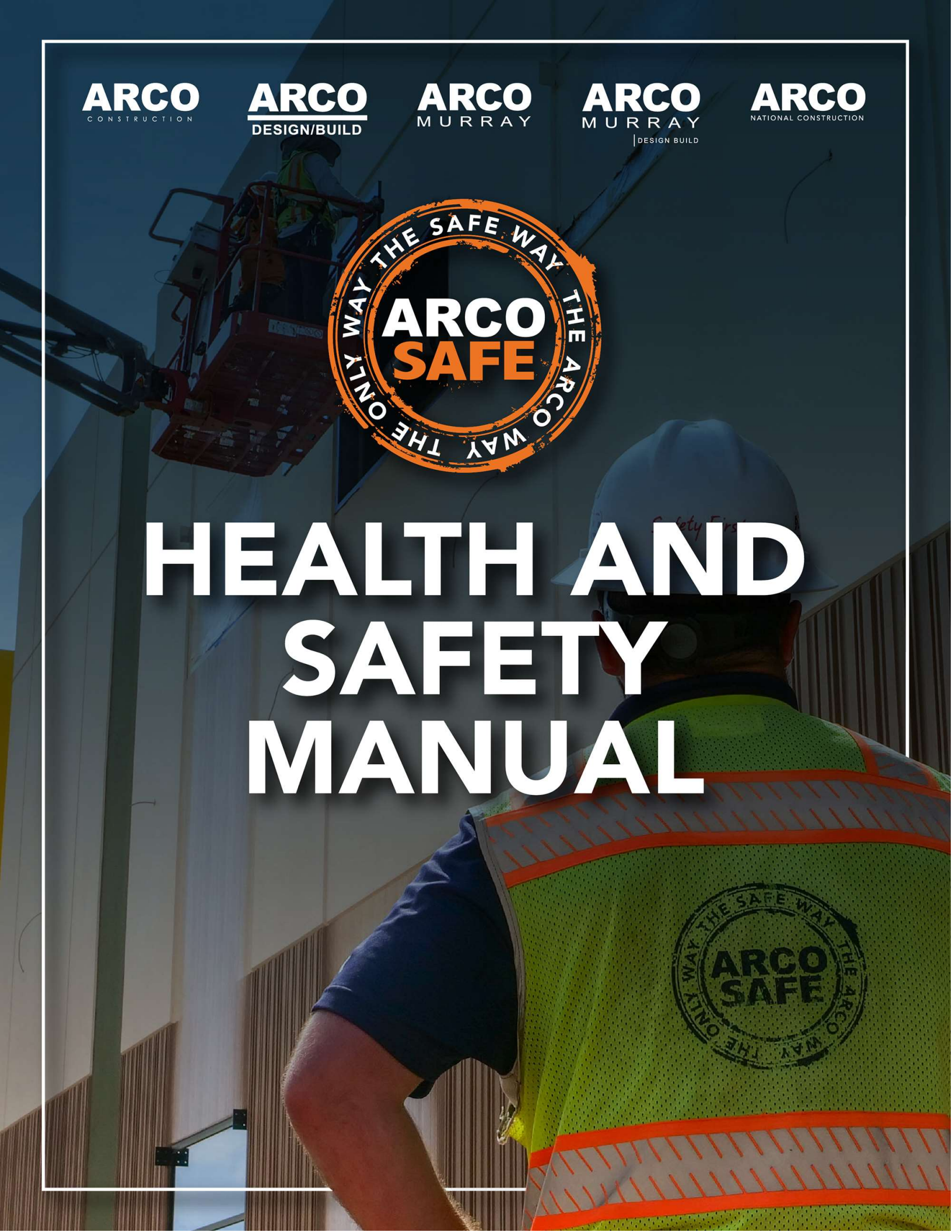
ARCO CONSTRUCTION

ARCO DESIGN/BUILD

ARCO MURRAY

ARCO MURRAY DESIGN BUILD

ARCO NATIONAL CONSTRUCTION



HEALTH AND SAFETY MANUAL

CONTENTS

HEALTH AND SAFETY MANUAL SECTION A

1 INTRODUCTION

The construction business is recognized as a particularly dangerous industry. Therefore, it is imperative that ARCO implements a practical and effective safety and health program. It is the first priority of ARCO to be proactive with regard to safety and to provide a hazard-free work environment. ARCO is committed to making the construction process enjoyable and beneficial for our associates and customers.

2 SCOPE

This policy is applicable and shall be available on all projects. Any work being performed by ARCO associates, its subcontractors, or any other entity on the jobsite is expected to maintain compliance with this program and the Occupational Safety and Health Act of 1970. In addition, the project team is responsible during project start-up for identifying any supplemental project requirements that are specified by the owner/client contract. Finally, ARCO reserves the right to apply stricter standards for reasons that may or may not be controlled by the company.

Throughout this policy manual, the term "ARCO" may be applied to any of the ARCO-affiliated companies.

3 PURPOSE AND GOALS

It is the policy of ARCO to provide a safe and healthful place of employment for ALL ASSOCIATES.

It is therefore the purpose of this stated policy to:

1. Abide by the Federal, State, and Local regulations as they pertain to construction.
2. Apply good sense and safe practices as dictated by locations, conditions, and circumstances to all jobs.
3. Exercise good judgment in the application of this policy.
4. Protect the public from the effects of our operations.

The ARCO safety program was designed to achieve three main objectives: increase efficiency, minimize property damage, and, most importantly, eliminate accidents and injuries to our associates and subcontractors' associates. The only way we will meet these objectives is if every member of the team actively participates in practicing safe working procedures at all times.

Management aims to educate all ARCO associates in recognizing hazards on the job and how to avoid the risks associated with such hazards. The field personnel aims to create awareness on the job and to strictly enforce all safety policies and procedures.

The effectiveness of ARCO's safety program will require the committed efforts of management, project managers, superintendents, and field associates. Everyone is responsible for the success of ARCO and ARCO's safety program.

Together, we all share in the responsibility to:

1. Plan all work to avoid personal injury, property damage, and loss of productive time.
2. Establish and maintain an open line of communication to report and correct all deficiencies within our safety program.
3. Provide for the safety and protection of all associates and subcontractors on all ARCO projects.
4. Investigate all accidents and near-miss incidents to determine their cause and devise protective measures to avoid further hazards.

ARCO is committed to the safety and well-being of all associates and the objectives and policies stated in this manual. However, this safety program cannot succeed without the complete commitment and cooperation of all ARCO associates. ARCO associates are required to comply with all aspects of the safety and health program and are to perform all work in a professional manner that includes safe work practices and procedures.

4 MANAGEMENT COMMITMENT AND INVOLVEMENT POLICY STATEMENT

ARCO is a safe workplace! We are committed to ensuring it stays that way, but it's going to take everyone. If any associate believes a condition to be unsafe, it is our policy that they report it to management. It is also a requirement that no unsafe tasks be performed. It is the associate's responsibility to report all accidents and injuries, and it's their right to do so without fear of retaliation.

ARCO Management's highest priority is making sure you feel safe at work. ARCO always has and will continue to devote substantial resources toward safety. Any safety-related request made to management will be granted all the resources necessary.

The effectiveness of our safety program is based on the active involvement of every associate, with a true top-down approach. All associates, including top management, will participate in ongoing safety program activities, such as:

1. Promoting and communicating safety awareness and associate participation;
2. Providing safety education and training;
3. Actively participating in incident investigations;
4. Reviewing safety-related recordkeeping; and
5. Reviewing and providing feedback on our safety rules

There is nothing more important than safety! Ideas to save money or shorten schedules will not even be considered if they, in any way, compromise the safety of our workers.

The above policy statement expresses management's commitment and involvement in ensuring the safety and health of all ARCO associates, subcontractor associates, and visitors to ARCO-controlled establishments. This program will be incorporated as the standard of practice for this organization. Compliance with all workplace policies, procedures, and practices is a condition of employment.

Every ARCO Shareholder agrees that nothing is more important than your health and safety!

– ARCO Leadership Team

5 MANAGEMENT DUTIES AND RESPONSIBILITIES

5.1 Safety Director

5.1.1 The Safety Director is responsible for developing and implementing the ARCO Safety & Health Program and ensuring compliance with all federal, state, and local safety requirements.

5.1.2 The Safety Director is to assist and advise the Project Managers, Superintendents, and field personnel in matters of safety and OSHA compliance.

5.1.3 The Safety Director is responsible for the appropriate training and education of all ARCO associates in safety-related areas.

5.1.4 The Safety Director is to supply the Superintendent with Toolbox Safety Talks to be given weekly by the superintendent.

5.1.5 The Safety Director is to conduct frequent inspections of all ARCO jobsites to ensure that all associates and subcontractors are following the proper procedures required by ARCO for safe work practices.

5.1.6 The Safety Director is to see that immediate corrective action is taken following the inspections if deficiencies are found.

5.1.7 The Safety Director is to review all accident investigation reports and near-miss reports to assist in the recommendation for corrective action.

5.1.8 The Safety Director is to periodically review the ARCO safety policy to detect any deficiencies. These deficiencies are to be noted and corrected upon their finding.

5.1.9 The Safety Director is to periodically attend pre-job meetings with subcontractors to assess the provisions of their safety programs and to convey ARCO's intention to maintain a safe work environment at all times.

5.2 Regional Safety Director

5.2.1 The Regional Safety Director is assigned to a group of companies, as well as the Safety Team responsible for those companies. The Regional Director is responsible for the coordination of the safety team in their assigned region.

5.2.2 The Regional Safety Director is to conduct frequent inspections of all ARCO jobsites to ensure that all associates and subcontractors are following the proper procedures required by ARCO for safe work practices.

5.2.3 The Regional Safety Director is responsible for the appropriate training and education of all ARCO associates in safety-related areas.

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5.2.6 The Regional Safety Director is to periodically attend pre-job meetings with subcontractors to assess the provisions of their safety programs and to convey ARCO's intention to maintain a safe work environment at all times.

5.3 Safety Manager

5.3.1 The Safety Manager will be assigned to a company and act as the point of contact for all safety-related training, inspections, pre-construction needs, etc., for that company.

5.3.2 The Safety Manager is to conduct frequent inspections of all assigned ARCO jobsites to ensure that all associates and subcontractors are following the proper procedures required by ARCO for safe work practices.

5.3.3 The Safety Manager is to see that immediate corrective action is taken following the inspections if deficiencies are found.

5.3.4 The Safety Manager shall attend pre-job meetings with subcontractors to assess the provisions of their safety programs and to convey ARCO's intention to maintain a safe work environment.

5.4 Traveling Safety Manager

5.4.1 The Traveling Safety Manager is to conduct frequent inspections of all assigned ARCO jobsites to ensure that all associates and subcontractors are following the proper procedures required by ARCO for safe work practices.

5.4.2 The Traveling Safety Manager is to see that immediate corrective action is taken following the inspections if deficiencies are found.

5.4.3 The Traveling Safety Manager shall attend pre-job meetings with subcontractors to assess the provisions of their safety programs and to convey ARCO's intention to maintain a safe work environment.

5.5 Safety Supervisor

5.5.1 The Safety Supervisor is a full-time safety representative to be utilized on high-hazard, high-risk, large manpower job sites.

5.5.2 The Safety Supervisor will be assigned to one or multiple jobs in proximity and support the project teams by managing the safety of the projects.

5.5.3 The Safety Supervisor shall maintain constant vigil on their assigned projects to ensure all ARCO, OSHA and site-specific safety rules are followed.

5.5.4 The Safety Supervisor is responsible for ensuring safety compliance by collecting and reviewing subcontractor safety documentation, collecting Weekly Toolbox Talks, participating in all pre-construction meetings, etc.

5.6 Operations

5.6.1 The Operations Team evaluates new projects in the company for overall risk and liability of the general conditions.

5.6.2 The Operations team assigns training to new staff within the business unit.

5.7 Project Manager / Design Build Manager

5.7.1 Project Managers shall ensure that subcontractors selected to perform work on an ARCO project are made aware of their safety responsibilities per our contract and the 1926 OSHA Construction Standards or any other state-specific/local jurisdiction standards.

5.7.2 The Project Manager is responsible for assisting the superintendent with correspondence and enforcement of the Safety and Health Program.

5.7.3 The Project Manager is responsible for completing an OSHA 10-hour training at least every 5 years.

5.7.4 The Project Manager is responsible for completing a First Aid/CPR/AED training at least every 2 years.

5.7.5 Reports to Regional Managers.

5.8 Superintendent

5.8.1 Newly employed Superintendents are expected to participate in an orientation provided by the safety staff. This orientation will be administered in person or via a conference telephone call. Project Superintendents are required to have, or be working towards achieving, an OSHA 30-hour Certification. The OSHA 30-hour must be renewed at least every 5 years.

5.8.2 The Project Superintendent or their designee shall oversee the safety process on the jobsite, including safety audits, correcting deficiencies, and ensuring subcontractor compliance.

5.8.3 All Superintendents shall be provided with a copy of the 1926 OSHA Construction Standards, Construction Procedures, and the safety and health program. The safety program shall be used as a resource whenever applicable.

5.8.4 The Project Superintendent shall be responsible for inspecting and reporting project deficiencies weekly. The findings shall be recorded on the Weekly Self-Inspection Form.

5.8.5 The Superintendent or their designee is responsible for coordinating subcontractor pre-mobilization meetings and the subcontractor safety orientations.

5.8.6 If an associate or subcontractor is found to be in violation of the safety rules or regulations, they shall be disciplined in accordance with the Safety Violation Notification Process.

5.8.7 The Superintendent is to notify the Safety Department of all accidents involving associates, subcontractors, or the general public.

5.8.8 The Superintendent shall complete all incident investigations and reports in a timely manner and submit them to the ARCO Safety Department.

5.9 Associate Responsibilities

5.9.1 The associate is responsible for following the safety rules and regulations pertaining to the 1926 OSHA Construction Standards and the ARCO Safety Policy.

5.9.2 All associates are to report all accidents and near-miss incidents directly to their supervisor immediately. All associates injured on the job, who require treatment other than first aid, are to report to the company's designated clinics.

5.9.3 All new associates are expected to participate in the company safety orientation. All associates must make themselves available for safety training offered by the company. See the New Associate Safety Orientation Process located at the end of this section.

5.9.4 Hard hats, safety glasses, hi-visibility outer layer, and proper work attire, including shirts with sleeves, long pants, and hard-soled shoes or boots, are required.

5.9.5 If any associate is found violating the company safety program or OSHA rules and regulations, disciplinary action will be taken up to and including termination. Actions taken will vary based on repeat offenses and severity.

5.9.6 It is the ultimate responsibility of the associate to assess the situation and request the necessary safety equipment to perform their work functions in a safe and reasonable manner.

5.9.7 No associate shall be authorized to perform craft work on a construction job site ALONE without proper authorization and an emergency response plan.

5.9.7.1 Emergency response plan shall include continuous means of communication, "check in" requirements, and a list of tasks approved for individual work (no high-risk activities).

5.10 Associate Training

Associate training is a fundamental element of the company's safety and health program. Therefore, ARCO continues to enhance associate education and improve the safety of its associates and subcontractors. Training provided by the company is deemed valid only while performing work for the company.

5.10.1 Associate Safety Orientation – New associates shall receive company safety information in the form of an orientation video prior to starting work. Should the new associate have further questions, they should contact their supervisor or a member of the safety staff. See the New Associate Safety Orientation Process located at the end of this section

5.10.1.1 New and/or inexperienced associates shall be monitored by their assigned mentors for a period determined at the time of employment and will vary based on experience levels.

5.10.2 OSHA Training – Supervisors will receive recurrent safety training in the form of an OSHA 10 or 30-hour safety course. The content and information relayed in the course will be maintained and updated as necessary. For Project Managers,

10-hour training shall occur at least every five years or when management determines recurrent training may be necessary. For Superintendents, 30-hour training shall occur at least every five years or when management determines recurrent training may be necessary.

5.10.2.1 First Aid/CPR – Each ARCO project shall have one supervisor trained in First Aid/CPR/AED. Such training shall be provided by the company or a third-party contractor and maintained within current requirements as set forth by the governing body of such certification (i.e., American Red Cross).

5.10.2.2 Toolbox Meetings – Weekly "toolbox" meetings will be held on the project. Associates are required to attend these sessions. In addition, supplemental training may be necessary based on project specific duties. In the event an associate fails to complete the required training, the company may pursue disciplinary action up to and including termination.

5.10.2.3 Web Based Training – Technical and recurrent training may also be offered through web-based training programs. The company may use outside resources to assist any technical or supplemental project training requirements.

5.10.2.4 Training Records – Training records and information will be retained within the associate personnel files. Training records shall be available and maintained throughout the duration of employment with the company.

5.10.2.5 Updating Training – Associates shall receive additional training whenever new substances, processes, procedures, equipment, or hazards are introduced to the work environment. This training shall be conducted immediately upon the introduction of the above items and recorded.

6 PROJECT STARTUP AND POSTING REQUIREMENTS

6.1 Introduction

Project startup is the appropriate time for the Project Management Team (PMT) to review the project setup and logistical requirements. Identifying safety issues early and proactively addressing them are the key to a safe project. Plan ahead! The PMT is expected to make continuous efforts to coordinate and communicate safety issues throughout the duration of any project.

6.2 Pre-mobilization

6.2.1 Numerous items shall be considered when initializing a project; the PMT should use the checklist and assignment matrix. The application of this matrix is a reminder of the many basic items to consider when mobilizing to a new project.

6.3 Project Posting Requirements

The listed information is required on all job sites and shall be posted in accordance with federal, state, and local regulations. Information shall be posted in a readily available location.

6.3.1 OSHA 300 Summary—February 1 to April 30.

6.3.2 State Specific All-On-One Labor Law Poster (English & Spanish).

6.3.3 Construction Safety Information Poster (English & Spanish).

6.3.4 Federal Heat Stress Illness Prevention Poster (English & Spanish).

6.3.5 Federal First-Aid Response Poster (English & Spanish).

6.3.6 Federal Fire Extinguisher Poster (English & Spanish).

6.3.7 Emergency Evacuation Plan

6.3.8 Hospital, Occupational Clinic, and Local Authorities (Police, Fire, Ambulance, etc.) Medical facilities information shall be identified and conspicuously posted upon the initialization of the project. Maps to designated clinics and contact information may be available from the local clinic. Contact the clinic for details.

6.3.9 Emergency Contact Phone Numbers

6.4 Project Site Specific Safety Plan

Each construction project shall prepare a formal or informal Site-Specific Safety Plan which will include the following information:

6.4.1 Site Specific Orientation Information

6.4.2 Project Emergency Action Plan

- Emergency Evacuation Plan
- Must Points and procedures
- Route to the nearest clinic and hospital
- Emergency Contact List

6.4.3 Site Specific Heat and Cold Stress Procedures

- Hot and Cold Stress Planning and Procedures to comply with the OSHA recommendations for heat and cold stress based on region, time of year, construction type (indoors, outdoors, freezer, cooler, etc.)
- See Heat Stress & Cold Stress Procedures in part 5.5 of this section.

6.5 Heat and Cold Stress

Heat Stress Prevention Procedures:

6.5.1 Factors Leading to Heat Stress

- High temperature and humidity; direct sun or heat; limited air movement; physical exertion; poor physical condition; some medicines; and inadequate tolerance for hot workplaces.

6.5.2 Symptoms of Heat Exhaustion

- Headaches, dizziness, light-headedness, or fainting.
- Weakness and moist skin.
- Mood changes such as irritability or confusion.
- Upset stomach or vomiting.

6.5.3 Symptoms of Heat Stroke

- Dry, hot skin with no sweating.
- Mental confusion or losing consciousness.
- Seizures or convulsions.

6.5.4 Know the Signs/Symptoms of Heat-Related Illnesses; Monitor Yourself and Coworkers.

- Block out direct sun or other heat sources.
- Use cooling fans/air-conditioning. Rest regularly.
- Drink lots of water; about 1 cup every 15 minutes.
- Wear lightweight, light colored, loose-fitting clothes.
- Avoid alcohol, caffeinated drinks, or heavy meals.

6.5.5 What to Do for Heat-Related Illness

- Call 911 (or local emergency number) at once.
- While waiting for help to arrive:
- Move the worker to a cool, shaded area.
- Loosen or remove heavy clothing.
- Provide cool drinking water.
- Fan and mist the person with water.

Cold Stress Prevention Procedures:

6.5.6 Workers who are exposed to extreme cold or work in cold environments may be at risk of cold stress. Extremely cold or wet weather are dangerous conditions that can cause occupational illness and injuries, such as hypothermia, frostbite, trench foot, and chilblains.

6.5.7 General Safety Measures:

- Monitor your physical condition and that of your coworkers.
- Wear appropriate clothing.
- Wear several layers of loose clothing for insulation.
- Tight clothing reduces blood circulation to the extremities.
- Be aware that some clothing may restrict movement, resulting in a hazardous situation.
- Protect the ears, face, hands, and feet in extremely cold or wet weather.
- Boots should be waterproof and insulated.
- Wear a hat to reduce the loss of body heat from your head.
- Move into warm locations during breaks; limit the amount of time outside.
- Carry extra socks, gloves, hats, jacket, blankets, a change of clothes, and a thermos of hot liquid.
- Include chemical hot packs in your first aid kit.
- Avoid touching cold metal surfaces with bare skin.

Hypothermia:

6.5.8 Early Symptoms:

- Shivering, fatigue, loss of coordination, confusion, disoriented

6.5.9 Late Symptoms:

- No shivering, blue skin, dilated pupils, slow pulse, slow breathing, loss of consciousness.

6.5.10 What to do for Hypothermia Illness:

- Call 911 (or local emergency number) at once.
- Move victim to a warm room or shelter.
- Remove wet clothing.
- Warm center of the body first – chest, neck, head, groin.
- If conscious, offer a warm beverage – no alcohol.
- If no pulse, begin CPR.

Frostbite:

6.5.11 Symptoms:

- Reduced blood flow, aching, numbness, tingling or stinging, bluish or pale, waxy skin.

6.5.12 First Aid:

- Get into a warm room as soon as possible.
- Unless necessary, do not walk on frostbitten feet or toes.
- Immerse the affected area in warm (not hot) water or warm the affected area.
- Do not massage the frostbitten area.

7 GENERAL LIABILITY AND PROJECT SECURITY

7.1 Introduction

It is important that any new project is well planned and organized. The general conditions and overall presentation of the project are a reflection of the company's commitment to safety, planning, and organization. In addition, ARCO strives to preserve the well-being of the communities and residents within the areas where we conduct our business. Therefore, it is necessary that the project team takes the time to consider the numerous items that will assist them in managing the general liability risk of the project.

7.2 General Liability

7.2.1 Traffic Management and Control – At times, it may be necessary to implement traffic control on and around the project. Several items must be considered when addressing public traffic activities, including DOT and local permits, Uniform Traffic Code Regulations, flagman training, and hours of operations. Also, barricades remaining in place after hours must be reflective and positioned in a manner as not to create a greater hazard. It may be more practical to subcontract traffic management responsibilities.

7.2.2 Site Visitors – Any visitors to the jobsite are required to check in at the office. This requirement shall be clearly posted on the project sign located at the entrance. This will allow the project supervisor to formally greet visitors and understand the purpose of their visit. In addition, visitors of the project who are not employed by the owner, architects, contractors, vendors, or suppliers of the project are required to sign a general release of liability waiver. See the end of this section.

7.2.3 3rd Party Injuries – All accidents and injuries occurring on and around the project must be reported to the ARCO Business Services Safety Department immediately.

7.3 Project Security

7.3.1 Project Security — ARCO shall take necessary precautions to prevent losses on and around our project sites. From a loss prevention standpoint, a chain link fence can be an effective method of establishing the project perimeter. A fence will also prevent the public from wandering onto the site. An eight-foot chain link fence is a recommended solution for establishing the project boundaries. It is equally important that the project fence is inspected regularly for damaged or open areas. Maintenance and upkeep of the fence shall be performed regularly throughout the duration of the project.

7.3.2 Machinery and Equipment — It is expected that prudent measures will be taken to secure tools and equipment when not in use. Suppliers, vendors,

subcontractors, or other owner/operators will be responsible for securing their respective tools and equipment on-site.

7.3.3 **Gate Security –** At times, it may be necessary to employ security services to control access to the site and/or patrol the project site during off-hours. The Project Management Team should determine if such measures are necessary.

7.3.4 **Deterrent Signage –** Signage indicating that the project site is under surveillance should be conspicuously located at all entrances to the project site.

ARCO will not be responsible for vandalism or theft of tools and/or equipment of others.

8 EMERGENCY MANAGEMENT AND PREPAREDNESS

8.1 Introduction

ARCO has developed emergency management guidelines that will lend our associates assistance throughout any phase of the emergency management lifecycle. Those steps are mitigation, preparedness, response, and recovery.

8.1.1 A written emergency action plan (EAP) must be kept in the workplace and available to associates for review. Employers with 10 or fewer associates may communicate the plan orally.

8.2 Emergency Notification

8.2.1 Each site will have different notification requirements. The project Superintendent shall coordinate the method of notification with the facilities owner.

8.2.2 The selected method shall be effective enough so that associates will be notified in the fastest possible manner of the emergency condition.

8.2.3 Operations shall be immediately notified when an emergency evacuation has taken place. In addition, the ARCO Business Services Safety Department shall be notified as soon as possible.

8.2.4 ARCO will have and maintain an associate alarm system. The alarm system will use a distinctive signal for each purpose and comply with the requirements in 29 CFR 1910.165. Suppliers who rely on the EAP of ARCO will be made aware of the meaning and tone of the alarm.

8.3 Emergency Evacuation Guidelines

8.3.1 ARCO will designate and train associates to assist in a safe and orderly evacuation of other associates. ARCO will review the EAP with each associate covered by the plan.

8.3.2 The project team shall identify evacuation routes and assembly areas in the event of an emergency evacuation.

8.3.3 The project staff shall identify key personnel that will be the primary point of contact in the event of an emergency. Information should be retained on the Project Emergency Contacts List.

8.3.4 When notified of an emergency, the project team will take prompt action to notify all lead personnel and initiate the Emergency Evacuation Plan.

8.3.5 Subcontractors should retain an accurate count of their associates prior to each shift. In the event of a project evacuation, it is imperative to be able to account for the project staff.

8.3.6 All associates shall meet at the predetermined assembly area in order for management to conduct a head count and confirm that all associates have safely

evacuated the project site. Only authorized associates shall re-enter the site for emergency rescue operations and/or to administer first aid.

8.3.7 In an evacuation situation, it may be necessary to shut off site utilities. The PMT should be prepared for such an event and understand the necessary steps to promptly shut off project utilities.

8.3.8 Proper authorities (security, police, fire, rescue, ambulance, etc.) will be notified of the emergency as soon as possible. Signs with emergency phone numbers and instructions will be clearly posted near all jobsite telephones and in the project trailer.

8.3.9 Any evacuated structure under the control of the company shall not be reoccupied until it is determined that work may resume safely.

8.3.10 Emergency Response Checklist, Emergency Evacuation Plan, and Project Emergency Contracts Forms are located on ARCONNECT.

8.3.11 Potential Emergencies may include, but are not limited to:

- **8.3.11.1** Fire Emergencies
- **8.3.11.2** Weather-Related Emergencies (Hurricanes, Flooding, etc.)
- **8.3.11.3** Earthquakes
- **8.3.11.4** Property Damage
- **8.3.11.5** Public Demonstrations
- **8.3.11.6** Bomb Threats
- **8.3.11.7** Media Crisis Communications

9 SUBCONTRACTOR DUTIES AND RESPONSIBILITIES

9.1 Introduction

ARCO's first priority is to prevent associate injuries and property damage by minimizing as many sources of potential liability as possible. We believe this can be accomplished by preplanning work activities, implementing a cooperative safety program, and empowering the associates to enforce the program. Our ultimate goal is for every associate to go home safe and healthy at the end of the day - we are committed to it.

Additionally, ARCO requires strict adherence to all state/federal/local and ARCO standards. ARCO reserves the right to modify or implement additional project safety requirements at any time during the project's duration.

9.2 Basic Subcontractor Requirements

Any subcontractor performing work for ARCO is expected to maintain safety as the highest priority. ARCO considers no aspect of the construction process more important than preserving the well-being of the public, associates, and clients of the company.

9.2.1 **Safety and Health Program –** Companies on the project are expected to maintain a copy of their safety and health program on the jobsite. This information must be submitted prior to being issued a contract.

9.2.2 **Supervision –** The subcontractor is expected to designate an on-site representative who will participate in project safety efforts to include, but not limited to, safety committees, audits, and development and implementation of AHA/JHA, etc.

9.2.3 **Safety Inspections (Washington State) –** Subcontractor(s) onsite supervisor must complete a weekly safety inspection (WASI -Walk Around Safety Inspection). Documentation of such inspection must be submitted to ARCO on a weekly basis for each individual project.

9.2.4 **Work Attire and Personal Protective Equipment (PPE)** – Shall comply with Section B - PPE.

9.2.5 **Hazardous Communication –** Subcontractors will submit a copy of their project-specific Hazardous Communication Plan to the ARCO Project Management Team. By accepting your program, ARCO does not accept responsibility for updating, changing, reviewing, or training your associates as it relates to this standard.

9.2.6 **Subcontractor Safety Orientation –** All subcontractor associates, vendors, and visitors will attend a site-specific safety orientation prior to beginning any work.

9.2.6.1 All Workers shall be informed of their authority and obligation to STOP WORK if unsafe acts or conditions are observed. Workers will NOT be retaliated against for reporting unsafe conditions or acts. Job site wide notification shall be made, and work shall not resume until corrective actions are taken.

9.2.7 **Project Planning and Coordination** – Subcontractors are expected to communicate and coordinate work activities so safety hazards can be effectively identified and managed on a daily basis.

9.2.7.1 The subcontractor's competent person/foreman shall be present at preconstruction meetings and is responsible for coordinating and preparing a pre-work hazard analysis AND ensuring that plan is safely executed in the field. Hazard analysis shall identify hazards and plan for controls to safeguard against hazards. The competent person shall reassess work when new/unforeseen hazards are introduced to the work area. Competent person(s) are responsible for coordinating with other trades' competent person(s) should their work introduce a new hazard to other work crews.

9.2.8 **Pre-Qualification –** Subcontractors will be pre-qualified by reviewing their safety programs, safety training documents, and safety statistics.

9.2.9 **Safety Metrics –** Safety Metrics such as TRIR, EMR, DART, and Fatality Rate will be used as criteria for selecting subcontractors.

9.2.10 **Post-Job Safety Reviews** – Post-job safety performance reviews will be conducted. In addition, certain types of work are considered high-risk. **For these types of work, ARCO reserves the right to require a written site-specific safety plan that outlines vital safety information and/or a full-time safety representative.** Subcontractors are expected to participate in the development and implementation of an AHA/JHA for all their work activities prior to commencement of that activity.

9.2.11 **Meetings and Audits –** Each subcontractor is required to hold a weekly on-site safety meeting with its associates. In addition, the ARCO project team will hold routine progress meetings that will address coordinating work activities and safety items. A subcontractor representative will attend. Furthermore, an ARCO Business Services safety representative will conduct project safety audits. Any deficiencies identified in the audit shall be corrected within a reasonable timeframe, depending on the severity. Items deemed as imminent danger must be corrected immediately!

9.3 Non-Compliance Process

ARCO is committed to making the construction process enjoyable and beneficial for our associates and customers and building strong partnerships with its subcontractors. However, project safety is taken seriously and will not be compromised. Therefore, it is expected that deficient items will be fixed within a reasonable time frame; said time frame will be dependent on the severity of the situation and may be easily corrected by field supervision. In the event that the subcontractor's field supervision does not produce satisfactory results, we will contact the subcontractor's main office and request immediate repair.

Shall the safety deficiencies continue to exist, we reserve the right to remove any associate(s) involved in the unsafe act or condition and/or take necessary contractual action.

Where danger may be imminent, ARCO reserves the right to stop work immediately!

10 ACCIDENT REPORTING AND RECORDKEEPING

10.1 Introduction

The purpose of accident/incident reporting is to determine the underlying factors of an occurrence so precautionary actions can be taken to prevent future losses. It is not intended to assign fault or blame the situation on any individual or team member.

Accident/Incident reporting and Root Cause Analysis are an essential component of the company's risk management process. The most effective way to prevent future problems is to learn from previous mistakes.

10.2 Accident Reporting and Investigation

10.2.1 Injuries, job-related illness, property damage, fire, and near-miss accidents occurring on any project shall be reported and investigated by the company.

10.2.2 The Superintendent shall ensure that any accident on the project is documented and investigated properly.

10.2.3 ARCO has a **24-HOUR** injury-reporting requirement. All associates, including supervisory personnel, must report an accident or possible injury to their supervisors within the time limit stated above.

10.2.4 It is the supervisor's responsibility to report all associate injuries to the safety staff.

10.2.5 The safety department shall also be informed of all subcontractor injuries and accidents. It is the responsibility of the project team to report this information in a timely manner.

10.2.6 **In the event of a fatality or hospitalization, amputation, or loss of an eye, OSHA must be informed within the required 8-HOUR reporting period. The Project Superintendent shall be responsible for contacting the Safety Department in the event of a fatality or serious injury.**

10.2.7 The scene of a fatality or serious injury must be secured until the appropriate documentation, including photographic and physical evidence, can be preserved. No material, machinery, or equipment should be moved until the Superintendent has given approval or unless the condition poses an additional hazard. There should also be an accident investigation done at this time. We must also secure the site and potential evidence, and OSHA may need to be notified. This includes any event dealing with subcontractors.

10.2.8 Only authorized agencies and authorized project personnel will be allowed to photograph the scene of the accident. All official notifications to the family will come from ARCO Business Services when applicable or directly from the subcontractor involved in the event.

10.2.9 Accidents involving third parties, property damage, or potential builder's risk claims shall be reported to the Safety Department. Information pertaining to third-party property damage accidents should be listed on the "Property Damage Accident Report."

10.3 Recordkeeping

10.3.1 OSHA recordkeeping will be maintained at ARCO Business Services. Any parties requesting such information shall contact the Safety Department.

10.3.2 OSHA 300 logs and summaries will be distributed by January 31st for posting and OSHA compliance.

10.3.3 If medical record retention for associates is required, they shall be maintained in accordance with local and federal jurisdictional requirements.

10.3.4 Medical records shall be retained for the duration of associate employment plus 30 years.

10.3.5 If requested, associates shall have access to records within a reasonable time frame, not to exceed 24 hours.

10.3.6 Associate medical records shall be maintained in a secure database to protect private information.

11 OSHA INSPECTIONS

11.1 Introduction

Since 1970, the Occupational Safety and Health Administration (OSHA) has taken the legal initiative to protect workers. ARCO recognizes that its efforts to ensure job safety and the well-being of associates are in good faith and in the best interest of the construction industry. Therefore, ARCO welcomes any opportunity to partner and cooperate with the government agency. Furthermore, the project team should take advantage of any assistance or guidance that the administration may offer.

11.2 Inspection Guidelines

11.2.1 ARCO does not require a warrant from OSHA to inspect our project sites.

11.2.2 Some states have state-specific programs that may vary from Federal OSHA requirements.

11.2.3 If an OSHA inspector appears with the intent to perform an inspection, the Superintendent shall be notified immediately. If the Superintendent is not directly present, ask the compliance officer to be seated while he/she is located.

11.2.4 The Superintendent or a designee should notify the Safety Department immediately upon learning of the presence of an OSHA compliance officer.

11.2.5 The Superintendent should greet the inspector, note the time of his/her arrival, and review his/her credentials carefully. This information should be recorded immediately.

11.2.6 The Superintendent should ask the inspector to identify the type of inspection that they are conducting: Associate Complaint, Focused Inspection, Random, or Local Emphasis. This information should be recorded immediately.

NOTE: All information surrounding the inspection should be documented and forwarded to the Safety Department as soon as possible.

