks, etc.
2. If we encounter materials, tanks, pipes, vessels, etc. that Quality Electric is unaware of the contents, the owner and/or his representative will be notified immediately to provide the needed information before work resumes.

J. Non-Routine Tasks

Occasionally, workers are required to perform tasks that would be considered non-routine. Prior to starting work on such projects, each affected employee will be given information by their supervisor about hazards to which they may be exposed during such an activity. If a worker is required to perform a task that would be considered non-routine, the Supervisor shall ensure that:

1. The worker is trained in the hazards associated with this task.
2. The personal protective equipment available is sufficient for the potential hazards encountered.
3. All SDS's associated with the work are available and precautions followed.

If anyone has questions or suggestions about this plan, contact the Hazard Coordinator. The plan will be monitored by the Hazard Coordinator or the Personnel Manager to help ensure that the policies are carried out and that the plan is effective.

Quality Electric recognizes the need for a written Hazard Communication Program to meet its specific business needs. After thorough consideration, Quality Electric elects to adopt and implement the above Hazard Communication Program. This program will become effective on the following date:

Quality Electric

Date

Hazard Coordinator

Date

K. Annexes

1. Forms
 - Hazard Communication / Worker – Right – To – Know Regulations Member / Employee Training Acknowledgment
 - Hazcom Compliance Checklist
 - Hazcom Employee Training Checklist

Hazard Communication / Worker - Right - To - Know Regulations Member / Employee Training Acknowledgment

This document signifies that you have received training regarding the types of chemicals present on the jobsite and that you understand that you have the right to continue to obtain information on these chemicals should you so desire.

I, _____, have recieved training regarding the chemicals used on the jobsite, including their properties, use of safety equipment, proper handling techniques, emergency response prcedures and potential health effects.

Employee

Date

Hazard Coordinator

Date

HAZCOM Compliance Checklist

Employee Name:	
Department:	
Date:	

- Have you designated a HAZCOM coordinator? ☐ Yes ☐ No
- Have you made a list of all hazardous chemicals? ☐ Yes ☐ No
- Is there clear communication between purchasing and receiving departments and HAZCOM coordinator? ☐ Yes ☐ No
- Are all containers of hazardous substances labeled? ☐ Yes ☐ No
- Do you have up-to-date SDS for every hazardous chemical? ☐ Yes ☐ No
- Have you contacted appropriate supplier for missing or incomplete SDS? ☐ Yes ☐ No
- Have you established a training program? ☐ Yes ☐ No
- Have you identified and trained all employees? ☐ Yes ☐ No
- Have you established a procedure monitor who has received training? ☐ Yes ☐ No
- Are your SDS accessible to all employees? ☐ Yes ☐ No
- Have you assembled a written HAZCOM Plan? ☐ Yes ☐ No
- Do other on site employers know your HAZCOM program? ☐ Yes ☐ No

Employee Signature

Job Position / Title

HAZCOM Employee Training Checklist


Employee Name:	
Department:	
Training Date:	

- About the HAZCOM Standard? ☐ Yes ☐ No
- Who the HAZCOM Coordinator is? ☐ Yes ☐ No
- Where the written communication program is? ☐ Yes ☐ No
- About the chemical hazards they are exposed to? ☐ Yes ☐ No
- How to read and understand warning labels? ☐ Yes ☐ No
- The locatin of the SDS forms? ☐ Yes ☐ No
- How to read and understand SDS forms? ☐ Yes ☐ No
- The safety precautions for handling chemicals? ☐ Yes ☐ No
- How to detect presence or release of chemicals? ☐ Yes ☐ No
- Signs of overexposure? ☐ Yes ☐ No
- Emergency and first aid procedures? ☐ Yes ☐ No
- Their responsibilities and involvment with compliance ☐ Yes ☐ No

Employee Signature

Orientation Conducted By

Job Position / Title

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Section 35: Housekeeping

A. Intent Statement

The intent of this section is to define expectations for project housekeeping.

B. General Requirements

1. To reduce the risk of fire, slip, trip and fall hazards, good housekeeping habits must be maintained daily.
2. A cord management plan should be developed and reviewed with the safety department.
3. Operations will develop a cord management plan that addresses electrical cords, hoses, welding leads to prevent slips, trips, and falls.
4. All stripped lumber shall be safely stacked after nails have been removed or bent over.
5. All stairways, scaffolds, ramps, platforms, walkways, and work areas shall be kept clear and clean of trash and material.
6. Supervisors shall provide trash receptacles in their immediate work areas and in lunch and break areas
7. Round or rolling stock such as pipe, rebar, conduit, and all-thread scraps and equivalent, must be immediately disposed of properly and not allowed to lie on the floor.
8. All combustible scrap and debris shall be removed from project daily. Methods include:
 - Trash chutes
 - Trash carts
 - Rolling containers
 - Cranes
 - Material hoists
9. Separate closed containers shall be provided for any generated waste containing paint-soaked combustibles, oily or solvent soaked rags. This material shall be removed from the project daily.
10. Trash carts used to fly debris off the building shall not have the debris stacked any higher than the sides.
11. Dumpsters shall have the end door open for employees to dump trash or a platform shall be built for safe access.

C. General Waste Management


1. Purpose

The purpose of this waste management strategy was developed to provide guidance and requirements necessary for efficient, effective, and compliant waste management during construction and operations.

2. Scope

This procedure applies to all Quality Electric employees. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Quality Electric employees and contractors and shall be used on owned premises, or when an operator's program does not exist or is less stringent.

3. Procedure

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The Supervisor or other designated person in his or her absence is accountable for managing waste and disposition of wastes generated at the work site.

4. Waste Elimination

Each work site will estimate the waste, trash and/or scrap that will be generated and taken into consideration prior to work being performed so the need for containers and waste removal, if necessary, can be determined.

Each site will utilize the following for planning of dumpster scheduling and total non-hazardous dry waste material. These figures do not include neither recycling nor waste minimization efforts and reflect no use of an incinerator. Dumpster figures are based on a 40-yard container and can be modified if another size is used by changing the table below.

SAMPLE ONLY - SOLID WASTE

	Number of Employees	10	25	35	50	100
<u>Total Estimated Square Feet of Waste (@ 0.675 cu ft per person daily)</u>						
Daily		7	17	24	34	68
Weekly		47	118	165	236	473
Monthly (4.33 wks)		205	511	716	1,023	2,046
Annual		2,455	6,138	8,593	12,276	24,551
<u>Total Estimated Weight of Waste (@ 4lb per person daily)</u>						
Daily		40	100	140	200	400
Weekly		280	700	980	1,400	2,800
Monthly (4.33 wks)		1,212	3,031	4,243	6,062	12,124
Annual		14,549	36,372	50,921	72,744	145,488
<u>Number of Total Dumpster Fills</u> 40 yard dumpster 7x8x22 = 1,232 square feet						
Daily		0.0	0.0	0.0	0.0	0.1
Weekly		0.0	0.1	0.1	0.2	0.4
Monthly (4.33 wks)		0.2	0.4	0.6	0.8	1.7
Annual		2.0	5.0	7.0	10.0	19.9

Quality Electric must coordinate with the project site or owner to ensure proper disposal of wastes or scrap materials.


Quality Electric must ensure the owner client is aware of whether wastes and scrap materials will be taken off site by Quality Electric or will be disposed of on the owner client's site.

Waste Segregation

- Only place waste in the designated container or designated dumpster.

5. Recycling

Wastes should be recycled whenever practicable. Quality Electric will encourage proper segregation of waste materials to ensure opportunities for reuse or recycling occurs at each work site. The collection of recycled material will reduce the total load on the environment. Bins of sufficient size must be lined with a plastic bag and

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clearly labeled for use. Collection bins will also be placed in administrative areas will follow the following color guiding:

- Blue - Paper
- Green - Aluminum cans
- Yellow - Plastic

Cardboard will be flattened, staples and excess shipping tape removed. No cardboard shall be placed in the dumpster used for the landfill.

6. *Storage Requirements*

Quality Electric must ensure project related wastes are stored and maintained in an organized fashion to encourage proper disposal and minimize risks to employees. Proper waste receptacles must be provided for trash and materials that may be reused or recycled during a project.

7. *PPE*

For each site waste management plan Quality Electric shall determine a PPE matrix that includes gloves, hand protection, eye, and face protection and/or other necessary PPE.

8. *Education and Training*

Employees shall be instructed on managing waste generated at the work site and on the proper disposal method of wastes. Examples include:

- Instruction on the proper handling, storage and disposal of wastes and depending on the waste generated at the site to also include general instruction on disposal of non-hazardous wastes, trash, or scrap materials. If wastes generated are classified as hazardous then employees shall be trained to ensure proper disposal and compliance with regulations.
- Minimization methods to reduce waste.
- Recycling methods and proper PPE to be utilized.


D. *Sanitation*

1. *Potable Water:*

- An adequate supply of potable water shall be provided by each Supervisor for their employees.
- All potable containers used to distribute drinking water shall be sanitized, clearly marked, and not used for any other purpose. The lids shall be sealed with tape and marked with the date it was filled.
- The common drinking cup is prohibited.
- When using single service cups on-site, a sanitary container for unused cups and a receptacle for disposing of cups shall be provided.
- Or water bottles can be substituted in place of the potable containers.

2. *Non-Potable Water:*

Outlets for non-potable water used for firefighting, dust control, industrial use, etc. shall be identified.

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3. Toilets:

- a) Adequate toilet facilities shall be provided for employees according to the following table and must meet all local laws:

Number of Adequate Toilet Facilities

Number of Employees	Minimum Number of Facilities
20 or less	1
21 to 199	1 toilet seat and 1 urinal per 40 workers
200 or More	1 toilet seat and 1 urinal per 50 workers

- b) Hand sanitizer shall be provided and maintained by the toilet supplier.
- c) Under temporary field conditions, provisions shall be made to assure a minimum of one toilet facility is available.
- d) Toilets should be serviced on a regular basis (preferably, 2x weekly) and more often if conditions warrant.
- e) Local codes shall be checked for additional requirements such as heat and hand washing facilities.
- f) All toilets must provide privacy for the user.

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Section 36: Material Handling and Storage

A. Intent Statement

The intent of this section is to provide requirements for the safe handling and storage of materials, tools, and/or equipment on the project site. The accomplishment of this requirement by use of mechanical means, proper body placement, and an effective logistics plan will help reduce the risk of incident to onsite personnel.

B. Material Storage

1. Aisle and passageways must be kept clear for free and safe movement of material handling equipment and personnel.
 - a) Permanent passageways on the project should be marked with standard traffic control signs and devices (i.e. cones, fencing, tape, etc.)
 - b) All egress and exits from a building shall be kept free of material and equipment at all times.
2. Materials shall not be placed within six (6') feet of hoist ways or floor openings and not within ten (10') feet of exterior walls that are not completed.
 - a) Exception: Where guardrails with debris netting are installed on perimeter building edges, materials can be stored closer than 10' provided that they do not exceed the height of the guardrail system.
3. Dunnage shall be placed under all stored materials to allow for easier movement by mechanical means and to prevent materials from contacting water on the ground or floor.
4. Materials must be stable and secured if there is a potential for them to become dislodged from contact by equipment or personnel.
 - a) Pallets of material should remain in their original packaging (i.e. shrink-wrap or container) until the last possible moment before use.
5. Lumber must adhere to the following requirements:
 - a) Used lumber must have all nails removed before stacking or disposal
 - b) Bundles of dimensional lumber will be stacked neatly with longer pieces on the bottom and tapering back to smaller pieces at the top
 - c) Plywood must be secured from displacement when weather conditions warrant. Placing a series of nails or screws through the first few layers of material is acceptable
 - d) Stacked no more than 8' tall from the surface.
6. Rolling stock (pipes, conduits, rebar, etc.) must be placed in a rack for storage or on dunnage and cleated to prevent movement if on a floor.
7. Load limits for the floor or structure that is being used for material storage must be determined, posted, and not exceeded.
8. Spill containment (such as a "catch pan") shall be positioned under all liquid storage containers to contain any potential spills or leaks.
9. Storage areas must be planned.
 - a) No material shall be stored directly under an overhead powerline unless specific provisions are met:
 - (1) All parts of material handling equipment must be kept a minimum of 20' away from energized overhead powerlines

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- (2) Warning signs must be installed to warn workers and operators of equipment of the danger overhead powerlines present
- (3) The overhead powerlines are de-energized and visibly grounded.

C. Material Handling & Transportation


1. Ensure that loads are centered, stable, and secured to prevent tipping/displacement while moving or in transit.
2. Loads must be kept as low as possible while traveling to limit the exposure to a falling load.
3. Inspect the material prior to moving it to determine if containers are damaged, banding has been removed, or similar load securing devices are not present. Transfer materials to an approved and rated container for safer handling if original containers are not suitable.
4. Clear the path of travel for the load to ensure no obstructions are present that could cause the load to shift or fall.
5. Hand placement during hoisting and/or setting of materials and equipment is critical. Plan the points of where the worker will place their hands to lift or set the material/equipment. Avoid pinch points that are common and use dunnage to allow space for hand placement under the load.
6. Only hoist from approved and rated pick points on a container or material. Never re-use empty containers for removing excess material or debris from a building or floor.
7. Barrels must be hoisted with an approved picking device and never by attaching slings directly to the barrel in a choke or basket hitch.
8. Personnel riding in vehicles or equipment must be seated with all parts of their body within the confines of the vehicle or equipment. No person is allowed to ride in the bed of a truck or cart.
9. Seatbelts are required for all personnel in a vehicle or equipment.
10. All personnel must be removed from vehicles prior to loading or unloading operations from a crane or other hoisting device.
11. Loads that extend beyond the limits of the bed of a truck or trailer must be visibly marked with high visibility materials (ex. red flagging).
12. Place softeners on sharp edges of materials (specifically metal) to prevent cuts while handling the material. Pieces of carpet, burlap, or heavy cardboard may be acceptable for this use. Proper gloves and arm protection sleeves will be required for personnel exposed to sharp edges during material handling.

D. Safe Lifting Requirements

1. Purpose

Quality Electric is committed to providing a safe and healthy working environment for all employees. Musculoskeletal disorders (MSD) account for a majority of reported injuries and we must minimize the risk and incidence of MSDs. To achieve this goal, Quality Electric requires each worksite to establish and maintain a Safe Lifting Program with the following elements:

- Ongoing training of management, supervisors, and employees (including new hires) on MSD awareness and Safe Lifting Techniques
- Tracking of MSD statistics, through use of accident reports and investigation
- Control of MSD hazards through the application of engineering and/or administrative controls

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- Proactively integrating ergonomics principles into workplace design and work techniques
- A realization that personal protective equipment may only be used as a substitute for engineering or administrative controls if it is used in circumstances in which those controls are not practicable.


2. General Guidelines

- Personnel should first know their own capacity for lifting materials, tools, or equipment prior to starting any tasks.
- Determine the weight of the load before applying force to move it. This can be obtained from shipping labels or material calculations for common construction products. If unsure of the load weight, always seek assistance from a co-worker or supervisor.
- Inspect the materials/equipment prior to attempting to lift or move them. Damaged containers, sharp edges, etc. can pose additional hazards that could interfere with safe lifting and transportation.
- Mechanical material handling equipment or aids should always be used when possible, to lessen the amount of manual lifting required for a job. The amount of weight in a single lift should be limited to approximately 50 pounds for all materials/equipment. If a lift will exceed this limit, seek assistance from a co-worker or mechanical means to transport the materials.
- Objects or materials that are awkward to lift or carry should use the “2-person rule”; 2 people should carry long items (ex. 8’ or longer) such as tall extension ladder, sheet of plywood, formwork, etc. During windy conditions, any large sheet materials (plywood, formwork, or drywall) must use the 2-person rule to prevent the material from being pushed or pulled from the workers’ hands.
 - Use the following rules for picking up, carrying, or placing materials:
 - Place feet as close to the load as possible
 - Bend at the knees and not at the waist. Never lift any materials by bending at the waist to pick them up
 - Get a good handhold on the load - keep hands out of pinch points and use handles where available
 - Lift straight up on the load using the leg muscles
 - Keep the load close to the body - keep the load below head height
 - Maintain a straight back while carrying the load
 - Never twist or turn at the waist; make changes in direction with the feet only
 - To place the load down, bend with the waist. Bend the knees and place the load down on cribbing/dunnage to avoid pinch points. Where possible, keep the load at least one foot off the ground to minimize stress on the body from lifting.

3. Key Responsibilities

a. Quality Electric Safety Manager

- Communicate, promote, and support the MSD and Safe Lifting Techniques
- Conduct MSD training sessions and/or provide MSD training materials.
- Maintain records of MSD training that they provide in a manner that supports accuracy and ease of access for monitoring purposes.
- Monitor corrective actions taken as identified on incident reports.
- Support supervisors in Safe Lifting Techniques

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- Assist in the investigation of MSD incidents to address injury hazards.
- Bring to the attention of Quality Electric management any MSD hazards identified during their investigations, audits, or inspections.
- Provide input into purchasing specifications for new tools, equipment and furniture as needed to reduce MSD hazards.
- Provide input into the development of safe work procedures to reduce MSD hazards.

b. Jobsite Supervision

Responsible for the implementation and maintenance of the Safe Lifting Techniques for their facility and ensuring all assets are made available for compliance with the procedure. He or she will also:

- Ensure that all worksite departments implement and maintain the provisions of Safe Lifting Techniques.
- Seek regular reports to ensure that their worksite is in compliance with the Lifting and Handling Loads Program.
- Manual lifting equipment such as dollies, hand trucks, lift-assist devices, jacks, carts, hoists must be provided for employees. Other engineering controls such as conveyors, lift tables, and workstation design should be considered.
- Use of provided manual lifting equipment by employees must be enforced.

c. Employees

d. Shall attend all MSD related training for the task they are performing.