11.3 Types of Inspections

11.3.1 **Focused Inspection —** During a focused inspection, OSHA may review ARCO Business Service's Safety and Health Program. If the inspector then determines that the written plan coupled with the implementation of the plan protects against the four major hazard areas (falls, electrical, struck-by, caught-in/caught-between), OSHA has the option to leave the project without conducting a full-blown inspection.

11.3.2 **General Inspection [Random] —** A project may be selected for inspection by OSHA as part of a Dodge list report. In the event a random inspection occurs, contact the Safety Department immediately. All information related to the inspection shall be recorded in accordance with the OSHA Inspection Process.

11.3.3 **Associate Complaint —** An individual complaint may be filed on behalf of ARCO or its subcontractors. In case of such an event, the investigating officer should

attend to only those circumstances pertaining to the items specifically related to the complaint.

11.3.4 **Local Emphasis —** The OSHA Regional Office may implement local programs for specific geographical areas located within its region. In addition, any inspection based on a local initiative should be limited to the specific program items.

For other OSHA information, visit their website at ***www.osha.gov***

12 FLEET SAFETY PROGRAM

12.1 Purpose

12.1.1 The use of motor vehicles is a necessary part of ARCO's business. The operation of motor vehicles exposes our company to the risk of loss through injury to associates or the general public, damage to property, and damage to our company's overall reputation. Therefore, this policy ensures that ARCO maintains a high standard of vehicular safety through proper screening, selection, training, and documentation of associates who are eligible to operate vehicles for business operations.

12.2 Scope

12.2.1 An "Eligible Driver" is an associate assigned to a company-owned vehicle or provided a vehicle allowance for the use of a personal vehicle for business purposes (each a "Fleet Benefit"). Each prospective and current Eligible Driver must meet the standards outlined in this policy to qualify as an Eligible Driver. Use of company-owned vehicles or personal vehicles for business purposes, in any manner, which does not meet the standards outlined in this policy, is prohibited. Associates are required to be familiar with and comply with all federal, state, and local laws before operating any motor vehicle for business purposes. The safe operation of any vehicle is the Eligible Driver's responsibility and must be given appropriate attention. This policy applies to all Eligible Drivers and locations.

12.3 Responsibilities & Communication

12.3.1 ARCO Fleet will administer this policy and is responsible for implementation, management, recordkeeping requirements, and enforcement. Eligible Drivers will participate in both new-hire orientation and continued driver training. In some instances, remedial training may also be required. New Eligible Drivers will receive detailed information on the ARCO Fleet Program. A formal orientation program is established to help ensure all Eligible Drivers understand their responsibilities and are familiarized with the vehicle

12.3.2 ARCO Fleet will enforce regulations outlined in this Policy. Compliance with this policy is a condition of receiving a Fleet Benefit and, in certain cases, employment. Violations of this policy may result in disciplinary action up to and including dismissal.

12.3.3 ARCO reserves the right to amend this policy at any time, with or without prior notice. In addition, ARCO reserves the right to revoke an associate's Fleet Benefit at any time.

12.4 Eligible Driver Qualification Program

12.4.1 It is ARCO's policy to obtain Motor Vehicle Records ("MVRs") on Eligible Drivers prior to employment for individuals seeking positions that necessitate the operation of a motor vehicle.

12.4.2 Eligible Driver Eligibility Criteria

Because effective Eligible Driver qualification controls are essential elements of a successful fleet safety program, ARCO has developed and incorporated standards into its fleet program that reflect the skills necessary for satisfactory job performance while taking into consideration applicable federal and state regulations. MVRs are reviewed at the time of hiring an Eligible Driver and continuously monitored thereafter. To be enrolled in ARCO's MVR Continuous Monitoring Program, permission must be obtained by the associate completing the MVR authorization link emailed from ARCO Fleet. Eligible Drivers are subject to corrective actions as outlined in this policy.

12.4.3 Eligible Drivers must meet the following criteria to receive a Fleet Benefit:

12.4.3.1 Minimum age of 20 years old

12.4.3.2 Possession of a valid driver's license issued by the state in which the associate permanently resides and appropriate for the type of vehicle to be operated

12.5 Authorized Vehicle Use

12.5.1 The associate's supervisor (e.g., President, Vice President, Director of Operations, etc.) will determine who is authorized to operate vehicles on company business. No associate or non-associate (for example, an associate's spouse or child) can operate a company-owned vehicle, or their own vehicle on company business, unless the associate's supervisor has authorized that person to drive. Before any non-associate is permitted to use a company-owned vehicle, he or she must meet the same qualifications as those for associates. Use of company-owned vehicles by associates and non-associates under the age of 20 is strictly prohibited.

12.5.2 Towing

12.5.2.1 Company-owned field vehicles are prohibited from towing items, including but not limited to utility/cargo trailers, traveling trailers, boats, etc.

12.5.2.2 Personal vehicles are prohibited from towing items, including but not limited to utility/cargo trailers, traveling trailers, boats, etc., at the direction of ARCO or while associates are on duty.

12.5.2.3 ARCO Fleet can arrange for a 5th wheel/traveling trailer to be transferred using a 3rd-party shipping company. If an associate arranges transport themselves, they may expense the shipping costs. Prior approval from the associate's Operations Manager is required.

12.5.2.4 ARCO will not purchase cargo trailers (separate regulations will be put in place for ARCO-owned subcontractors).

12.6 Personal Vehicle Guidelines (Vehicle Allowance Benefit)

12.6.1 A vehicle allowance and fuel card (unless otherwise stated) will be issued to field associates who have chosen to drive their personal vehicle for business in lieu of a company-owned vehicle. This amount will be included in the associate's regular paycheck and subject to applicable taxes. The allowance is to be used to pay for routine maintenance, other repairs, and insurance for the associate's vehicle. An allowance will only be provided for personal vehicles that meet or exceed company standards. Any such vehicle must be suitably designed and equipped for intended use. This includes:

12.6.1.1 Navigating typical jobsite terrain.

12.6.1.2 Traveling in all climates/seasons across our project locations.

12.6.1.3 Suited for all roadways (city streets, highways, interstates, travel routes necessary for accessing projects, etc.)

12.6.2 To effectively represent the ARCO brand at our job sites, the vehicle must be in good mechanical condition, well-maintained, and free of excessive wear and tear. ARCO does NOT permit any company logos, advertising, or provocative decals/stickers on personal vehicles at the jobsite. The vehicle must not have features or modifications that negatively influence vehicle handling, safety, or driver visibility. The vehicle must be fitted with a hands-free mobile device kit or Bluetooth compatibility for hands-free mobile devices. Any vehicle that does not meet one or more of these requirements must be approved by the associate's supervisor (e.g., President, Vice President, Director of Operations, etc.) prior to receiving the allowance.

12.6.3 Associates must have, maintain, and renew insurance coverage of at least the minimum limits indicated below for any vehicle used for work and must provide ARCO with a copy of current insurance documents before using the vehicle for work, as well as when the policy is renewed or changed.

12.6.3.1 $100,000 bodily injury liability per person.

12.6.3.2 $300,000 bodily injury liability per accident.

12.6.3.3 $100,000 property damage liability per accident.

12.6.4 The associate, as the vehicle's owner, is responsible for all maintenance and repairs and must comply with all regulations outlined in this Policy.

12.6.5 Company and Personal Property

12.6.5.1 Associates are expected to ensure reasonable care of company property, such as computers, work papers, and equipment under their control. Company property left in vehicles must be secured out of sight to prevent theft. ARCO will not reimburse the associate for the theft of private property from company-owned or personal vehicles used for company business.

12.7 Vehicle Incident Reporting

12.7.1 Vehicle Incident Occurs While on Company Business or Operating a Company-Owned Vehicle in Traffic with Another Vehicle:

12.7.2 Report all accidents to ARCO Fleet (***arcofleet@arco1.com***) as soon as possible. It is important to report the claim, regardless of how small an incident may appear to be. After reporting the claim to ARCO Fleet, complete a vehicle incident report on Procore using the information collected from the scene. Details on what to collect are listed below.

12.7.2.1 Immediately After the Accident:

12.7.2.1.1 Stay safe. Assess the situation for immediate safety. Stay in the vehicle if there is a risk of injury or if moving might risk further injury.

12.7.2.1.2 Move to a safe location if the vehicle is creating a safety hazard or obstructing traffic. Do not leave the scene of an accident.

12.7.2.1.3 Determine if there are any injuries.

12.7.2.1.4 Call 911 immediately to report the accident when there is another vehicle involved.

12.7.2.2 At the Scene: Gather Information:

12.7.2.2.1 Be courteous and polite, but do not admit fault.

12.7.2.2.2 Collect the names, insurance information (company, policy number, contact number), and vehicle information (year, make, model, VIN, license plate number) of any other drivers involved in the accident.

12.7.2.2.3 Collect names and contact information for any witnesses to the accident.

12.7.2.2.4 Provide the associate's name and insurance information to the police and other driver(s).

12.7.2.2.5 Take photos of the associate's vehicle and the other vehicle(s) from various angles.

12.7.3 Vehicle Incident Involving <u>Only</u> a Company-Owned Vehicle:

Report all accidents to ARCO Fleet (arcofleet@arco1.com) as soon as possible. It is important to report the claim, regardless of how small an incident may appear to be.

12.7.3.1 Immediately After the Accident

12.7.3.1.1 Stay safe. Assess the situation for immediate safety. Stay in the vehicle if there is a risk of injury or if moving might risk further injury.

12.7.3.1.2 Move to a safe location if the vehicle is creating a safety hazard or obstructing traffic. Do not leave the scene of an accident.

12.7.3.1.3 Determine if there are any injuries.

12.7.3.2 At the Scene: Gather Information

12.7.3.2.1 Take photo of vehicle(s).

12.7.3.2.2 Determine if any damage was caused to property in the surrounding area.

12.7.3.3 Reporting the Vehicle Incident:

12.7.3.3.1 Reach out to ARCO Fleet to report the incident. With the information collected from the scene, submit a vehicle incident report on Procore.

12.7.3.3.2 If the ARCO vehicle was damaged, an estimate must be obtained within two weeks of the incident. An insurance claim may or may not be submitted depending on the cost of repairs.

12.7.3.3.3 ARCO Fleet will submit and manage the vehicle claim for a company-owned vehicle.

12.7.3.3.4 If another vehicle is involved and ARCO's Eligible Driver is at fault, the other driver will work directly with our insurance company to collect damage costs.

12.7.3.4 Applicability of Drug and Alcohol Policy

12.7.3.4.1 Eligible Drivers involved in an at-fault accident are subject to the Drug and Alcohol Policy in the ARCO Associate Handbook.

12.8 Seatbelt Requirements

12.8.1 It is ARCO's policy, and a condition of employment, that all associates who operate or ride in company-owned vehicles or operate or ride in personal vehicles on company business, wear properly fastened and adjusted seat belts, shoulder harnesses, and other similar equipment when provided in the vehicle they are operating or riding in. Associates are required to report any malfunction of seat/shoulder belts, and to have this equipment repaired or replaced as soon as possible after its discovery. Any associate who fails to adhere to these policies may be subject to disciplinary action, including but not limited to, written warning and/or subsequent restrictions of Fleet Benefits.

12.9 Additional Fleet Assets

12.9.1 Associates authorized to operate company-owned fleet assets, such as utility vehicles and drones used for company business, must meet the standards outlined in this policy. Personal use of company-owned fleet assets that do not

meet the standards outlined in this policy is prohibited. Associates are required to be familiar with and comply with federal and state laws before operating any asset. The safe operation of any fleet asset is the associate's responsibility and must be given appropriate attention.

12.9.2 Jobsite Utility Vehicles (UTV)

12.9.2.1 The purchase of all utility vehicles will be processed through ARCO Fleet.

12.9.2.2 Assets are assigned to an associate.

12.9.2.3 Report all asset assignment changes to ARCO Fleet.

12.9.2.4 Used for business purposes only.

12.9.3 Drones

12.9.3.1 Associates interested in operating drones on ARCO jobsites are required to obtain a Remote Pilot Certificate from the Federal Aviation Administration. ARCO drones are purchased and managed through ARCO Fleet (arcofleet@arco1.com).

13 TRANSITIONAL DUTY PROGRAM

13.1 Introduction

The ARCO Transitional Duty Policy applies to all associates within the organization. The primary goal of the safety and health program is to prevent associate illness and injuries. However, in the event an accident may occur, it is vital to associate morale for the company to assist the return-to-work process and support the associate's recovery.

13.2 Definitions

13.2.1 **Transitional Duty:** Duties designed to vary as the associate's work capacity increases. Transitional duty, if available, is contingent on the associate's ability to return to work at full functional capacity within a reasonable period of time. The benefits of transitional duty include: (1) the associate retaining his/her partial or normal income, and (2) the associate continuing to contribute as a productive associate.

13.2.2 **Communication:** Management shall advise associates that there is a return-to-work policy that will allow the associate to perform transitional duty for a reasonable period of time following an occupational injury or illness.

13.2.3 **Determination:** Management and the associate shall have joint responsibility for obtaining information related to any work restrictions from the treating physician for occupational and non-occupational injuries and illnesses. Management is responsible for determining if transitional duty is available based on this information.

13.2.4 **Return-to-Work:** An associate shall not be allowed to return to work following an occupational or non-occupational injury or illness until a work capacity form is received from the attending physician. A work capacity form shall state whether the associate can return to either full or transitional duty. A work capacity form, which specifies transitional duty, shall state the specific work limitations and/or restrictions

13.3 Procedure

13.3.1 Associates are responsible for reporting any occupational injury or illness, regardless of severity, to their supervisor immediately. If the supervisor is not available, the report should be made to the Safety Department.

13.3.2 If treatment beyond first aid is needed, the associate should be sent for medical treatment at the designated medical facility or at a designated health care provider.

13.3.3 Work restrictions outlined by the attending physician will be reviewed by the supervisor in conjunction with a representative of the ARCO Safety Department and compared to the job description/job requirements. A determination will be made whether the associate can perform his/her current job in its entirety, if reasonable accommodations can be made to his/her existing job to meet the

restrictions, if a temporary position can be created within the work restrictions, or whether there is no available position. Communication will be required between the associate, the applicable Superintendent, Project Manager, ARCO Safety Department, and the treating physician in order to make an informed decision regarding any return-to-work limitations.

13.3.4 Associates on transitional duty or those experiencing days away from work as a result of an occupational injury or illness may be required to be evaluated by the treating physician, a health care provider of the employer's choice, or an independent medical examiner (IME) at any time. The following general guidelines apply:

13.3.4.1 Examination every 10 working days of associates experiencing days away from work until they return to work (including transitional duty).

13.3.4.2 Examination every 30 calendar days of associates on transitional duty until they are released to return to their regular job.

13.3.5 Associates on transitional duty are not generally eligible for overtime work.

13.4 Interpretation and Exceptions

The ARCO Safety Department is responsible for the implementation and interpretation of this policy. It must be noted that the ARCO Safety Department will work closely with the associate's supervisor and the associate in making determinations regarding return to work or the implementation of any transitional duty.

14 DRUG AND ALCOHOL POLICY

14.1 Purpose

14.1.1 ARCO supports and endorses the Federal Drug-Free Workplace Act. Consistent with that act, it is the Company's objective to create and maintain a safe, healthy, and productive work environment for all associates, to provide high-quality products and services for our customers in an efficient manner, and to maintain the integrity and security of Company facilities, property, and job sites. This policy has been developed to achieve those objectives and to ensure the safety of our associates, our customers, and other persons who do business with the Company by preventing accidents and casualties that result from impairment of associates because of alcohol and/or illegal drugs.

14.2 Scope

14.2.1 Unless otherwise prohibited by law, this policy shall apply to all Company associates, including all management personnel and all union and non-union salaried or hourly workers.

14.3 Effective Date

14.3.1 This policy shall be effective immediately and shall continue in force until further written notice from the Company.

14.4 Policy

14.4.1 Being under the influence of or impaired by alcohol and/or illegal drugs in the workplace and/or on jobsites, during working time, in/on Company-owned or leased premises or in Company-owned or leased vehicles, is prohibited, except when taking prescription or over-the-counter medication for legitimate medical reasons that are disclosed and approved by ARCO.

14.4.2 The actual or attempted unlawful manufacture, distribution, dispensing, possession, or use of alcohol and/or illegal drugs in the workplace and/or on jobsites, during working time, in/on Company-owned or leased premises, and in Company-owned or leased vehicles is prohibited.

14.4.3 The possession of drug paraphernalia by an associate in the workplace and/or on jobsites, during working time, in/on Company-owned or leased premises or in Company-owned or leased vehicles is prohibited.

14.5 Legal Drugs

14.5.1 This policy does not apply to or prohibit the possession or use of legal drugs while performing Company business or while on Company property. However, an associate is required to report the use of any legal drug to their immediate supervisor or other appropriate Company management official if the use of such legal drug may affect the associate's capacity or ability to properly or safely

perform job duties or may create a danger to the associate or to other persons. If an associate is determined by Company management to be under the influence of or impaired by a legal drug, the associate may be required to participate in reasonable suspicion testing, take a leave of absence, and/or comply with other appropriate and reasonable requests by the Company.

14.6 Enforcement

14.6.1 The Company shall have the right to enforce this policy through the following means, the submission to which, upon request by the Company, shall be a condition of employment or continued employment, subject to applicable local laws:

14.6.1.1 All associates shall be required to provide a negative drug and alcohol test in compliance with the Company's Drug and Alcohol Policy. Any failure to provide said drug and alcohol test will forfeit employment eligibility with the Company for a period of not less than six months.

14.6.1.2 Associates may be required to submit to alcohol and/or drug tests in the following instances:

14.6.1.2.1 **Post-Accident —** any associate whose conduct, actions, or inactions caused or contributed to an accident or safety-related incident occurring during work time, on Company property, or involving Company-owned or leased vehicles.

14.6.1.2.2 **Reasonable Suspicion —** any associate whom the Company reasonably suspects is currently under the influence of or impaired by alcohol and/or illegal drugs (or a combination of alcohol, illegal drugs, and/or other substances), and/or has otherwise violated this policy in the workplace and/or on jobsites, during working time, in/on Company-owned or leased premises or in Company-owned or leased vehicles, based upon the specific, personal observations of at least one Company management official or upon other reliable information, may be required to submit to alcohol and/or drug testing.

14.6.1.2.3 **Follow-Up Testing —** any associate who previously has had a confirmed positive alcohol and/or drug test result under this policy may be required, at the Company's sole discretion, to submit to follow-up, unannounced alcohol and/or drug testing for six months following such positive test results.

14.6.1.2.4 **Search and/or Inspections —** any associate whom the Company reasonably suspects is in possession of alcohol and/or illegal drugs and/or drug paraphernalia, or otherwise has violated any provision in this policy, in the workplace and/or on jobsites, during working time, in/on Company-owned or leased premises or in Company-owned or leased vehicles, based upon the specific, personal observations of at least one Company management official or upon other reliable information, may be required to submit to a search and/or inspection of:

- **a** Any vehicle on Company property (including an associate's personal vehicle or any vehicle in which the associate is a passenger or driver).
- **b** Any vehicle engaged in Company business.
- **c** Any offices, lockers, rooms, parking lots, desks, tool boxes, packages, or other structures or containers on Company property.
- **d** The associate's personal property or effects (including but not limited to purses, briefcases, wallets, handbags, lunch boxes, coats, and clothing).

14.7 Testing Procedures

14.7.1 Unless circumstances or applicable laws dictate otherwise, alcohol testing will be by blood analysis, and drug testing will be by urine analysis. A reputable laboratory selected by the Company will conduct the tests.

14.7.2 An initial immunoassay test will screen for and determine the presence of alcohol and/or illegal drugs in the urine or blood (or other bodily fluids).

14.7.3 All urine or blood samples identified as positive on the initial test or screen shall be retested and confirmed using a Gas Chromatography/Mass Spectrometry (GC/MS) test (for drugs) or a Gas Chromatography (GC) test (for alcohol). An alcohol and/or drug test shall be deemed positive only after a GC/MS (for drugs) or GC (for alcohol) test has confirmed the initial positive test/screen results.

14.7.4 Any non-negative (dilute) samples will not be considered compliant with the company's Drug and Alcohol Policy. A retest may be rendered at management's discretion.

14.7.5 Alcohol and/or drug test results will be kept confidential and will be disclosed to only Company management or other persons with a need to know. Test results will be provided to a tested associate if requested in writing by the tested associate.

14.8 Reporting Criminal Drug Statute Convictions

14.8.1 Pursuant to the Federal Drug-Free Workplace Act, and as a condition of continued employment with the Company, an associate must notify the Company within five (5) days of the associate's conviction under any criminal drug statute for any violation occurring in the workplace. This notification must be in writing, signed by the associate, and provided to Human Resources. The Company may notify appropriate agencies of such conviction within ten (10) days of receipt of notification of such conviction. The Company may take appropriate disciplinary action against the associate, up to and including termination, for such conviction. The term "conviction" means finding a guilty (including pleas of nolo contendere) or imposition of sentence, or both, by any judicial body charged with the responsibility to determine violations of the federal, state, or local criminal drug statutes.

14.9 Disciplinary Action

14.9.1 Any associate who violates this policy, any provision herein, or who fails to cooperate fully with the Company, in the implementation and/or enforcement of this policy, may be subject to appropriate disciplinary action, up to and including immediate discharge, even for a first offense. In addition to specific violations of this policy, the following circumstances may be considered insubordinate misconduct and grounds for appropriate disciplinary action, up to and including immediate discharge, even for a first offense.

14.9.1.1 Failure or refusal to execute, upon request by the Company, a consent/disclosure form and to submit to an alcohol and/or drug test.

14.9.1.2 Failure or refusal to disclose and explain, upon request by the Company, the nature of any substance suspected of being in violation of this policy.

14.9.1.3 Failure or refusal to leave Company property upon request by the Company.

14.9.1.4 Failure or refusal to submit to searches upon request by the Company.

14.9.1.5 Falsifying or altering, or attempting to falsify or alter, a sample submitted for alcohol and/or drug testing.

14.9.1.6 Failure or refusal to report a criminal drug statute conviction within five days thereof.

14.9.1.7 A confirmed positive alcohol and/or drug test result.

14.9.1.8 Failure or refusal to sign and return to the Company the "Acknowledgment of Receipt and Compliance" form.

14.9.2 Except as required by applicable state or local law to the contrary, nothing in this policy shall require the Company to undertake alcohol and/or drug testing as:

14.9.2.1 A prerequisite to any disciplinary action, up to and including immediate discharge, nor shall this policy restrict the discretion of the Company to take disciplinary action (including discharge) against an associate based solely on evidence of behavior, personal observations, or other evidence or information customarily relied upon in making employment and disciplinary decisions.

14.10 Associate Assistance & Drug Treatment / Rehabilitation Programs

14.10.1 The associate's (and/or their spouse's) health insurance plan may contain provisions and coverage for qualified substance abuse treatment and rehabilitation programs. The associate should consult the plan administrator of such a health insurance plan for additional details and information. Additional information and assistance can be obtained upon request from Human Resources.

14.10.2 It is the responsibility of each associate to seek assistance (treatment/rehabilitation) from such programs before substance abuse problems are discovered or violations of this policy occur. Once a violation of this policy occurs, subsequently seeking assistance or entering a substance abuse treatment/rehabilitation program will not necessarily avoid or lessen the disciplinary action imposed on the associate by the Company or have any relevance or bearing on the appropriate disciplinary action taken by the Company. An associate's decisions to voluntarily seek assistance or to enter a substance abuse program; however, shall not be used by the Company as the basis for any disciplinary action against the associate.

14.10.3 Although the violation of this policy or any provision herein is sufficient grounds for immediate discharge, the Company reserves the right and discretion, in appropriate cases, not to terminate an associate for a first-time positive alcohol and/or drug test result and to allow the associate a "second chance." Any such second chance shall be conditioned upon the associate satisfactorily participating in and completing, at the associate's expense, an approved alcohol and/or drug (substance) abuse assistance or treatment/rehabilitation program. The associate will be placed on unpaid medical leave of absence status during their enrolment in the program. The associate shall provide the Company with all necessary and requested documents following completion of the program and shall execute a consent/disclosure form authorizing the release of the associate's program and medical records to the Company. The associate also shall be required, as a condition of continued employment and prior to returning to work, to submit to and test negative on a post-treatment/rehabilitation alcohol and/or drug test, in accordance with the testing procedure stated above.

14.11 Definitions

14.11.1 The term "Company property" means any and all offices, work locations, desks, lockers, parking lots, vehicles and other tangible objects physically located on or in any property or facility owned by the Company or job sites in which the Company engages in its business, and any vehicles owned by the Company, or which are used to perform Company business.

14.11.2 The term "Illegal drugs" means drugs, the use or possession of which are prohibited as a matter of federal, state or local law, and includes the abuse of prescription medications, including exceeding the recommended prescribed dosages or using others' prescribed medications. **Please also refer to the Marijuana section of this Policy for the Company's position and expectations with respect to marijuana use, possession, and related issues.**

14.11.2.1 Marijuana - Marijuana remains an illegal drug as a matter of federal law, even where its use has been approved by certain states for recreational or medical use. Notwithstanding any other provision of this Policy, the following expectations apply with respect to marijuana use that is lawful under the laws of the states for the Company locations to which an associate works. At all times, Company Policy implementation and administration will be in accordance with the law.

14.11.2.1.1 Associates who are covered by DOT drug and alcohol regulations are strictly prohibited from using any marijuana, including medical marijuana, and in no event will a confirmed positive test result on a DOT-administered drug test be excused on the basis of marijuana use.

a The Company prohibits possessing or using marijuana and marijuana products in the workplace and/or on jobsites, during working time, in/on Company-owned or leased premises or in Company-owned or leased vehicles.

b Associates are, additionally, at all times strictly prohibited from working while impaired by marijuana, including medical marijuana.

14.11.2.2 Further, the Company may take adverse action based on confirmed positive test results for marijuana (including medical marijuana), when marijuana is in an associate's system or if an associate is working while under the influence of marijuana, to the fullest extent permitted by law. Where applicable, the Company will comply with

requirements to show impairment in addition to a positive test result for marijuana before taking adverse action.

14.11.3 The term "legal drugs" means a controlled substance taken pursuant to and in accordance with a valid prescription written for the associate by the associate's physician or other healthcare provider,, or when used as otherwise authorized by law and/or over-the-counter medication taken pursuant to and in accordance with label directions.

14.11.4 For questions and further information please contact the ARCO Safety Department.

14.12 Smoke-Free Workplace

14.12.1 In order to provide and maintain a safe and healthy work environment for all associates, ARCO prohibits smoking on all company premises. Under this policy, smoking is defined as the "act of lighting, smoking, or carrying a lighted or smouldering cigar, cigarette, pipe or e-cigarette of any kind."

14.12.2 The smoke-free workplace policy applies to:

- **14.12.2.1** All areas of the company building, including job sites or clients' properties
- **14.12.2.2** All Company-sponsored off-site conferences and meetings
- **14.12.2.3** All visitors (customers and vendors) to the Company premises
- **14.12.2.4** All contractors and consultants, and/or their associates working on the Company premises
- **14.12.2.5** All associates, temporary associates, and student interns

14.12.3 Smoking is only permitted in parking lots or other outside designated areas approved by the Company.

14.12.4 Associates who violate the smoking policy will be subject to disciplinary action up to and including termination.

15 PROGRESSIVE DISCIPLINE POLICY

15.1 Introduction/Purpose

15.1.1 To establish rules pertaining to associate conduct, performance, and responsibilities so that all personnel can conduct themselves according to certain rules of good behavior and good conduct.

15.1.2 The purpose of these rules is not to restrict the rights of anyone, but rather to help people work together harmoniously according to the standards we have established for efficient, courteous, safe service for our customers.

15.1.3 Reasonable rules concerning personal conduct of associates are necessary if the facility is to function safely and effectively. Your supervisor or department head will keep you informed of department rules and changes to those rules.

15.1.4 The company believes that you want to, and will, do a good job if you know what is required to perform your job properly. Your supervisor is responsible for ensuring that you know what is expected of you in your job. Further, it is company policy that associates are given ample opportunity to improve in their job performance.

15.1.5 The project Superintendent is responsible for the enforcement of this policy at the project level. Each associate's direct supervisor is responsible for enforcing this policy for that associate.

15.2 Policy

15.2.1 Degrees of discipline are generally progressive, unless aggressive, criminal, or blatant in nature, and are used to ensure that the associate has the opportunity to correct his or her performance. There is no set standard of how many oral warnings must be given prior to a written warning or how many written warnings must precede termination.

15.2.2 The project Superintendent will conduct regular inspections of the work site to ensure compliance with the safety policies.

15.3 Exceptions

15.3.1 For serious offenses, such as fighting, theft, insubordination, threats of violence, the sale or possession of drugs, or abuse of alcohol on company property, etc., termination may be the first and only disciplinary step taken. Any step or steps of the disciplinary process may be skipped at the discretion of ARCO after investigation and analysis of the total situation, past practice, and circumstances.

15.3.2 In general, several oral warnings should, at the next infraction, be followed by a written warning, followed at the next infraction by discharge.

15.3.3 This is especially true in those cases where the time interval between offenses is short, and the associate demonstrates a poor desire to improve his/her performance.

16 HAZARD COMMUNICATION WRITTEN PROGRAM

16.1 Purpose

This program has been prepared to comply with the requirements of the Globally Harmonized System (GHS) and Federal OSHA standard 1926 and to ensure that the information necessary for the safe use, handling, and storage of hazardous chemicals is provided and made available to associates.

This program includes guidelines on the identification of chemical hazards and the preparation and proper use of container labels, Safety Data Sheets (SDSs), and other types of warning devices.

A developed, implemented, and maintained written Hazard Communication Program will be kept at each workplace, which addresses these elements: labels and other forms of warnings, SDSs, associate information, and training.

16.2 References

16.2.1 29 CFR 1926.59

16.2.2 29 CFR 1920.1200

16.3 Safety Data Sheets (SDS)

16.3.1 Project-specific SDSs shall be obtained from each subcontractor and supplier and kept in a binder. The binder shall be posted in a conspicuous location.

16.3.2 Associates working with a hazardous chemical may request a copy of the SDS. Requests for SDSs shall be made to the project Superintendent or the ARCO Safety Department.

16.3.3 SDSs shall be available, and standard chemical references may also be available on the site to provide immediate reference to chemical safety information. NOTE: ARCO utilizes an OSHA-Compliant Online SDS Database.

16.3.4 For multi-employer workplaces, copies of ARCO SDSs will be made and given to other employers on site. Requests will be made to have copies of other employers' SDSs as well. SDSs will be made available to all associates in the project site office.

16.3.4.1 Employers who produce, use, or store hazardous chemicals at a workplace in such a way that the associates of other employer(s) may be exposed shall additionally ensure that the hazard communication programs developed and implemented include the following:

16.3.4.1.1 Methods the employer will use to provide the other employer(s) on-site access to safety data sheets.

16.3.4.1.2 Precautionary measures that need to be taken to protect associates during the workplace's normal operating conditions and in foreseeable emergencies.

16.3.4.1.3 The labeling system used in the workplace.

16.4 Chemical Inventory

16.4.1 ARCO Superintendents will maintain an inventory of all known chemicals in use on each worksite. The chemical inventory list will serve as the index for the project-specific SDS.

16.4.2 The project Superintendent is responsible for recording all hazardous chemicals brought onto the worksite by subcontractors. Hazardous chemicals brought onto the worksite by ARCO or subcontractors will be included on the hazardous chemical inventory list.

16.5 Container Labeling

16.5.1 All chemicals on site will be stored in their original or approved containers with a proper label attached, except for small quantities for immediate use. Any container not properly labeled shall be given to the appropriate ARCO Superintendent in charge of that project for labeling or proper disposal.

16.5.2 All workplace labels or other forms of warning will be legible, in English, and prominently displayed on the container or readily available in the work area throughout each work shift. ARCO will provide associates who speak other languages the information they need in their respective languages as well.

16.5.3 Workers may dispense chemicals from original containers only in small quantities intended for immediate use. Any chemical left after work is completed must be returned to the original container or the appropriate ARCO Superintendent in charge of that project for proper handling.

16.5.4 No unmarked containers of any size are to be left in the work area unattended.

16.5.5 ARCO will rely on manufacturer-applied labels whenever possible and will ensure that these labels are maintained. Containers that are not labeled or have a removed manufacturer's label must be relabeled.

16.5.6 ARCO will ensure that each container is labeled with the identity of the hazardous chemical contained and any appropriate hazard warnings.

16.5.7 Labels should comply with the Globally Harmonized System standard of labeling requirements.

16.6 Associate Training

16.6.1 Associates will be trained to work safely with hazardous chemicals. Associates will be trained in their work area at the time of their initial assignment and whenever a new chemical hazard that the associates have not previously been trained on is introduced into their work area. Associate training will include:

16.6.1.1 Methods that may be used to detect a release of hazardous chemical(s) in the workplace.

16.6.1.2 Physical and health hazards associated with chemicals;

16.6.1.3 Protective measures to be taken.

16.6.1.4 Safe working practices, emergency responses, and use of personal protective equipment.

16.6.1.5 Information on the Hazardous Communication Standard, including labeling, warning systems, and an explanation of SDS.

16.6.2 Training shall be conducted to inform associates of the hazards of non-routine tasks and the hazards associated with chemicals contained in unlabeled pipes in their work areas. This training shall be documented to verify that the information has been communicated.

16.7 Personal Protective Equipment (PPE)

16.7.1 Required PPE is available from the appropriate ARCO Superintendent in charge of that project. Any associate found in violation of PPE requirements may be subject to disciplinary actions up to and including discharge.

16.8 Emergency Response

16.8.1 Any incident of over-exposure or spill of a hazardous chemical/substance must be reported to the appropriate ARCO Superintendent in charge of that project. In the absence of the Superintendent, the ARCO Safety Department shall be contacted.

16.9 Hazards of Non-Routine Tasks

16.9.1 Superintendents will inform associates of any special tasks that may arise, which would involve possible exposure to hazardous chemicals.

16.9.2 Review of safe work procedures and use of required PPE will be conducted prior to the start of such tasks. Where necessary, signs will be posted to indicate the nature of the hazard involved.

16.9.3 Associates will be instructed to get with Superintendents when they come across hazardous chemicals in unlabeled pipes in the work area to identify hazardous chemicals.

16.10 Informing Other Employers

16.10.1 Other onsite employers are required to adhere to the provisions of the ARCO Hazard Communication Written Program.

16.10.2 Information on hazardous chemicals known to be present will be made available to other employers. Employers will be responsible for providing necessary information to their associates.

16.10.3 A copy of the ARCO Hazard Communication Program will be posted in a conspicuous location.

16.11 Posting

16.11.1 ARCO will post a copy of the Hazard Communication Program at each jobsite. Additional information can be found at the ARCO office.

16.12 Posting of Emergency Phone Numbers

16.12.1 ARCO Superintendents shall post the following list of emergency numbers in a conspicuous location on each jobsite:

16.12.1.1 911
16.12.1.2 Ambulance
16.12.1.3 Poison Control
16.12.1.4 Fire Department
16.12.1.5 Police Department

17 HAZARDOUS SUBSTANCES COMMONLY FOUND ON CONSTRUCTION PROJECTS*

Acetone
Acetylene Gas
Acids
Aluminum Etching Agent
Ammonia
Anti-Freeze
Arsenic Compounds
Asbestos
Asphalt
Benzene (and derivatives)
Bleaching Agents
Carbon Monoxide (in cylinders)
Caulking, Sealant Agents
Chromate Salts
Cleaning Agents
Cobalt Hydraulic
Compressed Gases
Concrete Curing Compounds
Kerosene
Lime (Calcium Oxide)
Lubricating Oils
Lye (Sodium or Potassium Hydroxide)
Metals (Magnesium, Nickel, Copper, Zinc, Lead, Chromium, Cadmium, Iron, etc.)
Methanol (Methyl Alcohol)
Methyl Ethyl Ketone (2-Butane)
Motor Oil Additives
Naphtha (Coal Tar)
Nitroglycerin
Paint Remover/Stripper
Paints/Lacquers/Enamels
Particle Board
Pentachlorophenol
Cresol
Cutting Oil (Oil Mist)
De-emulsifier for Oil
Diesel Gas/Oil
Drywall
Dusts (Brick, Cement Block)
Etching Agents
Fiberglass, Mineral Wool
Foam Insulation
Freon 20, R20 and others
Gasoline (Petrol & Ethyl)
Graphite
Greases
Fluid
Inks
Insulations
Plastics
Putty
Resins, Epoxy/Synthetics
Sealers
Solder, Flux (Zinc Chloride, Fluorides, etc.)
Solder, Soft Lead and Tin
Solvents
Thinner, Paint Lacquer
Transite
Turpentine, Gum Spirit, Oil of Turpentine
Waterproofing Agents
Waxes and Polishes
Wood Preservatives Xylene

* No representation is made that these are the only hazardous substances found on ARCO's construction projects for which a contractor must have SDS's, initiate training, etc.

18 CRYSTALLINE SILICA EXPOSURE CONTROL POLICY, PROGRAM, & PROCEDURES

18.1 Introduction

Silica is the second most common mineral on Earth, commonly found in the form of sand and rock. Silica is the compound formed from the elements silicon (Si) and oxygen (O) and has a molecular form of SiO2. The polymer most abundant and most hazardous to human health is alpha quartz and is commonly referred to as crystalline silica.

Health Hazards Associated with Silica Exposure

The health hazards of silica come from breathing in the dust. If crystalline silica becomes airborne through industrial activities, exposure to fine crystalline silica dust (specifically exposure to the size fraction that is considered to be respirable) can lead to 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 the symptoms of the disease may not appear for many years. Silica dust is very small and is not visible to the human eye.

A worker may develop any of three types of silicosis, depending on the concentration of silica dust and the duration of the exposure:

- **Chronic Silicosis:** Develops after 10 or more years of exposure to crystalline silica and relatively low concentrations.
- **Accelerated Silicosis:** Develops 5 to 10 years after initial exposure to crystalline silica at high concentrations.
- **Acute Silicosis:** Develops within weeks or up to 4 or 5 years after exposure to very high concentrations of crystalline silica.

Initially, workers with silicosis may have no symptoms; however, as the disease progresses, workers 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.

Potential Silica Exposures on ARCO Jobsites

Many of the activities performed on ARCO projects result in the creation/release of silica dust, thus exposing our associates and subcontractor associates. These activities include, but are not limited to:

- Housekeeping
- Jackhammering
- Grinding and polishing concrete
- Handheld saw cutting of concrete
- Walk-behind saw cutting of "green" concrete (soft-cutting)
- Walk-behind saw cutting of concrete
- Drilling of concrete
- Mixing operations
- Cutting of masonry
- Rock crushing/hammering

18.2 Statement of Purpose

ARCO is committed to providing a safe and healthy work environment for our associates and subcontractors, recognizes the right to work in such an environment, and will ensure that ARCO activities do not adversely affect the health & safety of any persons.

This commitment includes ensuring every reasonable precaution is taken to protect our associates and subcontractors from the adverse health effects associated with silica.

18.3 Responsibilities

Due to the risk posed by respirable silica, it is critical that all personnel involved in activities that could potentially create silica dust take specific actions to limit hazards as much as possible. In recognition of this, the following responsibilities have been established for silica-related operations and must be adhered to:

18.3.1 ARCO Safe Associates

18.3.1.1 Regularly evaluating new equipment and technologies that become available and purchasing the "best available" equipment/technology. Equipment with (silica) dust suppression/collection technologies will be given preference over equipment that lacks such technology.

18.3.1.2 Implementing a suitable respirable silica exposure monitoring program or otherwise ensuring representative exposure monitoring results are available. The purpose of the program will ensure that (over time) ARCO has quantifiable silica exposure data available for all regularly occurring, as well as reasonably foreseeable work activities.

18.3.1.3 Ensuring project and task-specific Exposure Control Plans (ECPs) are developed, communicated, and effectively implemented as appropriate.

18.3.1.4 Ensuring that all associates receive the necessary education and training related to this policy, as well as project/task-specific ECPs.

18.3.1.5 Maintaining applicable records (i.e. exposure sampling, inspections, respirator fit tests, training records, etc.) in accordance with ARCO's recordkeeping policies.

18.3.2 Superintendents

18.3.2.1 Obtaining a copy of the project/task-specific ECPs (and/or other similar such information) and ensuring such are made available at each work site.

18.3.2.2 Ensuring that all the tools, equipment, PPE, and materials (including water) necessary to implement the ECP are available (and in good working order) prior to allowing work activities to commence.

18.3.2.3 Ensuring that all workers have received the necessary education and training. Subcontractors should submit education/training records to the Superintendent prior to commencing work.

18.3.2.4 Ensuring that workers adhere to the project/task-specific ECP, including PPE and personal hygiene.

18.3.2.5 Coordinating work activities with the Owner and Owner subcontractors as required, and/or otherwise implementing the controls necessary to protect others (i.e. erecting of barricades and signage) who could be adversely affected by ARCO's scope of work.

18.3.3 Project Managers

18.3.3.1 Assist ARCO SAFE in conducting job site assessments for silica containing materials.

18.3.3.2 Assist in the selection and implementation of appropriate control measures in accordance with OSHA's Table 1.

18.3.3.3 Communicating the requirements of this program and OSHA Silica Standards for Construction to Project Owners, subcontractors, and any parties that may be exposed to respirable silica as a result of ARCO's scope of work.

18.3.4 Associates

18.3.4.1 Following recognized work procedures as established by this program and OSHA's Silica Standards, including the control measures identified in Table 1.

18.3.4.2 Use the assigned PPE in an effective and safe manner.

18.3.4.3 Participate in Respirable Silica exposure monitoring and the medical surveillance program.

18.3.4.4 Report any unsafe conditions or acts to the Superintendent, Project Manager, or ARCO SAFE.

18.3.4.5 Report any exposure incidents or any signs or symptoms of Silica-related illnesses.

18.4 Exposure Limits & Definitions

18.4.1 Action Level: The Occupational Safety & Health Administration (OSHA) has established an Action Level (AL) for respirable crystalline silica of 25 micrograms per cubic meter of air (µg/m3) averaged over an 8-hour workday.

18.4.2 Competent Person: An individual who is capable of identifying existing and foreseeable Respirable Silica-related hazards in the workplace and who has authorization to take prompt corrective measures to eliminate them.

18.4.3 Associate Exposure: The exposure to airborne Respirable Crystalline Silica that would occur if the associate were not using a respirator.

18.4.4 High-Efficiency Particulate Air (HEPA) Filter: Means a filter that is at least 99.97% efficient in removing monodispersed particles of 0.3 micrometers in diameter.

18.4.5 Objective Data: Means information, such as air monitoring data from industry-wide surveys or calculations based on the composition of a substance, demonstrating associate 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 process, types of material, control methods, work practices, and environmental conditions in the workplace. ARCO utilizes objective data in accordance with OSHA standards for "soft-cutting" concrete slabs.

18.4.6 Permissible Exposure Limit (PEL): The Occupational Safety & Health Administration (OSHA) has established a Permissible Exposure Limit (PEL) for respirable crystalline silica of 50 micrograms per cubic meter of air (µg/m3) averaged over an 8-hour workday.

18.4.7 Physician or Other Licensed Health Care Professional (PLHCP): An individual whose legally permitted scope of practice allows him or her to independently provide or be delegated the responsibility to provide some or all the particular health care services required by the Medical Surveillance Section of the OSHA Respirable Crystalline Silica Standard.

18.4.8 Respirable Crystalline 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 specified in the International Organization for Standardization (ISO) 7708:1005: Air Quality – Particle Size Fraction Definitions for Health-Related Sampling.

18.5 Risk Identification

Silica is found in many of the products/materials used/encountered on ARCO projects. For example: Safety Data Sheets for concrete indicate a potential for up to 90% crystalline silica. Silica dust can also be readily released through the various tasks performed by ARCO and its subcontractors.

The health hazards of silica result from breathing in the dust. In addition to identifying the specific activities/areas where personnel could be exposed to silica dust, the amount and duration of exposure must also be considered.

The specific activities performed on ARCO projects that potentially expose our associates and subcontractors to silica dust include, but are not necessarily limited to:

18.5.1 Surface preparation activities such as cleaning with backpack blowers; skid steer loaders with sweeper attachments; sweeper trucks; and hand sweeping

18.5.2 Jackhammering of concrete, stone, and asphalt

18.5.3 Walk-behind saw cutting of concrete, stone, and asphalt

18.5.3.1 Specific procedures for "soft-cutting" concrete can be found in Appendix B at the end of this section.

18.5.4 Handheld saw cutting of concrete, stone, and asphalt

18.5.5 Mounted core-drilling of concrete

18.5.6 Handheld drilling of concrete

18.5.7 Grinding and patching of concrete

18.5.8 Mixing operations (i.e., mortar, grout, drywall compound, etc.)

18.5.9 Sanding of drywall compound

18.5.10 Housekeeping (sweeping, blowing, etc.)

18.6 Risk Assessment

When possible, ARCO will conduct activities with potential silica exposure to be consistent with OSHA's Silica Standard for Construction Table 1 (Appendix A of this program). Superintendents will ensure that each associate under their supervision, and engaged in a task identified on Table 1, has fully and properly implemented the engineering controls, work practices, and respiratory protection specified for the task.

When an associate performs more than one task included on OSHA's Table 1 during a shift, and the total duration of all tasks combined is more than four hours, the required respiratory protection for each task is the respiratory protection specified for more than four hours per shift. If the total duration of all tasks on Table 1 combined is less than four hours, the required respiratory protection for each task is the respiratory protection specified for less than four hours per shift.

When compliance with OSHA's Table 1 is not possible, ARCO will assess the exposure of the associate to respirable crystalline silica as follows:

Assessment Options

18.6.1 **Performance Option:** ARCO will assess the 8-hour TWA exposure for each associate based on any combination of air monitoring data or objective data sufficient to accurately characterize associate exposures to respirable crystalline

silica. If this option is chosen, the exposure assessment must be conducted before the work begins.

18.6.2 Scheduled Monitoring Option:

18.6.2.1 ARCO will perform initial monitoring to assess the 8-hour TWA exposure for each associate based on one or more personal breathing zone air samples that reflect the exposures of associates on each shift, for each job classification, and in each work area. Where several associates perform the same tasks on the same shift and in the same work area, ARCO will plan to monitor a representative fraction of these associates. When using representative monitoring, ARCO will sample the associate(s) who are expected to have the highest exposure to respirable crystalline silica.

18.6.2.2 If initial monitoring indicates that associate exposures are below the Action Level, ARCO will probably discontinue monitoring for those associates whose exposures are represented by such monitoring.

18.6.2.3 Where the most recent exposure monitoring indicates that associate exposures are at or above the Action Level but at or below the PEL, ARCO will repeat such monitoring within six months of the most recent monitoring.

18.6.2.4 Where the most recent exposure monitoring indicates that associate exposures are above the PEL, ARCO will repeat such monitoring within three months of the most recent monitoring.

18.6.2.5 Where the most recent (non-initial) exposure monitoring indicates that associate exposures are below the Action Level, ARCO will repeat such monitoring within six months of the most recent monitoring until two consecutive measurements, taken seven or more days apart, are below the Action Level, at which time ARCO will probably discontinue monitoring for those associates whose exposures are represented by such monitoring, except when a reassessment is required. ARCO will reassess exposures whenever a change in the production, process, control equipment, personnel, or work practices may reasonably be expected to result in new or additional exposures at or above the Action Level, or when ARCO has any reason to believe that new or additional exposures at or above the Action Level have occurred.

ARCO will ensure that all respirable crystalline silica samples taken to satisfy the monitoring requirements of this program and OSHA are collected by a qualified individual (i.e. a Certified Industrial Hygienist) and the samples are evaluated by a qualified laboratory (i.e. accredited to ANS/ISO/IEC Standard 17025:2005 with respect to crystalline silica

analyses by a body that is compliant with ISO/IEC Standard 17011:2004 for implementation of quality assessment programs).

Within five working days after completing an exposure assessment, ARCO will individually notify each affected associate in writing of the results of that assessment or post the results in an appropriate location accessible to all affected associates.

Whenever an exposure assessment indicates that associate exposure is above the PEL, ARCO will describe in the written notification the corrective action being taken to reduce associate exposure to or below the PEL.

Where air monitoring is performed, ARCO will provide affected associates or their designated representatives an opportunity to observe any monitoring of associate exposure to respirable crystalline silica. When observation of monitoring requires entry into an area where the use of protective clothing or equipment is required for any workplace hazard, ARCO will provide the observer with protective clothing and equipment at no cost and shall ensure that the observer uses such clothing and equipment.

Once air monitoring has been performed, ARCO will determine its method of compliance based on the monitoring data and the hierarchy of controls. ARCO will use engineering and work practice controls to reduce and maintain associate exposure to respirable crystalline silica to or below the PEL, unless ARCO can demonstrate that such controls are not feasible. Wherever such feasible engineering and work practice controls are not sufficient to reduce associate exposure to or below the PEL, ARCO will nonetheless use them to reduce associate exposure to the lowest feasible level and shall supplement them with the use of respiratory protection.

In addition to the requirements of this program, ARCO will comply with other programs and OSHA standards (such as 29 CFR 1926.57 [Ventilation]) when applicable, where abrasive blasting is conducted using crystalline silica-containing blasting agents, or where abrasive blasting is conducted on substrates that contain crystalline silica.

18.7 Risk Control

When possible, ARCO will conduct activities with potential silica exposure to be consistent with OSHA's Silica Standard for Construction Table 1 (Appendix A of this program). Superintendents will ensure that each associate under their supervision and engaged in a task identified on Table 1 has fully and properly implemented the engineering controls, work practices, and respiratory protection specified for the task.

When compliance with OSHA's Table 1 is not possible or for tasks not listed in Table 1, ARCO will limit the exposure of the associate to respirable crystalline silica using one or a combination of the following methods, listed in order of preference:

18.7.1 Elimination and Substitution: Whenever possible, ARCO will substitute products containing silica with products that do not contain silica. While there have historically been few substitution options available, ARCO recognizes the

importance of planning work to minimize the amount of silica dust generated. During the planning phases of a project, ARCO will advocate for the use of methods that reduce the need for cutting, grinding, or drilling of concrete surfaces.

18.7.2 **Engineering Controls:** Engineering controls are those controls that aim to control or otherwise minimize the release of crystalline silica. Two "common" engineering control options are available to ARCO in many circumstances. These include Local Exhaust Ventilation (LEV) and Wet Dust Suppression (WDS) systems.

18.7.2.1 **Local Exhaust Ventilation (LEV):** Tool-specific LEV systems are available on some tools. Such LEV systems are generally comprised of a shroud assembly, a hose attachment, and a vacuum system. Dust-laden air is collected within the shroud, drawn into the hose attachment, and conveyed to the vacuum, where it is filtered and discharged. Large-scale LEV systems, such as those available on some vacuum trucks and mobile sweepers, may also be used on ARCO projects. When/if LEV systems are used, ARCO will employ the following systems and safe work practices:

18.7.2.1.1 Vacuum attachment systems that capture and control dust at its source.

18.7.2.1.2 Dust control systems must be maintained in optimal working condition.

18.7.2.1.3 Grinding wheels will be operated at the manufacturer's recommended RPM (operating more than this can generate significantly higher levels of airborne dust).

18.7.2.1.4 HEPA, multi-stage vacuum units (approved for use with silica) will be used in accordance with the manufacturer's instructions.

18.7.2.2 **Wet Dust Suppression (WDS):** Many tools are available with WDS systems. When WDS systems are not available, similar effects can be achieved by manually wetting the surface with a mister or hose. When WDS systems are used, ARCO will employ the following systems and safe work practices:

18.7.2.2.1 If water is not readily available on the specific ARCO project, the Superintendent will arrange to have a water tank delivered to the site.

18.7.2.2.2 Pneumatic or fuel-powered equipment will generally be used instead of electrically powered equipment if water is the method of dust control, unless the electrical equipment is specifically designed to be used in such circumstances.

18.7.2.2.3 Pressure and flow rate will be controlled in accordance with the tool manufacturer's specifications.

18.7.2.2.4 When sawing concrete, tools that provide water directly to the blade will be used.

18.7.2.2.5 Wet slurry will be cleaned from the work surfaces as soon as work is complete.

18.7.3 Administrative Controls: Administrative controls are those that aim to control or otherwise minimize the release of silica using work procedure and work methods, rather than by affecting the actual physical work. Common examples of administrative controls include, but are not limited to:

18.7.3.1 Posting of warning signs.

18.7.3.2 Rescheduling of work as to avoid the activities of others.

18.7.3.3 Relocating unprotected workers away from dusty areas. When administrative controls are used, ARCO will employ the following systems and safe work practices:

18.7.3.4 In conjunction with the owner and subcontractors, suitable exposure controls will be discussed and determined. As necessary, supplemental project and task-specific Exposure Control Plans will be developed.

18.7.3.5 Suitable housekeeping, restricted work area, hygiene practices, training and supervision procedures/standards will be determined and implemented on ARCO projects.

18.7.3.6 As appropriate, barriers will be erected around known silica dust generating activities, and/or warning signs will be posted.

18.7.3.7 As able, work activities will be scheduled to minimize the silica related effect on and from others.

18.7.4 Personal Protective Equipment Controls

When used in conjunction with the other (i.e. Engineering and Administrative) controls elsewhere identified, personal protective equipment and clothing can help further reduce our associates' exposure to silica dust.

An air purifying respirator fitted with HEPA cartridges is the most common piece of PPE that would be used by ARCO to minimize exposure to silica dust. Dependent on the effectiveness of the other (i.e., engineering) control measures employed, either a "full face piece" or "1/2 face piece" respirator would be used by personnel (In the majority of situations, a ½ face respirator will be used. When working indoors or in other areas with poor ventilation, a full-face respirator may be required). Both of these respirators are "seal dependent", and thus the users must be "fit tested" and clean-shaven where the respirator seals to the face.

In addition to respiratory PPE, protective clothing (i.e., disposable/washable coveralls) may be used and/or required to help prevent the contamination of the worker's personnel clothing.

18.8 Education and Training

Prior to performing activities or working on project sites where personnel could be exposed to silica dust, ARCO will ensure that personnel receive suitable education and training. As necessary, personnel will be trained to a level of "demonstrated competency". Education and training may include:

18.8.1 The hazards and risks associated with exposure to silica dust.

18.8.2 The signs and symptoms of silica-related diseases.

18.8.3 General and specific silica exposure reduction methods as described in this program.

18.8.4 The use of specific pieces of equipment and control systems.

18.8.5 The use and care of respiratory protection and other personal protective equipment.

18.8.6 How to report items of concern.

The education and training will be delivered to ARCO associates through a variety of forums, including but not limited to:

18.8.7 New associate orientations

18.8.8 Site-specific safety orientation.

18.8.9 Equipment/task-specific training

18.8.10 "Toolbox Talks"

18.8.11 Notifications and postings

18.9 Safe Work Procedures

ARCO will ensure that suitable written procedures for controlling the risk of silica exposure are developed using the forms provided in Appendix B of this program. The document will summarize the silica control options available on ARCO projects and will be used as supplemental information to project-specific Exposure Control Plans, as necessary. This document and ECPs will be made readily available for review by all affected workers.

18.10 Documentation

In accordance with ARCO's Recordkeeping Policy, records associated with the Crystalline Silica Program will be maintained as follows:

RECORD TYPE	LOCATION	RETENTION
Crystalline Silica Exposure Control Policy/Program	Corporate Office	Current revision
Project/Task Specific Silica ECPs	Jobsite Office (trailer)	Duration of project
Exposure Monitoring Results	Jobsite Office (trailer); Corporate Office	Duration of project
Jobsite Inspections	Jobsite Office (trailer); Corporate Server	Duration of project
First Aid Records/Reports of Exposure	Jobsite Office (trailer)	Duration of project
Incident Investigation Reports	Jobsite Office (trailer); Corporate Server	Duration of project +2 years
Respirator Fit Tests	Corporate Office	Duration of employment
Equipment Maintenance & Repair Logs	Corporate Office	Duration of service
Associate Orientation Records	Corporate Office	Duration of employment
Site-Specific Orientation; Task-Specific Training	Jobsite Office (trailer)	Duration of project
Project meetings; Toolbox Talks	Jobsite Office (trailer)	Duration of project

APPENDIX A OSHA's Silica Standard for Construction Table 1

Equipment/Task	Engineering and work practice control methods	Required respiratory protection and minimum assigned protection factor (APF)	
		≤ 4 hours/shift	> 4 hours/shift
1 Stationary masonry saws	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions	None	None
2 Handheld power saws (any blade diameters}	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
	– When used outdoors	None	APF 10
	– When used indoors or in an enclosed area	APF10	APF 10
3 Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less}	For tasks performed outdoors only: • Use saw equipped with commercially available dust collection system • Operate and maintain tool in accordance with manufacturer's instruction to minimize dust emissions • Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency	None	None
4 Walk-behind saws	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
	– When used outdoors	None	None
	– When used indoors or in an enclosed area	APF 10	APF 10
5 Drivable saw	For tasks performed outdoors only: • Use saw equipped with integrated water delivery system that continuously feeds water to the blade • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions	None	None

Equipment/Task	Engineering and work practice control methods	Required respiratory protection and minimum assigned protection factor (APF)	
		≤ 4 hours/shift	> 4 hours/shift
6 Rig-mounted core saws or drills	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions	None	None
7 Handheld and stand mounted drills (including impact and rotary hammer drills)	• Use drill equipped with commercially available shroud or cowling with dust collection system • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions • Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter **with** 99% or greater efficiency and a filter-cleaning mechanism • Use a HEPA-filtered vacuum when cleaning holes	None	None
8 Dowel drilling rigs for concrete	For tasks performed outdoors only: • Use shroud around drill bit with a dust collection system. Dust collector must have a filter with 99% or greater efficiency and a filter-cleaning mechanism	APF 10	APF10
9 Vehicle-mounted drilling rigs for rock and concrete	• Use dust collection system with dose capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector	None	None
	OR		
	• Operate from within an enclosed cab and use water for dust suppression on drill bit	None	None
10 Jackhammers and handheld powered chipping tools	• Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact:		
	– When used outdoors	None	APF 10
	– When used indoors or in an enclosed area	APF 10	APF 10
	OR		
	• Use tool equipped with commercially available shroud and dust collection system		
	• Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		

Equipment/Task	Engineering and work practice control methods	Required respiratory protection and minimum assigned protection factor (APF)	
		≤ 4 hours/shift	> 4 hours/shift
	• Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99°/o or greater efficiency and a filter-cleaning mechanism:		
	– When used outdoors	None	APF 10
	– When used indoors or in an enclosed area	APF 10	APF 10
11 Handheld grinders for mortar removal (i.e., tuckpointing)	• Use grinder equipped with commercially available shroud and dust collection system	APF 10	APF 25
	• Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
	• Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism		
12 Handheld grinders for uses other than mortar removal	For tasks performed outdoors only: • Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface	None	None
	• Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
	OR		
	• Use grinder equipped with commercially available shroud and dust collection system		
	• Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
	• Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre separator or filter-cleaning mechanism:		
	– When used outdoors	None	None
	– When used indoors or in an enclosed area	None	APF 10

Equipment/Task	Engineering and work practice control methods	Required respiratory protection and minimum assigned protection factor (APF)	
		≤ 4 hours/shift	> 4 hours/shift
13 Walk-behind milling machines and floor grinders	• Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface	None	None
	• Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
	OR		
	• Use machine equipped with dust collection system recommended by the manufacturer	None	None
	• Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions		
	• Dust collector must provide the air flow recommended by the manufacturer, or greater, and have a filter with 99% efficiency and a filter-cleaning mechanism		
	• When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes		
14 Small drivable milling machines (less than half-lane)	• Use a machine equipped with supplemental water sprays designed to suppress dust. Water must be combined with a surfactant • Operate and maintain machine to minimize dust emissions	None	None
15 Large drivable milling machines (half lane or larger)	For cuts of any depth on asphalt only: • Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust	None	None
	• Operate and maintain machine to minimize dust emissions		
	For cuts of four inches in depth or less on any substrate:		
	• Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust	None	None
	• Operate and maintain machine to minimize dust emissions		
	OR		

Equipment/Task	Engineering and work practice control methods	Required respiratory protection and minimum assigned protection factor (APF)	
		≤ 4 hours/shift	> 4 hours/shift
	• Use a machine equipped with supplemental water spray designed to suppress dust Water must be combined with surfactant	None	None
	• Operate and maintain machine to minimize dust emissions		
16 Crushing machines	• Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (e.g., hoppers, conveyors, sieves/sizing or vibrating components, and discharge points)	None	None
	• Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions		
	• Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote control station		
17 Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (e.g., hoe-ramming, rock ripping) or used during demolition activities involving silica-containing materials	• Operate equipment from within an enclosed cab	None	None
	• When employees outside of the cab arc engaged in the task, apply wc1ter c1nd/or dust suppressants as necessary to minimize dust emissions	None	None
18 Heavy equipment and utility vehicles for tasks such as grading and excavating but not including: Demolishing, abrading, or fracturing silica-containing materials	• Apply water and/or dust suppressants as necessary to minimize dust emissions	None	None
	OR		
	• When the equipment operator is the only employee engaged in the task, operate the equipment from within an enclosed cab	None	None

APPENDIX B Specific Procedures for "Soft Cutting" Concrete Slabs

ARCO has determined that compliance with OSHA's Table 1 is infeasible while cutting concrete slabs that have not fully cured using walk-behind saws. Applying water to concrete that has not fully cured will impact the integrity of the slab and appearance of the final product.

Per OSHA Silica Standard for Construction Paragraph D, employers that conduct tasks not listed in Table 1 or do not fully and properly implement the engineering controls, work practices, and respiratory protection described in Table 1 of the specified exposure control methods approach must follow the alternative exposure control methods approach. The alternative exposure control methods approach involves assessing associate exposure to respirable crystalline silica and limiting exposure to the PEL using feasible engineering and work practice control methods, and respiratory protection when necessary.

ARCO has chosen to utilize the Performance Option as defined by OSHA and in Section 16.6 of this program for hazard assessment, specifically using Objective Air Sampling Data from industry-wide surveys (available on ARCOnnect).

ARCO will periodically review more current available objective data from industry-wide surveys to ensure the most up-to-date information is used.

HEALTH AND SAFETY MANUAL SECTION B

1 ABRASIVE BLASTING

1.1 Prior to performing abrasive blasting operations, trade partners must provide all SDS for abrasive materials.

1.1.1 All PPE required for abrasive blasting must be listed on JHA/PTP prior to commencing work.

1.1.2 Areas around abrasive blasting zones must be barricaded to protect workers not involved in the task.

1.1.3 When feasible, alternative methods should be utilized to eliminate abrasive blasting

2 ADMINISTRATIVE

2.1 Mobilization Day 1: On the first day of mobilization, contractors must:

2.1.1 Attend ARCOSAFE Job Site Orientation prior to starting work.

2.2 Permits

2.2.1 All permits must be submitted to ARCO prior to beginning work.

2.2.2 Tasks that require a permit will include (but are not limited to):

2.2.2.1 Ground Disturbance

2.2.2.2 Core Drilling/Penetration

2.2.2.3 Electrical (LOTO/Energized Electrical Work/Initial Energization)

2.2.2.4 Hot Work

2.2.2.5 Confined Space

3 CARBON MONOXIDE

3.1 Carbon monoxide (CO) is a highly toxic, colorless, odorless, and tasteless gas that is slightly lighter than air. CO is a leading asphyxiant hazard on construction sites, especially in enclosed or poorly ventilated areas.

3.2 It is produced by internal combustion engines fueled by gasoline, diesel, or propane, such as:

- **3.2.1** Generators
- **3.2.2** Compressors
- **3.2.3** Concrete mixers
- **3.2.4** Welding machine
- **3.2.5** Forklifts
- **3.2.6** Gas-powered saws

3.3 Health Symptoms of CO Exposure

- **3.3.1** Shortness of breath
- **3.3.2** Headache
- **3.3.3** Dizziness
- **3.3.4** Nausea
- **3.3.5** Muscular weakness

3.4 Severe exposure can lead to unconsciousness or death if not recognized and addressed promptly.

3.4.1 Permissible Exposure Limits (PELs)

- **3.4.1.1** OSHA PEL: 50 parts per million (PPM), as an 8-hour time-weighted average (TWA)
- **3.4.1.2** Action Level: 35 PPM — if this level is reached, immediate corrective measures must be taken

3.4.2 Preventive Measures and Requirements

3.4.2.1 Equipment Use and Restrictions

3.4.2.1.1 Prohibited Indoors Without Controls:

- **a** Fuel-powered tools and engines (gas, diesel, propane) are prohibited in enclosed or poorly ventilated areas unless utilized with approved controls to prevent excessive accumulation of CO.

3.4.2.1.2 Acceptable Equipment Use:

- **a** Use electric, battery-powered, or compressed-air tools whenever available.

b Low-emission diesel and propane equipment used indoors should be fitted with functional exhaust scrubbers when feasible.

c Final Tier 4-compliant equipment may be used indoors with continuous air monitoring and applicable controls.

3.4.3 Location of Fuel-Powered Equipment

3.4.3.1 Generators, compressors, and other fuel-powered engines should be placed outdoors, when possible, away from air intakes, to prevent CO from re-entering the building.

3.4.4 Monitoring Requirements

3.4.4.1 CO monitors should be used in areas where combustion equipment is used or CO exposure is possible.

3.4.4.2 Monitors should be the direct-read type giving a visible reading of CO levels.

3.4.4.3 Readings above 50 PPM require immediate action:

a Ventilate, reduce equipment use, or temporarily evacuate.

3.4.5 Ventilation Protocols

3.4.5.1 Maintain natural ventilation when possible (keep doors and windows open).

a If natural ventilation is inadequate, mechanical ventilation should be installed to prevent hazardous CO accumulation

3.4.6 Response and Reporting

3.4.6.1 All CO-related complaints must be taken seriously. Any report of symptoms or monitor readings over 35 PPM must result in immediate investigation and corrective actions.

3.4.6.2 If employees report symptoms of CO exposure, evacuate the immediate area and assess any potentially exposed workers.

3.4.7 Summary of Key Actions

SITUATION	ACTION
CO ≥ 35 PPM	Ventilate area and investigate source
CO ≥ 50 PPM	Evacuate workers, mitigate hazard, recheck before resuming
Enclosed/poorly ventilated area	Prohibit fuel-powered tools without proper controls
No natural ventilation	Use mechanical ventilation
CO-related complaints	Stop work, investigate, and respond immediately

4 COMPRESSED GAS CYLINDERS

4.1 Training and Awareness

4.1.1 Only trained personnel should handle compressed gas cylinders. Ensure all users are familiar with the specific hazards of the gas in the cylinder and proper handling procedures.

4.2 Proper Storage

4.2.1 Store cylinders in a well-ventilated area, secured to a wall/structure or a dedicated cylinder cart.

4.2.2 Keep cylinders away from heat sources, open flames, and direct sunlight.

4.2.3 Segregate cylinders based on their hazard class. Oxygen cylinders must be separated from fuel-gas cylinders or combustible materials by at least 20 feet or by a noncombustible barrier at least 5 feet high with a fire resistance rating of at least one-half hour.

4.2.4 Always store cylinders upright. Close valves on empty cylinders.

4.3 Handling and Transportation

4.3.1 Never drag, slide, or roll cylinders. Use a designated cylinder cart or hand truck to move cylinders.

4.3.1.1.1 Ensure the protective cap is securely on the valve when not in use. Do not lift cylinders by the cap.

4.4 Valve Operation

4.4.1 Open cylinder valves slowly and carefully, standing to the side of the valve outlet. Close the valve completely when not in use. Never force a valve if it is difficult to open.

4.5 Cylinder Inspection

4.5.1 Ensure all cylinders are legibly marked. Check cylinders for visible damage, corrosion, or leaks before use. Do not use damaged or expired cylinders. Report any damaged cylinders to the supplier.

4.6 Operating Procedures

4.6.1 Position cylinders where sparks, hot slag, or flame will not reach them.

4.6.2 Do not place cylinders where they might become part of an electric circuit.

4.6.3 Never drop cylinders from any height.

4.6.4 Always place cylinders vertically.

5 CONCRETE AND MASONRY CONSTRUCTION

5.1 Purpose

The purpose of this policy is to minimize the hazards associated with concrete and masonry construction, to provide uniform methods and requirements that assure associate safety, and to satisfy OSHA.

5.2 References

29 CFR Part 1926 Subpart Q, 1926.700 - 1926.706

5.3 General Requirements

5.3.1 Construction loads must not be placed on a concrete structure unless it is capable of supporting the intended loads.

5.3.2 Protruding reinforcing steel must be guarded to eliminate impalement hazards.

5.3.3 Only associates essential to the post-tensioning operations are permitted behind the jack during post-tensioning operations. Signs and barriers must be erected to limit associate access.

5.3.4 Associates shall not be permitted to ride concrete buckets.

5.3.5 Associates must not be permitted to work under concrete buckets while the buckets are being elevated or lowered into position.

5.4 Equipment and Tools

5.4.1 Concrete mixers with one cubic yard or larger loading skips shall be equipped with the following:

5.4.1.1 A mechanical device to clear the skip of materials.

5.4.1.2 Guardrails installed on each side of the skip.

5.4.2 Powered concrete trowels shall be equipped with a "dead-man" switch.

5.4.3 Concrete buggy handles shall not extend beyond the wheels on either side of the buggy.

5.4.4 Concrete Pumping Systems

5.4.4.1 Discharge pipes shall be provided with pipe supports designed for 100% overload.

5.4.4.2 Compressed air hoses used on concrete pumping system shall be provided with positive fail-safe joint connectors.

5.4.5 Concrete buckets equipped with hydraulic or pneumatic gates shall have positive safety latches to prevent accidental dumping.

5.4.6 Bull float handles shall be constructed of nonconductive material or insulated with a nonconductive sheath.

5.4.7 Masonry saws shall be guarded with a semicircular enclosure over the blade.

5.5 Cast-In-Place Concrete

5.5.1 General

5.5.1.1 Formwork shall be capable of supporting any loads that might be applied.

5.5.1.2 Drawings for the jack layout, formwork, working decks, and scaffolds must be available at the jobsite.

5.5.2 Shoring and Reshoring

5.5.2.1 All shoring equipment must be inspected prior to erection.

5.5.2.2 Erected shoring equipment must be inspected immediately prior to, during, and immediately after concrete placement.

5.5.3 Vertical Slip Forms

5.5.3.1 The steel rods or pipes on which jacks climb or by which the forms are lifted must be specifically designed for that purpose and adequately braced.

5.5.3.2 Forms must be designed to prevent excessive distortion of the structure during the jacking operation.

5.5.3.3 Lifting devices must be equipped with automatic holding devices to support the slip forms whenever failure of the lifting mechanisms occurs.

5.5.3.4 The form structure must be maintained within all design tolerances specified for plumbness during the jacking operation.

5.5.3.5 The predetermined safe rate of lift must not be exceeded.

5.5.3.6 Scaffolds or work platforms must be provided where access is required.

5.5.4 Reinforcing Steel

5.5.4.1 Reinforcing steel must be adequately supported.

5.5.4.2 Measures shall be taken to prevent unrolled wire mesh from recoiling.

5.5.4.3 Measures must be taken to protect personnel from impalement hazards caused by protruding reinforcing steel.

5.5.5 Removal of Formwork

5.5.5.1 Forms and shores must not be removed until it has been determined safe to do so, based on compliance with the following:

5.5.5.1.1 The plans and specifications stipulate conditions for removal of forms and shores and such conditions have been followed.

5.5.5.1.2 The concrete has been tested according to ASTM standards.

5.6 Tilt-Up and Precast Concrete Operations

5.6.1 Tilt-Up & precast concrete wall units, structural framing, and tilt-up wall panels must be adequately supported.

5.6.1.1 Lifting inserts on tilt-up wall panels must be capable of supporting at least two times the maximum intended load.