- Practice MSD prevention strategies as per MSD training.
- Comply with safe work procedures.
- Correctly use the equipment provided by Quality Electric, according to manufacturer's recommendations.
- Report to the supervisor any unsafe acts, unsafe tasks, unsafe conditions, or equipment problems that create MSD hazards.
- Report any MSD incidents to the supervisor and cooperate in the investigation process.

4. Procedure

a. Worksite Assessment

Before manual lifting is performed, a hazard assessment must be completed. The assessment must consider size, bulk, and weight of the object(s), if mechanical lifting equipment is required, if two-man lift is required, whether vision is obscured while carrying and the walking surface and path where the object is to be carried. The assessment shall also include:


- Physical Demands
 - Neck Back Shoulder Wrist
 - Hand
 - Knee Ankle/
 - Feet

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- Force Required and Working Distance
- Do employees push, pull, lift, lower, or carry objects that are too heavy or require too much force; away from the center of the body or in a jerky or twisting manner?
- Work Postures
 - Is the back is curved too much or in a stooped position?
 - Is the back is twisted during movements?
 - Is the neck bent or twisted?
 - Are the arms away from the body?
 - Are the wrists flexed, extended or pinched positions?
- Repetitive Use of Similar Muscles
 - Do employees perform movements over and over in the same way
- Static Muscle Use and Duration
 - Do employees hold any of the above work postures for > 20 sec.?
 - Stand for long periods with their knees locked?
 - Stand in one position without moving or stretching?
- Contact Stress
 - Do employees put localized pressure on any part of their body?
- Workspace Layout and Conditions
 - Are there working heights, reaches in workspace, equipment, tool design, storage conditions, etc., that cause or contribute to employees experiencing any of the physical demands risk factors?
 - Also consider seating, floor surfaces, the characteristics of objects handled, including size and shape, load condition and weight distribution, and container as well as tool and equipment handles.
- Organization of Work
 - Are there work processes, monotonous job tasks, work recovery cycles, task variability, work rate, machine paced tasks or peak activity demands that cause or contribute to rushing, frustration, fatigue or other visible signs of stress?
- Environmental Conditions
 - Are employees exposed to poor lighting, vibration, cold or hot air/wind/water?

5. Work Controls

Quality Electric must ensure based on the assessment, implement control measures to eliminate, minimize, or reduce, so far as is reasonably practicable, the risk of musculoskeletal injury to the worker.

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a. Handling Heavy or Awkward Loads

Quality Electric will take all practicable means to adapt the heavy or awkward loads to facilitate lifting, holding, or transporting by workers or to otherwise minimize the manual handling required.

Those include:

- Where use of lifting equipment is impractical or not possible, two-man lifts must be used.
- All loads carried on handcarts shall be secured.
- All awkward type loads shall be secured to prevent tipping of material.

Additional methods include:

- Reducing the weight of the load by dividing it into two or more manageable loads
- Increasing the weight of the load so that no worker can handle it and therefore mechanical assistance is required
- Reducing the capacity of the container
- Reducing the distance, the load must be held away from the body by reducing the size of the packaging providing hand holds
- Team lift the object with two or more workers
- Improve the layout of the work process to minimize the need to move materials
- Reorganize the work method(s) to eliminate or reduce repeated handling of the same object
- Rotate workers to jobs with light or no manual handling
- use mobile storage racks to avoid unnecessary loading and unloading.

b. Incidents and Injuries

If some employee reports symptoms of a MSI, Quality Electric will:

- Musculoskeletal injuries caused by improper lifting must be investigated and documented. Incorporation of investigation findings into work procedures must be accomplished to prevent future injuries.
- Injuries must be recorded and reported as required by 29 CFR Part 1904.

c. Review and Updating Lifting and Handling Loads Program


Supervision must periodically evaluate work areas and employees' work techniques to assess the potential for and prevention of injuries. New operations should be evaluated to engineer out hazards before work processes are implemented.

6. Training

Quality Electric shall ensure that a worker who may be exposed to the possibility of musculoskeletal injury is trained in specific measures to eliminate or reduce that possibility. Our training shall include:


General principles of ergonomics:

- Recognition of hazards and injuries,

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- Procedures for reporting hazardous conditions, and
- Methods and procedures for early reporting of injuries.

Additionally, job specific training will be given on safe lifting and work practices, hazards, and controls.

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Section 37: Overhead Protection

A. Intent Statement

The intent of this policy is to protect people and property from overhead hazards both inside and outside of the project.

B. Definitions


1. Competent person - one who can identify 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
2. Qualified person - one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project
3. Fall zone - the area (including but not limited to the area directly beneath a potential falling object) in which it is reasonably foreseeable that falling objects could fall

C. General Requirements

1. Employees shall be trained in falling object prevention.
2. As a minimum, training must consist of an initial new hire training and an annual refresh training.
3. Utilize pre-task planning (PTP) for daily risk and/or hazard mitigation.
4. Always follow proper rigging procedures.
5. Company barrier policy must be complied with.
6. Remove all tools and unused materials from elevated work areas as soon a job is complete.
7. A post job walk shall be performed to ensure all tools and materials are removed from heights.
8. Materials may not be stacked within 10 feet of the exterior edge of a building or within 6 feet of an interior opening where the material is higher than the toe board or debris netting.
9. Materials should be tied back and secured, when possible.
 - a. Good housekeeping practices and inspections shall be performed regularly.
 - b. Tool lanyards are required when working at or near an open-sided floor, or edge, of the structure.
10. Workers who enter barricaded areas without authorization are subject to disciplinary action up to and including removal from project site.
11. Contractors shall barricade areas below overhead work to prevent potential injury from falling objects and mark the area as “Overhead Work in Progress” or similar notice, along with contact information.
12. Elevated workplaces (6 feet 3, 2.0 meters or more) shall be provided with adequate barriers to prevent the fall of people, tools, or materials. If not possible, safety nets or other approved methods should be utilized.

D. Hand / Power Tools and Material use at Height

1. All unnecessary tools / materials shall be left at ground level.
2. All hand and power tools must be positively secured (tether or equivalent) whenever they can fall eight feet or more, including:
 - a. Unprotected holes, edges, or guardrails

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- b. Within the confines of a mobile elevated work platform Personnel are allowed to remove tools from containers/holders in order to tether.
 - c. When working from ladders.
3. If hand tool / power tools cannot be tethered and materials cannot be secured a risk assessment must be completed and mitigation measures agreed with the designated company Safety Representative.

E. Responsibilities:

1. Superintendent and General Foreman shall:
 - a. Conduct a risk assessment of the project prior to starting work in elevated work zones and put in place at minimum a verbal Overhead Protection Plan, to include:
 - Review and approval by a competent person and assigned Safety Representative
 - Protection against exposure hazards to both project site personnel and property
 - Protection against exposure hazards to offsite project personnel and property
 - b. Provide effective and timely communication of the Overhead Protection Plan to employees, Trade Partners, Vendors, and all others that enter the Quality Electric work zones.
 - c. Review the plan periodically and make adjustments, as necessary
 - d. Inspect falling object and / or overhead protection systems (at least weekly)
2. Safety Representative shall:
 - a. Review risk assessment, project conditions and provide guidance, as necessary.
 - b. Safety Director has the responsibility and authority to make exceptions and additions to the plan.
 - c. Safety Representative assigned full time to projects inspect weekly and traveling Safety Representative will inspect projects during the visit.


F. Fall Zone Protection and Barricades

1. A controlled access zone should be established using barricades and should completely encompass the potential fall zone.
2. Fall zones must be well defined (and marked), easily controlled and established around the entire perimeter of the structure, when possible.
3. Placement of a “Ground man” to warn other workers of the overhead hazard and keep people out of the potential fall area may be necessary. Note, an employee assigned as a “Ground man” must receive adequate training before being assigned, be able to effectively communicate with all employees, and should be equipped with an air horn or whistle and distinct vest.
4. Barricades may consist of:
 - a. Standard barricading, i.e. chain link fence panels, orange plastic fence or an equivalent barricade and appropriate signage to warn of overhead work or potential falling objects.
 - b. High strength fiber tape with appropriate signage. (Appropriate signage to include: company name, point of contact, and duration of work for the overhead hazard.)
5. A temporary barricade (less than 8 hours) may consist of red danger tape if it is not erected in a high traffic area. (Appropriate signage to include: company name, point of contact, and duration of work for the overhead hazard.)

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G. Points of Entry, Hoist Platforms, Loading Areas, Walkways and Material Laydown

1. Overhead protection shall be provided where potential exposures exist, such as: at all points of entry, exterior personnel hoists, loading areas, walkways leading up to the dock, trash disposal locations, walkways connected to adjacent hoist docks (when applicable), and laydown areas near fall zone.
2. Overhead protection will be constructed with a minimum standard of 3 layers of ¾ inch exterior grade plywood (or equivalent) supported by joists consisting of 4x4 or 2x8 (upright) or scaffold planks. If this solution is unsuitable, all other systems will be engineered. System must be secured to prevent uplift. Methods to construct may include:
 - a. stick built lumber walkway,
 - b. jersey barrier system with stick build system on top,
 - c. walk through scaffold frame scaffold.
 - d. Conex boxes are also acceptable to use for entry point protection.
3. Overhead protection should extend outward from the edge of building to a minimum of 30 feet or as allowed by site conditions and continue with sufficient protection and coverage taking into consideration any additional provisions for height.
4. Designs must consider:
 - The heights of the overhead work
 - The materials being installed over the potential fall area
 - The tools and equipment being used in the area.
5. Overhead work that exceeds the intended level of protection provided by the design should include:
 - Re-routing of traffic, construction personnel, construction equipment, public, etc.
 - Placement of a trained and authorized Ground Person to control risk and exposure.

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Section 38: Signs Signals and Barricades

A. Intent Statement

The intent of this section is to define clear expectations for sign and barricades utilized on and around JE Dunn projects.

B. Sign Types

1. Danger Signs – Used only where an immediate hazard exists. Danger signs shall meet the following requirements:
 - a) The colors will be red, black, and white
 - b) Removed as soon as the potential hazard is no longer present
 - c) Sign should be printed and not handwritten when possible
 - d) Signage cannot be makeshift (i.e. duct tape, cardboard, drywall, scrap wood, etc.). Laminated for interior use. Metal for exterior use.
2. Caution Signs – Used only to warn against potential hazards or to caution against unsafe practices. Caution signs shall meet the following requirements:
 - a) The colors will be yellow, black, and white
 - b) Removed as soon as the potential hazard is no longer present
 - c) Sign should be printed and not handwritten when possible
 - d) Signage cannot be makeshift (i.e. duct tape, cardboard, drywall, scrap wood, etc.). Laminated for interior use. Metal for exterior use.
3. Exit Signs – Are to be installed at egress points throughout the project. The exit signs should meet the following requirements:
 - a) The signs shall be lettered in legible red letters no less than 6 inches high on a white background.
 - b) Removed as soon as the potential hazard is no longer present.
 - c) Sign should be printed and not handwritten when possible.
 - d) Signs should be visible in all light conditions.
 - e) Signage cannot be makeshift (i.e. duct tape, cardboard, drywall, scrap wood, etc.). Laminated for interior use. Metal for exterior use.
4. Informational Signs – Signs will be used to convey safety messages. The informational signs should meet the following requirements:
 - a) The colors will be white and green
 - b) Removed as soon as it is no longer needed
 - c) Sign should be printed and not handwritten when possible
 - d) Signage cannot be makeshift (i.e. duct tape, cardboard, drywall, scrap wood, etc.). Laminated for interior use. Metal for exterior use.

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5. Directional Signs – Directional signs will be used to direct pedestrian or vehicular traffic. Directional signs shall meet the following requirements:
 - a) The colors will be white and black.
 - b) Removed as soon as it is no longer needed.
 - c) Sign should be printed and not handwritten when possible.
 - d) Signage cannot be makeshift (duct tape, cardboard, drywall, scrap wood, etc.) Laminated for interior use. Metal for exterior use.
6. Traffic Signs – will be posted at points of hazard on the construction site. Traffic control signs must meet and comply with the requirements set by the Manual on Uniform Traffic Control Devices.
7. Slow moving vehicle sign – will be installed and prominently displayed on construction equipment that will be traveling on public roads outside of the work zone.
8. Enter the work zone sign – will displayed at the main entrance of a work zone on the perimeter fencing or by other acceptable means.

C. Signals


1. Traffic signals must comply with the requirements set forth in the Manual of Uniform Traffic Control Devices (MUTCD).
2. Stop/Slow paddles shall have an octagonal shape on a rigid handle with the base of the sign at 6 feet high and shall be at least 18 inches wide with letters at least 6 inches high. The STOP face shall have white letters and a white border on a red background. The SLOW face shall have black letters and a black border on an orange background. When used at night, the STOP/SLOW paddle shall be retro-reflectorized.
3. Red Orange Safety Flag - Use of flags should be limited to emergency situations. Flags, when used, shall be red or fluorescent orange/red in color, shall be a minimum of 24 inches square, and shall be securely fastened to a staff that is approximately 36 inches in length.

D. Barricade Types


1. Reinforced Tape

½ inch rope can be used in lieu of tape and must be accompanied by the appropriate signage for the hazard

- a) Red Danger tape – Barricading tape can be used for a short-term identification of restricted areas. Danger tape will be used in areas where an imminent hazard exists. When using danger barricade tape the following will apply:
 - (1) Unauthorized employees shall not enter this temporarily barricaded area.
 - (2) Any unauthorized employee that crosses the danger taped area is subject to disciplinary action up to removal from the job site.

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- (3) Tape will be removed as soon as potential hazard has been eliminated.
 - (4) The employee that installed the tape shall place Quality Electric Inc and the person responsible in legible ink on the appropriate signage to be displayed on all sides of the barricading.
 - (5) The installer shall be responsible for the installation/maintenance and removal/disposal of the barricading tape.
- b) Yellow Caution tape – will be used in an area where a potential hazard exists. Non-designated employees should find alternative routes if this area blocks their path of travel. When using caution barricade tape the following will apply:
- (1) Employees must get permission to enter barricaded area from supervisor that installed the barricade.
 - (2) Any unauthorized employee that crosses the caution taped area is subject to disciplinary action if they did not have permission to enter.
 - (3) The employee that installed the tape shall place Quality Electric Inc and the person responsible in legible ink on the appropriate signage to be displayed on all sides of the barricading
 - (4) The installer shall be responsible for the installation/maintenance and removal/disposal of the barricading tape.
2. Water filled barricades – water filled barricades must be inspected regularly to ensure that they are connected to adjacent barricades, do not leak, and are not damaged. When in use the barricades must be filled with water to ensure proper functionality.
 3. Concrete “K” /” Jersey” Barriers - If barriers are struck by a vehicle or machinery they must be inspected immediately. If the barrier is damaged, then it must be replaced.
 4. Delineator Cones – are to be inspected regularly to ensure that they are not damaged and are able to maintain a vertical position. If cones are damaged or discolored, they must be replaced as soon as possible. Ensure that cones are in their designated location daily.
 5. Channelizer barrel drums / cones – are to be in full in shape when in use. Inspected regularly to ensure that they maintain proper visibility from their designated locations in the traffic control plan. If drums / cones are damaged or discolored they must be repaired or replaced as soon as possible. Ensure that barrels/cones are in their designated location daily.
 6. Barricade lights / flashers – must be functioning if installed on any traffic control devices. If lights are damaged or not functioning, they must be removed or replaced.
 7. Type 1 barricades - Any damaged folding or panel barricades must be replaced if damaged or discolored. Ensure that stripes are displayed properly – they should direct the traffic where to go by pointing downward in the direction of traffic.

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8. Type 2 barricades - Any damaged folding or panel barricades must be replaced if damaged or discolored. Ensure that stripes are displayed properly – they should direct the traffic where to go by pointing downward in the direction of traffic.
9. Type 3 barricades – When in use must be secured by stands, uprights or other acceptable methods to ensure full visibility. Any damaged barricades must be replaced if damaged or discolored. Ensure that stripes are displayed properly – they should direct the traffic where to go by pointing downward in the direction of traffic.
10. Temporary Fence Panels – fence panels and all components must be inspected regularly. If fence panel stands are damaged, they must be repaired or replaced. When fence panels are installed on water filled barricades, they must be secured with clamps to prevent displacement. If fence panels are free standing, they must be installed on temporary fence panel stands to ensure that they maintain their upright position. Orange fencing is not considered perimeter security fencing.
11. Wind screen / privacy screen – screens should be installed on temporary fence panels when it is required. Screens should be inspected regularly and replaced if damaged.
12. Fence “T” Posts & barrier fencing – when installed ensure that posts are vertical and not bent or damaged. Barrier fencing must be secured to ensure full visibility. Barrier fencing must be inspected regularly and replaced if damaged.