5.6.1.2 Lifting inserts for other precast members must be capable of supporting four times the load.

5.6.1.3 Only essential associates are permitted under precast concrete that is being lifted into position.

5.6.2 All associates must be orientated and trained in the tilt-up process before beginning work on the project. This will be verified at the preconstruction meeting held at the project to review all erection and crane specifications for safety and project specific procedures (note this preconstruction meeting will be held 1 to 2 weeks prior to the erection process starting. In addition, a safety meeting will be held on the scheduled day of commencement for erection as stated in #2).

5.6.3 Limited Access Zone (LAZ): A Limited Access Zone shall be established around all sides of the tilt-up panels being erected. The LAZ shall be set at a distance of 2x the height of the panel, if possible, but not less than the height of the panel +4' in all directions. Anyone not involved in the erection process is strictly prohibited from entering the LAZ.

5.6.4 Prior to panels being erected, all workers involved in the lifting process shall attend a Panel Erection Pre-Lift Meeting. This may require other subcontractor workers to attend IF the lifting operations affect their work areas. The talk is to discuss the dangers involved in tilt-up and what is required of each individual during the tilt-up process.

5.6.5 All associates and subcontractors shall wear the appropriate personal protective equipment at all times. This includes eye protection, hard hats, gloves, and proper job site clothing as stated in the ARCO Safety Orientation.

5.6.6 A competent person within the tilt-up crew will be selected for each project and shall be responsible for the day-to-day safety of the tilt-up process. The competent person is to report any deficiencies to the Superintendent immediately.

5.6.7 All trash and rubbish shall be removed from the site daily to avoid tripping hazards and/or injury. Housekeeping will be maintained at all times.

5.6.8 The concrete slab area shall be cleared daily of all nails, wire and other loose materials that may cause injury. Wood products lying around with nails or other blunt material shall be removed from the site and the nails and blunt materials removed from the wood material.

5.6.9 Clean up of spilled petroleum or other products that may cause slippery surfaces must be done immediately.

5.6.10 All wood materials must be stacked appropriately in a neat and orderly fashion to avoid tripping hazards.

5.6.11 All powder-actuated equipment must be inspected regularly by ARCO and labeled accordingly. During use of powder-actuated tools, additional eye care such as shields and goggles must be worn.

5.6.12 When ironworkers tie reinforcing steel in the panel areas, they must be directed as to appropriate stepping through and around the panels to avoid tripping, and appropriate bending requirements to avoid back injuries during moving and placing of rebar.

5.6.13 When pouring the panels, caution must be used to avoid injury. An ARCO associate or equivalent subcontractor shall be assigned to assist all concrete trucks when backing. All concrete trucks must be equipped with backup alarms as well.

5.6.14 While prying forms away from the panels during the stripping process, caution must be taken with pry bars and hammers to avoid bodily injury.

5.6.15 Pipe braces are not to be removed until the deck has been welded and is secured. Removal shall not take place until the Superintendent has approved such action.

5.6.16 Special care shall be taken to have the entire erection area cleared of material and miscellaneous items.

5.6.17 A manlift, such as a scissors lift or JLG, shall be used for providing access to areas above the ground. One hundred percent tie-off is required to the boom lift.

5.6.18 All members of the erection crew shall be trained specifically for erection and to avoid placing hands and feet into areas where they could be injured.

5.6.19 When welding is required, welding tanks, torches, leads, and hoses will be required. Acetylene and oxygen tanks must be secured in a tank dolly or fastened to a column. All hoses and torches must be inspected prior to use for any deficiencies.

5.6.20 Appropriate head and eye gear must be worn during any welding or cutting process.

5.7 Masonry Walls

5.7.1 Whenever a masonry wall is being constructed, a limited access zone must be established prior to the start of construction. The limited access zone must be:

5.7.1.1 Equal to the height of the wall to be constructed plus four feet and shall run the entire length of the wall.

5.7.1.2 On the side of the wall without scaffolding.

5.7.1.3 Kept in place until the wall is adequately supported.

5.7.2 All masonry walls over eight feet in height shall be adequately braced to prevent overturning and to prevent collapse unless the wall is adequately supported.

6 CONFINED SPACES

6.1 Purpose

The purpose of this policy is to minimize the hazards associated with confined spaces encountered in the workplace, to provide uniform methods and requirements that assure associate safety, and to satisfy OSHA.

6.2 References

Confined Spaces in Construction, 29 CFR 1926.1201 - .1213

6.3 Definitions

6.3.1 **Attendant:** An individual stationed outside one or more permit-required confined spaces who monitors the authorized entrants and who performs all Attendant's duties as assigned in this program.

6.3.2 **Authorized Entrant:** An ARCO or subcontractor associate that is authorized to enter a permit-required confined space.

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

6.3.4 **Confined Space:** A confined space means a space that:

6.3.4.1 Is large enough and so configured that an associate can bodily enter and perform work.

6.3.4.2 Has limited or restricted means for entry or exit (for example, manholes, vaults, and pits are spaces that may have limited means of entry or exit).

6.3.4.3 Is not designed for continuous associate occupancy.

6.3.5 **Controlling Contractor:** The employer that has overall responsibility for construction at the worksite.

6.3.6 **Entrants:** Anyone that is entering the confined space.

6.3.7 **Entry Employer:** Any employer who decides that an associate it directs will enter a permit space.

6.3.8 **Entry Permit:** The written document that allows and controls entry into a permit-required confined space.

6.3.9 **Entry Rescue:** Occurs when a rescue service enters a permit space to rescue one or more associates.

6.3.10 **Entry Supervisor:** The person 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 program.

6.3.11 **Hazards:** Any source of potential damage, harm, or adverse health effects on something or someone.

6.3.12 **Hazardous Atmosphere:** An atmosphere that may expose associates to the risk of death, incapacitation, impairment of ability to self-rescue, or acute illness resulting from the following:

- **6.3.12.1** Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL).
- **6.3.12.2** Airborne combustible dust at a concentration that meets or exceeds its LFL (Note: this condition may be approximated as a condition in which the dust obscures vision at a distance of five feet or less).
- **6.3.12.3** Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.
- **6.3.12.4** Atmospheric concentration of any substance that could result in an exposure greater than the Permissible Exposure Level (PEL).
- **6.3.12.5** Any other atmospheric concentration that is immediately dangerous to life and health (IDLH).

6.3.13 **Host Employer:** The employer that owns or manages the property where the construction work is taking place.

6.3.14 **Immediately Dangerous to Life or Health (IDLH):** Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a confined space.

6.3.15 **Lower Flammable Limit (LFL):** The minimum vapor concentration of a flammable liquid in air, below which flame propagation does not occur on contact with an ignition source.

6.3.16 **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.

6.3.17 **Oxygen Deficient Atmosphere:** An atmosphere containing less than 19.5 percent oxygen by volume.

6.3.18 **Oxygen Enriched Atmosphere:** An atmosphere containing more than 23.5 percent oxygen by volume.

6.3.19 **Permit Required Confined Space:** A confined space that has one or more of the following characteristics:

- **6.3.19.1** Contains or has the potential to contain a hazardous atmosphere.
- **6.3.19.2** Contains a material that has the potential for engulfing an entrant.
- **6.3.19.3** Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section.
- **6.3.19.4** Contains any other recognized serious safety or health hazard.

6.3.20 Permit-required confined space program (permit space program) means the employer's overall program for controlling, and, where appropriate, for protecting associates from permit space hazards and for regulating associate entry into permit spaces.

6.3.21 **Rescue Services:** A public or private entity trained in the rescue of personnel from a confined space.

6.3.22 **Testing:** The process by which hazards that may confront entrants of a permit space are identified and evaluated.

6.3.23 **Ventilation:** A process used to control the atmospheric hazards of confined spaces by replacing unsafe air with clean, breathable air.

6.4 General Requirements

6.4.1 The Competent Person shall be identified prior to beginning the work.

6.4.2 Prior to beginning work, each employer must ensure that a Competent Person identifies all confined spaces in which one or more of the associates it directs may work and identifies each space that is a permit-required space.

6.4.3 Any employer who identifies a confined space or permit-required confined space on the jobsite shall notify the ARCO Superintendent immediately.

6.4.4 Employers who receive notice of a permit-required space must inform exposed associates by posting proper signage of the existence and location of, and the danger posed by each permit-required space.

6.4.5 Each employer who identifies, or receives notice of, a permit-required space and has no authorized associates it directs to work in that space, must take effective measures (signage, training, removal from work area) to prevent those associates from entering that permit space.

6.4.6 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 employer must have a competent person reevaluate that space and, if necessary, notify the ARCO Superintendent immediately before they reclassify it as a 'permit-required' confined space.

6.4.7 If the work requires ARCO associates to enter permit-required confined spaces, the project team shall call the ARCO Safety Department and must have a written permit space program implemented and available at the construction site.

6.4.8 ARCO will oversee the on-site 'permit required' procedure system for preparation, issuance, use, and cancellation of entry permits under both planned and emergency conditions, unless the Host Employer already has such procedures in place.

6.4.9 Before executing a confined space entry, ARCO shall:

6.4.9.1 Obtain all information regarding previous permit-required space hazards and entry operations from the Host Employer.

6.4.9.1.1 This information shall include all permits used by other entry employers who have performed work in the permit space.

6.4.9.1.2 This information shall be distributed to all Entry Employers on the ARCO job site.

6.4.9.2 Entry Employer that directs associates to enter a permit-required space must have a written permit-required space program implemented and available at the construction site.

6.4.10 ARCO shall coordinate entry operations with all entry employers when:

6.4.10.1 Permit-required space entry operation takes place on an ARCO job site.

6.4.10.2 More than one entity performs permit space entry at the same time.

6.4.10.3 Permit space entry is performed at the same time as any activities that could foreseeably result in a hazard in the permit-required space.

6.4.11 Post-Entry Operations:

6.4.11.1 ARCO shall gather all entry permits and monitoring records used during the permit space entry.

6.4.11.2 ARCO shall distribute all entry permits and monitoring records collected to each entry employer involved in the permit space entry.

6.4.11.3 ARCO will submit all entry permits and monitoring records to the Host Employer.

6.4.11.4 ARCO will 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.

6.4.12 This confined space program shall be reviewed annually and updated as necessary.

6.4.13 ARCO will not work in IDLH confined spaces.

6.4.14 All associates are encouraged to assist in the development and implementation of all aspects of the permit-required confined space entry program by contacting their immediate supervisor, or the ARCO Superintendent.

6.5 Confined Space Entry Requirements

6.5.1 Unauthorized entry into confined space is prohibited.

6.5.2 Hazard evaluation/assessment shall be conducted prior to entrant access.

6.5.2.1 Hazard evaluation shall be completed by the competent person.

6.5.3 All authorized entrants shall be given access to observe any monitoring or testing of permit spaces.

6.5.3.1 Authorized entrants shall be enabled to request additional testing/re-evaluation of the confined space at any time.

6.5.4 All permit spaces shall be purged, inserted, flushed or ventilated as necessary to eliminate or control atmospheric hazards.

6.5.4.1 If ventilation systems should fail, the entry attendant shall immediately order the evacuation of the confined space.

6.6 Alternate Procedures for Entering Non-Permit Confined Space

6.6.1 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.

6.6.2 Continuous forced air ventilation is utilized to maintain safe for entry.

6.6.3 The space should have continuous monitoring unless the employer has supporting data that demonstrates continuous monitoring is unnecessary.

6.7 Reclassification to Non-Permit Confined Space

6.7.1 To be reclassified as a "Non-Permit Confined Space," a competent person on site must notify the ARCO Superintendent after determining that all of the applicable requirements have been met, and

6.7.1.1 Space poses no actual or potential atmospheric hazards, and if all hazards within the space are eliminated or isolated without entry into the space.

6.7.1.2 Testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated or isolated.

6.7.1.3 Forced air ventilation does not constitute elimination or isolation of the hazards.

6.7.1.4 Document the basis for determining that all hazards in a permit space have been eliminated or isolated.

6.7.1.5 Through a certification that contains the date, the location of the space, and the signature of the person making the determination.

6.7.1.6 If hazards arise within a permit-required space that has been reclassified as a non-permit space, each associate in the space must exit the space. The entry employer must then reevaluate the space, notify the ARCO Superintendent, and reclassify it as a permit space.

6.8 Permit-Required Entry Requirements

6.8.1 As a minimum, an entry supervisor, entry attendant, and entrant shall be designated to participate in each permit-required confined space entry (Note: The entry supervisor may act as the entry attendant as well.).

6.8.2 Acquire, inspect, and set up any safety equipment required by the permit, including blowers, full-body harness, rescue tripod, and traffic control systems.

6.8.3 The entry supervisor shall establish appropriate rescue procedures specific to the space entry and shall list them on the permit.

6.8.4 All hazardous sources of energy shall be locked and/or tagged out.

6.8.5 If an entrance cover must be removed, the opening shall be promptly guarded to prevent an accidental fall through the opening and protect each associate working in the space from foreign objects entering the space.

6.8.6 Test the air for hazardous contaminants and enter the results on the Confined Space Entry Permit. Continuously sample and record results throughout the entire entry process.

6.8.7 The entry supervisor shall complete and sign the Confined Space Entry Permit (all sections) prior to space entry. The permit conditions, entry precautions, and rescue procedures shall be reviewed with the attendant and entrant prior to entry.

6.8.8 Prior to entry, the attendant shall verify that the entry conditions are acceptable.

6.8.9 The entrant must wear retrieval equipment during the entire entry operation.

6.8.10 The attendant will continuously monitor the portable gas detector and record the readings every hour (minimum).

6.8.11 An immediate evacuation of the space shall be ordered if the safety equipment fails or if the space has the potential to become immediately hazardous.

6.8.12 Upon completion of the job, the entry supervisor shall cancel the permit and ensure that the completed permit is placed in the project file.

6.9 Entry Permit

6.9.1 Entry Permit shall identify:

6.9.1.1 The permit space to be entered.

6.9.1.2 The purpose of the entry.

6.9.1.3 The date and the authorized duration of the entry permit.

6.9.1.4 The authorized entrants within the space, by name, as will enable the attendant to determine quickly and accurately, for the duration of the permit, which authorizes which entrants are inside the permit space.

6.9.1.5 Means of detecting an increase in atmospheric hazard levels.

6.9.1.6 Each person, by name, currently serving as an attendant.

6.9.1.7 The individual, by name, currently serving as the entry supervisor, and the signature or initials of each entry supervisor who authorizes entry.

6.9.1.8 The hazards of the permit space to be entered.

6.9.1.9 The measures used to isolate the permit space and to eliminate or control permit space hazards before entry.

6.9.1.10 The acceptable entry conditions.

6.9.1.11 The results of tests and monitoring performed accompanied by the names of the testers, and the time/date of data collection.

6.9.1.12 The rescue and emergency services to be summoned and the contact information for said entities.

6.9.1.13 The communication procedures used by entrants and attendants during entry.

6.9.1.14 Equipment (PPE, testing equipment, communication radios, alarm system, rescue equipment, etc.) used during permit space entry.

6.9.1.15 Additional permits, such as hot work, that have been issued to authorize work in the permit space.

6.10 Monitoring Confined Space Air Quality

6.10.1 Prior to entering a permit-required confined space, prepare the gas detector by ensuring the device has been recently calibrated (check manual for frequency) and is in good working order.

6.10.2 Conduct a "bump test." Breathe into the gas detector probe and look for a decrease in the oxygen concentration.

6.10.3 Sample the air quality of the space by slightly moving the lid or by testing the space through the hole in the lid (if available) before completely opening the space.

6.10.4 Lower the probe slowly, allowing time for the instrument to detect atmospheric changes at different vertical heights within the space.

6.10.5 Measure in the following order:

6.10.5.1 Oxygen

6.10.5.2 LEL

6.10.5.3 H2S

6.10.5.4 CO

Record the results on the Confined Space Entry Permit.

6.10.6 The gas detector shall remain on during the entire entry operation and shall be regularly inspected by the attendant. The attendant shall also record the gas readings on the Permit at a minimum of one (1) hour intervals.

6.10.7 Cease entry operations and remove entry personnel if the following concentrations are exceeded at any time:

6.10.7.1 Oxygen reading less than 19.5 percent or greater than 22.5 percent.

6.10.7.2 Combustible gas reading greater than 9 percent LEL.

6.10.7.3 H2S reading greater than 9 ppm.

6.10.7.4 CO reading greater than 34 ppm.

6.11 Ventilating a Confined Space

6.11.1 Set up one or more blowers to provide adequate ventilation for the space. Ventilation must be forced draft discharge of clean air into space (not exhaust of space).

6.11.2 Ensure that the ventilation air supply is from a clean source.

6.11.3 Allow enough time for blowers to clear the space before entering.

6.11.4 Ensure that the blowers remain on during the entire entry operation. If the blower fails, the entrant must leave the space immediately.

6.12 Emergency Rescue from Permit-Required Confined Spaces

Emergency rescues within confined spaces should only be attempted by persons who are properly trained and have the proper rescue equipment.

6.12.1 All rescues attempted by ARCO personnel will be non-entry rescues (i.e., rescuer will not enter the space at any time during rescue).

6.12.2 Retrieval equipment is required for all permit-required vertical entries greater than five feet. Retrieval equipment shall include (but not be limited to) the following:

- **6.12.2.1** Rescue harness (chest or full body).
- **6.12.2.2** Rescue tripod.
- **6.12.2.3** Rope or cable (inspected for damage).

6.12.3 Entry Attendant will notify the local Emergency Services and the ARCO Superintendent.

6.12.4 At least one member of the rescue team must have training in CPR and First Aid.

6.12.5 Evaluation and selection of external rescue and emergency services, and/or the training of an in-house Host Employer or Entry Employer rescue team.

- **6.12.5.1** Evaluate a prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified.
- **6.12.5.2** Evaluate a prospective rescue service's ability, in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing entrants from the particular permit space or types of permit spaces identified.
- **6.12.5.3** Select a rescue team or service from those evaluated that has the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified.
- **6.12.5.4** Is equipped for, and proficient in, performing the needed rescue services.
- **6.12.5.5** Agrees to notify the employer immediately in the event that the rescue service becomes unavailable.
- **6.12.5.6** Inform each rescue team or service of the hazards they may confront when called on to perform a rescue at the site.
- **6.12.5.7** Provide the rescue team or service selected with access to all permit spaces from which rescue may be necessary so that the rescue team or service can develop appropriate rescue plans and practice rescue operations.

6.13 Confined Space Entry Supervisor

6.13.1 Ensure that all persons involved in a confined space entry are properly trained and follow the procedures outlined in the company program.

6.13.2 Evaluate and classify the confined space prior to entry. The supervisor is responsible for verifying the safety of the space.

6.13.2.1 Supervisors shall be familiar with and understand the hazards that may be faced during entry.

6.13.3 Confirm that rescue resources are available.

6.13.4 Complete the Confined Space Entry Permit.

6.13.5 Ensure that cancelled permits are properly filed.

Note: *The entry supervisor does not need to be present during the entire confined space entry operation.*

6.14 Confined Space Entrant(s)

6.14.1 Must be familiar with and understand the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

6.14.2 Must have completed training.

6.14.3 Proper use of required equipment and attendant communication.

6.14.4 Must stay in constant contact with the attendant (i.e., sight, voice, or radio) during a permit-required confined space entry.

6.14.5 Must alert the attendant whenever:

6.14.5.1 There is any warning sign or symptoms of exposure to dangerous situations.

6.14.5.2 The entrant detects prohibited conditions.

6.14.6 Know how to immediately exit the space when required.

6.14.7 Must evacuate immediately when:

6.14.7.1 Becoming aware of a problem or is ordered to do so by an attendant or supervisor.

6.14.7.2 There is any warning or symptoms of exposure to a dangerous situation.

6.14.7.3 The entrant detects a prohibited condition.

6.14.7.4 An evacuation alarm is activated.

6.14.8 Use the appropriate safety equipment as specified on the entry permit.

6.15 Entry Attendant

6.15.1 Is familiar with and understands the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

6.15.2 The means used to identify authorized entrants.

6.15.3 Is equipped with the proper means of communication to summon rescue.

6.15.4 Is aware of possible behavioral effects of hazard exposure in authorized entrants.

6.15.5 Continuously maintains an accurate count of authorized entrants in the permit space.

6.15.6 Obtains and installs the required safety equipment for permit-required confined space entries.

6.15.7 Monitors pedestrian barriers to protect entrant(s) from external hazards.

6.15.8 Monitors the atmosphere within the confined space during the entire entry operation.

6.15.9 Remains outside the permit space during entry operations until relieved by another attendant.

6.15.10 Ensures that all lockout/tag out measures (if implemented) remain in place.

6.15.11 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:

- **6.15.11.1** If there is a prohibited condition.
- **6.15.11.2** If the behavioral effects of hazard exposure are apparent in an authorized entrant.
- **6.15.11.3** If there is a situation outside the space that could endanger the authorized entrants.
- **6.15.11.4** If the attendant cannot effectively and safely perform all the duties required under §1926.1209 of this standard.

6.15.12 Ensures that no unauthorized persons enter the permit-required space and informs the authorized entrants and the entry supervisor if unauthorized persons have entered the permit-required space.

6.15.13 Performs NO duties that might interfere with the attendant's primary duty to assess and protect the authorized entrants.

6.15.14 Summons rescue and other emergency services as soon as they determine that authorized entrants may need assistance to escape from permit-required space hazards.

6.15.15 Performs non-entry rescues as specified by the employer's rescue procedure.

6.15.16 If a single attendant is responsible for monitoring several confined spaces:

- **6.15.16.1** Entry Attendant CANNOT act as the Entry Supervisor.
- **6.15.16.2** Each space shall have a separate Entry Permit and Entrant Roster.
- **6.15.16.3** Entry Supervisor shall be immediately accessible (cell phone, radio, etc.) and available in case of emergency so said emergency does not interfere with the attendant's responsibilities to the other confined spaces.

6.15.17 Takes appropriate actions when unauthorized persons approach or attempt to enter a permit-required space.

6.16 Entry Supervisor

6.16.1 Be familiar with and understand the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

6.16.2 Verifies, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.

6.16.3 Verifies, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.

6.16.4 Terminates the entry and cancels or suspends the permit as required.

6.16.5 Verifies that rescue services are available and that the means for summoning them are operable, and that the employer will be notified as soon as the services become unavailable.

6.16.6 Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations.

6.16.7 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 the terms of the entry permit and that acceptable entry conditions are maintained.

6.17 Training

6.17.1 All ARCO associates who participate in permit-required confined space entry shall be trained in the requirements of this policy.

6.17.2 Worker training shall be conducted:

- **6.17.2.1** Prior to initial assignment.
- **6.17.2.2** Prior to a change in assigned duties.
- **6.17.2.3** If a new hazard has been created and/or if special deviations have occurred.
- **6.17.2.4** Whenever there is a change in permit space entry operations that presents a hazard about which an associate has not previously been trained.

6.17.3 All Confined Space Training shall be documented and made available for review on site.

6.17.4 Documentation of training shall be maintained by ARCO onsite and include the name of each associate trained, the name of the trainers, and the date of the training.

- **6.17.4.1** Records shall be submitted to the Safety Dept. post job completion.

6.17.5 Entry Employer's Confined Space Program shall have the following elements:

6.17.5.1 Training shall be at no cost to the associate, and the employer shall ensure that the associate possesses the understanding, knowledge, and skills necessary for the safe performance of the duties assigned.

6.17.5.2 Training must be in both a language and vocabulary that the associate can understand.

6.17.5.3 Training must be conducted:

6.17.5.3.1 Before the associate is assigned confined space entry work.

6.17.5.3.2 Before there is a change in assigned duties.

6.17.5.3.3 Whenever there is a change in permit space entry operations that presents a hazard about which an associate has not previously been trained.

6.17.5.3.4 Whenever there is any evidence of a deviation from the permit space entry procedures or there are inadequacies in the associate's knowledge or use of these procedures.

6.17.5.3.5 The training must establish associate proficiency in their assigned duties and must introduce new or revised procedures.

6.17.5.3.6 The employer must maintain training records that contain each associate's name, the name of the trainers, and the dates of training. The documentation must be available for inspection by associates and their authorized representatives for the period of time the associate is employed by that employer.

6.18 Host Employer

6.18.1 If a Host Employer exists on the job site, the following are entry communication and coordination responsibilities before entry operations begin.

6.18.1.1 Location of each known permit space.

6.18.1.2 Hazards or potential hazards in each space.

6.18.1.3 Precautions that the Host Employer or any previous controlling contractor or Entry Employer have implemented for the protection of associates in the permit space.

6.19 Controlling Contractor (ARCO)

6.19.1 The Controlling Contactor is responsible for the following entry communication and coordination responsibilities before entry operations begin.

6.19.1.1 Must obtain the host employer's information about the permit space hazards and previous entry operations and provide that 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.

6.19.2 Must coordinate entry operations when:

6.19.2.1 More than one entity performs permit space entry at the same time.

6.19.2.2 Entry is performed at the same time that any activities that could foreseeably result in a hazard in the permit space are performed.

6.20 Entry Employer (Subcontractors)

6.20.1 Entry Employers performing work for ARCO shall take appropriate measures to comply with confined space requirements as set forth by OSHA 29 CFR1926.

6.20.2 Must obtain related entry information from the 'Controlling Contractor'; inform the controlling contractor of the permit space program that they will follow.

6.20.3 Provide a 'permit-required' confined space program that addresses the following elements:

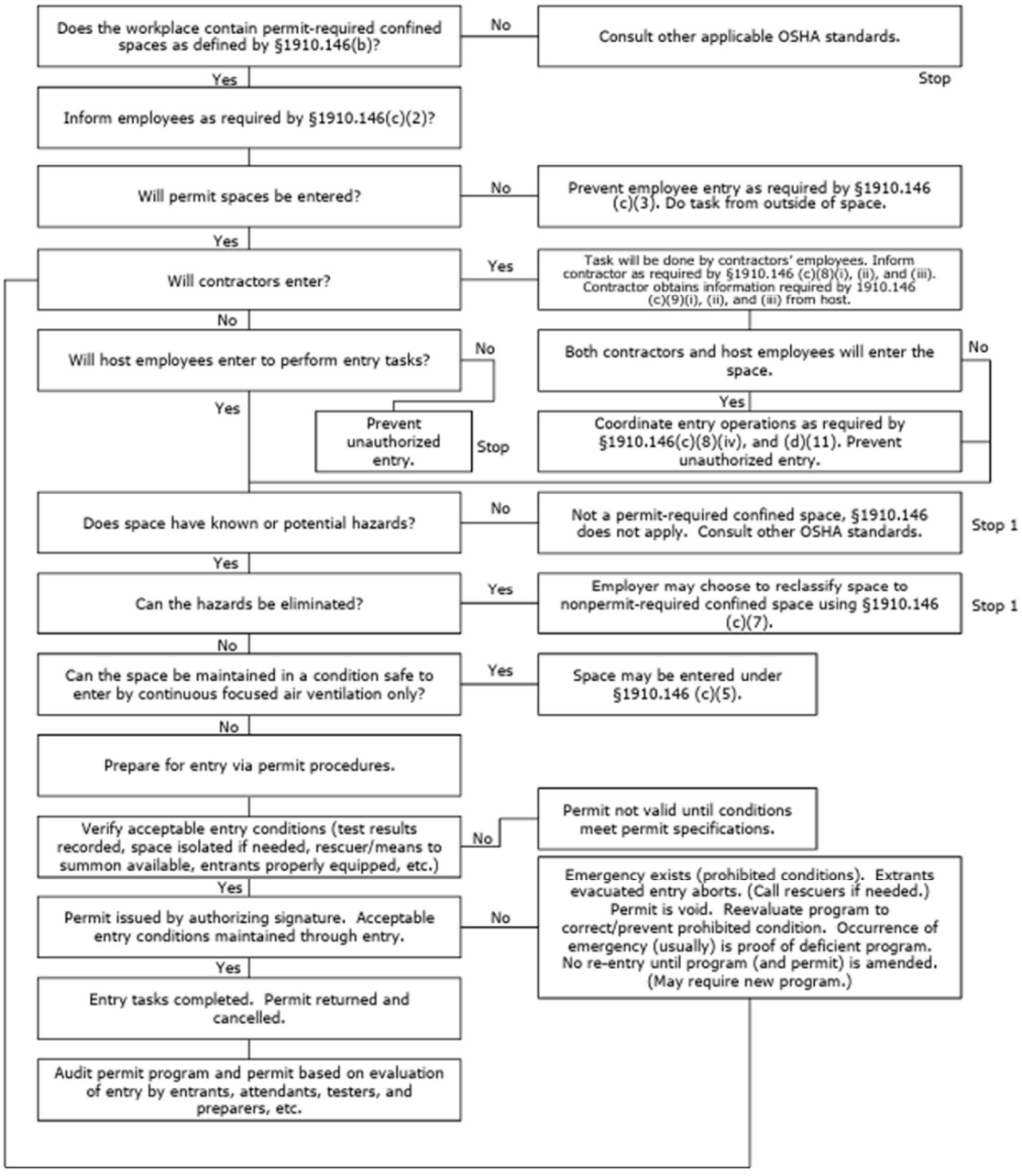
6.20.3.1 Implement the measures necessary to prevent unauthorized entry.

6.20.3.2 Identify and evaluate the hazards of permit spaces before associates enter them.

6.20.3.3 Develop and implement the means, procedures, and practices necessary for safe permit space entry operations.

6.20.3.4 Provide entry equipment at no cost to each associate, maintain that equipment properly, and ensure that each associate uses that equipment properly.

6.21 Permit Required Confined Space Decision Flow Chart



[1] Space may have to be evacuated and reevaluated if hazards arise during entry.

Walton Construction\07\space decision flow chart.ppt\r

7 CRANES, DERRICKS, HOISTS, AND ELEVATORS

7.1 Purpose

The purpose of this policy is to provide uniform methods for minimizing the hazards associated with cranes and hoisting equipment, and to satisfy OSHA requirements.

7.2 References

29CFR 1926 Subpart CC- Cranes and Derricks in Construction

7.3 General Requirements and Documentation

7.3.1 All Cranes, Derricks, Hoists, and Elevators shall be assembled, disassembled, and used following the applicable manufacturer requirements.

7.3.2 The rated capacity limit must not be exceeded for any equipment or equipment components (including rigging) during assembly, disassembly, or use**.**

7.3.3 Wherever there is a concern as to safety, the operator must have the authority to stop and refuse to handle a load until a qualified person has determined that safety has been assured.

7.3.4 Where available, hoisting routes that minimize the exposure of associates to hoisted loads must be used.

7.3.5 The ARCO project team has the authority to stop operations of equipment operating subcontractors when there is a concern as to the safety of the operation of a crane.

7.3.6 Equipment operators or subcontractors shall submit the names, training, and qualifications/certifications of their A/D Director, Lift Director, and Operator to the ARCO project team prior to the start of operations.

7.3.7 Equipment operators or subcontractors shall submit the names, training, and qualifications/certifications of their Qualified Riggers, Signal Persons, and Dedicated Spotters to the ARCO project team prior to their arrival or work on site.

7.3.8 Equipment operators or subcontractors shall submit Post Assembly, Monthly, Annual, and Repair/Modification inspections to the ARCO project team on a regular basis or as needed/required by the OSHA Crane Standard.

7.3.9 Modifications or additions that may affect the capacity or safe operation of the equipment must not be made without written approval from the manufacturer or approval from a registered professional engineer.

7.3.10 **Lift Plan:** A written lift plan shall be completed and submitted for review prior to any lift taking place on an ARCO job site. The ARCO Crane Lift Worksheet (available on ARCOnnect) shall be completed and submitted for review prior to any critical lift taking place on site.

7.3.11 **Critical Lifts:** A lift is considered "critical" when any of the following conditions exist: Total weight exceeds 75% of the crane capacity, two cranes are being used for one lift, the crane moves with an elevated load, or blind picks. Critical Lifts require field measurements to confirm radius prior to lift.

7.4 Ground Conditions

7.4.1 When acting as a controlling contractor, the ARCO project team shall take steps to ensure that all cranes being assembled, disassembled, or used on the project site are placed on a firm, drained, and graded foundation.

7.4.2 Planning in conjunction with the equipment operator or subcontractor shall take place to establish suitable conditions that will meet the equipment manufacturer's specifications for support and level. Supporting materials such as blocking, mats, cribbing, etc., may be used to aid in meeting this requirement.

7.4.3 The ARCO project team shall inform the equipment operator of any known underground hazards, including voids, tanks, utilities, etc., that may interfere with the support of such equipment. All information identified as a known hazard on site drawings, as-built, or soils reports shall be shared with the crane operator.

7.5 Assembly and Disassembly

7.5.1 Assembly and disassembly must be directed by an "A/D director" or person who meets the criteria of both a competent person and a qualified person. (Note: A competent A/D director may be assisted by a qualified person.)

7.5.2 Before commencing assembly/disassembly operations, the A/D director should review any applicable manufacturer procedures. (The A/D director must always review any procedures that they have not previously applied to the same type of configuration of equipment.)

7.5.3 The A/D director must ensure that all crew members understand their specific tasks, the hazards associated with those tasks, and any hazardous positions/ locations that they should avoid.

7.5.4 No crew member should work in a location out of the view of the operator without his consent. The operator shall not move any part of the equipment until he has been informed that the crew member is in a safe position.

7.5.5 No crew member shall work under the boom, jib, or other components when pins are being removed without permission from the A/D director. (The A/D director must implement procedures to minimize the risk of unintended movement of these components if site constraints warrant such actions.)

7.5.6 The A/D director must address any specific hazards associated with the assembly or disassembly. Site ground bearing conditions and blocking material should be checked to maintain stability. Any conditions that could cause unintended dangerous movement, structural damage, or collapse should be considered, such as wind speed and weather conditions, boom and jib pick points, the center of gravity of all loads, and backward stability.

7.5.7 All loads on assist cranes should be verified before each phase of assembly/disassembly. The weight of each of the equipment's components must be **readily available.**

7.5.8 All rigging work during assembly and disassembly must be done by qualified riggers. Special care should be taken to protect synthetic slings from abrasive, sharp, or acute edges. All slings must be used in accordance with the manufacturer's instructions, limitations, and specifications.

7.5.9 Upon completion of assembly, the equipment must be inspected by a qualified person.

7.6 Power Line Safety Up To 350kV

7.6.1 Before assembly, disassembly, or use, the equipment operator must determine if any part of the equipment, load line, or load could get closer than 20 feet to a power line. If so, the contractor/operator must meet one of the following:

7.6.1.1 **Option (1) - De-energize and Ground:** Confirm from the utility owner or operator that the power has been de-energized and visibly grounded at the worksite.

7.6.1.2 **Option (2) - 20 feet Clearance:** Ensure that no part of the equipment, load line, or load gets closer than 20 feet to the power line by implementing encroachment prevention precautions.

7.6.1.3 **Option (3) - Table A Clearance:** Determine the power lines' voltage and make sure that no part gets closer than the minimum clearance distance in Table A.

7.6.2 When encroachment precautions are required under option (2) or (3), a planning meeting should be held between the A/D or Lift Director, their crew, and the operator to review the location of the power line and the steps to prevent encroachment/electrocution. Tag lines, if used, must be nonconductive.

7.6.3 Encroachment precautions under option (2) or (3) must also include at least one of the following:

7.6.3.1 Dedicated spotter who is equipped with a visual aid and positioned to gauge the power line clearance distance and can communicate with the operator to stop in time.

7.6.3.2 Proximity alarm on the equipment to warn of encroachment.

7.6.3.3 Range control device on the equipment to control movements in the direction of power lines.

7.6.3.4 Physically elevated warning lines or barricades in which operations do not encroach beyond.

7.6.4 All power lines must be assumed to be hot until the utility owner confirms that they have been de-energized and the lines have been visibly grounded at the worksite.

7.6.5 A hazard assessment must be done prior to equipment operations. Precautions must be taken for all power lines within the 360-degree maximum working radius of all equipment. Barricades or boundaries should be identified before work begins.

7.6.6 Operators and crew members working around power lines must be trained in power line safety and the procedures to be followed in the event of electrical contact (See Subpart CC for more information).

7.6.7 Power lines over 350kV and below 1000kV have a minimum distance requirement of "50 feet" in place of "20 feet" and power lines over 1000kV must have the minimum safe distance established by the utility owner.

7.6.8 All equipment traveling below power lines must maintain the minimum clearances in Table T (Note: Table T is attached at the end of this section). A dedicated spotter shall be used if closer than 20 feet. When traveling at night or in poor visibility, the power lines shall be illuminated and a safe path identified and used.

7.7 Inspections

7.7.1 Equipment inspections are required by the equipment operator, or all equipment must receive a visual inspection by a competent person prior to each shift for apparent deficiencies. If any deficiency poses a safety hazard, the equipment must be taken out of service. In each of the following situations:

7.7.1.1 **Modification or Repair –** Any equipment which has had a modification or repair which could affect the safe operation of the equipment must be inspected by a qualified person. These inspections must include functional testing.

7.7.1.2 **Post Assembly -** All equipment must be inspected by a qualified person upon completion of assembly in accordance with the manufacturer's equipment criteria. The equipment must not be used until this inspection is done.

7.7.1.3 **Shift Inspection -** All equipment must receive a visual inspection by a competent person prior to each shift for apparent deficiencies. If any deficiency poses a safety hazard, the equipment must be taken out of service.

7.7.1.4 **Monthly Inspection -** All equipment must receive a monthly inspection by a competent person. The inspection must be documented and retained for at least three months.

7.7.1.5 **Annual/ Comprehensive Inspection -** All equipment must be inspected by a qualified person at least every twelve months. This inspection must be documented and retained for at least twelve months.

7.7.1.6 **Additional Inspections -** Additional inspections on equipment must be performed by a qualified person on any equipment that has suffered severe conditions, such as an exceeded rated capacity, shock loading, etc., or any equipment that has been idle for three months.

7.7.1.7 All inspections except for the daily visual shift inspection are required to be documented by the equipment operator or subcontractor and should be kept on file with the ARCO project team.

7.8 Safety Devices and Operational Aids

7.8.1 No equipment shall be allowed to operate without all safety devices in proper working order. Such devices include: Crane level indicators, boom stops, jib stops, locks on equipment with foot petals, check valves on hydraulic outrigger jacks, stops on equipment rails, and horns.

7.8.2 No equipment shall be allowed to operate without functioning operational aids until such time as they are repaired or the equipment operator or subcontractor implements the specified temporary alternative measures spelled out in the OSHA Cranes and Derrick standard (See 29 CFR 1926 Subpart CC for more detail).

7.9 Operation

7.9.1 The equipment operator or subcontractor must comply with all manufacturer procedures applicable to the operational function of the equipment.

7.9.2 All equipment operational procedures, including load charts, recommended operating speeds, special hazard warnings, instructions, and the operator's manual must be available in the cab.

7.9.3 If rated capacities are available only in electronic form, the operator must shut down if there is a failure of electronic equipment.

7.9.4 The equipment operator must not engage in any activity that diverts his attention from operating the equipment, such as cell phone use.

7.9.5 The equipment operator must not leave the controls while a load is suspended unless he remains adjacent to the equipment and is not engaged in other duties, or the competent person determines that it is safe and implements measures to restrain any required functions. Barricades should be erected to prevent all associates from entering the area.

7.9.6 Any equipment taken out of service must be tagged. The operator may not start equipment or activate a switch until the tag is removed by the person who authorized it or until they have verified no one is servicing the machine, and the equipment has been properly repaired.

7.9.7 The competent person must adjust the equipment stability and capacity to address the effects of wind, ice, and snow. When a local storm warning has been issued, the competent person must determine whether it is necessary to secure the equipment.

7.9.8 The operator of equipment must verify that all loads are within the rated capacity of the equipment. The weight of the load must be determined from a source recognized by the industry, such as by the load's manufacturer, calculation by a recognized industry standard, or equally reliable means. A Load Moment

Indicator (LMI) may be used until the load exceeds 75% of the maximum rated capacity at the longest radius. All loads over 75% are considered a critical lift in accordance with ARCO policy.

7.9.9 Traveling with a load is prohibited unless allowed by the manufacturer. The competent person must supervise any such event and reduce capacity according to load weight, boom position, ground support, etc.

7.9.10 Taglines must be used on loads as necessary to prevent any rotation of the load that would be hazardous.

7.9.11 The equipment operator must obey a stop or emergency stop signal irrespective of who gives it.

7.9.12 Whenever there is a concern as to safety, the operator must have the authority to stop and refuse to handle the load until a qualified person has determined that safety has been assured.

7.10 Signals

7.10.1 A signal person must be provided when the point of operation is not in full view of the operator, or when any equipment is traveling and the direction of travel is obstructed, or due site safety concerns the operator or person handling the load determines that it is necessary. All signal persons must be trained and documentation must be available at the job site for each signal person (See 29CFR 1926 Subpart CC for more details).

7.10.2 Signals to the operator must be by hand, voice, audible, or new signals. The signals used must be appropriate for the site conditions. When using non-standard hand signals, the signal person, lift director, and operator must agree on the signals (See attached Standard Methods for Hand Signals Chart at the end of this section).

7.10.3 Communication must be maintained at all times between the signal person and the operator. If it is interrupted, the operator must safely stop.

7.10.4 Only one person may give signals to a crane operator at a time, except for someone giving the stop or emergency stop signal. Coordination of signaling on sites with multiple cranes should take place before work begins.

7.10.5 Devices used to transmit signals must be tested on site before they are used. Signal transmission must be through a dedicated channel except when there are multiple cranes or more than one signal persons share a channel for the purpose of coordination.

7.10.6 The operator's reception of transmitted signals must be by a hands-free device or system.

7.10.7 When voice signals are used, the operator, signal person, and lift director must agree on the voice signals to be used.

7.10.8 Hand signal charts must be either posted on the equipment or conspicuously posted in the vicinity of the hoisting operations.

7.11 Fall Protection

7.11.1 The equipment operator or subcontractor must maintain any originally-equipped steps, handholds, walking surfaces, ladders, and guardrails.

7.11.2 Fall protection must be provided to non-assembly/disassembly equipment crew members who are over 6 feet when moving point to point or at a work station on non-lattice boom cranes, on lattice booms that are not horizontal, or on horizontal lattice booms where the fall distance is 15 feet or more except when working near the draw-works when the equipment is running, inside the cab, or on the deck.

7.11.3 Assembly/disassembly crew workers must be provided with fall protection at 15 feet except when working near the draw works when the equipment is running, in the cab, or on the deck.

7.11.4 Personal fall arrest systems must be anchored to any apparently substantial part of the equipment that would meet 29 CFR 1926.502.

7.11.5 Fall protection must be provided for any work other than erecting, climbing, and dismantling of tower cranes on any walking/working surface with a side or edge more than 6 feet, except when the associate is at or near the draw-works when the equipment is running, in the cab, or on the deck.

7.11.6 Fall protection must be provided at 15 feet when erecting, climbing, and dismantling tower cranes.

7.12 Work Area Control

7.12.1 Any swing radius in which the equipment's rotating superstructure would pose a risk of striking, injuring, pinching, or crushing an associate shall be protected by control lines, warning lines, railing, or barriers. When barriers are not feasible due to site conditions, the area should be marked by warning signs and high-visibility marking on the equipment. Associates must be trained to understand what these markings signify.

7.12.2 Any associate entering a swing radius hazard area that is out of view of the operator must inform the operator that they are going to that location. The operator must not rotate the superstructure until he is informed that the associate is in a safe position.

7.12.3 Where any part of a crane is within the working radius of another crane, the controlling entity must institute a system to coordinate operations.

7.12.4 Where available, hoisting routes that minimize the exposure of associates to hoisted loads must be used.

7.12.5 While the operator is not moving a suspended load, no associate must be within the fall zone except for associates engaged in:

7.12.5.1 Hooking, unhooking, or guiding the load.

7.12.5.2 The initial attachment of the load to a component or structure.

7.12.5.3 Operating a concrete hopper or bucket.

7.12.6 When associates are engaged in hooking, unhooking, or guiding the load, and are within the fall zone, all of the following must be met:

7.12.6.1 The materials being hoisted must be rigged to prevent unintentional displacement.

7.12.6.2 Hooks with self-closing latches must be used.

7.12.6.3 The materials must be rigged by qualified riggers.

7.12.7 Only essential associates who guide the load, monitor its movement, or attach it to a component or superstructure are permitted to be in the fall zone during tilt-up or tilt-down operations. No associate is allowed directly under the load.

7.12.8 Controlled load lowering is required anytime an associate is in a fall zone, an associate is being hoisted, the load or boom is over a power line, or when a load is over a shaft.

7.13 Training, Qualification, and Certification

7.13.1 Each equipment operator or subcontractor must ensure that prior to operating any equipment; the person operating is properly trained/qualified/certified. Each operator must be certified per the requirements of OSHA Subpart CC-2018 on the specific operation of the equipment that they will be using. Certification shall be provided to the ARCO project team before work begins.

7.13.2 Signal persons must be qualified for each specific type of signal that they will be using. Documentation of this training shall be provided to the ARCO project team before work begins.

7.13.3 Riggers shall be qualified for each specific type of equipment that they will be using. Documentation of this training shall be provided to the ARCO project team before work begins.

7.13.4 Maintenance, inspection, and repair personnel must meet the definition of a qualified person and are not allowed to operate equipment unless they are under the direct supervision of a qualified operator.

7.13.5 Each equipment operator or subcontractor must ensure that dedicated spotters, operators and other crew members must be trained to work with equipment around overhead power lines.

7.13.6 Each equipment operator or subcontractor must ensure that qualified riggers are properly trained. Documentation of this training shall be provided to the ARCO project team before work begins.

7.13.7 Each equipment operator or subcontractor must ensure that any associate or crew member who works with equipment is trained to recognize and keep clear of loads, crush/pinch points, and other hazards in the work area.

7.13.8 Each equipment operator or subcontractor must train each operator and other associates authorized to start/energize equipment or operate controls on the equipment such as maintenance associates on the proper tag-out and start-up procedures.

7.14 Hoisting Personnel

7.14.1 The use of equipment to hoist associates is prohibited except when the equipment operator or subcontractor demonstrates that the erection, use, and dismantling of conventional means of reaching the work area, such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform, or scaffold, would be more hazardous, or that it is not possible because of the project's structural design or worksite conditions.

7.14.2 Upon receiving a request from an equipment operator or subcontractor to use equipment to hoist associates, the ARCO project team shall contact the Safety Department to review all applicable procedures regarding equipment set up, criteria, and use.

7.15 Multiple Crane Lifts

7.15.1 Before beginning a crane operation in which more than one crane will be supporting a load, the operation must be planned. The ARCO project team shall hold a preplanning meeting with the equipment operator or subcontractor and any other relevant parties to discuss the coordination of the lift.

7.15.2 Details of the plan must be developed by a qualified person using the proper engineering expertise as required.

7.15.3 All multiple crane lifts must be directed by a Lift Director who meets the criteria for a competent and qualified person.

7.15.4 The Lift Director must review the plan specifics and hazards/precautions with all workers and crew who will be involved in the operation.

7.16 Tower Cranes

7.16.1 All requirements in the Assembly/Disassembly sections apply to tower cranes.

7.16.2 Associates must not be in or under the tower, jib, or rotating portion of the crane during erecting, climbing, and dismantling operations until the crane is secured in a locked position and the competent person indicates that it is safe.

7.16.3 All tower crane foundations and structural supports must be designed by the manufacturer or registered professional engineer using the proper engineering expertise.

7.16.4 Towers must be erected plumb to meet the manufacturer's tolerances and verified by a qualified person.

7.16.5 Coordination on sites with more than one crane must be done so that the cranes do not come in contact with each other.

7.16.6 The size and location of signs installed on tower cranes must be in accordance with manufacturer specifications and/or approved by a registered professional engineer.

7.16.7 Tower cranes have different safety devices and operational aids than conventional rigs. The ARCO project team and equipment operator or subcontractor should take steps to familiarize themselves with these requirements.

7.16.8 Before each crane component is erected, it must be inspected by a qualified person for damage or excessive wear.

7.16.9 In addition to a typical post-erection inspection, a load test using certified weights must be conducted after each erection.

7.16.10 CAL/OSHA requires separate project-specific permits anytime a tower crane is being used. The ARCO project team should coordinate with the closest CAL/OSHA District Office if a tower crane is to be used on the project site.

8 DEMOLITION

8.1 Purpose

The purpose of this policy is to minimize the hazards associated with demolition activities, to provide uniform methods and requirements to assure associate safety, and to meet OSHA requirements.

8.2 References

29FR 1926 Subpart T Demolition

8.3 Preplanning

8.3.1 Subcontractors shall submit the name of their Competent Person during the Pre-Construction Conference.

8.3.2 The Competent Person shall conduct an engineering survey of the structure to determine the condition of the structure and any adjacent structures. Documentation of the survey must be provided and maintained at the jobsite.

8.4 General Requirements

8.4.1 Only those associates necessary to the activities are permitted in the work area.

8.4.2 When associates are required to work within a structure to be demolished, which has been damaged, the walls and floors shall be shored or braced.

8.4.3 All utility services shall be shut off or capped outside the building prior to beginning demolition work. Utility companies shall be given sufficient advanced notice.

8.4.3.1 If it is necessary to maintain any utilities during demolition, such lines shall be temporarily relocated, as necessary, and identified and protected.

8.4.4 If any type of hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances have been used in any pipes, tanks, or other equipment on the property, testing and purging shall be performed, and the hazard eliminated before demolition is started.

8.4.5 Where a hazard exists from the fragmentation of glass, such hazards shall be removed.

8.4.6 When debris is dropped through holes in the floor without the use of chutes, the area onto which the material is dropped shall be completely enclosed with barricades not less than 42 inches high and not less than six feet back from the projected edge of the opening above. Signs warning of the hazard of falling materials shall be posted at each level.

8.4.7 Demolition of exterior walls and floor construction shall begin at the top of the structure and proceed downward.

8.4.8 Associate entrances to multi-story structures being demolished shall be completely protected for a minimum of eight feet from the face of the structure.

Protection shall be at least two feet wider than the building entrances or openings (one foot wider on each side thereof) and shall be capable of sustaining a load of 150 pounds per square foot.

8.5 Stairs, Passageways, and Ladders

8.5.1 Only those stairways, passageways, and ladders designated as means of access to the structure of a building shall be used.

8.5.2 All stairs, passageways, and ladders shall be periodically inspected and maintained in a clean, safe condition.

8.5.3 In a multi-story building, when a stairwell is being used, it shall be properly illuminated and substantially covered over at a point not less than two floors below the floor on which work is being performed.

8.6 Chutes

8.6.1 No material shall be dropped to any point lying outside the exterior walls of the structure unless the area is effectively protected.

8.6.2 All material chutes at an angle of more than 45 from the horizontal, shall be entirely enclosed.

8.6.3 Material chute openings shall:

8.6.3.1 Not exceed 48 inches in height measured along the wall of the chute. At all stories below the top floor, such openings shall be kept closed when not in use.

8.6.3.2 Be protected by a substantial guardrail approximately 42 inches above the surface on which the worker is standing. Any space between the chute and the surface edge shall be solidly covered over.

8.6.4 Chutes shall be designed and constructed of such strength as to eliminate failure due to impact of materials or debris loaded therein.

8.7 Removal of Materials Through Floor Openings

8.7.1 Any openings cut in a floor for the disposal of materials shall be no larger in size than 25 percent of the aggregate of the total floor area, unless the lateral supports of the removed flooring remain in place.

8.8 Removal of Walls, Masonry Sections, and Chimneys

8.8.1 Masonry walls shall not be permitted to fall upon the floors of the building in such masses as to exceed the safe carrying capacities of the floors.

8.8.2 No wall section, which is more than one story in height, shall be permitted to stand alone without lateral bracing. All walls shall be left in stable condition at the end of each shift.

8.8.3 Walkways or ladders shall be provided to allow safe access to any scaffold or wall.

8.8.4 Walls, which serve as retaining walls to support earth or adjoining structures, shall not be demolished until such earth has been properly braced or adjoining structures have been properly underpinned.

8.8.5 Walls, which are to serve as retaining walls against which debris will be piled, shall be capable of safely supporting the imposed load.

8.9 Manual Removal of Floors

8.9.1 Openings cut in a floor shall extend the full span of the arch between supports.

8.9.2 Before demolishing any floor arch, debris and other materials shall be removed.

8.9.3 2"x10" planks shall be used by associates to stand on while breaking down floor arches between beams. Such planks shall be so located as to provide a safe support should the arch between the beams collapse. The open space between planks shall not exceed 16 inches.

8.9.4 Safe walkways, not less than 18 inches wide, shall be used when necessary to enable them to reach any point without walking upon exposed beams.

8.9.5 Stringers of ample strength shall be installed to support the flooring planks, and the ends of such stringers shall be supported by floor beams or girders.

8.9.6 Planks shall be laid together over solid bearings with at least 12" overlapping.

8.9.7 When floor arches are being removed, associates shall not be allowed in the area directly underneath, and such an area shall be barricaded to prevent access to it.

8.9.8 Demolition of floor arches shall not be started until they and the surrounding floor area for a distance of 20 feet have been cleared of debris and materials.

8.10 Removal of Walls, Floors, and Material with Equipment

8.10.1 Mechanical equipment shall not be used on floors or working surfaces unless such floors or surfaces are of sufficient strength to support the imposed load.

8.10.2 Floor openings shall have curbs or stop-logs to prevent equipment from running over the edge.

8.10.3 Mechanical equipment used shall meet the requirements specified in this program.

8.11 Storage

8.11.1 The storage of waste material and debris on any floor shall not exceed the allowable floor loads.

8.11.2 Floorboards or floor arches may be removed from not more than one floor above grade to provide storage space for debris, provided falling material is not permitted to endanger the stability of the structure.

8.11.3 When wood floor beams serve to brace walls, such beams shall be left in place until other equivalent support can be installed to replace them.

8.11.4 Storage space into which material is dumped shall be blocked off, except for openings necessary for the removal of material.

8.12 Removal of Steel Construction

8.12.1 Steel construction shall be dismantled column length by column length and tier by tier (columns may be in two-story lengths).

8.12.2 Any structural member being dismembered shall not be overstressed.

8.13 Mechanical Demolition

8.13.1 No workers shall be permitted in any area which can be adversely affected by demolition operations when balling or clamming is being performed.

8.13.2 The weight of the demolition ball shall not exceed 50% of the crane's rated load, or it shall not exceed 25% of the nominal breaking strength of the line by which it is suspended, whichever results in a lesser value.

8.13.3 The crane boom and load line shall be as short as possible.

8.13.4 The ball shall be attached to the load line with a swivel-type connection to prevent twisting of the load line and shall be attached by positive means in such a manner that the weight cannot become accidentally disconnected.

8.13.5 When pulling over walls or portions thereof, all steel members affected shall have been previously cut free.

8.13.6 All roof cornices or other such ornamental stonework shall be removed prior to pulling walls over.

8.13.7 During demolition, periodic inspections by a Competent Person shall be made.

8.14 Selective Demolition by Explosives

8.14.1 Selective demolition by explosives shall be conducted in accordance with the applicable sections of this manual.

8.15 Training

8.15.1 Associates assigned work tasks associated with demolition shall be trained prior to performing such work. This training shall include:

- **8.15.1.1** Detailed review of the engineering survey.
- **8.15.1.2** Personal protective equipment and the emergency evacuation plan.
- **8.15.1.3** Fire prevention and protection and environmental hazards.
- **8.15.1.4** Other hazards, which are identified in the engineering survey and/or Project Safety and Health Analysis.

8.15.2 Understanding of the training shall be determined by test, verbal questioning, or performance of selected tasks under observation.

8.15.3 Training shall be documented.

8.15.4 Retraining shall be conducted as necessary due to identified problems, changing conditions, or as deemed necessary by the competent person.

Go to ARCOnnect to access forms and checklists. For questions and further information please contact the ARCO Safety Department.

9 DUST CONTROLS

9.1 Site Assessment

9.1.1 Prior to the start of operations, a job site assessment should be conducted. This assessment must evaluate and address the following:

9.1.1.1.1 Identification of potential dust sources (e.g., excavation areas, haul roads, material handling points, demolition sites).

9.1.1.1.2 Evaluation of regional weather patterns and topography.

9.1.1.1.3 Analysis of soil type and moisture content.

9.1.1.1.4 Assessment of existing dust control measures and their effectiveness.

9.2 Control Methods

9.2.1 To manage dust accumulation effectively, water-based methods, chemical dust suppressants, physical barriers, or soil stabilization may be utilized.

9.2.2 Dust control methods must be approved by ARCO prior to implementation.

9.3 Implementation Plan:

9.3.1 When possible, schedule dust control activities based on weather conditions and work phases.

9.3.2 Designated personnel will be responsible for monitoring and maintenance. When required, only properly calibrated equipment should be utilized when monitoring dust control measures.

9.4 Compliance with Regulations:

9.4.1 Any non-compliance of local air quality standards and permits resulting from trade partner's operations will be the responsibility of that trade partner to remedy.

10 ELECTRICAL SAFETY

10.1 Purpose

To ensure all electrical systems and components are properly maintained, controlled, and safeguarded to prevent shock, arc flash, and equipment-related injuries on ARCO project site.

10.2 Policy Requirements

10.2.1 Panel Safety Requirement

10.2.1.1 All powered panels must have metal covers installed at all times.

10.2.1.2 Panel doors shall remain closed and locked when not actively being serviced, when feasible.

10.2.2 Lockout/Tagout (LOTO) Requirements

10.2.2.1 Prior to any electrical operations, the responsible trade partner shall present a LOTO Procedure Plan to both their crew and the ARCO Project Team to meet NFPA 70E and OSHA 1926 Standards at a minimum.

10.2.3 Barricading of Electrical Equipment

10.2.3.1 When located in high-traffic areas, hard barricades should be placed around temporary or permanent power panels, junction boxes, transformers, and similar electrical equipment to prevent unintended contact with mobile equipment.

10.2.4 Cord Management and Inspection

10.2.4.1 Subcontractors are responsible for conducting weekly cord inspections and roundups as part of their tool and equipment safety program.

10.2.4.1.1 Trade partners will perform cord inspections.

10.2.4.1.2 Electrical cords that are damaged must be immediately removed from service.

10.3 Lighting

10.3.1 Temporary electrical installations shall be in compliance with OSHA and NEC specifications.

10.3.2 String lights shall have guards to protect against contact with exposed bulbs and not be suspended by cords unless so designed; additionally:

10.3.2.1 Be of 12v maximum in moist or other similarly hazardous sites.

10.3.2.2 Splices will be insulated to match the rest of the cord.

10.3.2.3 If metal guards are used, they shall be grounded.

10.3.2.4 Every location shall have a bulb in good working condition

10.3.3 Construction areas should be lit to not less than minimum illumination intensities listed while work is in progress:

10.3.3.1 General construction area lighting – 5-foot candles

10.3.3.2 General construction areas, concrete placement, active storage areas, loading platforms, refueling and field maintenance areas, and stairways – 3-foot candles

10.3.3.3 Indoor: warehouses corridors, hallways, and exits – 5-foot candles

10.3.3.4 General construction plant and shops – 10-foot candles

10.4 Ground Fault Protection

10.4.1 All 120-volt, single-phase, 15 and 20-ampere receptacle outlets on construction sites shall have approved ground-fault circuit interrupters for personnel protection.

10.5 Electrical Grounding

10.5.1 Temporary transformers, control panels, and similar master electrical components shall be installed as specified by the manufacturer and checked by the Project Superintendent or their designee prior to being put into service to ensure proper operation.

10.5.2 Live parts of electrical equipment operating at 50 volts or more must be guarded against accidental contact. Guarding of live parts must be accomplished as follows:

10.5.2.1 Location in a cabinet, room, vault, or similar enclosure accessible only to qualified persons.

10.5.2.2 Use of permanent, substantial partitions or screens to exclude unqualified persons.

10.5.2.3 Location on a suitable balcony, gallery, or platform elevated and arranged to exclude unqualified persons.

10.5.2.4 Elevation of eight feet or more above the floor.

10.5.3 Entrances to rooms and other guarded areas shall be marked with warning signs forbidding unqualified persons from entering.

10.6 Associate Training

10.6.1 Associates using electrical cords and or tools shall be informed of the following information regarding inspections prior to using such items:

10.6.1.1 Electrical cords and tools shall be inspected by the user prior to use. Defective items shall not be used.

10.6.1.2 The GFCI test button shall be used to assure the GFCI is working properly.

10.6.2 Associates shall be trained in and familiar with the safety-related work practices required by OSHA that pertain to their respective job assignments.

10.6.3 Unqualified Persons – Associates not considered "qualified persons" shall also be trained in and familiar with any electrically related safety practices not specifically addressed by OSHA but which are necessary for their safety.

10.6.4 Qualified Persons – Qualified persons (those permitted to work on or near exposed energized parts) shall, at a minimum, be trained in and familiar with:

10.6.4.1 The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment.

10.6.4.2 The skills and techniques necessary to determine the nominal voltage of exposed live parts.

10.6.4.3 The clearance distances specified in OSHA 1910.333(c) and the corresponding voltages to which the qualified person will be exposed.

10.7 Working On or Near Exposed Deenergized Parts

10.7.1 Conductors and parts of electric equipment that have been deenergized but have not been locked out or tagged in accordance with OSHA shall be treated as energized parts, and all OSHA standards for working on energized parts shall be followed.

10.8 Working On or Near Exposed Energized Parts

10.8.1 No work shall take place on exposed energized parts unless:

10.8.1.1 De-energizing would interrupt essential life support, emergency alarms or ventilation system.

10.8.1.2 The organization can demonstrate that de-energizing the system would introduce additional or increased hazards OR that it is infeasible due to equipment design or operational limitations.

10.9 Working On or Near Overhead Lines

10.9.1 If work is to be performed near overhead lines, the lines shall be deenergized and grounded, or other protective measures shall be provided before work is started. If the lines are to be deenergized, arrangements shall be made with the person or organization that operates or controls the electric circuits involved to deenergize and ground them. If protective measures, such as guarding, isolating, or insulating, are provided, these precautions shall prevent associates from contacting such lines directly with any part of their body or indirectly through conductive materials, tools, or equipment. Qualified associates must adhere to the following table.

300V and Less	Avoid Contact
Over 300V, not over 750V	1 foot 0 inches
Over 750V, not over 2kV	1 foot 6 inches

Over 2kV, not over 15kV	2 feet 0 inches
Over 15kV, not over 37kV	3 feet 0 inches
Over 37kV, not over 87.5kV	3 feet 6 inches
Over 87.5kV, not over 121kV	4 feet 0 inches
Over 121kV, not over 140kV	4 feet 6 inches

10.9.2 When an unqualified person is working in an elevated position near overhead lines, the location shall be such that the person and longest conductive object he or she may contact cannot come closer to any unguarded, energized overhead line than:

10.9.2.1 10′ – for voltages to ground 50kV or below.

10.9.2.2 10′ + 4″ for every 10kV over 50kV – for voltages to ground over 50kV.

10.9.3 Any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines shall be operated so that a clearance of 10′ is maintained. If the voltage is higher than 50kV, the clearance shall be increased 4″ for every 10kV over that voltage. However, under any of the following conditions, the clearance may be reduced:

10.9.3.1 If the vehicle is in transit with its structure lowered, the clearance may be reduced to 4′. If the voltage is higher than 50kV, the clearance shall be increased 4″ for every 10kV over that voltage.

10.9.3.2 If insulating barriers are installed to prevent contact with the lines, and if the barriers are rated for the voltage of the line being guarded and are not a part of or an attachment to the vehicle or its raised structure, the clearance may be reduced to a distance within the designed working dimensions of the insulating barrier.

10.9.3.3 If the equipment is an aerial lift insulated for the voltage involved, and if the work is performed by a qualified person, the clearance may be reduced to the distance given in the above table.

10.10 Working In Confined or Enclosed Workspaces

10.10.1 When an associate works in a confined or enclosed space that contains exposed energized parts, protective shields, protective barriers, or insulating materials as necessary to avoid inadvertent contact with these parts shall be used.

10.10.2 Doors, hinged panels, and the like shall be secured to prevent their swinging into an associate and causing them to contact exposed energized parts.

10.11 Switchgear Energization

10.11.1 Prior to the initial energization of a switchgear, the ARCO Initial Energization Permit and supporting documentation shall be completed, reviewed, and approved by the ARCO Team.

11 EQUIPMENT SAFETY

11.1 Purpose

To maintain a safe working environment and prevent injuries associated with the use of heavy equipment and powered vehicles, the following equipment safety protocols shall be implemented and enforced.

11.2 General Equipment Use and Load Security

11.2.1 Transported loads shall be adequately secured to prevent displacement during movement by vehicles or equipment.

11.2.2 Buckets, blades, and forks of equipment should be fully lowered to the ground when not in use or at the end of shifts

11.2.3 Engines on equipment must be turned off during refueling.

11.2.4 Running equipment should not be left unattended.

11.2.5 When feasible, all heavy equipment must have an eclosed cab. If open cab equipment must be utilized, it must be approved by ARCO prior to mobilization of the equipment.

11.2.6 For Demolition and tree clearing/logging operations, reinforced cabs must be utilized in excavators.

11.3 Gas-Powered Equipment – Indoor Use

11.3.1 Contractors responsible for internal combustion engine use (gas-powered tools & equipment) in enclosed areas must monitor air quality and address hazards such as carbon monoxide (CO) accumulation.

11.3.1.1 An interior or enclosed area is defined as any location with four walls and a roof that restricts natural ventilation.

11.3.1.1.1 Once an area is enclosed, efforts must be made to relocate gas-powered equipment (e.g., generators, welding machines, etc.) outside, and route cords or welding leads indoors from the outside location.

11.3.1.1.2 Diesel and propane-powered equipment used indoors must be low-emission and equipped with an exhaust scrubber when feasible.

11.3.1.1.3 Where feasible, electrical equipment should be used in place of internal combustion engines.

11.3.1.1.4 Air monitoring must be conducted by the contractors operating combustion engine equipment in interior areas to ensure safe working conditions.

11.4 Spotters and Equipment Movement

11.4.1 Spotters are required when operating mobile equipment or vehicles in:

11.4.1.1 Congested or critical areas

11.4.1.2 Tight or restricted spaces

11.4.1.3 Close proximity (within 10 feet) of the owner's/customer's staged/installed or specialized equipment

11.4.1.4 Areas with installed equipment or nearby structures

11.4.1.5 When exposer exists in a location where overhead work is being performed without protective barricades.

11.4.1.5.1 Spotters must remain in place until overhead work is completed.

11.4.1.6 When the operator does not have a full view of their travel path

11.4.1.7 When moving material while entering or exiting a building, room, or blind spot

11.4.1.7.1 In congested or high-risk situations, multiple spotters may be used if determined necessary by the ARCO Project Team.

11.4.1.7.2 Equipment operators shall sound their horn twice before entering or exiting a structure, room, or blind spot to alert surrounding personnel.

12 EXCAVATIONS AND TRENCHING

12.1 Purpose

The purpose of this policy is to minimize the hazards associated with excavations encountered in the workplace, to provide uniform methods and requirements that assure associate safety, and satisfy OSHA requirements.

12.2 References

29 FR 1926.650, 651, and 652—Excavations

12.3 General Requirements

12.3.1 The competent person shall be identified in writing prior to beginning excavations.

12.3.2 All surface hazards shall be removed prior to beginning excavations.

12.4 Ground Disturbance Procedure

12.4.1 Ground Disturbance Procedure – Initial Scope Setup:

12.4.2 When to Review:

- **12.4.2.1** At the beginning of the subcontractor's scope of work involving any subsurface activity (trenching, excavation, drilling, boring, pile driving, auger drilling, hand digging, etc.).
- **12.4.2.2** Upon initial mobilization of the subcontractor.
- **12.4.2.3** Whenever a new operator starts work.

12.4.3 Who Reviews:

- **12.4.3.1** The competent person and operator(s) for the subcontractor, in coordination with the ARCO Superintendent.

12.4.4 Key Requirements:

- **12.4.4.1** Confirm active 811 / One Call dig ticket (with ticket number).
- **12.4.4.2** Verify 48-hour notice and visible locate markings/flags.
- **12.4.4.3** Review plans for existing utility conflict areas with ARCO Superintendent.
- **12.4.4.4** Ensure all operator qualifications are up to date and submitted to ARCO.

12.4.5 Daily Ground Disturbance Permit – Daily Use

12.4.6 When to Complete:

- **12.4.6.1** Daily, whenever work is conducted within 15 feet of a known utility.
- **12.4.6.2** If utilities are within 5 feet, potholing using non-invasive methods (hand digging, probing, hydro-excavating, or vac-excavating) is required.

12.4.7 Who Completes:

12.4.7.1 The competent person and operator(s) for the subcontractor, with ARCO Superintendent review.

12.4.8 Key Requirements:

12.4.8.1 Confirm active 811 / One Call dig ticket and verify markings.

12.4.8.2 Review ARCO "Red Line" utility drawings and private locator results (GPR, etc.).

12.4.8.3 Identify specific utilities within the work area and describe how their locations will be confirmed.

12.4.8.4 Train the crew on this permit and obtain signatures daily.

12.4.9 ARCO 15' Rule

12.4.9.1 15' Rule: The Daily Ground Disturbance Permit is required if work is within 15 feet of any known utility.

12.4.9.2 5' Rule: If work is within 5 feet, utilities must be physically confirmed using potholing with non-invasive practices.

12.4.10 Responsibilities

12.4.10.1 Project Managers:

12.4.10.1.1 Ensure subcontractors are aware of and comply with this procedure.

12.4.10.1.2 Verify forms are submitted, reviewed, and maintained.

12.4.10.2 Superintendents:

12.4.10.2.1 Oversee compliance in the field.

12.4.10.2.2 Review permits and ensures daily acknowledgment from crews.

12.4.10.3 Subcontractors:

12.4.10.3.1 Competent person is responsible for accurate completion of forms.

12.4.10.3.2 Ensure all crew members are trained and sign off daily.

12.4.11 Recordkeeping

12.4.11.1 Completed Procedures and Daily Permits must be submitted to the ARCO Superintendent.

12.4.11.2 Originals should be maintained in the project safety file for inspection and recordkeeping.

12.5 Underground Installations

12.5.1 The location of all utilities shall be determined prior to beginning an excavation.

12.5.2 Utility companies or owners shall be contacted prior to beginning excavations with sufficient time to respond.

12.5.2.1 Both public and private utilities must be located and marked prior to beginning an excavation.

12.5.2.2 Additional Underground Utility Damage Prevention Guidelines are available on ARCOnnect.

12.5.3 When excavation operations are 5' or less from the estimated location of underground installations, their exact location shall be determined via "potholing" (or similar method) and marked.

12.5.4 Every subcontractor is responsible for calling in locates for their scope of work. It is not acceptable to use the locates for multiple subcontractors, even if the work is in the same area. The Superintendent is responsible for verifying that locates have been called in.

12.5.5 Check the expiration date! Locates are only valid for a certain period of time (each municipality is different). Every subcontractor is responsible for verifying how long the locates are good for. New locates must be called in prior to the current locates expiring.

12.5.6 The exact location of newly installed utilities must be marked on the most recent set of project drawings and clearly identified on the project site to protect them from subsequent scopes of work.

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

12.6 Access and Egress

12.6.1 Structural Ramps

12.6.1.1 Structural ramps that are used solely by associates as a means of access or egress from excavations shall be designed by a competent person.

12.6.1.2 Ramps and runways constructed of two or more structural members of uniform thickness shall have the structural members connected together to prevent displacement.