E. Annexes

a) Forms

- Caution Sign
- Danger Sign

CAUTION PRECAUTION CAUTION PRECAUTION CAUTION PRECAUTION CAUTION PRECAUTION

CAUTION

WORK NOTICE

PRECAUTION

AVISO DE TRABAJO

OVERHEAD WORK

☐

TRABAJO DE ARRIBA

ELECTRICAL WORK

☐

TRABAJO ELECTRICO

EXCAVATIONS/TRENCHES

☐

EXCAVACIONES/TRINCHERAS

HOT WORK

☐

TRABAJO HOT

(WELDING, TORCHING, GRINDING)

(SOLDURA, INCENDIO, MOLIENDA)

OTHER: _____

☐

OTRAS: _____

CONTRACTOR NAME:

NOMBRE DE LA EMPRESA:

CONTACT PERSON:

PERSONA DE CONTACTO:

CONTACT PHONE #:

TELEFONO DE CONTACTO #:

() _____

DATE STARTED:

FECHA DE INICIO:

_____/_____/_____

COMMENTS:

COMENTARIOS:



CAUTION PRECAUTION CAUTION PRECAUTION CAUTION PRECAUTION CAUTION

DO NOT ENTER NO ENTRAR DO NOT ENTER NO ENTRAR DO NOT ENTER NO ENTRAR DO NOT ENTER

DANGER

WORK NOTICE

PELIGRO

AVISO DE TRABAJO

OVERHEAD WORK

ELECTRICAL WORK

EXCAVATIONS/TRENCHES

HOT WORK

(WELDING, TORCHING, GRINDING)

OTHER: _____

☐☐☐☐☐

TRABAJO DE ARRIBA

TRABAJO ELECTRICO

EXCAVACIONES/TRINCHERAS

TRABAJO HOT

(SOLDURA, INCENDIO, MOLIENDA)

OTRAS: _____

CONTRACTOR NAME:

NOMBRE DE LA EMPRESA: _____

CONTACT PERSON:

PERSONA DE CONTACTO: _____

CONTACT PHONE #:

TELEFONO DE CONTACTO #: () _____

DATE STARTED:


FECHA DE INICIO: _____ / _____ / _____

COMMENTS:

COMENTARIOS: _____




DO NOT ENTER NO ENTRAR DO NOT ENTER NO ENTRAR DO NOT ENTER NO ENTRAR DO NOT ENTER


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Quality Electric Inc.

I _____, hereby
acknowledge that I have been briefed on the entirety of this
manual and have an understanding of the protocols and
procedural expectations that Micron and Quality Electric
holds of its employees. If I am unclear of those
expectations, I will seek guidance from my Foreman or
Safety Compliance Officer to help clarify the expectations.

Signature

Date _____

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I. Introduction

Quality Electric is dedicated to providing a quality product and service, with a set of core values as the foundation for everything we do.

Mission Statement: Quality, it is not just a name, it is what we do. We connect people, partners, products, and performance to the “Quality Way”.

Vision Statement: To be the benchmark for Quality in the electrical industry through our values, our people, our partnerships, and our service.

Core Values

- Our People
- Our Customers
- Our Community

- Committed
- Add Value
- Results Delivered
- Exceed Expectations
- Support

“The Quality Way”

The Backbone of Our Values

Quality

Employees

Fun

Loyalty

Safety

Respect

Leadership

Community

Integrity

Trust

Teamwork

Generational

Family

Innovation

Accountability

II. Team Member Expectations

Journeyman/Apprentice

- Attendance
 - Consider impact to projects when scheduling time off
 - Do not abuse break and lunch times
 - Ready to work at scheduled start time and works until scheduled stop time
 - On time for scheduled meetings and training classes
 - Adhere to Union attendance guidelines when scheduling time off
- Job Knowledge and Skills
 - Understands and applies NEC requirements
 - Understands and follows Micron procedures, policies and protocol
 - Correctly uses and maintains tools and equipment
 - Ability to read and understand blueprints, schematics, diagrams and schedules
- Safety
 - Properly use PPE
 - Aware of and insures a safe work environment
 - Abides by area requirements (Wears hearing protection where required, etc.)
 - Keep egress routes, work and staging areas, open, clean and free of clutter
 - Fills out a JHA at the beginning of each workday **“NO JHA, NO WORK”**
 - Properly fill out energized electrical work permit (EEWP) before hot work begins
 - Wears appropriate PPE identified on arc flash stickers
- Communication
 - Express concerns and problems with tact
 - Verbally communicates well with others
 - Listens and understands what others have to say (takes notes)
 - Keeps Foreman informed of pertinent information
 - Fully explains projects and expectations to apprentice(s)
 - Responds to pages in a timely manner
- Dependability and Initiative
 - Willing to work overtime, weekends and odd hours as needed
 - Stays focused on work and always looking out for QEI and Micron’s best interest
 - Completes assigned tasks on time
 - Seeks out new assignments
 - Keeps busy, do not wander from the job and looks for ways to be more productive

- Turns in all paperwork after project/work orders are completed (Reused Material Sheets, QC Checklists, JHA, EEWP, Panel Schedules, etc.)
 - Keep time sheet up to date and accurate
- Quality
 - Jobs are done in a professional manner (straight, plumb, and square)
 - Do not leave a job unfinished (testing, supports, covers, documentation complete, etc.)
 - Job is well thought out with little to no rework or scrap
 - Promotes quality of work within the crew
 - Maintains a high level of quality without sacrificing productivity
- Productivity and Time Management
 - Able to set realistic goals
 - Can be counted on for accurate assessment of time schedules
 - Able to keep in front of the project with information, material, and labor
 - Do not use QEI time for personal reasons
- Teamwork
 - Maintains good working relationship with customer and trades
 - Keep supervisors informed of schedules, time off, training, project needs, etc.
 - Consult with other trades and Foreman with regard to impact issues
 - Willingness to accept changes in routine and flexible in moving to other areas
- Organization
 - Keep work area clean and organized (staging areas, electrical rooms, etc.)
 - Keep all tools clean and orderly (Micron and Personal)
 - Return tools to tool crib within the allotted time requested
 - Organizes projects/work orders accordingly (scheduling, layout, material, special order items, etc.)
 - Clean up work area at shift end (store ladders and material in appropriate areas)
 - Keep personal paperwork and information organized
- Leadership
 - Effectively sets objectives, establishes priorities, and anticipates future requirements
 - Maintain control of costs and attempt to avoid or reduce waste
 - Motivates and influences others by setting a good example with a positive attitude
 - Voluntarily shares knowledge and information (provide direction and encouragement)

III. General Information

Important Telephone Numbers

- Emergency 66611
- Non-Emergency 66700

Work Schedule

- In – House Group
 - Monday – Thursday, 6am - 4:30pm
 - Tuesday – Friday, 6am - 4:30pm

Break/Lunchroom Times and Durations

- **In House Group**
 - Breaks are at 9am and 2pm and will to be 15 minutes (Breaks need to be taken at the closest break room to work area)
 - Lunch break is a ½ hour and will be taken at 11:30am
- No break or lunch shall be taken in electrical rooms.

IV. Policies and Procedures

Smoking

- Permitted only in designated smoking areas
- Smoking is not allowed in front of lobby reception areas
- Do not smoke within 30 feet of hydrogen or oxygen tanks

Drugs and Alcohol

- The use of intoxicants on the job is strictly prohibited.
- Anyone suspected of being under the influence of alcohol or illegal drugs will be escorted from the property.
 - Disciplinary action will be taken in accordance with Quality Electric's Disciplinary and Drug and Alcohol Program
 - Refer to Quality Electric's Safety Manual for information regarding Disciplinary and Drug & Alcohol Program
 - Micron has the right to revoke contractor privileges.

Dress Code

- No clothing with obscene or otherwise inappropriate lettering or graphics shall be worn.
- Wear clothing that is appropriate for the task at hand
- Work boots are required on all designated construction areas.

- Closed toe shoes may be worn in fab areas.

Proper Conduct

- Do not use obscene or otherwise inappropriate language.
- No horseplay
- Do not partake in any activities which create a hostile work environment (name calling, harassment, etc.)
- Non-compliance will result in disciplinary actions.

Housekeeping

- Tools shall be stored in approved areas (Gang boxes, designated spaces in electrical/mechanical rooms, carts/Kennedy)
 - Ask area Foreman where the approved areas are located.
- Work areas shall be kept clean and orderly.
 - Material shall be staged in a manner, which eliminates the potential for trips or falling hazards.
- Do not stage material/tools in front of electrical equipment (panels, switchgear, etc.), safety showers, fire extinguishers or any other life safety device/system.
- Keep walkways and emergency egress routes clear.
 - If walkways/egress routes need to be blocked, set up cones, bars, signage and notify area owner about the closure.
- Barricade off all work areas with cones, bars and signage
 - Information on signage shall include: Team members name, Foreman's name, time duration.
- Clean up work areas 15 minutes before shift end.
 - Ensure all tools and material are stored in approved areas.
 - Ensure area is free of all construction debris.

ESD Control

- All team members shall abide by ESD policies and procedures.
- All team members shall be given the Global ESD Awareness Training
 - **Appendix A** Global ESD Awareness
- All team members shall be trained on how to properly use/wear ESD-safe garments and grounding straps.
 - Contact area Foreman or Safety Representative for assists.

Clean Room

- All team members shall wear appropriate clean room attire that is required for entering clean rooms.
 - All team members shall be trained on proper cleanroom garment donning and doffing requirements.

- All tools/material shall be wiped down prior to being moved into clean rooms.

CUP Control

- Call CUP Control (66400) before removing any device that is being monitored.
 - Contact Foreman for any questions or concerns.

Micron Security Protocols and Area Security Issues

- Badge must always be displayed above waste line
- Lost badges must be reported to Security immediately
- No audio or visual recording devices on site without prior authorization
- Area-specific security issues (limited access areas, limited equipment, recording devices, networks, programs, or confidential information)
 - Limited access areas
 - Limited equipment
 - Recording devices
 - Networks
 - Programs
 - Confidential information
- Before entering any restricted area, such as those designated “Authorized Personnel Only” or “Door Alarmed,” Contractors must contact their supervisor and security for clearance and approval.

6s Barrier Zone Control

- Explain the 6s Barrier Zone Control Procedures and Protocol
 - **Appendix B** 6s Barrier Zone Control Procedures and Protocol

Environmental Compliance

- No chemicals can be brought on site without prior approval
- Place no chemical in any storm water drain
- Place no chemical in any drain or container for disposal without prior approval. Contact host for approval.
- Dump no chemical on Micron Property
- Report all spills and leaks to emergency (66611) or non-emergency (66700)

Hazardous Waste Disposal

- Discuss: How to properly dispose of hazardous material (Decontamination/Construction Trash/Recycle Bins)
 - **Appendix C** Decontamination/Construction trash/Recycle Bins

Non-Compliance

- Non-compliance with regulatory standards or Micron’s EHSS policies could lead to loss of access to Micron property.
- Violating verbal or written safety procedures, guidelines or rules of Quality Electric or Micron will result in disciplinary action

Safety Policies and Procedures

Quality Electric is dedicated to providing a safe and healthful workplace. Foreman shall provide their crew with the proper safety equipment for all tasks. They shall be a resource for team members to ask questions regarding safety. All safety concerns brought up by team members shall be addressed or forwarded to Safety Champion. Every team member has the authority to stop work if a safety issue occurs and shall not be disciplined for it. The responsibilities listed below are required of all Micron In-house Foreman.

Micron Safety Policy Elements

- Maintain a safe and healthful workplace
- Prevent occupational injuries and illnesses
- Comply with all applicable safety laws and regulations
- Continually improve

Reporting Safety Incidents, Event Issues and Blood Borne Pathogens (BBP)

- Explain notification procedures to report odors, leaks, spills, workplace injuries and near-misses, as well as accidents, or suspicious activity to emergency (66611) or non-emergency (66700) services

Evaluating Hazards in the Work Area

- Increase the awareness of the contractor to be constantly assessing the work area for new hazards
- Before work is started on any project/work order an evaluation of the potential hazards will be identified. If additional PPE or safety measures are need other than safety glasses, hard hats and cut resistant gloves, a JHA will need to be filled out by your supervisor.
- Fill out daily QEI JHAs (Job Hazard Analysis) **“NO JHA, No Work”**
 - **Appendix D** JHA Example
- React immediately to hazards to protect personnel and property and report any new hazards to the area Supervisor.

Personal Protective Equipment and Clothing (PPE)

- Explain area PPE requirements

- All Construction Contractors will wear safety glasses, hard hats and cut resistant gloves for all work activities. Additional PPE will be identified in the Work Procedure/JHA that is in place.
- All Maintenance Contractors will wear safety glasses for all work activities. Additional PPE will be identified in the Work Procedure/JHA that is in place.

Safety Shower/Eyewash Stations

- Point out closest shower / Eyewash locations in the area
- 15-minute policy
- Discuss safety shower/eyewash protocol

Area Alarm Systems

- Point out fire horn/strobe, fire pull stations, and describe evacuation procedure
- Point out blue TGM (Toxic Gas Monitoring) remote strobe and horns, explain their purpose, and describe evacuation procedure
- Point out red rotating beacons (EES/AES/VOC) and describe evacuation procedure

Fire Evacuation, Mustering Sites and Evacuation Routes

- Fire Alarm will produce a loud trumpeting sound and flashing light
 - Exit the building immediately through the nearest exit. Do not wait for someone to tell you to leave.
 - Follow the exit signs and others moving out.
 - Gather outside the building at the yellow mustering box.
 - Use stairs for evacuation. Remember elevators do not work during emergencies.
- Using diagram, show the evacuation routes from the work area
- Review mustering procedures:
 - Report to mustering area
 - Report any personnel still in the building

Electrical Safety/Energy Isolation (CoHE)(Lockout/Tagout)

- Explain QEI/Micron electrical safety procedures
- Explain how to properly fill out an EEWP (Energized Electrical Work Permit)
- Non-compliance will result in disciplinary action
- Explain basic electrical safety and Energy Isolation
 - Do NOT remove any energy isolation device unless you applied it.
 - Do NOT try to start equipment that is locked out.
- **Appendix E** Electrical Safety and Energy Isolation

Clean Room Energized Electrical Work

- Explain Clean Room Energized Work Procedures
 - **Appendix F** Clean Room Energized Electrical Work

Fall Protection

- Identify storage locations for ladders
- Describe how to safely perform tasks using ladders at Micron
- Discuss: A safety harness and lanyard must be worn when
 - In permanent installations whenever the worker is exposed to a fall four feet and greater
 - During construction and remodel activities whenever the worker will be exposed to a fall six feet and greater
- Inspect fall protection equipment before use
- Discuss: Do not stand on the top two rungs of a ladder
- Discuss: Do not step off a ladder onto equipment
- Discuss the use of scaffolding
 - **Appendix G** Scaffold Safety

Subfloor Entry and Guarding

- If one tile is removed, an appropriate guard (Cage) needs to be placed around it
Depth of subfloor cage requirements for one tile removed
 - Less than 1 foot no cage is required (use 6s barrier cones to direct traffic around open tile)
 - 1 foot or greater to less than 4 feet a 30 in minimum guard rail height is required
 - 4 feet and greater a 42 in minimum guard rail is required
- If multiple tiles are removed, a temporary railing system must be put in place
- After entry point is protected, you need to conduct a hazard analysis of the space before entry
- Subfloors are not considered a confined space as long as the hazards encountered are not capable of causing serious injury or death
- Two individuals are required upon entry into the sub floor (Let your tool partner or supervisor know before entry encase of an emergency)
- **Appendix H** Raised Floor Procedures

Confined Space

- Explain Micron's confined-space program
- **Appendix I** Confined Space

Fire Extinguishers

- You can use a fire extinguisher, but are not required to
- Contact Security (66611)
- Classes of Fire Extinguishers (A, B, C, D, K)
 - **Class A** extinguishers are for ordinary combustible materials such as paper, wood, cardboard, and most plastics. The numerical rating on these types of extinguishers indicates the amount of water it holds and the amount of fire it can extinguish. Geometric symbol (green triangle)
 - **Class B** fires involve flammable or combustible liquids such as gasoline, kerosene, grease, and oil. The numerical rating for class B extinguishers indicates the approximate number of square feet of fire it can extinguish. Geometric symbol (red square)
 - **Class C** fires involve electrical equipment, such as appliances, wiring, circuit breakers and outlets. Never use water to extinguish class C fires - the risk of electrical shock is far too great! Class C extinguishers do not have a numerical rating. The C classification means the extinguishing agent is non-conductive. Geometric symbol (blue circle)
 - **Class D** fire extinguishers are commonly found in a chemical laboratory. They are for fires that involve combustible metals, such as magnesium, titanium, potassium, and sodium. These types of extinguishers also have no numerical rating, nor are they given a multi-purpose rating - they are designed for class D fires only. Geometric symbol (Yellow Decagon)
 - **Class K** fire extinguishers are for fires that involve cooking oils, trans-fats, or fats in cooking appliances and are typically found in restaurant and cafeteria kitchens. Geometric symbol (black hexagon)

SDS and Chemical Safety

- Contact your supervisor for information on chemicals you encounter
- Adhere to all posted signage
- Contact supervisor before entering areas which require additional PPE (Tyvek Suit, Acid Gloves, etc.)
- Tyvek Suit Training required before usage

TMAH (Tetramethylammonium Hydroxide)

- Explain the hazards of TMAH
- Orange and black tape around equipment indicates TMAH is present
- **Appendix J** TMAH Information

Automated Material Handling System (AMHS)

- Make sure AMHS hazards and LOTO procedures are specifically addressed in your JHAs to include (requirement for them to apply their own lock)

- Contact Security Control 66611 right away for near misses involving AMHS system
- Scissor lift operation: understand your surroundings and use spotters and do not extend basket when working near Active AMHS system
- Coordinate with AMHS team if you will be working within 36" of AMHS system to appropriately lock system out (Remember if you are working on or within 36") you have to apply your own LOTO lock & tag.
- AMHS points of contact are John Weaver or Steve Nally

V. Quality Control Program

What is Quality Control?