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

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

12.6.2 A means of egress shall be provided for trench excavations that are four feet or more in depth, within 25' of all workers. Workers must not need to cross over or around any encumbrances during egress.

12.7 Exposure to Falling Loads

12.7.1 No associate shall be permitted underneath loads handled by lifting or digging equipment. Associates shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials.

12.8 Warning System for Mobile Equipment

12.8.1 When mobile equipment is operated adjacent to an excavation, a warning system shall be utilized. If possible, the grade should be away from the excavation.

12.9 Hazardous Atmospheres

12.9.1 Excavations, if determined by the competent person to be a confined space, shall be evaluated in accordance with the requirements of that section.

12.9.1.1 Where oxygen deficiency or a hazardous atmosphere exists, the atmosphere in the excavation shall be tested before associates enter.

12.9.1.2 Adequate precautions shall be taken to prevent associate exposure to atmospheres containing less than 19.5 percent oxygen or where other hazardous atmospheres could reasonably be expected to exist.

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

12.9.2 Emergency Rescue Equipment

12.9.2.1 Emergency rescue equipment shall be readily available where hazardous atmospheric conditions exist or may develop. This equipment shall be attended when in use.

12.9.2.2 Associates entering bell-bottom pier holes or other similar deep and confined footing excavations shall wear a harness with a lifeline securely attached to it.

12.10 Protection from Hazards Associated with Water Accumulation

12.10.1 Associates shall not work in excavations in which there is accumulated water or in excavations in which water is accumulating unless adequate precautions have been taken.

12.10.2 If water is controlled or prevented from accumulating by the use of water removal equipment, it shall be continuously monitored by a competent person.

12.10.3 If excavation work interrupts the natural drainage of surface water, means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains will require an inspection by a competent person and compliance with the above paragraphs.

12.11 Stability of Adjacent Structures

12.11.1 Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems shall be provided to ensure the stability of such structures for the protection of associates.

12.11.2 Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to associates shall not be permitted except when:

12.11.2.1 A support system is provided to ensure the safety of associates and the stability of the structure.

12.11.2.2 The excavation is in stable rock.

12.11.2.3 A registered professional engineer has determined that the structure is sufficiently removed from the excavation so as to be unaffected.

12.11.2.4 A registered professional engineer has approved the determination that such excavation work will not pose a hazard to associates.

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

12.12 Protection of Associates from Loose Rock or Soil

12.12.1 Adequate protection shall be provided to protect associates from loose rock or soil that could pose a hazard by falling or rolling from an excavation face.

12.12.2 Spoils shall be kept back from the edge of excavations by at least 2'.

12.12.3 Associates shall be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations.

12.12.4 Shoring, benching, sloping, or shielding must guard walls and faces of trenches five feet or more in depth, and all excavations in which associates are exposed to danger from moving ground or cave-in.

12.13 Inspections

12.13.1 Daily inspections of excavations, the adjacent areas, and protective systems shall be made and documented by a competent person prior to the start of work.

12.13.2 Where the competent person finds evidence of hazardous conditions, exposed associates shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

12.14 Fall Protection

12.14.1 Walkways shall be provided where associates or equipment are required or permitted to cross over excavations. Guardrails shall be provided where walkways are six feet or more above lower levels.

12.14.2 Adequate physical barrier protection shall be provided at all remotely located excavations. All wells, piers, pits, shafts, etc., shall be barricaded or covered. Upon

completion of exploration and other similar operations, temporary wells, pits, shafts, etc., shall be backfilled.

12.15 Soil Classification

12.15.1 Soil shall be tested and determined to be either Type A, Type B, or Type C as defined in OSHA 1926 Subpart P Appendix A.

12.15.2 Protective systems shall be designed based on the type of soil. Appropriate protective systems, based on soil type, can be found in OSHA 1926 Subpart P Appendix B.

13 FALL PROTECTION

13.1 Purpose

The purpose of this policy is to minimize the hazards associated with falls encountered in the workplace, to provide uniform methods and requirements that assure associate safety, and to satisfy OSHA requirements.

13.2 References

29 CFR 1926 Subpart M—Fall Protection

13.3 General Requirements

13.3.1 Fall protection is required anytime workers are exposed to fall hazards of more than 6 feet.

13.3.2 A written fall protection/rescue plan will be required from subcontractors performing work requiring any fall protection methods.

13.4 Floor Openings

13.4.1 Holes more than 6 feet above lower levels or above dangerous equipment or processes and greater than 2 inches wide in any direction shall be protected by covers or guardrail systems. Covers shall be closed when the hole is not in use, and when the cover is removed the associate shall be protected by guardrails or a personal fall arrest system.

13.4.2 Covers shall be capable of supporting twice the largest anticipated load without failure.

13.4.3 Ladder-way floor openings or platforms shall be guarded with standard guardrails and standard toe-boards on all exposed sides, except at entrance to opening, with passage through the railing provided by a swinging gate or offset so a person cannot walk directly into opening.

13.4.4 Temporary floor covers shall be secured to prevent accidental displacement.

13.4.5 Floor covers shall be marked with the words “Hole” or “Cover.”

13.5 Fall Protection Systems

13.5.1 Anchor Points

13.5.1.1 Anchor points shall be identified by a qualified person.

13.5.1.2 Anchor points must be capable of withstanding an arresting force of 5000 pounds per worker.

13.5.1.3 Anchor points shall be utilized in compliance with manufacturers’ recommendations.

13.5.2 Guardrail Systems

13.5.2.1 Top edge height of top rails, or equivalent guardrail system members, shall be 42 inches plus or minus 3 inches above the walking/working level.

13.5.2.2 When associates are using stilts, the height of the top rail, or equivalent member, shall be increased an amount equal to the height of the stilts.

13.5.2.3 Midrails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members shall be installed between the top edge of the guardrail system and the walking/ working surface.

13.5.2.3.1 Midrails, when used, shall be installed at a height midway between the top edge of the guardrail system and the walking/working level.

13.5.2.3.2 Screens and mesh, when used, shall extend from the top rail to the walking/working level and along the entire opening between top rail supports.

13.5.2.3.3 Intermediate members (such as balusters), when used between posts, shall be not more than 16 inches apart.

13.5.2.3.4 Other structural members (such as additional midrails and architectural panels) shall be installed such that there are no openings in the guardrail system that are more than 19 inches wide.

13.5.2.3.5 Any studs over 16 inches on center cannot be used as guardrails. A standard guardrail system must be used to prevent falls.

13.5.2.4 Toe-boards shall be used as part of the guardrail system when falling object hazards are present.

13.5.2.5 Guardrail systems shall be capable of withstanding a force of at least 200 pounds in a downward or outward direction.

13.5.2.6 Midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding, without failure, a force of at least 150 pounds.

13.5.2.7 There shall be no more than 8 feet between posts of a wooden guard railing system unless the system has been tested and meets all the above specifications.

13.5.2.8 The ends of all top rails and midrails shall not overhang the terminal posts.

13.5.2.9 Nails or other fastening devices shall not protrude or otherwise cause a snagging hazard.

13.5.2.10 Steel or plastic banding shall not be used as top rails or midrails.

13.5.2.11 Top rails and midrails shall be at least one-quarter inch nominal diameter or thickness to prevent cuts and lacerations. If wire rope is used for top rails, it shall be flagged at not more than 6-foot intervals with high-visibility material.

13.5.2.12 When guardrail systems are used at hoisting areas, a chain, gate or removable guardrail section shall be placed across the access opening.

13.5.2.13 When guardrail systems are used at holes, they shall be erected on all unprotected sides or edges of the hole.

13.5.2.14 When guardrail systems are used around holes, which are used as points of access (such as ladder ways), they shall be provided with a gate or be so offset that a person cannot walk directly into the hole.

13.5.2.15 Guardrail systems used on ramps and runways shall be erected along each unprotected side or edge.

13.5.2.16 Synthetic or natural fiber ropes shall not be used as guard rail systems.

13.5.2.17 Toe-boards shall be installed when there is a hazard of tools or other debris falling from height.

13.5.2.18 Toe-boards shall be able to withstand 50 pounds of force in a downward or outward direction.

13.5.2.19 Toe-boards shall be at least 3.5 inches in height and not have more than one quarter inch clearance from the top of the floor.

13.5.3 Safety Net

13.5.3.1 Under certain conditions, fall protection may include the use of nets. If safety nets are used, contact the ARCO Safety Department.

13.5.4 Safety Harnesses/Personal Fall Arrest Systems (PFAS)

13.5.4.1 Only full body harnesses and an approved connecting device shall be used. Body belts are strictly prohibited for use as fall arrest devices.

13.5.4.2 All snap hooks and carabineers shall have 3600-pound loaded gates in accordance with ANSI Z359.

13.5.4.3 PFAS or Self Retracting Life-lines (SRLs) shall be used in compliance with manufacturers' specifications.

13.5.4.4 At no time should a person using a PFAS be outside 30 degrees of their anchor point.

13.5.4.5 Lanyards shall not be looped back over or through an object then attached back to themselves unless manufactured for that purpose.

13.5.4.6 Shock-absorbing lanyards are prohibited in boom lifts. A self-retracting life-line (yo-yo) or restraint type lanyard shall be used.

13.5.4.7 Vertical Life-Line Systems ("Rope Grabs") are prohibited unless specifically approved by ARCO through submission of a site-specific plan and JHA.

13.5.4.8 Horizontal Lifelines shall be designed, installed, and used under the supervision of a qualified person as part of a complete fall arrest system, which maintains a safety factor of at least 2.

13.5.5 Positioning Device Systems

13.5.5.1 When an associate is more than 6 feet above the working surface fall protection shall be used in conjunction with a positioning system. At no time will a positioning system be used as the sole fall arresting component when a worker is more than 6 feet above the working surface.

13.5.6 Safety Monitor Systems - Not allowed on ARCO projects.

13.5.7 Warning Line Systems

13.5.7.1 Under certain conditions, fall protection may include the use of warning line systems.

13.5.7.2 Warning line systems shall be set back 15 feet from the exposed leading edge.

13.5.7.3 The warning line systems control lines shall comply with part 8.5.10.7 of this policy.

13.5.7.4 Any work performed outside the warning line system shall require the use of fall protection.

13.5.7.5 A demarcated access and egress point to the protected area shall be erected and maintained.

13.5.8 Controlled Decking Zone Systems (CDZ)

13.5.8.1 During installation of metal decking, fall protection systems may include the use of a controlled decking zone systems.

13.5.8.2 The CDZ consists of control lines, equivalent to warning line system, and shall be set back a minimum of 15 feet from all exposed leading edges, but not more than 90 feet from the exposed leading edge.

13.5.8.2.1 Workers shall utilize fall protection (harness, self-retracting life-line (or equivalent) and anchor point) while working outside of the protected area.

13.5.8.3 A demarcated access and egress point to and the protected area shall be erected and maintained.

13.5.8.4 No more than 3,000 square feet of unsecured decking can be laid at any time.

13.5.8.5 Each worker working in the CDZ shall be trained.

13.5.9 Fall Protection During Helicopter Lifting Operations

13.5.9.1 A detailed work plan outlining the sequence of operations, access control, and fall protection methods must be reviewed with the subcontractor crew and ARCO Project Team prior to the start of helicopter lift operations.

13.5.9.2 Alternate Fall Protection Plans

13.5.9.3 If a trade partner believes that their scope of work falls outside standard fall protection practices, they may submit a written alternate fall protection plan to the ARCO Project Team.

13.5.9.4 No deviation from standard fall protection protocols is permitted until the alternate plan is reviewed in a meeting with ARCO Safety and formally approved.

13.5.10 Life-Lines

13.5.10.1 All life-line systems used must be a part of the fall protection plan and must be manufactured or engineered to support the number of workers using the line.

13.5.10.2 All workers who will be tied off to the life-line system shall be trained to use the life-line system.

13.5.10.3 All life-line systems shall be inspected daily by a competent person to ensure the integrity of the life-line system.

13.5.11 Controlled Access Zones

13.5.11.1 When used to control access to areas where leading edge and other operations are taking place, the controlled access zone shall be defined by a control line or by any other means that restricts access.

13.5.11.2 When control lines are used, they shall be erected not less than 15 feet from the unprotected or leading edge, except when erecting precast concrete members.

13.5.11.3 When erecting precast concrete members, the control line shall be erected not less than 15 feet nor more than 60 feet or half the length of the member being erected, whichever is less, from the leading edge.

13.5.11.4 The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge.

13.5.11.5 The control line shall be connected on each side to a guardrail system or wall.

13.5.11.6 When used to control access to areas where overhand bricklaying and related work are taking place:

13.5.11.6.1 The controlled access zone shall be defined by a control line erected not less than 10 feet nor more than 15 feet from the working edge.

13.5.11.6.2 The control line shall extend for a distance sufficient for the controlled access zone to enclose all associates performing overhand bricklaying and related work at the working edge and shall be approximately parallel to the working edge.

13.5.11.6.3 Additional control lines shall be erected at each end to enclose the controlled access zone.

13.5.11.6.4 Only associates engaged in overhand bricklaying or related work shall be permitted in the controlled access zone.

13.5.11.7 Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:

13.5.11.7.1 Each line shall be flagged or otherwise clearly marked at not more than 6-foot intervals with high-visibility material.

13.5.11.7.2 Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches from the walking/working surface and its highest point is not more than 45 inches [50 inches when overhand bricklaying operations are being performed] from the walking/working surface.

13.5.11.7.3 Each line shall have a minimum breaking strength of 200 pounds.

13.5.11.8 On floors and roofs where guardrail systems are not in place prior to the beginning of overhand bricklaying operations, controlled access zones shall be enlarged, as necessary, to enclose all points of access, material handling areas, and storage areas.

13.5.11.9 On floors and roofs where guardrail systems are in place but need to be removed to allow overhand bricklaying work or leading-edge work to take place, only that portion of the guardrail necessary to accomplish that day's work shall be removed.

13.5.12 Roof Deck Penetration Policy

13.5.12.1 Deck penetrations with a diameter (or diagonal) equal to 12' OR greater shall be made from the roof level ONLY. IF permanent roofing material is installed, deck cutting from below deck level is strictly prohibited.

13.5.12.2 Roof material, insulation, and deck shall be cut from above deck at the roof level. Area below work shall be barricaded and monitored during roof & deck penetration. If the deck cutting method creates a spark or flame, hot work practices shall be in place, including but not limited to, the use of fire blankets, presence of a fire extinguisher, and (in some cases) the use of hot work permits.

13.5.12.3 Decking penetration for "layout" may be completed from beneath the roof deck (i.e. drilling penetration corners below deck to be used as the guide for cutting out decking above deck).

13.6 Training

13.6.1 Associates shall be trained in the following:

13.6.1.1 Fall Protection/rescue plan, if applicable.

13.6.1.2 The nature of fall hazards in the work area.

13.6.1.3 The correct procedures for erecting, maintaining, operating, disassembling, and inspecting the fall protection systems to be used.

13.6.1.4 The limitations on the use of mechanical equipment during the performance of roofing work on low-slope roofs.

13.6.1.5 The correct procedures for the handling and storage of equipment and materials and the erection of overhead protection.

13.6.2 Training shall be documented, and retraining shall be conducted on an as needed basis.

13.6.2.1 Training documentation shall contain the name of the associate trained, the date(s) of the training, and the signature of the person who conducted the training or the signature of the employer.

14 FIRE PROTECTION/PREVENTION

14.1 Purpose

The purpose of this policy is to minimize the hazards associated with fire protection encountered in the workplace, to provide uniform methods and requirements that assure associate safety, and to satisfy OSHA requirements.

14.2 References

29 FR Subpart F—Fire Protection and Prevention

14.3 General Requirements

14.3.1 Firefighting equipment shall be available, easily accessible, and conspicuously located on the project at all times. Contractors performing work on the project shall be responsible for providing any task-specific firefighting equipment.

14.3.2 All firefighting equipment shall be inspected every 30 days unless a more frequent inspection schedule is required by manufacturer. Defective equipment shall be immediately replaced.

14.3.3 Where the employer has provided portable fire extinguishers for associates use in the workplace, the employer also shall provide an educational program to familiarize associates with the general principles of fire extinguisher use and the hazards involved in incipient stage firefighting.

14.3.4 Training will be conducted prior to initial assignment and at least annually thereafter.

14.4 Water Supply

14.4.1 A water supply of sufficient volume, duration, and pressure required to properly operate the firefighting equipment shall be made available and clearly identified as soon as combustible materials accumulate.

14.4.2 Local regulations may require an active standpipe in multi-story structures.

14.5 Portable Fire Fighting Equipment

14.5.1 A fire extinguisher 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 100 feet.

14.5.2 One or more fire extinguishers, rated not less than 2A, shall be provided on each floor. In multistory buildings, at least one fire extinguisher shall be located adjacent to the stairway.

14.5.3 Extinguishers and water drums shall be protected from freezing.

14.5.4 A fire extinguisher rated not less than 10B shall be provided within 50 feet of wherever more than five gallons of flammable or combustible liquids or five pounds of flammable gas are being used or stored on the jobsite.

14.5.5 Carbon tetrachloride and other toxic vaporizing liquid fire extinguishers are prohibited.

14.5.6 Portable fire extinguishers shall be inspected and documented monthly, using the "Monthly Fire Extinguisher Checklist," Exhibit 1

14.5.7 Each internal combustion engine excluding road vehicles are required to have at least a 10B fire extinguisher within 25 ft of operation.

14.5.8 Portable fire extinguishers shall be subjected to annual maintenance checks.

14.5.9 All extinguishers must be:

14.5.9.1 Clearly labeled.

14.5.9.2 Easily accessible.

14.6 Fixed Fire Fighting Equipment

14.6.1 During demolition or alterations, existing automatic sprinkler installations shall be retained in service as long as reasonable. Only properly authorized persons shall permit the operation of sprinkler control valves. Modification of sprinkler systems to permit alterations or additional demolition should be expedited so that the automatic protection may be returned to service as quickly as possible.

14.7 Fire Alarm Devices

14.7.1 An alarm system shall be established by the project superintendent whereby associates on the site and the local fire department can be alerted for an emergency. This shall be included in the site-specific Emergency Evacuation Plan.

14.7.2 The project superintendent shall discuss the emergency evacuation plan, how to report a fire, and the assembly points with each associate before they are assigned to the field.

14.7.3 The reporting instructions shall be conspicuously posted on phones in the ARCO construction trailer.

14.8 Fire Watch Policy

14.8.1 To prevent fire incidents associated with hot work, a fire watch must be implemented as follows:

14.8.2 Duration:

14.8.2.1 A fire watch must remain in the hot work area for at least 60 minutes after completion or interruption of any hot work operation.

14.8.2.2 For decking or steel welding operations where roofing is completed, a fire watch must remain for at least 60 minutes.

14.8.3 Responsibilities:

14.8.3.1 Fire watch personnel must be alert to changes in environmental or operational conditions that may elevate fire risks.

14.8.3.2 Fire watch personnel must not be assigned any additional duties during their watch period to ensure full attention to fire hazards.

14.8.4 All personnel must comply with this policy as part of the broader fire prevention and life safety efforts. Failure to do so may result in disciplinary action and/or removal from the job site.

14.9 Containers

14.9.1 Only approved containers and approved portable tanks shall be used. Containers shall be properly and legibly marked. Markings shall show the identity of the material, appropriate hazard warnings, and the name and address of the manufacturer, importer, or other responsible party.

14.9.2 Portable tanks containing flammable or combustible liquids must be properly vented as per NFPA 30.

14.9.3 A safety can is an approved container of not more than five gallons capacity, having a flash arresting screen, spring closing lid, and spout cover designed to relieve internal pressure when subjected to fire.

14.10 Indoor Storage Requirements

14.10.1 Quantities exceeding 25 gallons shall be stored in approved cabinets. Cabinets shall be labeled in conspicuous lettering, "Flammable—Keep Fire Away." Not more than 60 gallons of Category 1, 2, and/or 3 flammable or 120 gallons of Category 4 flammable liquids shall be stored in any one cabinet.

14.10.2 Flammable and combustible liquids shall not be stored indoors in areas used for exits, stairways, or passageways.

14.10.3 Acetylene and oxygen cylinders shall be stored separately at least 20 feet apart, chained upright, with the caps on; or by an approved ½ hour rated barrier not less than five feet high.

14.11 Outdoor Storage Requirements

14.11.1 Outdoor portable tanks shall be in an area not closer than 20 feet from any building and shall be clearly labeled.

14.11.2 This area shall be free from weeds, debris, and other combustible materials.

14.11.3 Portable tanks shall be provided with secondary spill protection to prevent run-off or spills into adjacent environmental areas equal to 1.5 the capacity of the portable tank

14.11.4 Within 200 feet of each portable tank, there shall be a minimum of a 12-foot-wide access way to permit the approach of fire control apparatus.

14.12 Refueling Areas

14.12.1 Each refueling area shall have at least one fire extinguisher of not less than 20-BC rating, within 25 feet of each pump.

14.12.2 There shall be no smoking or open flames in the areas used for fueling, servicing fuel systems for internal combustion engines, receiving, or dispensing of flammable or combustible liquids.

14.12.3 Legible "No Smoking" signs shall be posted in service and refueling areas.

14.12.4 The motors of all equipment being fueled shall be shut off during the fueling operation.

14.12.5 See the "Hazardous Communication Program" for additional information.

14.12.6 Fire extinguishers must also be present and easily accessible wherever grills or similar onsite cooking/heating equipment are in use.

14.13 Temporary Heating Devices

14.13.1 Ventilation, natural or mechanical, must be ensured to protect the health and safety of workman and provide proper combustion.

14.13.2 Clearances and mounting should be to manufacturer's specifications or OSHA standards, 1926.154(b)(1)

14.13.3 Solid fuel salamanders are prohibited in buildings and on scaffolds.

14.13.4 Heaters used in the vicinity of combustible tarpaulins, canvas, or similar coverings shall be located at least 10 feet from the coverings. The coverings shall be securely fastened to prevent ignition or upsetting of the heater due to wind action on the covering or other material.

14.13.5 Rooms or other closed areas where heating devices are located shall be periodically monitored for oxygen content and adequate ventilation.

14.13.6 Fire extinguishers must also be present and easily accessible wherever grills or similar onsite cooking/heating equipment are in use

14.14 LP Gas

14.14.1 Storage of LP Gas within a building is prohibited.

14.14.2 Storage areas shall be marked "Propane" and "No Smoking"

14.14.3 Storage areas shall be provided with at least one fire extinguisher having a rating of not less than 20-B:C.

14.14.4 Storage outside of buildings for containers awaiting use shall be located from the nearest building or group of buildings in accordance with the following:

Quantity of LP.Gas Stored	Distance (feet)
500 lbs. or less	0
501 to 6,000 lbs.	10
6,001 to 10,000 lbs.	20
Over 10,000 lbs.	25

15 FIRST AID

15.1 Purpose

The purpose of this policy is to ensure availability of medical services and first aid, to provide uniform methods and requirements that assure associate safety, and to satisfy OSHA requirements.

15.2 References

CFR 1926.50 Medical Services and First Aid

15.3 General Requirements

15.3.1 During the Project Safety Analysis Process provisions shall be made for prompt medical attention in the case of serious injury.

15.3.1.1 Procedures for transporting injured or ill workers from the worksite to the nearest medical facility shall be contained with the project site specific safety plan AND posted in the project office.

15.3.2 Each ARCO project site will have, at a minimum, one supervisor that has been trained to perform First Aid and CPR. Documentation of training shall be available on the project site.

15.3.3 The telephone numbers of the physicians, hospitals, and ambulances shall be conspicuously posted on the project.

15.3.4 A first aid kit suitable for the size and nature of work being done shall be available. Contents of the kit shall be checked at the beginning of the project and then periodically thereafter to ensure that expended items are replaced.

15.3.5 All ARCO-controlled subcontractors are responsible for providing their own medical supplies, treatment facilities, and policies.

15.3.6 Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities shall be provided within the work area.

15.3.7 First-Aid Kits shall (at a minimum) contain:

15.3.7.1 1 absorbent compress, 32sq. in. with no side smaller than 4in.

15.3.7.2 16 adhesive bandages, 1 x 3 in.

15.3.7.3 1 adhesive tape, 3/8in. x 5 yd.

15.3.7.4 10 antiseptic applications, .5oz.

15.3.7.5 6 burn treatment applications, .5oz.

15.3.7.6 6 antibiotic treatment applications, 14 fl. oz.

15.3.7.7 2 pairs of medical exam gloves

15.3.7.8 4 sterile pads, 3 x 3 in.

15.3.7.9 1 triangular bandage, 40 x 40 x 56 in.

15.4 Training

15.4.1 Each project site should have at least one person trained in CPR/FirstAid/AED.

15.4.1.1 Training shall include bloodborne pathogen training in accordance with jurisdictional requirements, and shall include bloodborne pathogen hazard recognition, engineering controls, and PPE selection.

15.4.2 A valid certificate in first aid training must be obtained from the American Red Cross or equivalent training that can be verified by documentary evidence.

16 HAND TOOLS AND POWER TOOLS

16.1 Purpose

The purpose of this policy is to minimize the hazards associated with hand and power tools encountered in the workplace, to provide uniform methods and requirements that assure associate safety, and to satisfy OSHA requirements.

16.2 References

29 CFR 1926.300 General Requirements
29 CFR 1926.301 Hand Tools
29 CFR 1926.302 Power-operated Hand Tools
29 CFR 1926.303 Abrasive Wheels and Tools

16.3 General Requirements

16.3.1 All tools shall be maintained in safe condition.

16.3.2 Associates shall be protected as recommended by the tool manufacturer and in accordance with the company's Personal Protective Equipment Requirements.

16.3.3 Ergonomic considerations shall be made when selection tools considering the worker, repetitive motion, fatigue, material handling, body posture, and soft tissue injury prevention.

16.3.4 Inspection

16.3.4.1 Tools must be inspected to ensure they are in proper working order prior to issuance to the workers.

16.3.4.2 The associate shall check the tool before use to assure it is in safe working order.

16.3.4.3 Tools, which are found unsafe, shall be marked as defective or rendered inoperative.

16.3.5 Guarding

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

16.3.5.2 Reciprocating, rotating, or moving parts of equipment shall be guarded.

16.3.6 Switches

16.3.6.1 All hand-held powered sanders with 2" diameter or less, grinders, routers, planers, laminate trimmers, nibblers, shears, scroll saws, and jigsaws may be equipped with only a positive "on-off" control.

16.3.6.2 All hand-held powered drills, tappers, fastener drivers, horizontal, vertical, and angle grinders greater than 2" diameter, disc sanders, belt sanders, reciprocating saws, saber saws, and other similar operating powered tools shall be equipped with a momentary

contact "on-off" control and may have a lock-on control provided that turnoff can be accomplished by a single motion.

16.3.6.3 All other hand-held powered tools shall be equipped with a constant pressure switch that will shut off the power when the pressure is released.

16.4 Hand Tools

16.4.1 Wrenches shall not be used when jaws are sprung to the point of slippage.

16.4.2 Impact tools shall be kept free of mushroomed heads.

16.4.3 The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight in the tool.

16.5 Power-Operated Hand Tools

16.5.1 Electric Power-Operated Tools

16.5.1.1 Electric power operated tools shall be double insulated.

16.5.1.2 The use of electric cords for hoisting or lowering tools shall not be permitted.

16.5.1.3 Electric operated tools must be UL approved.

16.5.2 Pneumatic Power Tools

16.5.2.1 Pneumatic tools shall be secured to the hose or whip by a positive means to prevent the tool from becoming accidentally disconnected.

16.5.2.2 Compressed air shall not be used for cleaning purposes, except where reduced to less than 30 psi. and then only with effective chip guarding and personal protective equipment.

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

16.5.2.4 All hoses exceeding a two-inch inside diameter shall have a safety device at the source of supply or branch line to reduce pressure in case of hose failure.

16.5.3 Fuel Powered Tools

16.5.3.1 All fuel powered tools shall be stopped while being refueled, serviced, or maintained, and fuel shall be transported, handled, and stored in a safe manner.

16.5.3.2 When fuel powered tools are used in enclosed spaces, adequate ventilation shall be provided and the applicable requirements for concentrations of toxic gases and use of personal protective equipment requirements shall apply.

16.5.4 Hydraulic Power Tools

16.5.4.1 The fluid used in hydraulic powered tools shall be fire-resistant, approved under Schedule 30 of U.S. Bureau of Mines, Department of

the Interior, and shall retain its operating characteristics at the most extreme temperatures to which it will be exposed.

16.5.4.2 The manufacturer's safe operating pressures shall not be exceeded.

16.5.5 Powder-Actuated Tools

16.5.5.1 Only associates who have been trained in the operation of the particular tool in use shall be allowed to operate a powder-actuated tool. This training shall be documented.

16.5.5.2 Personnel protective equipment usage shall be in accordance with manufacturer specifications.

16.5.5.3 The tool shall be tested each day before loading to see that safety devices are in proper working condition. The method of testing shall be in accordance with the manufacturer's recommended procedure.

16.5.5.4 Tools shall not be loaded until just prior to the intended firing time. Neither loaded nor empty tools are to be pointed at any associates. Hands shall be kept clear of the open barrel end.

16.5.5.5 Loaded tools shall not be left unattended.

16.5.5.6 Fasteners shall not be driven into very hard or brittle materials.

16.5.5.7 Driving into materials easily penetrated shall be avoided unless such materials are backed by a substance that will prevent the pin or fastener from passing completely through the other side.

16.5.5.8 Tools shall not be used in an explosive or flammable atmosphere.

16.5.5.9 If a powder-actuated tool misfires, the associate should wait at least 30 seconds then try it again.

16.5.5.10 Unused cartridges shall be placed in water.

16.6 Abrasive Wheels and Tools

16.6.1 All grinding machines shall be supplied with sufficient power to maintain spindle speed at safe levels under all conditions of normal operation.

16.6.2 Use of abrasive wheels

16.6.2.1 Floor stand and bench mounted abrasive wheels shall be provided with safety guards. Floor and bench-mounted grinders shall be provided with work rests. Such work rests shall be kept at a distance not to exceed 1/8" from the surface of the wheel.

16.6.2.2 Cup-type wheels shall be protected by either a revolving cup guard or a band type guard. All other portable abrasive wheels shall be provided with safety guards.

16.6.2.3 Abrasive wheels shall be closely inspected by the user and ring-tested before mounting to ensure that they are free from cracks or defects.

16.6.3 All associates using abrasive wheels shall use appropriate PPE.

16.7 Saws

16.7.1 Portable, power-driven circular saws will be equipped with guards above and below the base plate or shoe.

16.7.2 The lower guard will cover the saw to depth of teeth and will automatically return to covering position when blade is removed from the work.

16.7.3 Radial saws will have an upper guard that completely encloses the upper half of the saw blade. A device that will automatically adjust to the thickness of and remain in contact with material being cut will guard the sides of lower exposed portion of blade. Radial saws used for ripping must have non-kickback fingers or dogs. Radial saws will be installed so the cutting head will return to starting position when released by operator.

16.7.4 Circular table saws will have a hood over the portion of the saw above the table mounted so that the hood will automatically adjust itself to the thickness of and remain in contact with the material being cut. The saw shall also be equipped with an automatic shut-off switch.

16.7.5 Circular table saws will have a spreader aligned with the blade, spaced no more than one half inch behind the largest blade mounted in the saw. Circular table saws used for ripping will have non-kickback fingers or dogs. Feed rolls and blades of self-feed circular saws will be protected by a hood or guard to prevent the hands of the operator from coming into contact with in-running rolls at any time.

17 HOT WORK PROGRAM

17.1 Purpose

The Safety Director is responsible for developing and implementing the ARCO Safety & Health Program, and ensuring the compliance with all federal, state, and local safety requirements.

17.2 References

29 CFR 1926 Subpart F- Fire Protection and Prevention

17.3 Definitions

17.3.1 **Fire Safety Supervisor:** ARCO Superintendent or other designated ARCO onsite associate.

17.3.2 **Authorized Worker:** An authorized subcontractor associate that conducts the Hot Work.

17.3.2.1 **Fire Watch:** Designated individual required to monitor Hot Work areas for fires while Hot Work is being performed and after Hot Work is completed.

17.3.2.2 **Hot Work Permit:** The written document that allows Hot Work operations and specifies fire prevention and protection requirements. See ARCOnnect for Hot Work Permit.

17.4 General Requirements

17.4.1 **A.** Hot Work Permits shall be required when the following conditions exist: When a significant fire load is present, when working in operational facilities, or when deemed necessary by the Safety Department.

17.4.2 **A.** The Fire Safety Supervisor shall be notified prior to beginning any Hot Work.

17.4.3 **A.** A Hot Work Permit shall be completed and approved prior to beginning any Hot Work. The Hot Work Permit shall identify the Authorized Worker, designated Fire Watch, and duration. The permit shall be posted in the work area.

17.4.4 **A.** After fire watch duration has been completed the Fire Safety Supervisor shall conduct a final inspection of the area and sign the Hot Work Permit. The permit shall be removed from the area and retained in the project office for the duration of the project.

17.5 Responsibility

17.5.1 A. Safety Department

17.5.1.1 A. Develop a formal written program pertaining to Hot Work; communicate the policy to ARCO associates and assist in interpretation of the program. The Safety Department will also perform periodic inspections to ensure compliance with the program.

17.5.2 Fire Safety Supervisors shall be ARCO Superintendent or other designated ARCO onsite associates. The Fire Safety Supervisor shall ensure that fire safety precautions have been met before authorizing Hot Work, including the completion of a Hot Work Permit, and designation of a fire watch. The Fire Safety Supervisor shall review the Hot Work Permit and sign off before Hot Work is commenced and conduct periodic inspections to ensure compliance. After Hot Work is completed, the Fire Safety Supervisor shall conduct a final inspection of the area and collect the Hot Work Permit.

17.6 Authorized Worker

17.6.1 The Authorized Worker will be responsible for understanding all elements and requirements of this program as explained by the ARCO Superintendent. If the Authorized Worker does not understand any element of this program, work must be delayed until all elements are fully understood. The Authorized Worker must conduct the work in the approved time frame listed on the Hot Work Permit.

17.7 Fire Watch

17.7.1 The Fire Watch is responsible for monitoring the Authorized Worker who performs the Hot Work. The Fire Watch maintains a constant vigil during the Hot Work for stray sparks, ignition or other fire hazards. The Fire Watch must be trained in the use of a fire extinguisher and how to activate the alarm in the event of a fire. The watch should remain in the area for a period of at least 30 minutes to watch for smoldering fires. Fire Watch duration shall be specified in the Hot Work Permit and may be longer but shall not be shorter than 30 minutes.

17.8 Subcontractors

17.8.1 Subcontractors performing work for ARCO shall take appropriate measures to comply with fire prevention and protection requirements set forth by OSHA 29 CFR1926 and the ARCO Hot Work Policy.

17.9 Procedure

17.9.1 The Fire Safety Supervisor should confirm that a Hot Work Permit has been completed and check for accuracy. The Fire Safety Supervisor should confirm that an Authorized Worker, designated Fire Watch, and a fire watch duration have been assigned.

17.9.2 After the permit is completed accurately the Fire Safety Supervisor signs and issues the permit.

17.9.3 The Authorized Worker hangs the permit in a visible place in the work area.

17.9.4 While the Hot Work proceeds, the designated Fire Watch maintains a constant vigil for stray sparks, ignition or other fire hazards, and is ready to provide initial fire response.

17.9.5 Once the work is complete, the designated Fire Watch conducts an inspection of the work area and adjacent areas for smoldering fires. The inspection includes floors above and below the work area and adjacent rooms. When the assigned monitoring period (at least 30 min) has ended, the designated Fire Watch then signs the permit and leaves it posted and contacts the Fire Safety Supervisor for final inspection.

17.9.6 The Fire Safety Supervisor conducts a final inspection of the area and signs the permit. The permit is removed and retained in the project office for the duration of the project.

18 LOCKOUT/TAGOUT PROGRAM

18.1 Purpose

The purpose of this policy is to control hazardous energy in compliance with the OSHA Standard 29 CFR 1910.147 and 1910.333.