Quality Control is a system for verifying and maintaining a desired level of quality in an existing product or service by careful planning, use of proper equipment, continued inspection, and corrective action as required.

Why is a Quality Control Program Important?

Quality control is essential to building a successful business that delivers a quality product that meets or exceeds the customer's expectations. It also, helps to minimize material waste and increases overall productivity.

Mission Statement

To provide and quality product and service which meets or exceeds local and national electrical standards as well as the customers' expectations.

Inspected Work Tasks

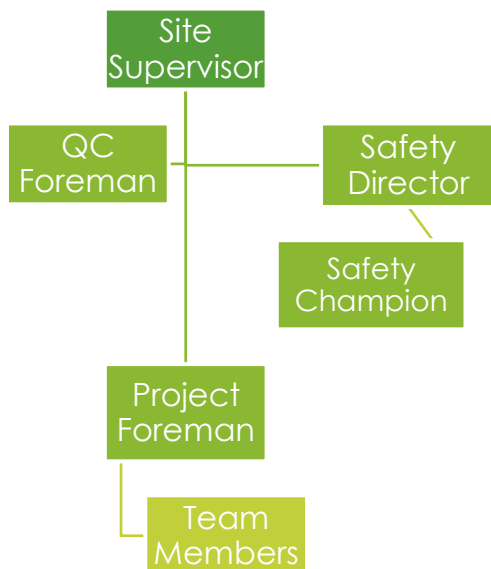
1. Material
2. Distribution Panel
3. Raceway Installation
4. Transformers
5. Conductor Installation
6. VFD's
7. Conductor Connections
8. Direct Equipment Connection
9. Continuity Test
10. Heat Trace
11. Medium Voltage Cable Installation
12. Switchgear
13. Disconnect Switch
14. TGM Installation

15. Enclosed Controller
16. Fire Alarm Installation
17. Branch Panel
18. Control Panel Installation

QC Personnel and Job Assignments

- Site Supervisor
 - Is responsible for all aspects of the QC program and QC personnel.
 - Will assume all responsibilities of the QC Foreman
- QC Foreman
 - Manages the QC Program
 - Witnesses or reviews testing activities
- Project Foreman
 - Manages projects/work orders and team members
 - Performs visual inspections
- Team Members
 - Performs required testing

Organization Chart



VI. Staffing of Safety Representation

At Quality Electric safety is our number one priority. Having appropriate Safety Representation is key in maintaining a positive safety culture and awareness. Having the appropriate personnel available to offer guidance and oversight is the key to the success of our company. We utilize the below format in structuring our safety representation throughout our projects. Subcontractors to adhere to the same safety guidelines and structure as indicated herein.

- < 20 people, a designated safety champion is appointed. Their responsibilities are as follows:
 - Analyze jobsite daily for safety hazards and improper safety practices,
 - Address any safety concerns team members or management may have,
 - Provide guidance for safe work practices for team members to complete tasks,
 - Attends weekly safety walk and / or meetings,
 - Completes safety Audits and general inspections,
 - Report and communicate to Safety Director concerns and violations.
- > 20 people will require a dedicated full time Safety Representative for the project;
 - All the responsibilities of Safety Champion as well as the following,
 - Directs corrective actions necessary on jobsites for violations or concerns,
 - Walk Project continuously to observe safe work practices,
 - Assists with root cause analysis for any Incidents that occur on project,

Appendix A

Global ESD Awareness

Electrostatic Discharge (ESD)

Electrostatic discharge (ESD) is the transfer of an electrostatic charge between bodies at different electrostatic potentials. It is caused by direct contact with the body or induced by an electrostatic field. This can be damaging to Micron Products. Follow signs and protocol for ESD footwear and lab coats.

Understanding ESD

- Static Electricity is an imbalance of electric charges on the surface of a material. The charge stays this way until it can “discharge”. With lightening, static electricity discharges when the difference in the charge from the sky is greatly different than the charge on the ground. When the charge releases, it creates a bright flash, heat, sound, and a huge electrical current arc through the air.
- Static electricity at Micron can build up on people when they walk on carpets or other floors that do not conduct electricity. These surfaces are called insulators. When you walk on them, you cannot feel it, but the motion of your feet on the carpet has caused you to pick up static electricity. Then when you touch a conductor the static electricity will discharge.
- So, what is it . . . ?
 - The answer to this question is that electrostatic discharge (ESD) is the movement, or “discharge” of static electricity from one surface to another.
 - An example of ESD is getting zapped when you touch a doorknob after walking on carpet. The shock was the static electricity being transferred to the doorknob. In other words, electrostatic energy was discharged.

Reducing Electrostatic Discharge

- Why are we worried about ESD at Micron?
 - The product we manufacture at Micron are all highly vulnerable to ESD damage. AS an employee who may work closely to product at Micron, you need to be aware of the problems that ESD can cause and take the necessary precautions to reduce ESD in the workplace.
- How can you help reduce built up static?
 - At Micron, equipment, tools and floors are connected to an earth ground much like a lightning rod is connected to the ground. We use ESD safe garments to shield product from static electricity and we ground ourselves to the floor using ESD booties, heel – straps or shoes. By wearing your protective smock and tucking in the ground strap you

will reduce static on your body and help protect sensitive product from damage.

- In addition to wearing protective clothing, make sure to keep insulators like cups and plastic garbage cans away from product.
- Watch for signs and floor labels indicating the ESD protected Areas (EPAs) like this one. Make sure you wear your protective clothing and booties and remember to be careful with insulators around tools and product
- Perform the Grounding test to verify you are properly grounded as you enter the ESD Protected Area with the tester below. If the test fails, readjust your bootie straps and test again. Do not enter the EPA until you have passed the footwear grounding test.

Appendix B

6s Barrier Zone Control Procedures

Glossary

- 6S – Workplace organization methodology that strives to create a visual workplace that is organized, clean efficient and safe. Sustainment of these behaviors is accomplished through regular 6S auditing of cleanroom and sub-fab areas by leadership and management personnel.
 - 6S =
 - Safety: Every process and activity performed is done safely
 - Sort: Distinguish needed and unneeded items through red tag events
 - Stabilize: Everything has a place, and everything is in its place.
 - Shine: Keep the workplace clean
 - Standardize: Maintain and monitor the first 4S's
 - Sustain: Adhere to the rules and standards established.
- 6S Audits – Performed in each of the cleanroom and sub – fab areas to identify workplace organization and safety deficiencies and assign owners for follow up. The system is used to sustain the barrier – zone control procedure.
- Barrier – An obstacle that is easily moved and is used to control, block passage, or re-route the flow of traffic in a desired direction. Barriers deter traffic through the area but do not physically prevent it.
- Barricade – An obstacle that is not easily moved and is used to control, block passage or force the flow of traffic in a desired direction. Barricades must be physically capable of withstanding at least 200 lbs. of force when applied against the barricade.
 - Example: Open floor tile cages, uni – strut barricades, etc..
- Barrier Zone – Any temporary work or material staging location that uses barrier bars and cones to keep local traffic out. A sign is posted for easy identification of

the work being performed or material in that area and identifies who owns the barrier zone and how long it will be there.

- Barrier Zone Sign – Sign posted at all barrier zones detailing the work and the impacted area.
- Barrier Item Staging Area – Area designated for storage of barrier zone signs, bars, cones and transfer carts when not in use.
- Owner – Individual who is performing the work or is responsible for the work being performed, or who own the items in the workspace

6S Barrier – Zone Control Business Process Responsibilities

- All Team Members
 - Adhere to the guidelines in this procedure. Barrier – zone control scenarios are posted at various barrier item staging areas.
 - Micron Team members must certify on 6S Barrier Zone Control Procedure prior to setting up or taking down barrier zones for temporary work or material staging.
 - Non – Micron employees, such as contractors and vendors, must receive barrier zone training from their host prior to setting up and taking down barrier zones for temporary work or material staging areas.
 - All items from the barrier item staging areas are to be returned when no longer in use. This includes barrier bars, cones, signs and carts which are all labeled with their home locations.
 - For all staging locations, the area around the material or work must have a barrier zone set up by the owner.
 - For all barrier zones, fill out a barrier zone sign with the required information and attached to one of the barrier bars, facing out in a visible location.
 - If the barrier zone is set up in a tight space, it may need to be set up so that it redirects or isolates traffic through the whole space. This may be required long term if necessary.
 - When setting up any barrier zone, minimize the footprint of the area to the smallest possible, while maintaining a safe perimeter.
 - When work is not actively being performed in the barrier zone, the owner of the space should consolidate the footprint of the barrier zone so traffic can resume where appropriate. The space must be free of any safety hazards, egress restrictions, or housekeeping issues (i.e. during lunch, breaks, or end of the shift, etc..)
 - When exiting a Barrier Zone, keep the area isolated by either opening one side of the barrier zone or removing the bar completely from the cones. Then exit the barrier zone and return the bar and cone to the appropriate position.
 - IMPORTANT: In order to prevent potential trip hazards, do not step over a barrier bar when exiting a barrier zone.

Appendix C

Decontamination/Construction Trash/Recycle Bins

PVC / PVDF Pipe

- PVC / PVDF Pipe will no longer be recycled at the Boise Site.
- Dispose of PVC / PVDF as follows:
 - All PVC / PVDF pipe that has been removed from service will go to the compactor as the first choice.
 - Larger pieces will go to construction trash.
 - Teflon pipe / fittings will go to Teflon recycle containers.

Gloves and Yellow Bags

- Acid gloves and yellow bags are not acceptable in recycle bins.
- Acid gloves are acceptable to use as caps in construction trash and decontamination bins.
- Yellow bags are only to be used for items needing decontamination.
- Yellow bags can only be placed in decontamination bins.
 - Use 150 – 00418 (24X40 4 mil) bags for construction trash. These will be stored at each service entrance.

Arsenic – Contaminated Material

- Only use red bags for items that are contaminated with arsenic.
- Prior to demolition of arsenic – contaminated material, page “Waste handler”.
- Arsenic – contaminated material is to be transported immediately to the arsenic waste drop off behind building 22.
 - There are no bins on-site that are acceptable to use for arsenic – contaminated materials.

Solvent – Contaminated Material

- For solvent – contaminated material, page “Waste handler”.
- Immediately deliver the contaminated material to Building 22.
 - There are no bins on site that are acceptable to use for solvent – contaminated material.

Glycol Disposal

- Glycol may not be poured into any drains at Micron without prior notification and approval from the Environmental Group and Water Services

- The preferred disposal method for glycol is to pour contents into a plastic sealed container (960 – 00208)
- Containers are not to be immediately tagged with a chemical relabel tag (400-00076) or clearly marked with:
 - Chemical Name
 - Date
 - Employee Name
- Unmarked containers of any chemicals are not allowed on-site
- Page “Waster Handler” for proper disposal.

Guardian Line Decontamination / Recycle

- Place the guardian lines listed below in recycle bins if there is no sign of process build up on the inner wall of the pipe. Place Guardian lines listed below with visual build up in decontaminated bins.
 - Diffusion Nitride (LPCVD)
 - CVD Nitride guardian lines (NTPR)
 - Diffusion Poly
 - CVD Transparent Carbon (TCPR)
 - CVD BPSG (BPPR)
 - CVD Teos (TEPR)
 - CVD Darc (DCPR)
 - CVD Tungsten (WNAL)
 - Diffusion Centura ISSG (CENT)
 - Diffusion LPRO (TLPR)
 - Diffusion ISOP (ASMF)
 - CVD HOP Oxide (HOSP)
 - Diffusion Hafnium (TALX)

Guardian Line Decontamination

- Do not place the Guardian lines listed below in recycle bins. Each process has either a written procedure for demolition / decontamination or the process lines must be placed in decontamination bins.
 - Dry Etch Metal Etch (ACM)
 - CVD Tech Unity (STUN)
 - CVD Amat Centura EPI (EPCN)
 - Diffusion ALD Sio2 (TOX)
 - Dry Etch Ti Silicide (TICN)
 - Ensure that exhaust line designation labels are on each piece (line#). If that is not possible, bundle lines together and use one decontaminated tag (400-00086). Ensure that all removed piping is transported immediately to the nearest decontamination bin.

PVC Glue and Primer – Storage and Disposal

- PVC glue and primer should be stored and disposed of as follows:
 - Store in an exhausted enclosure when not in use.
 - When a can of glue or primer goes bad or is empty, mark it with a sharpie as “empty” or “bad” and place it in the cabinet with the lid sealed.
 - It is no longer acceptable to open the lid in the enclosure and let the can dry out when the glue or primer can no longer be used.
 - When half a dozen or so cans are ready for disposal, page “Waste Handler” for pick up.

Additional Information

- MT Group “HAZDEMO” can be contacted with any decontamination concerns this procedure has not covered.
- Waste handler SharePoint Site
- EPL.doc (09005aef8050aa7c)
- For a demo that has potential contaminants, a “Hazdemo” will be requested. If janitorial support is needed, send the Hazdemo to the superintendent for that area stating when and where demo will occur. The superintendent will then schedule janitorial support and provide the Hazdemo to the janitorial team.

Emergencies

- If any accidents or emergencies occur, immediately contact the Security and Emergency Services Control Room at Ext 66611 or phone at 368-3095.

Appendix D

JHA Example

Job Title or Task:	Building36Remodel	Department:	Micron
Name of person(s) performing this job/task:	Chadrick Sandoval, Sam Erickson, Dave Williams, Rigo Reyes, Trey Dennis, David Baugh, Derrick Chavez, Russ Lewandowski, Dan Reichert, Bob Mott, Davey Trumbo, Jason Pluger, Phineas Lammer, Drew Hodge, Lyle Dean, Steve Pectal, George Ochoa, Bob Stork, and		

JHA Created Andrew Baker

Date: 11/20/19

by: _____

JHA Sam Erickson

Date: 12/23/19

Approved/Certified

by: _____

Task Step (Sequence)	Known or Potential Hazards	Controls (Preventive or Corrective Action)
1. Pre-task planning	Communication of hazards	<p>Perform walkthrough and pre-task planning of work area. Communicate all known hazards within work area. If additional hazards are recognized, notify foreman/safety rep to reevaluate job plan and update JHA. Fill out PTP daily before work begins. Perform stretch and flex prior to work.</p> <p>PPE requirements for all work: Safety glasses, cut resistant gloves, high visibility clothing (Vest), hard hats, knee pads and hearing protection (when required)</p>
2. Set up safe work area	Falls, slips, trips, other trades, and non-construction personnel	Corden off work area, good housekeeping, and situational awareness. Communicate with other trades and non-construction personnel.
3. Install underfloor electrical raceway supports with powder actuated tool (Hilti gun)	Falls, trips, pinch points, cuts, strains, sprains, spalling and hearing damage	<p>Barricade off work area. Adhere to proper lifting techniques when removing raised floor tiles. Communicate open floor hazard with other team members and trades. Certification required to operate powder actuated tools (Hilti cert.) Use powder actuated tools as there intended Notify other trades in the area when using powder actuated tool Wear appropriate PPE when using powder actuated tool (hearing protection, etc.) Good housekeeping and situational awareness.</p>

4. Install underfloor electrical raceways	Falls, trips, pinch points, cuts, strains, sprains	Barricade off work area. Adhere to proper lifting techniques when removing raised floor tiles. Communicate open floor hazard with other team members and trades. Use proper pulling techniques. Good housekeeping and situational awareness.
5. Install overhead electrical raceway supports (Lighting, General Purpose Power, Security, VAV power/controls, Fire Alarm)	Falls, trips, slips, cuts, falling objects, hearing damage and ricochet	Barricade off work area. Use single man lift to install overhead electrical raceway supports or a podium style ladder if necessary. All team members shall be trained on how to properly use lifts prior to use. Inspect ladders prior to use and adhere to proper ladder usage. Secure material and tools while working on elevated platforms. Good housekeeping and situational awareness. Use assists when raising and lower material while working off podium ladders (bucket, rope or team member). Certification required to operate powder actuated tools (Hilti cert.) Use powder actuated tools as there intended Notify other trades in the area when using powder actuated tool Wear appropriate PPE when using powder actuated tool (hearing protection, etc.)
7. Install overhead electrical raceways (Lighting, General Purpose Power, Security, VAV power/controls, Fire Alarm)	Falls, trips, slips, cuts, pinch points and strains	Barricade off work area. Use single man lift to install overhead electrical raceways or a podium style ladder if necessary. All team members shall be trained on how to properly use lifts prior to use. Inspect ladders prior to use and adhere to proper ladder usage. Secure material and tools while working on elevated platforms. Good housekeeping and situational awareness. Use assists when raising and lower material while working off podium ladders (bucket, rope or team member).
8. Removal of overhead conduit and wiring	Falls, trips, slips, cuts, falling objects	Use single man lift to access the ceiling or a podium style ladder if necessary. All team members shall be trained on how to properly use lift prior to use. Inspect ladders

		<p>prior to use and adhere to proper ladder usage.</p> <p>Secure material and tools while working on elevated platforms.</p> <p>Good housekeeping and situational awareness.</p> <p>Use assists when raising and lower material while working off podium ladders (bucket, rope or team member).</p>
9. Power operated and hand tool usage	Cuts, scrapes, pinch points and punctures	<p>Use tools according to manufacturer instructions.</p> <p>Wear proper PPE.</p> <p>Notify Foreman if unfamiliar with tool before use.</p>
10. Moving/handling material, equipment and tool handling	Falls, trips, slips, cuts, pinch points and strains	<p>Secure material before moving.</p> <p>Place all equipment and tools in a safe state prior to moving and storing.</p> <p>Use proper lifting techniques and ask for assistance when needed.</p> <p>Proper body positioning.</p>
11. Wall rough-in, floor penetrations, outlet and raceway attachment	Cuts, abrasions, binding, congested work areas, Hilti gun, man lift/ladder use	<p>Attentive and alert, PPE, proper tool use and training, proper form to access task being performed, coordinate with other trades in areas minimal ladder use to access conduits at elevation, list if necessary</p>
Required Training		Minimum Required Personal Protective Equipment
Minimum:		Hard Hats, Safety Glasses, High Visibility Clothing (Vest) and Cut Resistant Gloves
<ul style="list-style-type: none"> - All QEI required basic employee safety training - Anyone performing this task, must be trained on these JHA provisions <p><u>Additional:</u></p> <ul style="list-style-type: none"> - Lift training - Hilti Certification - Fork Lift Certification 		

Signature

Date

Appendix E

Electrical Safety and Energy Isolation

Purpose

The purpose of this procedural is to provide electrical safety related work practices for nonqualified person(s) with limited exposure [those with little or no training], workers expected to be exposed to hazards in the normal course of their duties, and qualified person(s) [those who have specific training in avoiding the electrical hazards of working on or near exposed energized parts] in an effort to avoid on-the-job injuries and property damage.

Policy and Procedure

1. General Statement Tagout/lockout and safety-related work practices shall be employed to protect all employees from electrical shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits which are or may be energized. The specific-related work practices shall be consistent with the nature and extent of the associated electrical hazards
2. **DO NOT WORK ON ANY EQUIPMENT THAT IS ENERGIZED**, live parts **shall always** be placed in an electrically safe work condition (as defined by NFPA-70(E) before an employee work on or near them, unless work on energized components can be **justified** according to NFPA-70E 130.2(A) 1, 2, 3 and Informational notes 1 and 2.
3. Three Levels of Potential Staff Exposure Designation
 - a. Non-Qualified Person:
 - As determined by their supervisor, person(s) NOT required to perform electrical work. A “non-qualified person” is an individual whose duties (i.e. Administrative/Office Staff, Other Specialty Craftsperson), as determined by their supervisor, do not require exposure to electrical hazards through their normal duties. Due to their normal work duties, these persons have little training and do not require specific training in avoiding possible electrical hazards that may be encountered while working on or near exposed energized parts. These persons may also include those who are unfamiliar with the equipment or systems on which work is to be performed. These person(s) are considered to have no training.
 - This person is NOT authorized to perform work on exposed energized or potentially exposed energized parts.
 - b. Exposed Worker NOT performing Electrical Work:
 - Person(s) with minimal training, as determined by their supervisor whose duties require exposure to electrical hazards through their normal duties but are NOT actually performing the electrical work. This person may have been trained in

accordance with 29 CFR 1910 parts 331 – 335. However, they have not received training with NFPA 70 E for avoiding electrical hazards of working on or near exposed energized electrical parts.

c. **Qualified Person:**

- As determined by their supervisor, person(s) required to perform electrical work.
- A “qualified person” is an individual who has been trained in accordance with 29 CFR 1910 parts 331 – 335 and NFPA 70 E. This individual has received training for avoiding electrical hazards and for working on or near exposed energized electrical parts. This individual is familiar with the electrical and electronic construction, operation, and hazards of a piece of equipment or system that they are working on. They know the proper use of precautionary work procedures, personal protective equipment, insulating and shielding materials and techniques, and the proper insulated tools required to work on energized circuitry.
- This person is authorized to perform work on exposed energized or potentially exposed energized parts **ONLY** if documented **VALID** training **IS ON FILE**.

4. **Labeling**

- a. Electrical panelboards rated 240 volts and below shall be labeled with a standard Arc Flash Warning label that identifies a Flash Protection Boundary of 48” and Personal Protective Equipment (PPE) as follows: Class 1-Work on energized conductors and/or parts; removal/installation of circuit breakers or switches; removal of bolted covers.
- b. Electrical panelboards, switchboards, and motor control centers (MCC’s) rated more than 240 volts and less than 600 volts, and less than 1200 amps shall be labeled with an Arc Flash Warning label that identifies a Flash Protection Boundary of 48” and Personal Protective Equipment (PPE) as follows:
 - Class 1-Non-contact inspections other than operation of circuit breaker handles (with covers on); circuit breaker or fused switch operations (covers off or doors open); opening of hinged covers to expose energized parts.
 - Class 2*-Work on energized conductors and parts; work on control circuits if voltage is 120 volts or greater; application of safety grounds after voltage test.
 - Class 4-Insertion or removal of individual starter buckets from MCC; removal of bolted covers to expose energized parts.
- c. Electrical panelboards, switchboards, and Meter Control Centers (MCC’s) at any voltage and rated more than 600 volts and panelboards,

switchboards, and MCC's of any voltage with a rating of 1200 amps or more shall have their available short-circuit current calculated by Physical Plant Engineering Services and labeled with a custom label with an Arc Flash Warning label that identifies a Flash Protection Boundary determined by the calculations and Personal Protective Equipment (PPE) as follows

- Class 1-Non-contact inspections other than operation of circuit breaker handles (with covers on); circuit breaker or fused switch operations (covers off or doors open); opening of hinged covers to expose energized parts; cable trough/tray/miscellaneous cover removal or installation.
- Class 2-non-contact inspections; opening hinged covers to expose energized parts.
- Class 2*-work on energized conductors and parts; work on control circuits if voltage is 120 volts or greater; application of safety grounds after voltage test; insertion of plug-in devices.
- Class 4-Insertion/removal (racking) of circuit breakers from cubicles; removal of bolted covers to expose energized parts.

d. Location/Placement of Labels

- Equipment in locations accessible to the public: Labels shall be adhered to the inside of the panelboard door or placed in a durable clear plastic envelope fastened to the inside of the panelboard door.
- Equipment in locations not accessible to the public: Labels shall be adhered to the equipment in a location that allows service personnel to readily see and read the label

5. Procedures for Working on Energized, Hazardous Voltage, Electrical Circuitry

a. Guidelines

- 1) Only “qualified persons” are permitted to work on energized electrical equipment such as electrical panels, wiring and switches. They shall follow all safe practices and procedures for the area and equipment/processes being worked on. Personal protective equipment (PPE) such as gloves, safety shoes, hard hats, eye/face protection, insulated fuse pullers, insulated hand tools and non-conductive ropes and hand lines should meet industry standards (NFPA-70E Article 250.2, subsection A) for electrical work as required. All personal jewelry (i.e., rings, earrings, watches, necklaces, etc.) will be removed before working on or around energized electrical equipment.
- 2) Live parts to which an employee may be exposed shall be de-energized and red tagged/locked out before the employee works on or near them, unless it can be demonstrated that de-energizing introduces additional or increased hazards or is not feasible due to equipment design or operational limitations. All electrical parts and components are assumed to be energized

until tested and verified to be de-energized. Live parts that operate at less than 50 volts to ground need not be de-energized if there will not be increased exposure to electrical burns or to explosion due to electric arcs.

- 3) If the exposed live parts are not de-energized and red tagged/locked, specific permission from the respective Foreman must be obtained prior to proceeding further (i.e., for reasons of increased or additional hazards or infeasibility), other safety-related work practices shall be used to protect employees who may be exposed to the electrical hazards involved. Such work practices shall protect employees against contact with energized circuit parts directly with any part of their body or indirectly through some other conductive object.
- 4) Anytime work is to be done on energized electrical circuitry, a Safety Watch will be employed. **Safety Watch: An individual who is trained in and familiar with the hazards and the methods of the work being performed. This individual's only responsibility is to ensure that safe work procedures are followed, to summon rescue help, and assist in rescue efforts when help arrives.**
- 5) Safe distances, spacing, and other required barriers shall be observed.
- 6) At least one or more persons per "crew" should be trained in CPR and should NOT be the person performing the work.
- 7) All electrical equipment shall be considered energized, until proven otherwise.
- 8) De-energize all circuits before beginning work. The use of Lockout/Tagout procedures will be accomplished to prevent electrical circuits from inadvertent energization.
- 9) Use double insulated or grounded electrical tools to protect employees. Use Ground Fault Circuit Interrupters (GFCI's) in wet or damp environments and/or with extension cords. Do not render electrical interlocks inoperative by removal, modification, or destruction.
- 10) High voltage or areas with exposed live parts must have a sign stating "Danger – Keep Out." "Qualified persons" who work on exposed energized parts must barricade/secure the area prior to leaving it.
- 11) All disconnects, circuit breakers, and control boxes shall be clearly labeled to identify the corresponding equipment they control. All voltage and amp ratings shall be clearly identified as specified by the National Electric Code (NEC).
- 12) Use non-conductive ladders when working near electrical equipment or energized electrical conductors.
- 13) Use protective equipment/devices such as rubber mats and blankets to provide insulation from other electrical energy and/or grounding sources. Other personal protective equipment is available as required.

b. Personal Protective Equipment and Care

- 1) Persons working in areas where there are potential electrical hazards shall be provided with, and shall use, electrical protective equipment that is appropriate for the specific parts of the body to be protected and for the work to be performed.
 - 2) Gloves and mats shall be rated for the voltage(s) involved. Minimum voltage rating on gloves and mats shall be 1,000 volts.
 - 3) The user of rubber insulating gloves shall perform a visual and a roll up pressure inspection of the gloves prior to each use to ensure they are free from defects (cuts, tears, holes, foreign objects, etc.)
 - 4) All work on energized equipment will be conducted while standing on an insulated floor mat rated for the voltages involved, except when performing measurements of calibration of equipment at or below 600 volts-to-ground or phase-to-phase. Rubber insulating blankets and mats have specific requirements to ensure that they are free from defects (cuts, tears, holes, foreign objects, etc.)
 - 5) All personal protective equipment shall be maintained in a safe, reliable condition and shall be annually (NFPA-70E Article 250.2, subsection-B) inspected and tested.
 - 6) Non-conductive protective head gear shall be worn wherever there is a danger of head injury from electrical shock or burns due to contact with exposed energy parts.
 - 7) Protective eye and face wear shall be worn whenever danger exists of eye or facial injuries from electrical arcs or flashes or from flying objects resulting from an electrical explosion
- c. Working on or Near Exposed De-Energized Parts
- 1) Conductors and parts of electric equipment that have been de-energized but have not been locked or tagged out shall be treated as energized. This applies to work being performed on exposed de-energized parts or near enough to them to expose employees to any electrical hazard present.
 - 2) A Lockout/Tagout Program has been established by Quality Electric. Whenever possible and the electrical equipment allows for it, the lockout/tagout program will be followed in isolating de-energized electrical equipment. Work on energized electrical components that does not employ the use of the lockout/tagout program will only be done after the written approval of the appropriate General Foreman or Foreman.
- d. Working on or Near Exposed Energized Parts
- 1) This applies to work being performed on electric circuit parts or equipment that has not been de-energized. Such person(s) shall be qualified as defined above to work safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.

- e. Illumination
 - 1) “Qualified person(s)” shall not enter or place parts of their body into spaces containing exposed energized unless illumination is provided that enable them to perform the work safely.
 - 2) Where lack of illumination or an obstruction precludes observation of the work to be performed, “qualified person(s)” shall not perform tasks near exposed energized parts. They shall not reach blindly into areas which may contain energized parts.
- f. Confined Space or Enclosed Workspaces
 - 1) A confined space entry permit must be obtained and safety backup in place prior to a “qualified person” working in a confined or enclosed space (such as a manhole or vault) that contains exposed energized parts.
 - 2) They shall be provided with and shall use protective shields, protective barriers, or insulating materials as necessary to avoid inadvertent contact with these parts. Doors, hinged panels, and similar items shall be secured to prevent their swinging into and causing the person to contact exposed energized parts.
- g. Conductive Materials and Equipment Conductive materials and equipment that are in contact with any part of a “qualified person’s” body shall be handled in a manner that will prevent them from contacting exposed energized conductors or circuit parts. If long dimensional conductive objects (such as ducts and pipes) must be handled in areas with exposed live parts, work practices (such as the use of insulation, guarding, and materials handling techniques) shall be employed eliminating or minimizing the hazard.
- h. Portable Ladders Portable ladders shall have non-conductive siderails if they are used where the qualified person(s) or the ladder could contact exposed energized parts.
- i. Housekeeping
 - 1) Where live parts present an electrical contact hazard, qualified persons may not perform housekeeping duties at such distances to the parts that there is a possibility of contact, unless adequate safeguards (such as insulating equipment or barriers) are utilized.
 - 2) Electrically conductive cleaning materials shall not be used in proximity to energized parts unless procedures are followed which will prevent electrical contact.
- j. Training
 - 1) Qualified persons shall be trained in accordance with the components detailed in 29 CFR 1910.331-335 and NFPA 70 E as they pertain to respective job assignments.
 - 2) Qualified persons shall, at a minimum, be trained in and familiar with the following:
 - a. The skills and techniques necessary to

distinguish exposed live parts from other parts of electrical equipment

6. Sequence of Process Events

a. Application

- 1) This application applies to work performed on exposed live parts (involving either direct contact or by means of tools or materials) or near enough to them for qualified person(s) to be exposed to any hazard they present.
- 2) Only qualified persons may work on electric circuit parts or equipment that has not been de-energized under the lockout/tagout program. Such persons shall be qualified as defined above to work safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.
- 3) Preparation for “Hot Work” Qualified persons must review the Energized Parts Work Permit (Attachment A) “Required Precautions Checklist” and ensure compliance with the established authorized process.
- 4) Energized Parts Work Permit (Attachment A) The qualified person will verbally notify the appropriate foreman or supervisor of the need for an Energized Parts Work Permit. The appropriate foreman will complete the Energized Parts Work Permit (Attachment A). The foreman will review all aspects of the Energized Parts Work Permit and process to determine if there is a way for Lockout. If lockout cannot be applied, appropriate actions shall be taken to ensure all affected personnel are notified and safe practices implemented. At that time, the appropriate foreman will authorize the energized work process.

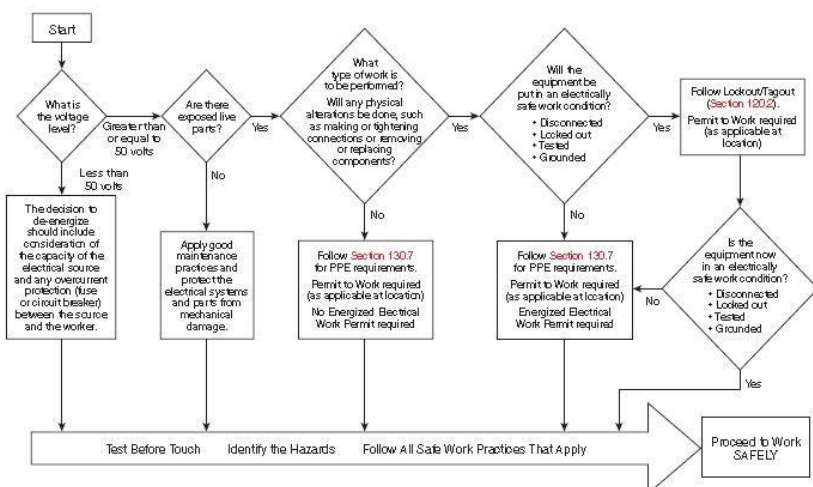
A permit will be issued only for the duration of the work process to be performed.

7. All personnel and other authorized personnel shall wear the appropriate PPE, based on the current NFPA70E guidelines in the Quality Electric Inc Safety Manual:

8. Accountability

Foremen are responsible for ensuring compliance of these Procedures.

Energized Electrical Work Permit Flow Chart



Licensed Apprentices Hot Work Procedures

This is just a guideline and should be held as the minimum standard, each apprentice should be evaluated for where they are currently and how comfortable the JW is with their skills according to the chart. If they feel they are more capable or less capable they can assess and have a conversation with their Foreman.