18.2 References

29 FR 1910.147

18.3 A General

18.3.1 Contractors performing work for the Company shall comply with lockout/tagout guidelines as set forth by OSHA regulations and manufacturer specifications.

18.3.2 Tagout is prohibited by itself when equipment/machinery is capable of being locked out.

18.3.3 Tagout may only be used when there is no means of locking out the device.

18.3.4 Proper lockout of equipment or machinery is the most reliable method to prevent re-energizing the equipment.

18.3.5 Periodic inspections of the energy control procedure must be conducted at least annually to ensure that the procedure is being followed. The program should address who performs the inspection (it must be someone other than those actually using the lockout/tagout in progress). A certified review of the inspection, including date, equipment, associates & inspector, should be documented.

18.3.6 If an energy isolating device is not capable of being locked out, the employer's energy control program shall utilize lockout, unless the employer can demonstrate that the utilization of a tagout system will provide full associate protection.

18.3.7 Whenever outside servicing personnel are to be engaged in activities requiring LOTO, ARCO and the outside employer shall inform each other of their respective lockout or tagout procedures. ARCO shall ensure that his/her associates understand and comply with the restrictions and prohibitions of the outside employer's energy control program.

18.4 Training

18.4.1 Training must include recognition of hazardous energy source, type & magnitude of energy available, methods & means necessary for energy isolation & control. Each authorized associate shall receive adequate training.

18.4.2 The training should address that all affected associates are instructed in the purpose & use of the energy control procedure.

18.4.3 There should be training provisions included for any other associate whose work operations are or may be in an area where energy control procedures may be utilized.

18.4.4 The associate training should also address when tagout systems are used, including the limitations of a tag (tags are warning devices & do not provide physical restraint).

18.4.5 The training should also include that a tag is not to be removed without authorization. The tag is never to be ignored or defeated in any way.

18.4.6 Retraining is required when there is a change in job assignments, in machines, a change in the energy control procedures, or a new hazard is introduced.

18.4.7 All training and/or retraining must be documented, signed, and certified.

18.5 A Power Disconnects

18.5.1 It is the responsibility of the subcontractor to ensure that all equipment has an approved means of power disconnect.

18.5.2 Subcontractors that have their own specialized equipment will be responsible for ensuring an approved means of disconnect.

18.5.3 One disconnect may service more than one machine. However, when this disconnect is locked out, all equipment connected to it must become de-energized.

18.5.4 Any equipment that is energized or operated by steam, electricity, water, air, gas, or hydraulic pressure must be locked in an off or neutral position.

18.5.5 Cord and plug-connected equipment are not required to be locked out as long as they remain under the exclusive control of the associate working on the equipment.

18.5.6 Because they are not readily accessible and cannot be locked, a buss plug will not be considered a power disconnect device.

18.5.7 A valve will be considered locked-out when it is chained, locked, or enclosed in the off position and tagged.

18.6 The Lockout Device

18.6.1 The lockout kit will consist of various lockout devices (all of which are red), small and large Master locks, and tags.

18.6.2 Any associate who is required to perform set-up, electrical or mechanical repairs, or general maintenance (such as, but not limited to, greasing and oiling) will be provided lockout devices and tags by the manager/supervisor. Padlocks issued to associates for the lockout procedure will be confined to that use only. No other lock will be permitted. Locks for individual associates will be keyed separately. There are no Grand Master keys for these individual locks. The associate will have possession of the only key for their lock.

18.6.3 The first lockout device will be provided to the associate at no charge. It will then be that associate's responsibility to maintain the device. Should an associate quit, retire, transfer, be terminated or otherwise leave, the lockout device must be returned. Any lockout device that is lost or intentionally made nonfunctional will be replaced and paid for by the associate.

18.6.4 The device shall include the name of the associate placing the device.

18.7 A Power Lockout General Procedure

18.7.1 Before starting repair or maintenance work on a machine, the supervisor of the project in which the machine is located must be contacted. Before beginning any work, review specific energy control procedures.

18.7.2 Alert the machine operator and/or set-up person.

18.7.3 Before starting work, disconnect the equipment from its power source by opening the disconnect switch or removing the plug. In the case of equipment that is powered by air, gas, steam, or fluid power, all valves must be placed in the closed position and all residual pressure relieved. Any machine components that may fall or be activated by gravity must be supported or blocked. Any secondary equipment that could create a hazard to an associate who has been assigned to work on a machine must also be locked out.

18.7.4 Attach the lockout device to the appropriate switch, valve, or plug.

18.7.5 After the machine has been locked out, activate the machine's operating controls to ensure that the power source has been disconnected. When there is the possibility that a disconnected machine may retain excess electrical energy, an electrician must check its circuits to ensure that this energy has been discharged and/or dissipated.

18.7.6 If a crew is working on equipment, when locking out a particular machine, one of the following conditions must be met to satisfy this procedure:

18.7.6.1 Each associate who is working on the machine must place a lock on the lockout shackle.

18.7.6.2 One associate may be designated as a crew leader and install one lock for his crew. It will be the crew leader's responsibility to ascertain when the work is completed and that his crew is clear of the machine before removing the lock.

18.7.6.3 The supervisor of the area in which the machine is located may place a lockout device on the disconnect. It will then be the supervisor's responsibility to ascertain that all work has been completed and that all crews are clear of the machine before removing the lock.

18.7.7 When work is completed, replace all guards and safety devices. When equipment is ready for testing or normal service, check the work area to see that associates are safely positioned or removed from the area. Inspect the work area to ensure that nonessential items have been removed and that the machine or equipment

components are operationally intact. The appropriate associate, crew leader or Superintendent should then remove the lockout device and restore power after alerting concerned personnel.

18.7.8 After it is determined that the machine is functioning correctly, it may be released for production.

18.7.9 Each associate or crew leader must remove his lockout device upon completion of the assignment. If work is to be continued by that same associate on the following day, his/her lock and tag may be left. In the event that it is not possible to complete the repair or maintenance assignment by the end of the shift, and work will be continued by associate(s) on another shift, the associate or crew leader's lockout device should be replaced by the lockout device of an associate or crew leader who will be continuing the work on the following shift.

18.7.10 Only the associate who put the lock on the energy-isolating device shall remove it. However, when the authorized associate who applied the lock is not available to remove it, it may be removed under the direction of the manager, but only if first:

18.7.10.1 It is verified by the manager that the authorized associate who applied the lock is not at the facility.

18.7.10.2 All reasonable efforts to contact the authorized associate have been made in order to inform the associate who applied the lock that his/her lock has been removed.

18.7.10.3 The manager ensures that the machine is safe to operate, and

18.7.10.4 It is made certain that the authorized associate has this knowledge before he/she resumes work.

18.8 Temporary Removal of Locks

18.8.1 In those situations where the lock must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment, or component thereof, the following sequence of actions shall be followed:

18.8.1.1 Clear the machine or equipment of tools and materials.

18.8.1.2 Remove associates from the machine or equipment area.

18.8.1.3 Remove the lock.

18.8.1.4 Energize and proceed with testing or positioning.

18.8.1.5 De-energize all systems and reapply energy control measures.

18.9 Tags

18.9.1 Lockout is the preferred method to guard against injury. The use of tags in de-energizing processes and in preventing unauthorized start-up of machines/equipment is therefore limited to:

18.9.1.1 Machinery and equipment with energy isolating devices that are not capable of being locked out.

18.9.1.2 Special and temporary situations where use of a tagout system will provide full associate protection.

18.9.2 The tags to be used in those situations will be provided by the company. The tags to be used have been determined by the company to be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

18.9.3 Tags having reusable, non-locking, easy means of attachment/detachment (such as string, cord, or adhesive) are not permitted. All tags to be used are non-reusable, self-locking, and attachable by hand, non-releasable with a minimum locking strength of no less than 50 pounds, and have the general design and basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie.

18.9.4 Each tag contains a warning against hazardous conditions if the machine or equipment should be energized. They contain words such as:

18.9.4.1 DO NOT START

18.9.4.2 DO NOT OPEN

18.9.4.3 DO NOT CLOSE

18.9.4.4 DO NOT ENERGIZE

18.9.4.5 DO NOT OPERATE

18.9.5 Any person who knows of the use of any tag that does not satisfy these requirements must immediately report that fact to his supervisor. That supervisor shall take immediate steps to ensure that the tag in question satisfies the above or that a suitable replacement tag is provided.

18.10 Tagout Procedure

18.10.1 In those instances where machinery or equipment is tagged out rather than locked out, the lockout procedures listed above will be followed except that the tags described above will be used instead of locks. The following additional requirements will also be met:

18.10.1.1 Tag-out will not be used unless it provides a level of safety equivalent to that obtained by the lockout procedures.

18.10.1.2 Additional safety measures beyond those necessary for lockout must be taken--such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energizing.

18.10.1.3 An authorized associate shall affix the tag to each energy-isolating device.

18.10.1.4 The tag shall be affixed in such a manner as to clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.

18.10.1.5 When a tag is used either by itself or in addition to a lockout device, the tag attachment shall be fastened at the same point that the lock is attached. However, when a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

18.10.1.6 A tag may be removed only by the associate who placed it there. If that associate is unavailable, tag removal must have management approval.

18.10.1.7 No tag will be bypassed, ignored, or otherwise defeated. The warning stated on tags must be observed by all associates at all times.

18.10.1.8 The tags must be securely attached to each energy-isolating device so that they cannot be inadvertently or accidentally detached during use.

18.10.1.9 All associates must keep in mind at all times that tags are WARNING DEVICES that are put in place for their protection. They do not provide physical restraint as a lock does.

18.10.1.10 Instruction on the use and limitations of tags is included in lockout tagout training sessions. Additional training of authorized, affected, and other associates is required when tagout-only programs are used.

18.11 Lockout/Tagout Procedures

18.11.1 Preparation for shutdown – To prepare for shutdown, authorized associates will notify all associates who will be in the area:

18.11.1.1 That the equipment is to be locked out for servicing and/or maintenance.

18.11.1.2 To be cautious and careful not to activate any movement on this piece of equipment.

18.11.2 If the equipment is in operation, shut it down following normal procedures to turn off the equipment.

18.11.3 Identify all energy sources and isolate – Identify the electrical energy source, shut off control, and turn off (isolate) the electrical energy source from the equipment. For plug-in equipment, remove the plug from the energy source.

18.11.4 Lock out the energy isolating device(s) with assigned individual locks – Place a lockout device, padlock, and tag on the energy source cut-off device or plug

(Exception: If the authorized associate has control of the plug at all times, no lockout is required).

18.11.5 Release and isolate all stored energy sources – Stored or residual energy (such as that in capacitors, springs, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.

18.11.6 Test the equipment to verify energy sources have been disconnected – Test electrical connections with a voltmeter while controls are in the "ON" position. After verifying that the power is disconnected, be sure to return the controls to the "NEUTRAL" or "OFF" position.

18.11.7 Restore equipment to service – After repair and/or maintenance has been accomplished, do the following:

18.11.7.1 Reassemble all removed components, including guards.

18.11.7.2 Remove all tools or other items not belonging to the equipment.

18.11.7.3 Ensure all associates are clear.

18.11.7.4 Verify that all controls are in neutral.

18.11.7.5 Remove all lockout/tagout devices.

18.11.7.6 Re-energize the equipment.

18.11.7.7 Test the equipment for proper operation.

18.11.7.8 Notify affected associates that maintenance is completed and equipment is ready to use.

19 MATERIAL HANDLING, STORAGE, USE, AND DISPOSAL

19.1 Purpose

The purpose of this policy is to minimize the hazards associated with material handling in the workplace, to provide uniform methods and requirements that assure associate safety, and satisfy to OSHA requirements.

19.2 References

29 CFR 1926 Subpart H, Material Handling, Storage, Use, and Disposal

19.3 Material Handling

19.3.1 Material handling shall be in accordance with the owner's technical documents, manufacturer's requirements, or general construction means and methods.

19.3.2 Prior to unloading materials, the load shall be inspected to verify that the load has not shifted, creating a hazardous condition.

19.3.3 Precautions shall be taken to prevent blocking roadways. If roadways must be blocked, appropriate measures shall be taken to ensure worker safety.

19.3.4 If materials must be stored under or near energized lines, minimum safe distances must be maintained, and extraordinary caution must be exercised when moving materials near such energized lines.

19.3.5 Material should be stored in a manner that minimizes repeated handling.

19.3.6 Material shall be stored in a manner that protects the intrinsic value of the material and minimizes potential hazards.

19.3.7 Hazardous materials shall be handled, stored, used, and disposed of in accordance with federal, state and local regulations.

19.3.8 All associates shall be kept clear of loads about to be lifted and of suspended loads – No associates are allowed under suspended loads.

19.3.9 All material delivered to the project that requires unloading by a forklift or telehandler shall be assisted by a spotter to ensure safe unloading with the proper placement of forks. Spotters must not be positioned directly in line with the unloaded material, within pinch points, or tipping hazards posed by the unloading process.

19.3.10 Tag Lines should be used whenever feasible to control suspended loads

19.3.11 Double rigging connection points must be used when changing blades on finishing machines.

19.3.12 Homemade, shop made, or field-fabricated rigging shall not be used on projects unless approved and tested by a professional engineer.

19.3.13 Rigging Hook Requirements

19.3.13.1 All rigging hooks used on ARCO projects must be of the self-locking type with integrated safety latches to prevent unintentional release during lifting operations

19.3.13.1.1 If self-locking hooks are determined to be infeasible, ARCO approval must be obtained before using any standard rigging hooks.

19.4 Rigging

19.4.1 General

19.4.1.1 Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to ensure that it is safe. Defective rigging equipment shall be removed from service.

19.4.1.2 "Free-Rigging" from equipment is prohibited. Rigging from below the forks of a forklift, bucket of a loader, etc. is prohibited unless proper jib attachment, pick point, or other positive locking mechanism is used.

19.4.1.3 Rigging equipment, when not in use, shall be removed from the immediate work area so as not to present a hazard to associates.

19.4.1.4 Special custom design lifting accessories shall be marked to indicate the safe working loads and be proof-tested prior to use to 125% of their rated load.

19.4.1.5 Taglines should be used to control loads, unless their use creates additional hazards.

19.4.2 Slings

19.4.2.1 Each day before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person; and during sling use, where service conditions warrant. Damaged or defective slings shall be immediately removed from service.

19.4.2.2 Alloy Steel Chains

19.4.2.2.1 Welded alloy steel chain slings shall have permanently affixed durable identification stating size, grade, rated capacity, and sling manufacturer.

19.4.2.2.2 Hooks, rings, oblong links, pear shaped links, welded or mechanical coupling links, or other attachments, shall have a rated capacity at least equal to that of the chain.

19.4.2.2.3 Makeshift fasteners shall not be used.

19.4.2.2.4 Rated capacity for alloy steel chain slings shall conform to the values shown in standard load tables or the manufacturer recommendation.

19.4.2.2.5 Whenever wear at any point of any chain link exceeds that shown in Table 1, the assembly shall be removed from service.

Table 1 – Maximum allowable wear at any point of link

Chain Size (inches)	Max. 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
11/8	7/32
11/4	1/4
1 3/8	9/32
1 1/2	5/16
1 3/4	11/32

19.4.2.2.6 In addition to the inspection required by other paragraphs of this section, a thorough periodic inspection of alloy steel chain slings in use shall be made on a regular basis, to be determined on the basis of:

- **a** Frequency of sling use.
- **b** Severity of service conditions
- **c** Nature of lifts being made.
- **d** Experience gained on the service life of slings used in similar circumstances.

19.4.2.3 Wire Rope

19.4.2.3.1 Standard rigging tables shall be used to determine the safe working loads of various sizes and classifications of improved plow steel wire rope and wire rope slings with various types of terminals.

19.4.2.3.2 Protruding ends of strands in splices on slings and bridles shall be covered or blunted.

19.4.2.3.3 Wire rope shall not be secured by knots, except on haul back lines on scrapers.

19.4.2.3.4 The following limitations shall apply to the use of wire rope:

- **a** An eye splice made in any wire rope shall have not less than three full tucks.
- **b** 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.
- **c** Eyes in wire rope bridles, slings, or bull wires shall not be formed by wire rope clips or knots.
- **d** Wire rope shall not be used if the total number of visible broken wires exceeds 10 percent of the total number of wires, or if the rope shows other signs of excessive wear, corrosion, or defect.

19.4.2.3.5 Slings shall not be shortened with knots, bolts or other makeshift devices.

19.4.2.3.6 Sling legs shall not be kinked.

19.4.2.3.7 Slings used in a basket hitch shall have the loads balanced to prevent slippage.

19.4.2.3.8 Slings shall be padded or protected from the sharp edges of their loads.

19.4.2.4 Hands or fingers shall not be placed between the sling and its load while the sling is being tightened around the load.

19.4.2.5 When U-bolt wire rope clips are used to form eyes, Table 2 shall be used to determine the number and spacing of clips.

Table 2

Improved Plow Steel Rope Diameter (inches)	Number of Clips		Minimum Spacing (inches)
	Drop Forged	Other Material	
1/2	3	4	3
5/8	3	4	3 3/4
3/4	4	5	4 1/2
7/8	4	5	5 1/4
1	5	6	6
1 1/8	6	6	6 3/4
1 1/4	6	7	7 1/2
1 3/8	7	7	8 1/4

Improved Plow Steel Rope Diameter (inches)	Number of Clips		Minimum Spacing (inches)
	Drop Forged	Other Material	
1 1/2	7	8	9

19.4.2.6 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.

19.4.2.7 Shock loading is prohibited.

19.4.2.8 A sling shall not be pulled from under a load when the load is resting on the sling.

19.4.2.9 Minimum Sling Lengths

19.4.2.9.1 Cable laid and 6 x 19 and 6 x 37 slings shall have a minimum clear length of wire rope 10 times the component rope diameter between splices, sleeves, or end fittings.

19.4.2.9.2 Braided slings shall have a minimum clear length of wire rope 40 times the component rope diameter between the loops or end fittings.

19.4.2.9.3 Cable laid grommets, strand laid grommets, and endless slings shall have a minimum circumferential length of 96 times their body diameter.

19.4.2.10 Safe operating temperatures—fiber wire rope slings of all grades shall be permanently removed from service if they are exposed to temperatures in excess of 200°F.

19.4.2.11 End Attachments

19.4.2.11.1 Welding of end attachments, except covers to thimbles, shall be performed prior to the assembly of the sling.

19.4.2.11.2 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 the proof test.

19.4.3 Natural Rope and Synthetic Fiber

19.4.3.1 When using natural or synthetic fiber rope slings, standard rigging table or the manufacturer recommendations shall govern load capacities.

19.4.3.2 All splices in rope slings provided by the employer shall be made in accordance with fiber rope manufacturer's recommendations.

19.4.3.2.1 In manila rope, eye splices shall contain at least three full tucks, and short splices shall contain at least six full tucks.

19.4.3.2.2 Inlayed synthetic fiber rope, eye splices shall contain at least four full tucks, and short splices shall contain at least eight full tucks.

19.4.3.2.3 Strand end tails shall not be trimmed short immediately adjacent to the full tucks. For fiber ropes under 1" diameter, the tails shall project at least six rope diameters beyond the last full tuck. For fiber ropes 1" diameter and larger, the tails shall project at least six inches beyond the last full tuck.

19.4.3.2.4 For all eye splices, the eye shall be sufficiently large to provide an included angle of not greater than 60° at the splice when the eye is placed over the load or support.

19.4.3.2.5 Knots shall not be used in lieu of splices.

19.4.3.3 Safe operating temperatures—natural and synthetic fiber rope slings, except for wet frozen slings, may be used in a temperature range from minus 20°F to plus 180°F without decreasing the working load limit.

19.4.3.4 Spliced fiber rope slings shall not be used unless they have been spliced in accordance with the following minimum requirements.

19.4.3.4.1 In manila rope, eye splices shall consist of at least three full tucks, and short splices shall consist of at least six full tucks.

19.4.3.4.2 In synthetic fiber rope, eye splices shall consist of at least four full tucks, and short splices shall consist of at least eight full tucks.

19.4.3.4.3 Strand end tails shall not be trimmed flush with the surface of the rope immediately adjacent to the full tucks. For fiber rope under 1" in diameter, the tail shall project at least six rope diameters beyond the last full tuck. For fiber rope 1" in diameter and larger, the tail shall project at least six inches beyond the last full tuck.

19.4.3.4.4 Fiber rope slings shall have a minimum clear length of rope between eye splices equal to 10 times the rope diameter.

19.4.3.4.5 Knots shall not be used in lieu of splices.

19.4.3.4.6 Clamps not designed specifically for fiber ropes shall not be used.

19.4.3.4.7 For all eye splices, the eye shall be of such size to provide an included angle of not greater than 60 degrees at the splice when the eye is placed over the load or support.

19.4.3.5 Fiber rope slings shall not be used if end attachments in contact with the rope have sharp edges or projections.

19.4.3.6 Natural and synthetic fiber rope slings shall be immediately removed from service if any of the following conditions are present:

19.4.3.6.1 Abnormal wear.

19.4.3.6.2 Powdered fiber between strands.

19.4.3.6.3 Broken or cut fibers.

19.4.3.6.4 Variations in the size or roundness of strands.

19.4.3.6.5 Discoloration or rotting.

19.4.3.6.6 Distortion of hardware in the sling.

19.4.4 Synthetic webbing (nylon, polyester, and polypropylene)

19.4.4.1 The project superintendent shall ensure that each synthetic web sling is marked or coded to show the:

19.4.4.1.1 Name or trademark of manufacturer.

19.4.4.1.2 Rated capacities for the type of hitch.

19.4.4.1.3 Type of material.

19.4.4.2 Rated capacity shall not be exceeded.

19.4.4.3 Synthetic webbing shall be of uniform thickness and width and selvage edges shall not be split from the webbing's width.

19.4.4.4 Fittings shall be of a minimum breaking strength equal to that of the sling and free of all sharp edges that could in any way damage the webbing.

19.4.4.5 Stitching shall be the only method used to attach end fittings to webbing and to form eyes; and shall be in an even pattern and contain a sufficient number of stitches to develop the full breaking strength of the sling.

19.4.4.6 When synthetic web slings are used, the following precautions shall be taken:

19.4.4.6.1 Nylon web slings shall not be used where fumes, vapors, sprays, mists or liquids of acid or phenolics are present.

19.4.4.6.2 Polyester and polypropylene web slings shall not be used where fumes, vapors, sprays, mists or liquids of caustics are present.

19.4.4.6.3 Web slings with aluminum fittings shall not be used where fumes, vapors, sprays, mists or liquids of caustics are present.

19.4.4.7 Synthetic web slings of polyester and nylon shall not be used at temperatures in excess of 180°F. Polypropylene web slings shall not be used at temperatures in excess of 200°F.

19.4.4.8 Synthetic web slings shall be immediately removed from service if any of the following conditions are present:

19.4.4.8.1 Acid or caustic burns.

19.4.4.8.2 Melting or charring of any pan of the sling surface.

19.4.4.8.3 Snags, punctures, tears, or cuts.

19.4.4.8.4 Broken or worn stitches.

19.4.4.8.5 Distortion of fittings.

19.4.5 Shackles and hooks

19.4.5.1 Table 3 shall be used to determine the safe working loads of various sizes of shackles, except that higher safe working loads are permissible when recommended by the manufacturer for specific, identifiable products, provided that a safety factor of not less than five is maintained.

Table 3

Material Size	Pin Diameter (inches)	Safe Working Load (tons)
1/2	5/8	1.4
5/8	3/4	2.2
3/4	7/8	3.2
7/8	1	4.3
1	1 1/8	5.6
1 1/8	1 1/4	6.7
1 1/4	1 3/8	8.2
1 3/8	1 1/2	10.0
1 1/2	1 5/8	11.9

19.4.5.2 The manufacturer's recommendations shall be followed in determining the safe working loads of the various sizes and types of specific and identifiable hooks. The project superintendent shall maintain a record of the dates and results of such tests.

19.4.5.3 Hooks on overhaul ball assemblies, lower load blocks, or other attachment assemblies shall be of 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.

19.4.6 Material Disposal

19.4.6.1 All waste should be evaluated to determine if it is or contains hazardous materials. If the waste is determined to contain hazardous materials it shall be disposed of in accordance with Section 9.16 "Hazardous Material Safety."

19.4.6.2 All solvent waste, oily rags, and flammable liquids shall be kept in fire resistant covered containers until removed from the worksite.

19.4.6.3 All waste will be disposed of in a manner that complies with local, state, and federal regulations and contract technical documents.

19.4.6.4 All scrap lumber, waste material, and rubbish shall be removed from the immediate work area as the work progresses.

19.4.7 Training shall be documented, and retraining shall be conducted on an as needed basis.

19.5 Storage

19.5.1 All materials stored in tiers will be secured to prevent sliding, falling, or collapse.

19.5.2 Aisles and passageways will be kept clear and in good repair.

19.5.3 Construction materials shall be stored in a manner that will not obstruct fire extinguishers or building exits.

19.6 General Waste Management

19.6.1 The amount of waste to be generated by the project should be estimated prior to project commencement, so that the need for containers and waste removal can be adequately addressed.

19.6.2 Associates must be made aware of the proper methods to dispose of waste generated by their scope of work.

19.6.3 Proper segregation of materials and opportunities for recycling must be considered.

20 PERSONAL PROTECTIVE EQUIPMENT (PPE)

20.1 Purpose

The purpose of this policy is to provide uniform methods for PPE use, to assure associate safety, and satisfy OSHA requirements.

20.2 References

29 CFR 1926 Subpart E Personal Protective and Life Saving Equipment
ANSI Standards for Various PPE

20.3 Safety and Health Analysis

20.3.1 Exposure monitoring when required will be performed under the supervision of a competent or qualified person.

20.3.2 The sections that follow address individual PPE that must be considered during project startup and daily planning. See the PPE Checklist.

20.4 General Requirements

20.4.1 Protective equipment for eyes, face, head, extremities, protective clothing, respiratory devices, and protective shields and barriers shall be provided, used, and maintained in a sanitary and reliable condition.

20.4.2 It is the associate's responsibility to properly wear the necessary PPE.

20.4.3 It is every individual's responsibility to understand, maintain, and use PPE properly.

20.4.4 Defective and damaged equipment SHALL NOT be used

20.4.5 Supervisors and trade partners must ensure PPE is readily available and in good condition.

20.5 Training

20.5.1 Training shall be provided to each associate who is required to use PPE. Each associate shall be trained to know the following:

20.5.1.1 When PPE is necessary
20.5.1.2 What PPE is necessary
20.5.1.3 How to properly don, doff, adjust, and wear PPE
20.5.1.4 Limitations of the PPE
20.5.1.5 The proper care, maintenance useful life and disposal of the **PPE**

20.5.2 Each associate shall demonstrate an understanding of the training, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

20.5.3 When there is reason to believe that an associate who has already been trained does not have the understanding and skill required, the employer shall retrain each such associate. Circumstances where retraining is required include, but are

not limited to, situations where: Changes in the workplace render previous training obsolete, changes in the types of PPE to be used render previous training obsolete, inadequacies in an affected associate's knowledge or use of assigned PPE indicate that the associate has not retained the requisite understanding or skill.

20.5.4 PPE shall be provided at no cost to associates, exceptions include: safety- toed footwear, cold-weather gear, and prescription safety glasses.

20.6 Eye and Face Protection

20.6.1 Associates shall be provided with and wear at all times eye protection.

20.6.1.1 Face and eye protection equipment shall be kept clean and in good repair.

20.6.1.2 The associate is responsible for inspection of his/her PPE to ensure it is proper. Damaged or defective PPE shall be replaced immediately.

20.6.2 Additional protection (full face shield) is required when performing tasks which may result in additional eye hazards such as grinding, cutting, welding, etc.

20.6.3 Subcontractors are responsible for providing their associates with proper eye/face protection.

20.6.4 Safety Glasses

20.6.4.1 Must meet ANSI Z87.1 standards with side-impact protection.

20.6.4.2 Type 2 helmet visors, when used, must offer equivalent protection to safety glasses.

20.6.4.3 When a structure is 75% enclosed or more, clear or indoor/outdoor lenses must be worn.

20.6.4.4 Dark lenses are only permitted for outdoor work.

20.7 Hard Hats

20.7.1.1 Must meet ANSI Z89.1 standards.

20.7.1.1.1 Electrical

a For electrical work, Type E (non-vented) helmets are required.

20.7.2 Hard hats must be worn even when using welding shields, face shields, or other head PPE.

20.8 High-Visibility Apparel

20.8.1 For night work or traffic exposure, Class 3 apparel may be required.

20.8.2 Black vests are prohibited, even with reflective stripes.

20.9 Clothing Requirements

20.9.1 Shirts must have min of 4" sleeves.

20.9.2 Long pants are required—shorts are not permitted.

20.10 Foot Protection

20.10.1 Footwear should be appropriate for the work environment and hazards present.

20.11 Hand Protection/Gloves

20.11.1 Gloves may be required for task(s) when a laceration, puncture, chemical exposure, or similar hazard is identified.

20.11.2 Gloves must be selected based on the task to ensure appropriate protection against:

- **20.11.2.1** Cuts (Minimum Cut Level 4)
- **20.11.2.2** Impact (Required for hammer use and steel handling)
- **20.11.2.3** Chemicals (when applicable)

20.11.3 Task Specific Requirements

- **20.11.3.1** Minimum ANSI/ISEA Level A4 cut resistance is required during tasks, including but not limited to:
  - **20.11.3.1.1** Demolition
  - **20.11.3.1.2** Cold-formed metal framing
  - **20.11.3.1.3** MEP in-wall rough-in
  - **20.11.3.1.4** Hanging Unistrut
  - **20.11.3.1.5** Overhead glass installation
  - **20.11.3.1.6** Sheet metal work
- **20.11.3.2** Trade partners must supply cut-resistant sleeves if required for their scope of work.

21 POWERED INDUSTRIAL TRUCKS (FORKLIFTS) AND AERIAL LIFTS

21.1 Purpose

The purpose of this policy is to provide uniform methods for minimizing the hazards associated with powered industrial trucks and associated equipment, and to satisfy OSHA requirements.

21.2 References

29 CFR 1910.178 Powered Industrial Trucks

29 CPR 1926 Subpart L Scaffolds

21.3 Powered Industrial Trucks

21.3.1 Powered industrial trucks shall only be operated by authorized and trained persons.

21.3.1.1 Training shall be administered by an authorized person and consist of form instruction (lecture and written materials) as well as a practical evaluation of the equipment operation.

21.3.2 Controls shall be marked in a safe and legible manner.

21.3.3 Operators' manual shall be stored on the machine and available for review.

21.3.4 Machine guards shall be in place to prevent incidental contact with running machinery.

21.3.5 Forklift operators shall be trained in the safe use and operation of the machine.

21.3.6 Items shall not be stored or located where they could affect the safe operation of the machine.

21.3.7 Propane shall be stored and maintained properly.

21.3.8 Many hazards exist that are easily detectable if a quick survey of the area is conducted. These hazards include, but are not limited to, the following:

21.3.8.1 Overhead obstructions.

21.3.8.2 Co-workers or pedestrians traveling within the facility.

21.3.8.3 Poor housekeeping such as debris left on the floor and wet floors.

21.3.8.4 Poor condition of the floor surface.

21.3.8.5 Poor visibility around corners.

21.3.8.6 Operating a forklift in a confined area with poor ventilation can allow the machines exhaust gases to accumulate.

21.4 Operating Procedures

21.4.1 Prior to operating (daily or pre-shift), PIT's and Aerial lifts shall be inspected for safe operating conditions.

21.4.2 Elevated work platforms shall be designed and used in accordance with OSHA 1926.451(c)(2)(iv).

21.4.3 Load limits shall be posted and not exceeded.

21.4.4 Brakes shall be set and wheel chocks installed when working on an incline.

21.4.5 Before moving a PIT, the load shall be stable and/or secured.

21.4.6 Fire extinguishers shall be available on all forklifts and aerial equipment.

21.4.7 Operators' manual must be located on the machine.

21.4.8 The following safety practices shall be adhered to at all times:

21.4.8.1 Wear seatbelts whenever the PIT is equipped with them.

21.4.8.2 Keep all body parts inside the driver's compartment.

21.4.8.3 Drive at appropriate speeds.

21.4.8.4 Do not carry passengers.

21.4.8.5 All PIT operators working on platforms that are six feet above a lower level shall wear appropriate fall protection devices.

21.4.8.6 When the PIT is left unattended, the load shall be fully lowered, controls shall be neutralized, power shut off, brakes set, and wheels blocked if PIT is parked on an incline.

21.4.8.7 If at any time during operation a PIT is found to be in need of repair, defective, or in any way unsafe, it shall be immediately removed from service.

21.5 Training

21.5.1 Each PIT operator shall be competent to operate a PIT safely, as demonstrated by the successful completion of the training and evaluation specified in OSHA 1910.178(l)

21.5.2 Each operator shall be re-evaluated at least every three years.

21.6 Aerial Lifts

21.6.1 Aerial lifts include the following types of vehicle-mounted aerial devices used to elevate personnel to jobsites above ground:

21.6.1.1 Extendable boom platforms.

21.6.1.2 Aerial ladders.

21.6.1.3 Articulating boom platforms.

21.6.1.4 Vertical towers.

21.6.1.5 A combination of any such devices.

21.6.2 Specific Requirements

21.6.2.1 Extendable and articulating boom platforms.

21.6.2.2 Lift controls shall be tested each day prior to use to determine that they are in safe working condition.

21.6.2.3 Only authorized persons shall operate an aerial lift.

21.6.2.4 Appropriate fall protection shall be worn when working from an aerial lift. The fall restraint system must be attached to the boom or basket.

21.6.2.5 Manufacturer's load limits shall not be exceeded.

21.6.2.6 The brakes shall be set and when outriggers are used, they shall be positioned on pads or a solid surface. Wheel chocks shall be installed before using an aerial lift on an incline.

21.6.2.7 An aerial lift truck shall not be moved when the boom is elevated in a working position with men in the basket.

21.6.2.8 Modifications to the equipment shall not be made without written approval from the manufacturer.

21.6.2.9 Equipment must have a working back-up alarm or use a spotter when backing.

21.6.2.10 Operator must maintain a minimum 10' clearance between any part of the equipment and electrical lines.

21.6.2.11 Associates shall stand firmly on the floor of the basket. Climbing the edges or rails of the basket is prohibited.

21.6.3 Material Handling in Aerial Lifts

21.6.3.1 When aerial lifts are used to install materials such as piping, etc., a rack or support system approved by the lift manufacturer shall be used to secure the material within the lift when applicable (pipe racks, panel carriers, etc.).

21.6.3.2 When feasible, the aerial lift basket shall be positioned directly beneath the overhead work area to minimize the potential for objects to fall to lower levels.

21.7 Inspections

21.7.1 All Equipment must be inspected by a competent person prior to each use and during use to make sure it is in safe operating condition. Any deficiencies shall be repaired or defective parts replaced before continued use.

21.7.2 See ARCOnnect for Aerial Lift Checklist

21.7.3 Reciprocating, rotating, moving parts or equipment shall be guarded.

21.7.4 Inspection Records

21.7.4.1 These forms will be reviewed during routine safety checks by the safety staff and should be available for review.

21.7.4.2 Upon completion of the project, the completed forms shall be retained in the project documentation.

21.8 Training

21.8.1 Powered Industrial Trucks

21.8.1.1 Safe Operation

21.8.1.1.1 Operators shall be competent as demonstrated by the successful completion of training and performance evaluation.

21.8.1.1.2 Trainees may operate a powered industrial truck only:

a Under the direct supervision of a qualified trainer.

b Where such operation does not endanger the associates.