Years as an Apprentice	Outside Arc Flash Boundary *	Inside Arc Flash Boundary *	Limited Approach Boundary (3' 6")	Restricted Approach Boundary (1')
CW	NO	NO	NO	NO
First	YES	NO	NO	NO
Second	YES	Yes (Category 0 – 2)	Yes (Category 0 – 2)	NO
Third	YES	Yes (Category 0 – 2)	Yes (Category 0 – 2)	NO
Fourth	YES	Yes (Category 0 – 2)	Yes (Category 0 – 2)	?
Fifth	YES	Yes (Category 0 – 3)	Yes (Category 0 – 3)	Yes (Category 0 – 3)

* Default to 48" in flash protection boundary on arc flash label is less than 48"

Personal Protective Equipment (PPE)

(NFPA 70E Table 130.7 (C)(16)

Arc – rated clothing shall be worn whenever there is a possible arc flash above the incident exposure level of a second-degree burn (1.2cal) (NFPA 70E 130.7 (C)(6)

PPE Category	PPE
1	<p>Arc – Rated Clothing, Minimum Arc Rating of 4 Cal Arc – rated long sleeve shirt and pants or arc – rated coverall Arc – rated face shield or arc flash suit hood Arc – rated jacket, parka, rainwear or hard hat liner (AN)</p> <p>Protective Equipment Hard Hat Safety Glasses of safety goggles (SR) Hearing protection (ear canal inserts) Heavy Duty leather gloves Leather footwear (AN)</p>
2	<p>Arc – Related Clothing, Minimum Arc Rating of 8 Cal Arc – rated long sleeve shirt and pants or arc rated coverall Arc – rated flash suit hood or arc rated face shield and arc rated balaclava Arc – rated jacket, parka, rainwear or hard hat liner (AN)</p> <p>Protective Equipment Hard Hat Safety glasses or safety goggles (SR) Hearing protection (ear canal inserts) Heavy duty leather gloves Leather Footwear (AN)</p>
3	<p>Arc – Rated Clothing Selected so that the System Arc Rating Meets the Required Minimum Arc Rating of 25 Cal Arc – rated long sleeve shirt (AR) Arc – rated pants (AR) Arc – rated coverall (AR) Arc – rated arc flash suit jacket (AR) Arc – rated arc flash suit pants (AR) Arc – rated flash suit hood Arc – rated gloves Arc – rated jacket, parka, rainwear, or hard hat liner (AN)</p> <p>Protective Equipment Hard Hat Safety glasses and Safety Goggles (SR) Hearing Protection (ear canal inserts) Leather footwear (AN)</p>
----- NO WORK SHALL BE DONE ON CATEGORY 4 PANELS -----	

Appendix F

Clean Room Energized Electrical Work

Purpose

The document will clarify the procedure for working on energized electrical equipment in clean rooms.

Procedure

1. **Category 0 – 1 Energized Electrical Work in Clean Rooms**
 - a. Electricians will gown inside fab bootie room or service entry with 6 cal. Arc rated (white) clean room suit and hood wearing no hair net or beard cover underneath.
 - b. Transport voltage rated gloves inside Ziplock bag to work location.
 - c. Immediately after energized electrical work is complete personnel will return to bootie room and remove 6 cal. Arc rated (white) clean room suits.
 - d. Return items to hot work cart inside fab or remove from clean room.
 - e. Laundering of arc rated clean room suits will be performed on a regular basis.
2. **Category 2 Energized Electrical Work in Clean Rooms**
 - a. Electricians will gown inside fab bootie room or service entry with 6 cal. Rated (white) clean room suit and hood wearing no hair net or beard cover underneath.
 - b. Transport 8 cal. Arc rated non-clean room coveralls, balaclava, arc rated face shield / hardhat and voltage rated gloves in zip lock bag to work location inside clean room. The 8 Cal coverall will be put on over the 6 Cal cleanroom coverall.
 - c. Immediately after work is complete, remove 8 cal. Non-clean room arc rated suit, balaclava and arc rated face shield / hardhat.
 - d. Return items to hot work cart inside fab or remove from clean room.
 - e. After 8 cal. Non- clean room suit has been removed and properly stored, personnel will promptly return to bootie room to remove 6 Cal. Arc rated (white) clean room suit.
3. **Category 3 Energized Electrical Work in Clean Rooms**
 - a. Electricians will gown inside fab bootie room or service entry with 6 Cal. Arc rated (white) clean room suit and hood wearing no hair net or beard cover underneath.
 - b. Transport 25 Cal. Arc rated non-clean room bibs, jacket, arc flash hood and voltage rated gloves in appropriate clean room approved container or bag to work location inside clean room. The 25 Cal bib and jacket will be put on over the 6 Cal cleanroom overall.
 - c. Immediately after work is complete personnel will remove 25 cal. Arc rated gear, place in clean room approved container or bag.

- d. Personnel will then promptly proceed to bootie room to remove 6 cal. Arc rated (white) clean room suit.
4. **Fab / Subfab Areas that require Frock, Hair Net and Beard Covers Only**
 - a. At energized work location, remove frock, hair net and beard cover before donning appropriate arc rated PPE as per Micron's EEWP form.
 - b. Immediately after energized work is complete, remove arc rated clothing and re-gown accordingly.

Appendix G

Scaffold Safety

General Scaffold Requirements

- Competency
 - A “competent” person must be present when erecting, moving, dismantling or altering a scaffold and will direct only “qualified” people to assist in erecting, moving or dismantling a scaffold. The competent person will also determine whether fall protection should be used when erecting and dismantling scaffold.
 - A competent person is defined as someone who is familiar with the scaffold system, can identify existing and predictable hazards in the area, and who has the authority to take the necessary measures to ensure a safe installation.
 - Anyone who is a “competent” person under the definition at the beginning of this policy can train others to be “qualified” to perform work on a scaffold.
 - There are people in Boise Facilities who are trained as competent in the assembling and disassembling of scaffolding. If you need training, contact your supervisor.
 - Provide a firm footing to support the intended load. Scaffolding is supported on bas plates, mudsills, concrete floors or other adequate platforms.
 - Micron requires the use of a guardrail system with toe boards on all open sides when scaffolding exceeds the “trigger height” of six (6) feet. Appropriate fall protection devices can be used in lieu of guardrails.
 - To protect workers below a scaffold, hard hats, toe boards, barricades or an attendant must be used.
 - For all areas over egress pathways that cannot be closed off, the scaffold or the area under the scaffold is barricaded and kept free of other people.
 - A scaffold must be able to support four (4) times the intended load.
 - Each type of scaffold has its own hazards. Consult the OEM manual or competent person.

- Do not mix different brands of scaffolds unless the parts are completely interchangeable, can be assembled without force and are approved by the competent person.
- All scaffold frames must be plumb, level braced and secure with all braces.
- Do not work on scaffolds when they are slippery. They must be clean and dry.
- Provide safe access to the scaffold. Only scaffolds with built in ladders designed by the manufacturer may be used as access to the scaffold. All of the rungs must be in alignment.
- Do not work on scaffolds in high winds.
- When leveling a scaffold is necessary, screw jacks must be used.
- Makeshift devices (such as barrels, boxes, etc..) cannot be used on top of scaffolds to increase working height level.
- Use of a ladder on the working surface of a scaffold is prohibited under general scaffold usage except as noted in Occupational Health and Safety Act (OSHA) 1926.451(f) (15).
- A scaffold is to be considered only temporary and maintained daily.

Covering a Scaffold

- If Visqueen is used for protection from the weather or debris, it should extend from the parapet over the full scaffold from the top to bottom. To avoid uplift from the wind, ensure that gravity locks or bolts are used to secure all scaffold couplers.
- If high winds are expected, secure the planks with wire to avoid having them fall off the scaffold.
- Adding plastic or other covers produces enormous pressure on scaffolding and can collapse when windy.

Dimensions

- The working platform shall not be placed further than 14” from the working surface.
- When a guardrail is the primary means of fall protection, the top rail height must be 38”.
- When personal fall protection is used in addition to a guardrail, the top rail height may be 36”.
- Cross bracing can be used in lieu of either a mid-rail or a top rail, but not in lieu of an entire guardrail system. Bracing must intersect in the middle at a height of between 38” and 48” above the platform for a guardrail and between 20” and 30” for mid-rails.
- If the platform length is 10’ or less, it cannot extend more than 12” beyond the support ends.

- If the platform length is more than 10', it cannot extend more than 18" beyond the support ends.
- Planks must be overlapped by at least 12" and only at the supports.
- Platforms must be fully planked with no more than a 1" gap between planks.
- Keep planking clean and organized.
- Walkways between scaffolds must be at least 18" wide and have handrails.
- Ramps between differing scaffold heights cannot be sloped greater than six (6) degrees and must have a slip protection (such as expanded metal, chicken wire, or cleats) and a handrail.
- When the scaffold height exceeds a 4:1 height to base width ratio, it must be guyed, tied or braced.
 - Install bracing where horizontal members meet vertical supports.
 - Repeat the process every 20'
- Forklifts cannot be used to support scaffolding unless the entire scaffold is attached to the forks and cannot be moved while occupied.

Baker Scaffold

- The 4:1 height – to – base ratio applies
- At six (6) feet, guardrails are recommended
- Above seven and a half (7 ½) feet, guardrails are required. (the competent person will make decision based on the task and environment.)

Standard Guardrail

- A standard guardrail must be provided for all scaffolds with a working deck greater than six feet high. (Rather than the 10' allowed in 1910. And 1926.)
- A single rise of most common, welded – frame scaffolds will produce a work deck just under 6 feet in height and can be used without a standard guardrail, but the second rise almost always exceeds 6 feet in height and would require a guardrail.
- It is prohibited to use the cross bracing in lieu of the top rail or the mid rail of a standard guardrail. (Although permitted in certain special situations in 1910 and 1926.)

Access

- An access ladder is required for all scaffolds less than 20' in height. Swing gates or protected guardrail openings are the proper methods to move from the access ladder to the work deck. Climbing over the guardrail to access the work deck is not acceptable at Micron. The end frames of most manufactured welded frame scaffolds are not acceptable as an access ladder.
- Swing gates, removable rails or chains across the point of access (that must remain closed when not in use) are the preferred method for scaffold decking access from ladder. In situations where installing a swing gate is impossible due to challenging

configurations, etc..., the Safety Department must be consulted and must approve any alternative method.

Manually Propelled Scaffolds

Riding on manually propelled scaffolds is not allowed (although permitted under certain conditions in 1910 and 1926). Whenever a manually – propelled scaffold is occupied, the wheels must be locked.

Exterior Wind Considerations

All exterior scaffolds that are draped with materials to retain heat inside the working area create an excess sail area and must be evaluated for stability in high wind conditions. It is usually necessary to provide considerable extra tie – back protection to maintain scaffold stability. In addition, it is usually necessary to strengthen the components used to secure the frame members and the planking.

Prohibited Types of Scaffold

Ladder – Jack Scaffolds are not acceptable for use at Micron

Inspection of the Scaffold

The competent person must inspect scaffolds for the following items each day before use:

- Base
- Ties
- Ladder
- All connections
- Guardrails and toe boards
- Platform / decking
- Distance from the building / wall (<14”) or (<18”) for lath/plastering
- Clean and dry working surface / ladders
- No modifications are permitted

Electrical Hazards

- Overhead lines pose the greatest risk; follow the OSHA requirements
- Power cords pose a potential problem, GFCI is required for construction.
- Protect the scaffold and personnel from encountering any electrical device.
- Do not tie off scaffolds to conduits, duct banks or any other electrical device.

Training Requirements

- Anyone who performs work on a scaffold shall be trained to recognize the following:
 - Electrical Hazards
 - Specific scaffold equipment hazards
 - Fall Hazards
 - Falling object hazards

- Weight restrictions
 - Load location
 - Design Criteria
 - Material handling hazards
 - Other area hazards
- Anyone who is a “competent” person under the definition at the beginning of this policy can train others to be “qualified” to perform work on scaffold.

Scaffold Retraining

- At the discretion of a Supervisor, retraining may be deemed necessary to bring workers up to an anticipated level of proficiency pertaining to assembly, disassembly or performing job task relative to scaffolding. Additional scaffolding training (depending on need and circumstances,) may be conducted as required.

Scaffold Tagging and Inspection

- Inspection and tagging of scaffolds are to be performed by a competent worker experienced in the erection of a scaffold.
- A unique scaffold identification tag number must be clearly identified on all tags for tracking purposes.
- All scaffolds shall be inspected after erection as per OSHA requirements.
- All scaffold identification tags will be of a solid green, yellow or red color with black lettering.
- All scaffold identification tags will have the front information displayed and must be completed for each tag.
 - Date Erected / Tagged
 - Inspected By: Name (print and signature)
 - Inspection Date
 - Department or Group Responsible for Erecting/Maintaining/Dismantling on the reverse side.
- It is a common practice to use the following color schemes:
 - **Green** – tags will be affixed on scaffolds that have been inspected and are safe for use. A green “SAFE FOR USE” tag(s) and should be attached to the scaffold at each access point after the initial inspection is complete.
 - **Yellow** – “CAUTION” tag(s), will replace all green “SAFE SCAFFOLD” tag(s) whenever the scaffold had been modified to meet work requirements, and as a result could present a hazard to the user. The tag indicates special requirements for safe use. The tag as a minimum requirement will have:
 - The unusual or potential hazard marked on the reverse side.
 - The preventative measures that must be taken prior to use to mitigate the hazard marked on the reverse side.

- The name of the client company representative authorizing the use of the yellow tagged scaffold.
- The yellow tag should not be removed until the scaffold has been returned to a safe condition and an inspection by a “competent person” has been completed. Based on the results of that inspection, the appropriate tag (red or green) will be affixed to the scaffold and the yellow tag removed.
NOTE: Use of the “yellow tag” status is not intended to override the green tag system. Efforts should be made to return the scaffold to a “green tag” status as soon as possible.
- **Red** – “DANGER – UNSAFE FOR USE” tag(s), will be used when erecting or dismantling when the scaffold is lift unattended and shall be replace all green “Safe for Use” tag(s) or yellow “Caution / Hazard” tag(s) when a scaffold has been deemed unfit for use. The tag(s) as a minimum requirement will include:
 - The work order or project number, the inspection date, and the name of the person who performed the inspection filled in on the front of the tag.
 - The designation, such as under erection, being dismantled, repairs required or overhead protection only, shall be marked on the reverse.
 - Scaffold re-inspections must be completed any time when conditions may have changed that cause the integrity of the scaffold to be suspect.

Emergencies

If any accidents or emergencies occur, immediately contact Security and Emergency Services Control Room at EXT 66611 or by phone at 208-368-3095.

Appendix H

Raised Floor Procedures

Purpose

This fatality and serious injury prevention program describes the expectations for working safely around raised metal floor (RMF) openings. Such work can create fall, trip, ergonomic, confined space and mechanical hazards. All openings in the RMF, including open view tiles or access panels, shall be protected with a barricade and appropriate signage.

Definitions

- **Barricade:** A barrier put in place to block the area, prevent access and prevent trips or falls. There are two acceptable types for use with raised floor: single tile and rigid.

- Barricade Signage: Acceptable RMF barricade signage includes a “Danger” statement, barricade owner and contact information, start and end date and time, and the hazards present.
- Confined Space: Any space with all three of the following characteristics:
 - Is large enough and so configured that an individual can bodily enter and perform assigned work.
 - Has limited or restricted entry or exit
 - Is not designed for continuous human occupancy
- Entrant: An individual whose head and shoulders enter beneath a raised floor environment
- Entry Attendant: An attendant who constantly monitors and protects an RMF Entrant
- JHA: Job Hazard Analysis
- Permit Required Confined Space: Permit required confined spaces are confined spaces that meet one of the following criteria:
 - Contains or has the potential to contain a hazardous atmosphere
 - Contains a material that has the potential to engulf an Entrant
 - Has an internal configuration that could trap or asphyxiate an Entrant?
 - Has any other serious safety or health hazard that is immediately dangerous to life or health.
- Pop – Out: A pop-out is a circular or square hole in the concrete slab between the Fab and Subfab areas. Pop – outs allow for facility lines and equipment to penetrate between these areas. Pop outs are sometimes called waffle.
- PPE: Personal Protective Equipment
- RMF: Raised Metal Floor consisting of gridded metal tiles, perforated or non – perforated, supported by a substructure of support pedestals.
- RMF Floor hole or Opening: A hole or opening in the RMF caused by removing a full floor tile, or portion of a floor tile, opening a view tile, access panel, or an uncovered opening in a tool pedestal. A hole or opening can create a fall, trip, ergonomic, and/or mechanical hazards.
- RMF Pre-Entry Checklist: A hazard assessment checklist that ensure the proper materials, Entry Attendant, and PPE are allocated and the hazards of entering the RMF are evaluated.
- Tile Puller: A tile puller is a device that is used to pull a tile out of the raised floor.
- Tool Pedestal: A tool pedestal is a steel frame installed beneath some tools to support the weight of the tool and dampen vibration
- Waffle Slab: See Pop - out
- View Tile: View Tiles are a metal floor tile with an insert transparent section that can be opened or removed. View tiles allow access to hazardous energy control points such as valves or disconnects.

Raised Flooring

- The Raised floor allows for facility services (i.e. exhaust, drain, water, gas, electrical, communication lines, etc.), to be routed and air to be distributed in the plenum beneath the floor.
- RMF consists of gridded metal tiles, metal concrete filled tiles, perforated or non-perforated, supported by a substructure of support pedestals.
- The floor tiles are removable and are a maximum of 24 X 24” in size. Hazards exist when there are openings or uneven surfaces.

Raised Floor Hole or Opening

- A raised floor hole or opening exists when a:
 - Full floor tile or a portion of a floor tile is removed.
 - View tile or access panel is opened
 - Opening in a tool pedestal is present
- Floor tiles are commonly removed during tool install to provide access to facility services, address failures or leaks, retrieve equipment and perform maintenance.
- A view tile is a floor tile with a transparent section that can be opened or removed.
- View tiles allow access to hazardous energy control points such as valves or disconnects
- View tiles may be opened for short durations and shall be 100% attended.
- The transparent portion of the view tiles shall be clearly marked to indicate the clear tile is in place. This can be done with any mark that clearly indicates that presence of a tile.
- A tool pedestal is a steel frame installed beneath some tools to support the weight of the tool and dampen vibration.

Raised Floor Hole or Opening Hazards

- A raised floor hole or opening create the following hazards:
 - Fall
 - Trip
 - Ergonomic
 - Mechanical
- All individuals who work in areas where floor openings have the potential to exist shall be aware of the hazards.
- To protect and maintain the safety of individuals working around raised floors, all hole or openings, present for any duration, shall be protected with a barricade or securely covered.
- All loose or uneven raised floor surfaces that present a hazardous condition shall be reported to be corrected.

- Tile pullers and proper lifting techniques shall be used to reduce the potential for a strain, sprain or pinch injury.

Pop Out Openings

- A pop – out is a circular or square hole in the concrete slab between the fab and sub fab areas and is located below the RMF.
- Pop – outs allow for facility lines and equipment to penetrate between these areas.
- A pop – out is not a floor tile, nor is it a view tile. The diameter of the pop – outs can vary from location to location.
- An open or unprotected pop – out can create a fall hazard and shall be protected.
- Acceptable protection includes a cover, grate or cross bracing according to the requirements below.
 - A cover or grate made of a cleanroom – approved material that 2X the intended load.
 - The cover shall be secured to prevent accidental displacement via tape, welds or other acceptable means.
 - Bracing or cross bracing with Patron sealant, Sikaflex or an equivalent sealant that seals the pop out opening is required when a potential for leaks exists.
- Pop – outs do not require such protection if they contain facilities or equipment that fill the diameter of the pop – out, do not present a fall hazard and protection is not feasible.
- The duration in which a pop – out is unprotected for the installation or removal of facilities should be short.
- If an individual is inside an RMF floor opening that contains one or more unprotected pop – outs that present a fall hazard, fall prevention shall be used or fall protection shall be worn (i.e., during tool install, performing repairs, etc...)
- All efforts should be made to cover the pop – outs to eliminate the hazard and need for fall protection.
- When objects may fall through the unprotected pop – out, the sub fab area below the pop – out shall be properly barricaded using Danger tape and signage, or equivalent protection shall be required.

Tile Removal

- To remove a floor tile, a single or two man lift with an approved tile puller is to be used.
- If the floor tile is difficult to remove or is stuck, then a two-man lift shall be completed using approved tile pullers to remove the floor tile. View tiles can be removed without a tile puller.

Barricades

All floor openings present for any duration shall be protected with a barricade. A barricade is a barrier put in place to block the area, preventing access, trips or falls. Multiple noncontiguous floor openings shall all be protected via one or more barricades. There are two types of acceptable barricades including a Single Tile Barricade and a rigid Barricade.

- **Single Tile Barricade**
 - A single tile barricade is a mobile barricade that can be used for the removal of one full floor tile 24 X 24” or a view tile.
 - Requirements area as follows:
 - May be left unattended if used for the removal of one full floor tile and the barricade is secured into the floor.
 - Shall be constructed with the following requirements:
 - Vertical Posts
 - Securely inserted into the floor opening
 - Capable of withstanding a load of at least 200lbs applied in any direction at any point
 - Top Rails
 - Smooth – surfaced
 - 42 inches in height
 - Capable of withstanding a load of at least 200lbs applied in any direction at any point on the top rail
 - A toe board is required when materials or tools could drop into the floor opening, which is a minimum of 4 inches nominal vertical height, securely fastened in place.
 - Position no more than 1/4” above the raised floor surface and store the single tile barricade out of walkways when not in use.
- **Rigid Barricade**
 - A rigid barricade is constructed of Unistrut or equivalent metal and can be used for removal of one or more floor tiles or a view tile.
 - Requirements are as follows:
 - Shall fully enclose the floor opening or meet directly against a solid structure (e.g. wall, tool, equipment, etc.)
 - May be left unattended if the barricade is fastened or secured into the floor (e.g. tool install, wall modification, etc..)
 - Barricade signage is always required to be displayed.
 - Large, raised metal floor openings may be enclosed with a rigid barricade that contains a gate that opens away from the floor hole or opening.
 - Shall be constructed with the following requirements:
 - Vertical Posts
 - Securely fastened to the floor level and positioned with a maximum distance of 24” from the floor opening.

- Capable of withstanding a load of at least 200lbs applied in any direction at any point
 - Top Rail
 - Smooth – Surfaced
 - 42” in height
 - Capable of withstanding a load of at least 200lbs applied in any direction at any point on the top rail.
 - Mid Rail
 - Approximately halfway between the top rail and the floor.
- Unacceptable floor opening barricades include:
 - Stanchions (an upright bar or post frequently referred to as a candlestick)
 - Chains
 - Barricade Tape (danger or warning)
 - Safety Cones
 - Visqueen (plastic sheeting)
 - A person or a portion of a person’s body does not constitute a barricade.

Barricade Signage

- Acceptable barricade signage is required for rigid barricades and single – tile barricades left unattended.
- Barricade signage shall be visibly posted on the barricade. For rigid barricades, a sign shall be posted on all sides of the barricade. For single tile barricades, one sign is required.
- All individuals who work in areas where floor openings have the potential to exist shall heed to barricade signage.
- Acceptable barricade signage shall include:
 - Stop sign
 - Caution – Do Not Enter Statement
 - Barricade owner and contact information
 - Start and end date and time
 - Hazards Present
- Completion of the RMF Pre – Entry Checklist is not required unless entry is made beneath the RMF.
- Entry is defined as head and shoulders being introduced beneath the raised floor. Only certified RMF Entry personnel complete the Pre – Entry Checklist hazard assessment or equivalent JHA and posts the form at the point of entry.

Temporary Opening of Rigid Barricade – Floor Opening Attendant

- A Floor opening attendant is required when a ridged barricade shall be removed for a limited duration (i.e. during tool install when moving a tool onto a pedestal or into final position, etc..) or when an entry will be made into the RMF by an Entrant (See Section RMF Entry).
- The responsibilities of a Floor Opening Attendant include:
 - Constantly monitor and protect the entrance of a floor opening to prevent personnel from inadvertently entering the hole or opening.
 - Notify individuals of the hazard as they approach.
 - Notify ERT in the event of an emergency.
 - Do not perform other duties that may interfere with the responsibility of being an Attendant.

RMF Opening Sequence of Events

- When removing a full floor tile, the following is an example of the sequence of events using a single tile barricade:
 - Identify the floor tiles to be removed.
 - Obtain materials (tile – pullers, barricade, barricade signage)
 - Remove the RMF tile, using a single man lift or two – person lift with approved and tile pullers. One team member shall monitor the hole opening until the barricade is in place.
 - Barricade the RMF opening.
 - Attach the barricade signage, if the barricade is going to be left unattended.
 - Perform the work.
 - Remove the barricade and have one team member monitor the hole until the floor tile is replaced.
 - Using one or two team members replace the floor tile, lift with the approved tile pullers.
 - Store the barricade in the proper location.
- When removing multiple floor tiles, the following is an example of the sequence of events using a Rigid Barricade
 - Identify the floor tiles to be removed
 - Obtain materials (tile – pullers, barricade, barricade signage).
 - Enclose with a barricade the entire RMF area to be opened. The barricade can end at a solid structure if the entire opening or opening area is enclosed.
 - Attach the barricade signage, on each side of the rigid barricade.
 - Remove the RMF tile, using a single man lift or two person lift with approved tile pullers.
 - Perform the work:
 - If a rigid or portion of a rigid barricade shall be removed for a limited duration (i.e. during tool install when moving a tool onto a pedestal or

into a pedestal or into final position, etc.) a Floor opening Attendant is required.

- Using one or two team members replace the floor tile with the approved tile pullers
- Remove the barricade.

Raised Metal Floor Closing

- Barricades can be removed after the tiles; view tiles or adequate hole covers have been replaced.
- All floor tiles that are replaceable shall be replaced when the work is completed.
- When work is completed under a View Tile and access is no longer needed, the transparent portion of the tile shall be put back in place.
- It is the responsibility of the individual who lifted, removed or opened the tile or view tile to ensure that it is properly replaced so that the tile does not create a slip or trip hazard for others in the area.
- If such a hazard exists after replacement of the tile, due to an improper tile seating, uneven floor surface or other reason, the hazardous condition shall be reported so that it can be corrected.

RMF Entry Hazards

- Entry into the RMF can create the following hazards:
 - Confined space
 - Ergonomic
 - Head Bump
 - Chemical exposure
 - Fall from height
- Confined Space Hazards
 - The area beneath the RMF has been evaluated and classified as a confined space. A confined space is an area large enough that an individual's body can enter and perform work, has limited or restricted entry or exit and is not designed for continuous human occupancy.
 - Under normal operating conditions, the area beneath the RMF is considered a non-permit confined Space (NPCS).
 - An NPCS inherently does not contain, or have the potential to contain, any hazard capable of causing death or serious physical harm.
 - Entry into a NPCS does not require a confined space permit.
 - Abnormal conditions that can, or have a potential to, cause a serious safety and health hazard may change the classification of the area beneath the raised floor to a Permit Required Confined Space (PRCS).
 - If an area is considered a PRCS, entry shall be performed according to permit required confined space requirements.

- Ergonomic Hazards
 - While performing work beneath the RMF, ergonomic hazards such as a strain or sprain can exist. As a result, Entrants shall use techniques to reduce the potential for ergonomic injury.
 - Examples include the following:
 - Perform as much work outside of the area under the RMF as possible.
 - Prefabrication equipment prior to entering under the floor.
 - Avoid awkward postures, excessive force, repetition, contact stress and static loading.
 - Stretch prior to work and take stretch breaks
 - Use tools and equipment adequately designed to be used under the RMF.
 - Limit the time that one individual shall spend under the RMF.
 - Use the buddy system.
- Head Hazards
 - Due to the area beneath the RMF being confined, head hazards are likely to be present. Consequently, all Entrants shall don head protection, such as a bump cap or a hard hat. Unless other controls are approved by the site.
 - Bump caps are not hard hats and do not replace hard hats when required. If an area under the RMF has been determined to be a hard hat required area, a bump cap cannot be used in lieu of a hard hat.
 - Other PPE needs to be used, as appropriate, for the hazards identified during the hazard assessment of the area beneath the floor.
 - Knee pads
 - Elbow pads
 - Ergonomic pads
 - Chemical – resistant clothing
 - Safety goggles
 - Face shield, etc.
- Chemical Exposure Hazards
 - The area beneath the RMF provides a plenum for facility services (i.e. exhaust, drain, water, gas, chemical, asphyxiants, electrical, communication lines, etc.) to be routed and air to be distributed.
 - On occasion, leaks from Facilities or Fab tools and other equipment can occur. The likelihood of a leak is higher near equipment that uses a liquid.
 - Accumulation of liquid can also occur in non-liquid facility lines such as exhaust. Fitting failures can occur and result in leaks.
 - When rehydrated, residues of previous leaks can cause exposure. Spills, leaks, or residue of leaks shall be identified so that they can be decontaminated.

- In addition to a liquid leak, other chemical exposure hazard exists. Examples include the following:
 - Facility lines being disconnected or demolished, or tools / support equipment being deinstalled
 - Hazardous maintenance being performed (e.g. gas bottle change, breaking fore lines, using inerts)
- Other Hazards
 - Hazards other than confined space ergonomic, head and chemical exposure can be present.
 - Example: Possible hazards include welding, exposed energized electrical, energized robotics, etc.
 - Caution needs to be taken to identifying these hazards and protect Entrants from them.
 - A risk assessment or JHA shall be used to pre plan the task.
 - Additional pre – planning considerations include the following:
 - Assess the location that the work will be performed
 - Identify equipment or facilities that may be blocking or restricting access
 - Address and correct identified issues prior to performing work.

RMF Pre – Entry Checklist

- A hazard assessment shall be performed prior to physical entry beneath the RMF using RMF Barricade Signage and Pre- Entry Checklist.
- Both the Raised Floor Pre – Entry Checklist and Barricade signage must be posted at the RMF barrier.
- It is the responsibility of the Entrant to allocate the checklist.
- Note: if the task or entry under the raised metal floor takes multiple days then a checklist needs to be filled out each day.
- The checklist ensures that the proper materials, Entry Attendant and PPE are allocated, and applicable hazards are evaluated.
- An evaluation of the under RMF work area is performed and a four-question hazard assessment completed to document the evaluation.
- The assessment included an evaluation of the potential hazards of the tools, associated utilities and operational conditions
 - If all the questions have been answered No, the checklist is posted at the entry point or in the area work is being performed and entry work commences.
 - If conditions change from the original assessment or major construction occurs, the area shall be reevaluated.
 - If any of the questions on the RMF Barricade Signage and Pre – Entry Checklist have been answered Yes, the area may be considered a PRCS and consultation with ERT / ESHS is required prior to entry.

- Example: Potential hazards that may cause the space beneath the raised floor to be classified as PRCS may include, but are not limited to, welding, exposed energized electrical, facility lines being disconnected or demolished, energized robotics, certain Fab Maintenance, etc..
- Entry into a PRCS requires additional training and a confined space entry permit.
- All possible efforts should be made to eliminate the identified hazards to allow for the reclassification of a PRCS to a NPCS.
 - Efforts may include cleaning up a leak, performing LOTO, removing floor tiles to avoid entry, rescheduling entry work until hazardous work is complete, etc..
 - Reclassification of the PRCS, can only be performed by ERT / ESHS.

Entrant

- The responsibilities of an Entrant include the following in addition to the other responsibilities outlined in this document (see section RMF Sequence of Events and RMF Closing):
 - Ensure an adequate barricade is placed around the floor opening used for entry.
 - Obtain an Entry Attendant
 - Post barricade signage (STOP sign) at the entry point
 - Ensure a hazard assessment using the RMF Barricade Signage and Pre – Entry Checklist is performed prior to entry. Post the Pre – Entry Checklist at the entry point.
 - Obtain and don PPE – minimum of a bump cap or hard hat, as required. Hang your Micron issued ID Badge on the barricade at the entry point just prior to entry.
 - Always maintain contact with the Entry Attendant (sight, verbal or radio).
 - Take caution not to damage facilities located under the raised floor. If damage does occur, report it so it can be corrected.
 - Notify the Entry Attendant with any concerns or if conditions change in the work area below the RMF.

RMF Floor Closing

- Do not replace floor tiles used for entry while Entrant is under the RMF unless another floor tile that is used for exit is opened and the change is communicated with the Entrant.
- All floor tiles that are replaceable shall be replaced when the Entrant is out of the hole and the work is completed.

- After approval, the Control Room Operator will notify the PRCS Entry Supervisor if the Rescue Team becomes unavailable for any reason, at which time all Entrants are required to immediately leave the space.
- All Micron team members, contractors and other non-Micron personnel involved in a PRCS entry must complete appropriate training before entering PRCS.
- The space must be evaluated, and protective measures identified before every PRCS entry. Permits must be completed in accordance with this program.
- Every person participating in a PRCS entry must review all available related monitoring and testing information before commencing entry operations.
- All Micron team members must be aware of PRCS identification labels and must not enter a PRCS without prescribed training.

Production Sub Floors

The following information provides guidance regarding the types of sub floor entry that may require a permit.

- Work that occurs directly beneath equipment that uses corrosive liquid chemicals or heated chemical baths.
- Work in a sub floor area where there is significant potential to become trapped due to obstructions or where self – rescue would be difficult.
- Any work performed in a sub floor where the work could seriously injure sub floor Entrants.

Contractor and Multiple Employer Entries

- Contractor's contractual agreements will require compliance with all local, state and federal laws including the OSHA PRCS standard at 1910.146.
- If a contractor must enter a PRCS, the following information must be made available to contractors participating in a PRCS entry, either by the Micron host or by a trained PRCS Entry Supervisor while physically at the specific PRCS location.
 - The elements that make the space a PRCS
 - Any hazards identified in the space
 - Any applicable experience of Micron team members with the space
 - Precautions or measures implemented by Micron in or near the space while contractors will be working
 - Any monitoring or testing information from the current or prior entries.
- Each contractor must inform the Micron host of the entry procedures to be used by the contractor. Each contractor is also required to inform the host all hazards confronted or created in the PRCS, especially those that are not detected before entry. This communication can occur wither through the required debriefing or during the entry operation.
- After entry operations have been concluded and the permit is closed, the Micron host must debrief the contractor regarding entry procedures and any hazards encountered or created in the permit space during entry operations.

- Trained Micron team members, contractors or other non-Micron personnel may enter a PRCS and work simultaneously. Entry and simultaneous work operations must be coordinated by the PRCS Entry Supervisor so that Entrants do not endanger one another.

Confined Space Training

- Micron Permit – Required Confined Space training will meet the requirements of OSHA 1910.146 (g), and any/all Micron requirements necessary to maintain safe entry into any/all confined spaces.
- Because there may be different types of confined space found within various departments at Micron, each department may train team members to meet department – specific needs. When a team member changes departments, new training will be provided as appropriate.
- The Safety Department provides confined space training to meet the requirements of this program.

Emergencies

If any accidents or emergencies occur, immediately contact the Security and Emergency Services Control Room at Ext 66611 or by phone at 208.368.3095

Appendix J

TMAH Information

Risk Assessment

- Sites must have a step – by – step instructions for performing tasks involving exposure or a significant risk of exposure to TMAH in a manner that mitigates identified risks. Procedures must be written by experienced personnel and be reviewed by EHS and must include or refer to a documented hazard and risk assessment for the task and be designed to mitigate the risk identified in these documents. Such procedures must be kept current and must be included in the site's periodic document review process. Procedures must be updated in response to changes in task or systems as well as where new information about hazards is identified or discovered. The instructions must include descriptions of the hazards that are present and the appropriate safety precautions related to include descriptions of the hazards that are present and the appropriate safety precautions related to each step. It is acceptable to refer to another procedure or document, for example to refer to a PPE procedure.
- Procedures that involve a risk to TMAH must be reviewed by site EHS.
- Health Risk Assessment

Training Requirements and Competency Assessment

Micron team members work that work on or in Raised metal floors must complete Raised Metal Floor Training.

Appendix I

Confined Space Procedures

Confined Space

A confined space is defined by the following criteria:

- Is large enough and configured in a way that a worker can bodily enter and perform assigned work.
- Has limited or restricted means for entry or exit (examples: tank, vessels, silos, storage bins, hoppers, vaults, and pits)
- Is not designed for continuous employee occupancy
- Is designated as a confined space by Micron.

Permit-Required Confined Space (PRCS)

A permit – required confined space has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere such as carbon monoxide or low oxygen content.
- Contains a material with the potential for engulfing an Entrant or creating a difficult rescue.
- Has an internal configuration such that an Entrant could be trapped?
- Contains any other recognized serious safety or health hazard.

Measures to Prevent Unauthorized Entry

Micron uses the following measures to prevent unauthorized entry into permit – required confined spaces including the following:

- Training
- Posting of unique warning signs
- Erecting barriers
- Installing covers with locks as necessary

General Requirements

- Entry Approval
 - The PRCS Entry Supervisor shall contact Security Control (ext. 66700) prior to all PRCS entries and wait approval to enter the space.
 - The Control Room Operator shall confirm that a Rescue Team is available for Entrants entering the PRCS.

- At the direction of Global EHS, sites have their health risk assessment and emergency medical protocols signed off by the medical director. These must address TMAH specifically if it is used on site.

Handling

- Team members must not eat or drink while handling TMAH.
- Handle chemicals in accordance with good safety practices, including washing hands and other potentially exposed areas with mild soap and water before eating, drinking or smoking and before leaving work.

Personnel Protective Equipment (PPE)

- Sites must comply with the PPE table in Appendix 1: PPE Matrix – Normative which has minimum PPWE requirements during typical operations and maintenance tasks involving a risk of exposure to TMAH. Deviations from the PPE schedule in Appendix 1 require a Job Hazard Analysis, JHA/risk assessment, RA specific to the task being performed. Site EHS approval of the JHA / RA is mandatory. For any such deviations, other sites and Global EHS must be informed so sites can align their practices. Global EHS will review the PPE selection.
- For any tasks not covered in the PPE table in Appendix 1, the site must perform a risk assessment or JHA to determine appropriate PPE and notify Global EHS of identified PPE. Global EHS must review the site selected PPE for the task and update the table in Appendix 1 as appropriate.
- All PPE must be examined by the wearer and be in condition prior to use.
- PPE that has been exposed to TMAH must not be reused and must be disposed of as contaminated with TMAH.
 - Exception: Reusable PPE such as chemically resistant boots, face shields, respirators and the like may be decontaminated if the integrity of the PPE can be examined, they have not been subjected to continuous contact and the PPE has not exceeded its rated lifetime. Site EHS must confirm that PPE is compatible with TMAH. Site EHS must confirm that PPE is rated as reusable by the manufacturer. PPE wearers must follow the manufacturer's decontamination instructions. Reusable PPE must be decontaminated before being put away.
- Coated suits such as Tychem QC/2000 or Kappler Zytron are not reusable. Light weight chemical aprons are not reusable.
- Clothing that is contaminated with TMAH must be disposed of as contaminated waste. Team members must not take – home contaminated clothes to wash.

Emergency Response

- Eyewashes and Showers (ANSI/ISEA, 2009)

- Emergency eyewash and showers installed near TMAH – using operations (ANSI/ISEA, 2009) must:
 - Require no more than 10 seconds to reach (approximate 55 ft at normal walking speed). Sites that have more stringent local or national standards may comply with the location requirements in those standards.
 - Not be separated from the hazard by a wall or partition which would require passage through a door unless the hazard requires escape from the immediate area.
 - Be located on the same level as the hazard.
 - Be in a well – lighted area.
 - Be identified with signs positioned so that they are visible within the area served by the unit.
- The date of eyewash inspections must be shown on tags.
- Portable or self-contained eyewash may not be able to meet the 15 – 20-minute flushing timeframe recommended by TMAH manufacturers. Therefore, eyewash stations must be plumbed to an appropriate source.
 - Exception: Where permanent eyewash systems are impaired due to construction or maintenance or repair activities, self-contained eyewash systems may be used. Sites must ensure that risks are addressed appropriately. Sites must restore eyewash systems to normal operation as soon as the activities are completed.
- Where there is a risk of direct exposure to pressurized fittings it is mandatory that team members verify that nearby eyewashes / showers have been inspected in accordance with site requirements.
- Eyewash / shower inspections in areas where TMAH is delivered, handled or treated must be current according to the site requirements.
- Emergency eyewash / shower stations must be certified after installation in accordance with ANSI / ISEA Z358.1 or in accordance with local or national requirements.
- Emergency eyewash / shower stations must be performance tested a minimum of annually in accordance with ANSI / ISEA Z358.1 or in accordance with local or national requirements.

Plumbed emergency eyewash / shower stations where there is the potential for exposure to TMAH concentrations over 1% must be on a periodic schedule or in accordance with local or national requirements. The activation must be for a period long enough to verify operations and ensure that flushing fluid is available.

Emergency Response Plan

- Site emergency response plans must directly address human exposures to TMAH. They must also directly address proper response to spills and releases of TMAH both indoors and outdoors and offsite.

Land Spill

- Contain spill. If safety allows, stop flow at the source.
- Prevent contact with skin and clothing
- Avoid routing to water bodies
- Take up with absorbent material and place in appropriate liquid tight containers for disposal.

Water Spill

- Contain spill. If safety allows, stop flow at the source.
- Prevent contact with skin and clothing.
- Prevent flow to water supply sources and to wastewater stream discharge points if dangerous.
- Isolate and take up for disposal in appropriate containers.

Exposure Response

- Refer to Appendix 2: TMAH Symptoms of Exposure – Informative and Appendix 3: Medical Reference Sheet for TMAH – Informative.
- TMAH first aid must be included in response procedures. Treatment protocols must be approved by the site medical consultant.
- A recent study published in the Resuscitation Journal (Wu, 2011) indicates that first aid should emphasize respiratory support. Sites with significant exposure to TMAH at concentrations above 1% must be prepared for emergency non – invasive respiratory support, for example using bag valve or person to person (PTP) valve masks.
- Sites must immediately inform treating physicians and/or emergency medical personnel when a person is potentially exposed to TMAH.
- Exposed personnel must seek medical attention immediately.

Specific First Aid Responses

- Inhalation
 - TMAH is corrosive to the respiratory tract, causing alkali burns if mist or spray is inhaled. Inhalations of very small amounts of mist or spray will cause irritation. The severity and extent of damage increases with the increase in mist or spray exposure and is potentially fatal.
 - Medical and emergency response personnel must avoid direct contact with contaminated clothing and skin of the patient.
 - Promptly remove to fresh air.
 - Monitor breathing and initiate artificial respiration if needed, taking care to avoid contact with this product, for example use a bag valve or person to person (PTP) valve masks.
- Eye Contact

- TMAH is very corrosive and destructive on contact with eyes causing serious alkali burns. Exposure to a very small amount of mist or spray will cause irritation. TMAH is potentially fatal following eye exposure.
 - Medical and emergency response personnel must avoid direct contact with contaminated clothing and skin of the patient.
 - IMMEDIATELY flush with water and continue to flush until no evidence of chemical remains for at least 15 minutes. While, flushing, forcibly hold the eye lids apart to ensure flushing of the entire eye surface. Seek medical attention immediately.
- Skin Contact
 - TMAH is very corrosive to skin and will cause alkali burns. The effect of local dermal exposure may consist of multiple areas of superficial destruction of the skin or primary irritant dermatitis. The length of contact time will increase the severity and extent of damage. TMAH is potentially fatal following dermal exposure.
 - Medical and emergency response personnel must avoid direct contact with contaminated clothing of the patient.
 - IMMEDIATELY remove contaminated clothing, jewelry and shoes and flush skin with water for at least 15 minutes.
 - Discard contaminated clothing.
- Ingestion
 - TMAH is very corrosive and will cause serious alkali burns to the mucous membranes of the mouth, throat, esophagus and stomach. TMAH is potentially fatal following ingestion.
 - Medical and emergency response personnel must avoid direct contact with contaminated clothing of the patient:
 - Do not induce vomiting
 - If person is conscious and able to swallow, provide large quantities of water to drink.
 - Immediately contact a physician.
- Chronic
 - No known chronic effects.

Appendix 2: TMAH Symptoms of Exposure – Informative

Symptoms of exposure to TMAH from published studies include irregular breathing, dyspnea (shortness of breath), tremors, ptosis (drooping eyelids), hypo-activity, ataxia (poor coordination of muscles), coma and convulsions. (Sachem, 2012)

TMAH is an extremely caustic material with a pH greater than 14. Exercise extreme caution when working with TMAH to prevent accidental exposure and injury. (Sachem, 2012)

Exposure may result in intense burning of the eyes, nose, throat, lungs and skin. Depending on the level and duration of exposure, signs and symptoms may include blurred or double vision; pinpoint pupils; changes in heart rate and blood pressure; abdominal cramping, nausea and vomiting; diarrhea; excessive salivation, sweating or bronchial secretions; urinary incontinence; muscle twitching, tremors or convulsions. Exposure is potentially fatal. (Sachem, 2012) (National Center for Biotechnology Information, 2015)

Detection

Because TMAH is a hydroxide, anhydrous TMAH does not exist (A Reinvestigation of Pyrolysis of Tetramethylammonium Hydroxide, 1964, 86 (5)) (Lewis, 2004) (National Center for Biotechnology Information, 2015) Therefore, it is not practical to monitor for airborne concentrations of TMAH. However, aerosols or sprays of TMAH in liquid form can be inhaled.

The major byproduct of evaporation or vaporization is trimethylamine. Since trimethylamine has excellent warning properties it is more easily detected at lower concentrations by smell (fishy or amine odor) than by common gas detection technologies. The level of distinct odor awareness (LOA) is published as 0.00051 ppm. (US Environmental Protection Agency, 2012). The ACGIH has a 10 – ppm / 8-hour TWA exposure limit and a 15 ppm / 15-minute STEL.

Appendix K

Gas Room Safety

Scope

This document applies to anyone who enters the gas room areas. It is especially aimed at individuals other than Gas Services team members who have added responsibilities for the safety, operation and cleanliness of the rooms.

Terms

- Gas Room Area – Gas room areas are utilized to contain process gases and liquids. Typically, gases and liquids are segregated for safety (oxidizers & corrosives, flammables & pyrophoric and non-HPM (or inert gases).
- Hazardous Production Material (HPM) – A chemical that has a three or higher rating in any diamond on the National Fire Protection Association 704M hazard Diamond.
- Gas Cabinets – Utilized to safely house HPM gas cylinders while in service, control gas delivery pressure or volume from cylinder source to a point of use connection and provide automated inert purge capability.

Safety

Important: It is everyone's responsibility to ensure that **SAFETY** is the Number One priority during all activity in a gas room area.

- Gas Odor Response
 - Gas services team members will respond to strange odors by completing the following steps in the order indicated:
 - Notify your supervisor of the odor and location.
 - Attempt to identify the originating location and identify what is causing the odor.
 - Important: if at any time you start to feel ill, are feeling an irritation that may be related to the odor, or do not feel comfortable in the area, leave the area and immediately contact Security Control.
 - Notify Security Control of your findings
 - All other personnel in the gas room areas will respond to strange odors by completing the following steps in the order indicated.
 - Immediately evacuate the gas room area.

- Contact Security Control at X 66700 regarding the condition
- Notification Regarding Unusual Situations
 - Contact Security Control at extension 66611 for all Emergency conditions
 - Contact Security Control at extension 66700 for all Non – Emergency conditions
- Phone and First Aid Station
 - For your safety, a phone and first aid station are located in each safe room.
- Gas Room Alarm Systems
 - Fire
 - Fire Pull Station
 - White Strobe with Horn
 - Response; Immediately evacuate building to outside mustering area.
 - TGM – Toxic Gas Monitor
 - Blue strobe with high pitch siren
 - Response evacuates the gas room area.
 - Breathable air (Carbon Monoxide, Air Parameters Outside of Life Support Limits Warning)
 - Alarm: Yellow light, no sound
 - Response, Respirator/breathable air system is down, must use SCBA instead of Ska-Pak for work
 - Scrubber

Note: The scrubber alarm is found only in the building 1 gas room area – currently the alarm is inactive, as the scrubber is turned off.

 - Alarm: red light, sound of scrubber running
 - Response: Evacuate gas rooms and safe room
- Personal Protective Equipment (PPE)
 - It is required that safety glasses be worn whenever in a gas room
 - Additional Personal Protective Equipment (PPE) is required when working with specific gas systems. PPE selection is based on the hazards of gases or residuals that might be present in the gas lines. For information regarding PPE requirements when working on fluid delivery systems, please refer to Gas Services Personal Protective Equipment (PPE) Procedure.
- General Safety
 - Gas room visitors and workers are required to recognize all lockout / tagout devices and operational tags applies to energy sources.

Warning: Only MTI Gas Services team members (including trained / certified contractors who report to Gas Services personnel) may remove or modify operational CAUTION tags or lockout / tag out device's places on MTI Gas Services equipment.

- There is a fire extinguisher located in each safe room that may be used for small fires.
 - Note: Fire extinguishers should only be used if you are trained and comfortable using the device in a particular instance.
- Ensure all CoHE (Lockout / Tagout) procedures have been followed by referring to Gas Services Energy Isolation Procedure (EIPS)
- Under no circumstances will safety be compromised. All guidelines established in the MTI site wide Compressed Gas Safety Procedure.

Work Notification

- Check the facilities work schedule for work outside the gas room area which may impact work to be performed inside the gas room area.
- Trades foreman should Skype, e-mail or call the Gas Services supervisor to schedule any previously unscheduled work to be done in a gas room. Provide the following information to Gas Services:
 - Name(s) of individuals doing the work
 - Phone and Badge #
 - Gas room and specific work location
 - Desired time to perform work
 - Brief description of work to be done
- Contact Facilities Control at extension 66500 when exiting the gas room area following the completion of work.

Gas Room Guidelines

Important: Safety is the Number One priority in the gas room areas as large quantities of compressed gases are in each room.

The following guidelines must be followed when in the gas rooms:

1. Contact Security at extension 66611 in case of emergency
2. Contact Security at extension 66700 when equipment or access is needed through any doors that are not designated for normal entry and exit. These doors are monitored by the security system and initiate an alarm at security when opened.
3. Notify Gas Services prior to welding in a gas room – 24-hour notice is preferred. Welding must not be performed in any of the gas rooms, with the exception of the safe rooms, without an MTI Gas Services team member present to monitor equipment and alarms.
 - a. Note: Operating ARC welding machines within a gas room can potentially shut down the controllers operating the gas distribution systems.
4. Call the Facilities Control Room (extension 66500) if any gas cabinet or panel controller alarm sounds.

5. Do not enter a gas room when a **DO NOT ENTER** box is hanging on the door. Either there may be an HPM cylinder or liquid canister change in progress, or other work may be taking place which requires respirator protection.
6. Call 66500 and speak to a Gas Services team member if you accidentally hit an EGO or in another way shut down a delivery system controller.
7. Ask an MTI Gas Services team member if you are uncertain whether or not you should be doing something (climbing on cabinets, lines, etc.)
8. Be aware that Gas Services technicians may also be trying to work and may need you to move out of the way to allow access to a cabinet or toolbox. Higher priority work assignments or an emergency may arise at any time; coordinate your work activity with other workers requiring gas room access.
9. Absolutely no food, drink or tobacco products are allowed in the gas room areas.
10. Do not walk on or hold onto gas piping for support
11. When working is complete for the day, properly store all tools, ladders and equipment so that all work areas, egress routes and aisles are clear. Properly store all equipment and tools before taking a break. Remove all equipment when your job is complete.
12. Do not use emergency exits for non-emergency purposes without calling Security Control at extension 66700.
13. Do not block a gas room door open. If you need to open any outside door for more than a couple minutes, to move parts or equipment, contact Security at 66700. Doors are alarmed and Security will show up if not notified.
14. Do not block pathways or access to cabinets. Be sure to keep clear your own access to emergency exits.
15. Do not hang or place materials, other than approved identifying tags, on gas cylinders, valves or piping.
16. Do not rearrange existing safety equipment or tools in any of the rooms without first checking with a Gas Services team member.
17. Pick up your own items and maintain good housekeeping.
 - a. Janitorial does not maintain the gas rooms. Each person who works in the room is responsible for clean – up. Keeping tools, ladders and trash picked up before breaks, lunches and at the end of the day will prevent conflict.

Documentation, Evaluation and Quality

- Incomplete or incorrect work notification
 - Contact a Gas Services Supervisor, by calling extension 66500, to review any work left incomplete or performed incorrectly or without necessary PPE.

Notes

**Love yourself and Be
Safe.**