21.8.2 Lifts other than Powered Industrial Trucks

21.8.2.1 Each associate who performs work using a lift shall be trained by a qualified person. The training shall include the following areas, as applicable:

21.8.2.1.1 The nature of any hazards in the work area.

21.8.2.1.2 The correct procedures for operating the assigned equipment.

21.8.2.1.3 The proper use of the equipment and the proper handling of materials on the item.

21.8.2.1.4 The maximum load-carrying capacities of the equipment used.

21.8.2.1.5 Any other pertinent requirements of this standard.

21.8.3 Training Program

21.8.3.1 Training shall consist of a combination of formal instruction, practical training, and evaluation of the operator's performance in the workplace.

21.8.3.2 All operator training and evaluation shall be conducted by qualified persons.

21.8.3.3 Operators with evidence of prior training and certification on the same type of equipment may be required to perform a proficiency demonstration.

21.8.4 Refresher training shall be conducted when:

21.8.4.1 The operator has been observed operating the vehicle in an unsafe manner.

21.8.4.2 The operator has received an evaluation that reveals that the operator is not operating the truck safely.

21.8.4.3 A condition in the workplace changes in a manner that could affect safe operation of the truck.

22 PRESSURE TESTING SAFETY

22.1 **Purpose:** The purpose of this program is to establish minimum safety requirements and procedural controls to ensure all pressure testing operations are conducted in a manner that protects workers, equipment, and the environment from the hazards associated with stored energy and pressurized systems.

22.2 **Scope:** This program applies to all contractors and personnel performing pressure testing on site under the direction of ARCO. It covers pressure testing of piping systems and associated equipment, using any testing medium, including liquids and inert or flammable gases.

22.3 **Hazards:** Pressure testing presents serious hazards, including:

- **22.3.1** Release of hazardous energy
- **22.3.2** Flying debris or failure of system components
- **22.3.3** Oxygen displacement from inert gases (e.g., nitrogen), creating asphyxiation risks
- **22.3.4** Explosion hazard from flammable gases if exposed to ignition sources

22.4 **Responsibilities: Contractors**

- **22.4.1** Develop and submit site-specific Pressure Testing Procedures and a Job Hazard Analysis (JHA) to ARCO for review prior to starting any testing.
- **22.4.2** Ensure all personnel are trained and authorized.
- **22.4.3** Supervise all pressure testing activities.
- **22.4.4** Provide and maintain all necessary equipment and PPE.

22.5 **ARCO Project Team**

- **22.5.1** Review and approve contractor JHA and procedures.
- **22.5.2** Monitor compliance with this program.

22.6 **Pressure Testing Procedures**

- **22.6.1** Pre-Test Requirements
- **22.6.2** Barricading and Signage
  - **22.6.2.1** Barricade the test area and post signs to restrict access to authorized personnel only.
- **22.6.3** PPE
  - **22.6.3.1** Authorized personnel must wear PPE appropriate to the test hazards, as defined in the JHA.
- **22.6.4** Lockout/Tagout
  - **22.6.4.1** All isolation devices (e.g., valves, blinds, etc.) must be locked and tagged to prevent accidental release of pressure.
- **22.6.5** System Walkdown

22.6.5.1 Inspect all components (connections, terminations, caps, seals, fittings, etc.) to ensure integrity prior to testing.

22.6.6 Supports

22.6.6.1 Install temporary supports as needed for additional weight or pressure loads added during the test.

22.6.7 Equipment Inspection

22.6.7.1 Test gauges and equipment must be inspected and verified to be in good working condition.

22.6.8 Communication of Test Parameters

22.6.8.1 Clearly communicate the maximum test pressure and test duration to all authorized personnel and to ARCO.

22.7 Venting and Draining Procedures

22.7.1 Venting

22.7.1.1 Develop and follow a venting procedure to dissipate gas safely. Use applicable gas monitors to confirm effective ventilation.

22.7.2 Draining

22.7.2.1 Establish a draining procedure to dispose of test fluids without environmental contamination or creating slip hazards.

22.8 Test Execution

22.8.1 Pre-Test Briefing

22.8.1.1 Review the JHA with all authorized personnel immediately before testing.

22.8.1.2 All personnel must sign off, documenting that they've been trained on and understand the procedures to be followed.

22.8.2 Supervision

22.8.2.1 Conduct all testing under the supervision of the contractor's designated supervisor.

22.8.3 Manufacturer Guidance

22.8.3.1 Follow all equipment manufacturer's recommendations and specifications.

22.8.4 Pressure Limits

22.8.4.1 Never exceed the maximum allowable pressure for any component in the system.

22.9 Post-Test Activities

22.9.1 System Repairs or Adjustments

22.9.1.1 Only perform work after pressure is fully relieved and gauges read 0 PSIG.

22.9.2 Depressurization

22.9.2.1 Use mechanical valves (e.g., gate or ball valves) for pressure release. Never use flanges to depressurize.

22.9.3 Pressure Relief Verification

22.9.3.1 After test completion and acceptance, relieve all pressure until gauges read 0 PSIG

22.9.3.1.1 Contractor supervisor must verify.

22.9.4 Standards and Compliance

22.9.4.1 All pressure testing shall be conducted in accordance with:

22.9.4.1.1 Applicable federal, state, and local laws and codes

22.9.4.1.2 Contractor-specific procedures and safety protocols

22.9.5 Documentation

22.9.5.1 Contractors must maintain documentation of:

22.9.5.1.1 Approved JHAs and test procedures

22.9.5.1.2 Equipment inspection records

22.9.5.1.3 Personnel training and authorization

22.9.5.1.4 Test results and supervisor verifications

23 SANITATION AND WATER SUPPLY

23.1 Drinking Water Supply: To ensure the health and safety of all workers, the following standards for drinking water shall be maintained at all worksite locations:

23.1.1 Adequate Supply: A sufficient supply of drinking water should be available at all times. Cool drinking water should be provided by crew supervisors during hot weather conditions to help prevent heat-related illnesses.

23.1.2 Potable Water Systems: Only approved potable (safe for human consumption) water systems shall be used for the distribution of drinking water.

23.1.3 Portable Dispensers: Any portable drinking water dispensers used must:

23.1.3.1 Be designed and constructed to ensure sanitary conditions.

23.1.3.2 Be capable of being securely closed.

23.1.3.3 Include a functioning tap to dispense water.

23.1.4 Labeling and Use: Containers used for drinking water must:

23.1.4.1 Be clearly marked as "Drinking Water."

23.1.4.2 Be used exclusively for potable water and not for any other purposes.

23.2 Non-Potable Water

23.2.1 To prevent health hazards associated with contaminated water, the following guidelines shall be followed:

23.2.1.1 All outlets or containers dispensing non-potable water must be clearly marked with signage stating: "Unsafe for Drinking, Washing, or Cooking."

23.2.1.2 These signs must be conspicuously posted and easily visible to all workers.

23.3 Toilet Facilities

23.3.1 Proper sanitation is essential to maintaining hygiene and preventing illness. The following toilet standards shall be implemented:

23.3.1.1 Alternative Facilities:

23.3.1.1.1 When access to sanitary sewers is not available, alternative toilet systems such as chemical toilets, recirculating toilets, or other systems may be used, provided they are compliant with state and local regulations.

23.3.1.2 Facility Requirements:

23.3.1.2.1 Each toilet facility shall include a toilet seat.

23.3.1.2.2 An adequate supply of toilet paper and a suitable holder shall be provided for each seat.

23.3.1.3 Construction and Safety:

23.3.1.3.1 Toilet structures must be constructed to protect users from the weather and falling objects.

23.3.1.3.2 Doors must be tight-fitting, self-closing, and capable of being latched for privacy and security.

23.3.1.4 Capacity and Access:

23.3.1.4.1 An adequate amount of toilet facilities should be provided for the number of workers on site.

23.3.1.5 Maintenance:

23.3.1.5.1 All toilet facilities should be regularly serviced and cleaned.

23.4 Washing Facilities

23.4.1 To support personal hygiene and prevent the spread of contaminants, the following provisions shall be made:

23.4.1.1 Additional washing stations should be made available as needed to maintain healthy and sanitary working conditions.

23.4.1.2 Requirements:

23.4.1.2.1 Each washing station should be kept in a clean and sanitary condition.

23.4.1.2.2 Stations should be equipped with:

- **a** Water
- **b** Soap

23.4.1.2.3 If it is not practical to provide running water, hand sanitizers may be used as an acceptable substitute.

23.4.1.3 Change Rooms:

23.4.1.3.1 When employees are required by regulation or job function to wear protective clothing, the employer shall provide:

- **a** Change rooms with storage facilities for street clothing,
- **b** Separate storage for protective clothing to prevent contamination.

24 SCAFFOLDING

24.1 Purpose

The purpose of this policy is to minimize the hazards associated with scaffolding, to provide uniform methods and requirements that assure associate safety, and to satisfy OSHA requirements.

24.2 References

29 CFR 1926 Subpart L Scaffolding

24.3 General

24.3.1 Capacity

24.3.1.1 Except as provided below each scaffold and scaffold component shall be capable of supporting, without failure, its own weight and at least four times the maximum intended load applied or transmitted to it.

24.3.1.2 Direct connections shall be capable of resisting at least 4 times the tipping moment imposed by the scaffold operating at the rated load of the hoist, or 1.5 times the tipping moment imposed by the scaffold operating at the stall load of the hoist, whichever is greater.

24.3.1.3 Each suspension rope used on non-adjustable scaffolding shall be capable of supporting at least 6 times the maximum intended load applied or transmitted to that rope.

24.3.1.4 Each suspension rope, used on adjustable suspension scaffolds shall be capable of supporting at least 6 times the maximum intended load applied or transmitted to it with the scaffold operating at either the rated load of the hoist, or 2 times the stall load of the hoist, whichever is greater.

24.3.1.5 The stall load of any scaffold hoist shall not exceed 3 times its rated load.

24.4 Inspection/Competent Person

24.4.1 Scaffolds shall be erected, moved, dismantled, or altered only under the supervision and direction of a competent person.

24.4.2 The competent person shall have a copy of the OSHA scaffolding standard, including applicable appendixes readily available for reference.

24.4.3 Scaffolds shall be designed by a competent person and shall be constructed and loaded in accordance with manufacturer's requirements.

24.4.4 Fall protection for associates erecting or dismantling supported scaffolds shall be provided where the installation and use of such protection is feasible.

24.4.5 Scaffolds and scaffold components shall be inspected for visible defects by the competent person before each work shift and after any occurrence, which could affect a scaffold's structural integrity.

24.4.6 Ropes shall be inspected for defects by the competent person prior to each work shift and after every occurrence which could affect a rope's integrity. Ropes shall be replaced if any of the following conditions exist:

24.4.6.1 Any damage, which impairs the function and strength of the rope.

24.4.6.2 Kinks that might impair the tracking or wrapping of rope around the drum(s) or sheave(s).

24.4.6.3 Six randomly distributed broken wires in one rope lay or three broken wires in one strand in one rope lay.

24.4.6.4 Abrasion, corrosion, scrubbing, flattening or peening causing loss of more than one-third of the original diameter of the outside wires.

24.4.6.5 Heat damage caused by a torch or any damage caused by contact with electrical wires.

24.4.6.6 Evidence that the secondary brake has been activated during an overspeed condition and has engaged the suspension rope.

24.4.7 When wire rope clips are used on suspension scaffolds clips, they shall be inspected by the competent person and retightened to the manufacturer's recommendations at the start of each shift.

24.4.8 Unsafe equipment or conditions must be tagged out by Competent Person and must be complied with.

24.5 Scaffold Platform Construction

24.5.1 Each platform on all working levels of scaffolds shall be fully planked or decked so that no spaces more than 1 inch exist.

24.5.2 Each scaffold platform and walkway shall be at least 18 inches wide with the following exceptions:

24.5.3 Each ladder jack scaffold, top plate bracket scaffold, roof bracket scaffold, and pump jack scaffold shall be at least 12 inches wide.

24.5.3.1 Where scaffolds must be used in areas that the competent person can demonstrate are so narrow that platforms and walkways cannot be at least 18 inches wide, such platforms and walkways shall be as wide as feasible.

24.5.3.2 The front edge of all platforms shall not be more than 14 inches from the face of the work, with the following exceptions:

24.5.3.3 The maximum distance from the face for outrigger scaffolds shall be 3".

24.5.3.4 The maximum distance for plastering and lathing operations shall be 18".

24.5.3.5 Each end of a platform unless cleated or otherwise restrained by hooks or equivalent means shall extend over the centerline of its support at least 6".

24.5.3.6 Each end of a platform 10 feet or less in length shall not extend over its support more than 12 inches. Each platform greater than 10 feet in length shall not extend over its support more than 18 inches.

24.5.3.7 On scaffolds where scaffold planks are abutted to create a long platform, each abutted end shall rest on a separate support surface.

24.5.3.8 On scaffolds where platforms are overlapped to create a long platform, the overlap shall occur only over supports and shall not be less than 12.

24.5.3.9 At all points of a scaffold where the platform changes direction, any platform that rests on a bearer at an angle other than a right angle shall be laid first.

24.5.3.10 Wood platforms shall not be covered with opaque finishes.

24.5.3.11 Scaffold components by different manufacturers shall not be intermixed.

24.6 Supported Scaffolds

24.6.1 Scaffolds shall be properly braced by cross bracing or diagonal braces, so that the erected scaffold is always plumb, square, and rigid.

24.6.2 Cross bracing is acceptable in place of a mid-rail when the crossing point of two braces is between 20 inches (0.5m) and 30 inches (0.8m) above the work platform or as a top rail when the crossing point of two braces is between 38 inches (0.97 m) and 48 inches (1.3 m) above the work platform. The end points at each upright shall be no more than 48 inches (1.3 m) apart.

24.6.3 Supported scaffolds with a height to base width ratio of more than four to one (4:1) shall be restrained from tipping as follows:

24.6.3.1 Guys, ties, and braces shall be installed at locations where horizontal members support both inner and outer legs.

24.6.3.2 Guys, ties, and braces shall be installed according to the scaffold manufacturer's recommendations or at the closest horizontal member to the 4:1 height and be repeated vertically at locations of horizontal members every 20 feet or less thereafter for scaffolds three feet wide or less, and every 26 feet or less thereafter for scaffolds greater than three feet wide. The top guy, tie, or brace of completed scaffolds shall be placed no further than the 4:1 height from the top. Such guys, ties, and braces shall be installed at each end of the scaffold and at horizontal intervals not to exceed 30 feet.

24.6.3.3 Ties, guys, braces, or outriggers shall be used to prevent the tipping of supported scaffolds in all circumstances where an eccentric load,

such as a cantilevered work platform, is applied or is transmitted to the scaffold.

24.6.4 Supported scaffolds shall bear on base plates and mud sills or other adequate firm foundation.

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

24.6.6 Unstable objects shall not be used to support scaffolds or platform units.

24.6.7 Unstable objects shall not be used as working platforms.

24.6.8 Fork-lifts shall not be used to support scaffold platforms.

24.6.9 Supported scaffolds shall be plumb and braced to prevent swaying and displacement.

24.6.10 Scaffolding over 125 feet must be designed by a registered professional engineer. Business Services Risk Management Department should be contacted.

24.7 Mobile Scaffolds

24.7.1 When freestanding mobile scaffold towers are used, the height shall not exceed four times the minimum base dimension.

24.7.2 Casters shall be properly designed for strength and dimensions to support four times the maximum intended load. All casters shall be provided with a positive locking device to hold the scaffold in position.

24.7.3 A ladder or stairway shall be provided for proper access and exit and shall be affixed or built into the scaffold and so located that when in use it will not have a tendency to tip the scaffold.

24.8 Suspension Scaffolds

24.8.1 Suspension scaffold outrigger beams shall be made of structural metal or equivalent strength material and shall be restrained to prevent movement.

24.8.2 The inboard ends of suspension scaffold outrigger beams shall be stabilized by bolts or other direct connections to the floor or roof deck, or they shall have their inboard ends stabilized by counterweights.

24.8.3 Before the scaffold is used, direct connections shall be evaluated by a competent person who shall confirm based on the evaluation that the supporting surfaces are capable of supporting the loads to be imposed. In addition, masons' multipoint adjustable suspension scaffold connections shall be designed by an engineer experienced in such scaffold design.

24.8.4 Counterweights shall be made of non-flowable material.

24.8.5 Only those items specifically designed as counterweights shall be used to counterweight scaffold systems.

24.8.6 Counterweights shall be secured by mechanical means to the outrigger beams to prevent accidental displacement.

24.8.7 Counterweights shall not be removed from an outrigger beam until the scaffold is disassembled.

24.8.8 Outrigger beams that are not stabilized by bolts or other direct connections to the floor or roof deck shall be secured by tiebacks.

24.8.9 Tiebacks shall be equivalent in strength to the suspension ropes.

24.8.10 Outrigger beams shall be placed perpendicular to its bearing support.

24.8.11 Tiebacks shall be secured to a structurally sound anchorage on the building or structure.

24.8.12 Tiebacks shall be installed perpendicular to the face of the building/structure or opposing angle tiebacks shall be installed.

24.8.13 Suspension scaffold outrigger beams shall be:

- **24.8.13.1** Provided with stop bolts or shackles at both ends.
- **24.8.13.2** Securely fastened together with the flanges turned out when channel iron beams are used in place of I-beams.

24.8.14 Installed with all bearing supports perpendicular to the beam center line.

- **24.8.14.1** Set and maintained with the web in a vertical position.
- **24.8.14.2** When an outrigger beam is used, the shackle or clevis with which the rope is attached to the outrigger beam shall be placed directly over the center line of the stirrup.

24.8.15 Suspension scaffold support devices shall be:

- **24.8.15.1** Made of steel, wrought iron, or materials of equivalent strength.
- **24.8.15.2** Supported by bearing blocks.
- **24.8.15.3** Secured against movement.
- **24.8.15.4** Tiebacks shall be equivalent in strength to the hoisting rope.

24.8.16 When winding drum hoists are used on a suspension scaffold, they shall contain not less than four wraps of the suspension rope at the lowest point of scaffold travel. When other types of hoists are used, the suspension ropes shall be long enough to allow the scaffold to be lowered to the level below without the rope end passing through the hoist.

24.8.17 The use of repaired wire rope as suspension rope is prohibited.

24.8.18 Wire suspension ropes shall not be joined together except through the use of eye splice thimbles connected with shackles or cover plates and bolts.

24.8.19 The load end of wire suspension ropes shall be equipped with proper size thimbles and secured by eye splicing or equivalent means.

24.8.20 Swaged attachments or spliced eyes on wire suspension ropes shall not be used unless they are made by the wire rope manufacturer or a qualified person.

24.8.21 When wire rope clips are used on suspension scaffolds:

24.8.22 There shall be a minimum of three wire rope clips installed, with the clips a minimum of six rope diameters apart.

24.8.23 Clips shall be installed according to the manufacturer's recommendations.

24.8.24 Clips shall be re-tightened to the manufacturer's recommendations after the initial loading.

24.8.25 Clips shall be inspected and retightened to the manufacturer's recommendations at the start of each work shift thereafter.

24.8.26 U-bolt clips shall not be used at the point of suspension for any scaffold hoist.

24.8.27 When U-bolt clips are used, the U-bolt shall be placed over the dead end of the rope, and the saddle shall be placed over the live end of the rope.

24.8.28 Suspension scaffold power-operated hoists and manual hoists shall be tested by a qualified testing laboratory.

24.8.29 Gasoline-powered equipment and hoists shall not be used on suspension scaffolds.

24.8.30 Gears and brakes of power-operated hoists used on suspension scaffolds shall be enclosed.

24.8.31 In addition to the normal operating brake, suspension scaffold power-operated hoists and manually operated hoists shall have a braking device or locking pawl.

24.8.32 Manually operated hoists shall require a positive crank force to descend.

24.8.33 Two-point and multipoint suspension scaffolds shall be tied or otherwise secured to prevent them from swaying.

24.8.34 Devices whose sole function is to provide emergency escape and rescue shall not be used as working platforms.

24.9 Access

24.9.1 When scaffold platforms are more than two feet above or below a point of access, a safe means of access shall be provided. Cross braces shall not be used as a means of access.

24.9.2 Ladders shall be positioned so as not to tip the scaffold.

24.9.3 Ladders shall be positioned so that their bottom rung is not more than 24 inches above the scaffold supporting level.

24.9.4 Ladders shall be specifically designed for use with the type of scaffold used.

24.9.5 Ladders shall have a minimum rung length of 11 1/2 inches.

24.9.6 Ladders shall have uniformly spaced rungs with a maximum spacing between rungs of 16 3/4 inches.

24.9.7 Stairway-type ladders shall:

24.9.7.1 Be positioned such that their bottom step is not more than 24 inches above the scaffold supporting level.

24.9.7.2 Be provided with rest platforms at 12-foot maximum vertical intervals.

24.9.7.3 Have a minimum step width of 16 inches, except that mobile scaffold stairway-type ladders shall have a minimum step width of 11 1/2 inches.

24.9.7.4 Have slip-resistant treads on all steps and landings.

24.9.8 Stair towers, Ramps and Walkways shall conform to OSHA 1926 Subpart X.

24.10 Use

24.10.1 The use of shore or lean-to scaffolds is prohibited.

24.10.2 Damaged or weakened scaffolding shall be immediately repaired or replaced, braced to meet those provisions, or removed from service until repaired.

24.10.3 Scaffolds shall not be moved horizontally while associates are on them.

24.10.4 The clearance between scaffolds and power lines shall be as follows:

Voltage	Minimum Distance	Alternatives
Less than 300 volts	3 feet	
300 volts to 50 Kv	10 feet plm	
More than 50 Kv	10 feet plus .4 inches for each 1 Kv over 50 Kv	Two times the length of the line insulator but never less than 10 feet.

Uninsulated Lines

Voltage	Minimum Distance	Alternatives
Less than 50 Kv	10 feet	
More than 50 Kv	10 feet plus .4 inches for each 1 Kv over 50 Kv	Two times the length of the line insulator but never less than 10 feet.

Exceptions: Scaffolds and materials may be closer to power lines than specified above where such clearance is necessary for performance of work, and only after the utility company, or electrical system operator, has been notified of the need to work closer and the utility company, or electrical system operator, has deenergized the lines, relocated the lines, or installed protective coverings to prevent accidental contact with the lines.

24.10.5 Associates shall be prohibited from working on scaffolds covered with snow, ice, or other slippery material.

24.10.6 Where swinging loads are being hoisted onto or near scaffolds such that the loads might contact the scaffold, tag lines or equivalent measures to control the loads shall be used.

24.10.7 Work on or from scaffolds is prohibited during storms or high winds.

24.10.8 Debris shall not be allowed to accumulate on platforms.

24.10.9 Makeshift devices shall not be used on top of scaffold platforms to increase the working level height of associates.

24.10.10 Ladders shall not be used on scaffolds to increase the working level height of associates.

24.10.11 Platforms shall not deflect more than 1/60 of the span when loaded.

24.10.12 To reduce the possibility of welding current arcing through the suspension wire rope when performing welding from suspended scaffolds, the following precautions shall be taken, as applicable:

24.10.12.1 An insulated thimble shall be used to attach each suspension wire rope to its hanging support (such as cornice hook or outrigger). Excess suspension wire rope and any additional independent lines from grounding shall be insulated.

24.10.13 The suspension wire rope shall be covered with insulating material extending at least four feet above the hoist. If there is a tail line below the hoist, it shall be insulated to prevent contact with the platform. The portion of the tail line that hangs free below the scaffold shall be guided or retained, or both, so that it does not become grounded.

24.10.14 Each hoist shall be covered with insulated protective covers.

24.10.15 In addition to a work lead attachment required by the welding process, a grounding conductor shall be connected from the scaffold to the structure. The size of this conductor shall be at least the size of the welding process work lead, and this conductor shall not be in series with the welding process or the work piece.

24.10.16 If the scaffold grounding lead is disconnected at any time, the welding machine shall be shut off.

24.10.17 An active welding rod or uninsulated welding lead shall not be allowed to contact the scaffold or its suspension system.

24.11 Fall Protection

24.11.1 Each associate on a scaffold more than 6 feet above a lower level shall be protected from falling to that lower level.

24.11.2 A competent person shall determine the feasibility and safety of providing fall protection for associates erecting or dismantling supported scaffolds.

24.11.3 In addition to meeting other requirements, personal fall arrest systems used on scaffolds shall be attached by lanyard to a vertical lifeline, horizontal lifeline, or scaffold structural member.

24.11.4 When vertical lifelines are used, they shall be fastened to a fixed safe point of anchorage, shall be independent of the scaffold, and shall be protected from sharp edges and abrasion.

24.11.5 When horizontal lifelines are used, they shall be secured to two or more structural members of the scaffold.

24.11.6 When lanyards are connected to horizontal lifelines or structural members on a single-point or two-point adjustable suspension scaffold, the scaffold shall be equipped with additional independent support lines and automatic locking devices capable of stopping the fall of the scaffold in the event one or both of the suspension ropes fail. The independent support lines shall be equal in number and strength to the suspension ropes.

24.11.7 Vertical lifelines, independent support lines, and suspension ropes shall not be attached to each other, nor shall they be attached to or use the same point of anchorage, nor shall they be attached to the same point on the scaffold or personal fall arrest system.

24.11.8 Guardrail systems shall be installed to meet the requirements of this manual.

24.12 Falling Object Protection

When there is a danger of tools, materials, or equipment falling from a scaffold and striking associates below, the following provisions apply:

24.12.1 Toeboards shall be erected on all working levels of scaffolding and shall be:

24.12.1.1 Capable of withstanding without failure a force of at least 50 pounds.

24.12.1.2 At least 3 ½" high from the top edge of the toeboard to the level of the walking/working surface. Toeboards shall be securely fastened in place at the outermost edge of the platform and have not more than 1/4-inch clearance above the walking/working surface. Toeboards shall be solid or with openings not over one inch in the greatest dimension.

24.12.2 Where tools, materials, or equipment are piled to a height higher than the top edge of the toeboard, paneling or screening extending from the toe- board or platform to the top of the guardrail shall be erected for a distance sufficient to protect associates below.

24.12.3 A guardrail system shall be installed with openings small enough to prevent the passage of potential falling objects.

24.12.4 A canopy structure, debris net, or catch platform strong enough to withstand the impact forces of the potential falling objects shall be erected over the associates below.

24.12.5 Canopies, when used for falling object protection, shall comply with the following criteria:

24.12.5.1 Be installed between the falling object hazard and the associates.

24.12.5.2 The scaffold shall be equipped with additional independent support lines equal in number to the number of points supported, and equivalent in strength to the strength of the suspension ropes.

24.12.5.3 Independent support lines and suspension ropes shall not be attached to the same points of anchorage.

24.13 Training Requirements

24.13.1 Each associate who performs work while on a scaffold shall be 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 include the following areas, as applicable:

24.13.1.1 The nature of any electrical hazards, fall hazards, and falling object hazards in the work area.

24.13.1.2 The proper use of the scaffold, and the proper handling of materials on the scaffold.

24.13.1.3 The maximum intended load and the load-carrying capacities of the scaffolds used.

24.13.1.4 The nature of scaffold hazards.

24.13.1.5 The correct procedures for erecting, disassembling, moving, operating, repairing, inspecting, and maintaining the type of scaffold in question.

24.13.1.6 The design criteria, maximum intended load-carrying capacity, and intended use of the scaffold.

24.13.2 Retraining is required in at least the following situations:

24.13.2.1 Where changes at the worksite present a hazard about which an associate has not been previously trained; or

24.13.2.2 Where changes in the types of scaffolds, fall protection, falling object protection, or other equipment present a hazard about which an associate has not been previously trained; or

24.13.2.3 Where inadequacies in an affected associate's work involving scaffolds indicate that the associate has not retained the requisite proficiency.

25 SIGNS, SIGNALS, AND BARRICADES

25.1 Purpose

The purpose of this policy is to post signs, signals, and barricades to serve as a warning for hazards encountered in the workplace, to provide uniform methods and requirements that assure associate safety, and to satisfy OSHA requirements.

25.2 References

29 CFR 1926.200-203 Subpart G Signs, Signals, and Barricades

EM-385-1-1 Section 8 – Accident Prevention Signs, Tags, Labels, Signals, Piping System Identification, and Traffic Control

25.3 Injury Prevention Signs and Tags

25.3.1 General

25.3.1.1 Signs and symbols required by OSHA shall be visible at all times when work is being performed and shall be removed or covered promptly when the hazards no longer exist.

25.3.2 Danger Signs

25.3.2.1 Shall be used only where an immediate hazard exists.

25.3.2.2 Shall have red as the predominating color for the upper panel; black outline on the borders; and white lower panel for additional wording.

25.3.3 Caution Signs

25.3.3.1 Shall be used only to warn against potential hazards or to caution against unsafe practices.

25.3.3.2 Shall have a yellow background with black lettering.

25.3.4 Exit Signs

25.3.4.1 Shall have red letters, not less than six inches high and ¾ in. wide, on a white field.

25.3.5 Traffic Signs

25.3.5.1 Construction areas shall be posted with legible traffic signs or devices used for protection of construction workers at points of hazards.

25.4 Uniform Traffic Control Devices

25.4.1 Fundamental Principals

25.4.1.1 All traffic control devices shall conform to the applicable specifications of the Manual on Uniform Traffic Control Devices.

25.4.1.2 Work should be planned and conducted with the safety of the motorist, pedestrian, and worker kept in mind at all times.

25.4.1.3 A traffic control plan, in detail appropriate to the complexity of the project, should be prepared and understood by all responsible parties before the site is occupied.

25.4.1.4 Traffic movement should be inhibited as little as practicable.

25.4.1.5 Construction time should be minimized to reduce exposure to potential hazards.

25.4.1.6 Motorists should be guided in a clear and positive manner while approaching and traversing construction and maintenance work areas.

25.4.1.6.1 Adequate pavement marking, signing, and other devices which are effective under varying conditions of light and weather should be provided.

25.4.1.7 To ensure acceptable levels of operation, routine inspection of traffic control elements should be performed.

25.4.1.8 The maintenance of roadside safety requires constant attention during the life of the construction zone because of the potential increase in hazards.

25.4.2 Training

25.4.2.1 Shall be provided to any person whose actions may affect maintenance and construction zone safety.

25.4.3 Hand Signaling Devices

25.4.3.1 Flagging

25.4.3.1.1 Flags shall be a minimum of 24 by 24 inches in size, made of red material fastened to a staff approximately three feet in length. The free-end edge should be weighted to ensure that the flag would hang vertically, even in heavy winds.

25.4.3.2 Sign Paddles

25.4.3.2.1 Sign paddles should be at least 18 inches wide with letters at least six inches high. A rigid handle should be provided.

25.4.3.3 Flag Persons

25.4.3.3.1 Shall possess the following minimum qualifications:

- **a** Average intelligence.
- **b** Good physical condition, including sight and hearing, mental alertness.
- **c** Neat appearance.
- **d** Sense of responsibility for safety.

25.4.3.3.2 The flag person must be clearly visible to approaching traffic for a distance sufficient to permit proper response by the motorist to the flagging instructions, and to permit traffic to reduce speed before entering the work site.

25.4.3.3.3 High-visibility clothing must be worn at all times.

25.4.4 Flagging Procedures

25.4.4.1 To stop traffic. The flag person shall face traffic and extend the flag horizontally across the traffic lane in a stationary position so that the full area of the flag is visible hanging below the staff. For greater emphasis, the free arm may be raised with the palm toward approaching traffic.

25.4.4.2 When it is safe for traffic to proceed. The flag person shall stand parallel to the traffic movement, and with flag and arm lowered from view of the driver, motion traffic ahead with the free arm. Flags shall not be used to signal traffic to proceed.

25.4.4.3 If a sign paddle is used, it shall be held in a stationary position with the arm extended horizontally away from the body. For added emphasis, the flag person may slowly raise and lower the free hand with the palm down.

25.4.4.4 Lights approved by the appropriate highway authority or reflectorized sign paddles or reflectorized flags shall be used to flag traffic at night. Daytime flagging procedures shall be followed whenever such lights, paddles, or flags are used at night.

25.4.4.5 Flag people and operators of construction machinery or trucks should be made to understand that every reasonable effort must be made to allow the driving public the right-of-way and prevent excessive delays.

25.4.5 One-way Traffic Control

25.4.5.1 Control points at each end of the route should be chosen to permit easy passing of opposing lines of vehicles.

25.4.5.2 This can be accomplished by a single flagger at each end of the work zone.

25.4.5.3 When two flaggers are used, one at each end of the work zone, one should be designated as the flagging coordinator.

25.4.5.4 A clear line of communication shall be established between the two flaggers and can be accomplished orally, electronically, or with manual signals that cannot be mistaken for flagging signals.

25.4.6 Barricades/Perimeter Guarding

25.4.6.1 Temporary barricades, such as yellow “Caution”, may be utilized for Trip hazards or equivalent.

25.4.6.2 Temporary Barricades, such as red “Danger” tape may be utilized for overhead work, falling object protection, steel erection, crane activities or similar operations.

25.4.6.2.1 If “Caution” or “Danger” tape is used as temporary barricades, it must be the reinforced type.

25.4.6.3 Hard barricades that meet OSHA 1926 Subpart M guidelines may be utilized when a fall hazard is present.

26 SPILL PREVENTION AND CLEANUP RESPONSE

26.1 Applies to all workers, subcontractors, and vendors handling or exposed to fuels, chemicals, or other liquids on the construction project.

26.1.1 Spill Prevention Measures

26.1.1.1 Proper Storage

26.1.1.1.1 Store fuels, oils, chemicals, and hazardous materials in approved, labeled containers.

26.1.1.1.2 Keep storage areas away from storm drains, drainage ditches, and water bodies.

26.1.1.2 Handling and Transfer

26.1.1.2.1 Only trained personnel may handle hazardous liquids.

26.1.1.2.2 Use drip pans, funnels, or other tools to prevent spills during transfer.

26.1.1.2.3 Conduct fueling only in designated areas equipped with spill control materials.

26.1.1.3 Equipment Inspections

26.1.1.3.1 Inspect fuel tanks and equipment regularly for leaks.

26.1.1.3.2 Maintain fully stocked spill kits near fueling areas, chemical storage, and inside applicable service vehicles.

26.1.2 Spill Response Procedures

26.1.2.1 Small Spills (Less than 5 gallons)

26.1.2.1.1 Stop the spill at the source if safe to do so.

26.1.2.1.2 Contain the spill using absorbent pads, booms, or other spill kit materials.

26.1.2.1.3 Clean up using appropriate personal protective equipment (PPE).

26.1.2.1.4 Dispose of contaminated materials according to regulations.

26.1.2.1.5 Report the spill immediately to the ARCO Project Team.

26.1.2.2 Medium Spills (5 to 25 gallons)

26.1.2.2.1 Follow small spill procedures.

26.1.2.2.2 Evacuate nearby workers if necessary.

26.1.2.2.3 Notify the ARCO Project Team and complete an incident report.

26.1.2.2.4 Determine if additional assistance if needed.

26.1.2.3 Large Spills (Over 25 gallons or sensitive areas involved)

26.1.2.3.1 Stop work and evacuate the area as needed.

26.1.2.3.2 Secure and restrict access to the spill area.

26.1.2.3.3 Notify the ARCO Project Team immediately.

26.1.2.3.4 Contact the designated third-party emergency spill response contractor for cleanup.

26.1.2.3.5 Notify environmental or regulatory agencies if required.

26.1.3 Preparedness

26.1.3.1 Ensure supervisors check that spill kits are stocked and easily accessible.

26.1.3.2 Ensure that a third-party emergency spill response contractor for cleanup is identified for the project.

26.1.4 Documentation and Reporting

26.1.4.1 Document all spills, regardless of size, using an Incident Report.

26.1.4.2 Include spill type, amount, cause, response actions, and disposal methods in the report.

26.1.4.3 Submit all Incident Reports to the ARCO Project Team.

27 STAIRWAYS AND LADDERS

27.1 Purpose

The purpose of this policy is to minimize the hazards associated with stairways and ladders encountered in the workplace, to provide uniform methods and requirements that assure associate safety, and to satisfy OSHA requirements.

27.2 References

29 CFR 1926. Subpart X Stairways and Ladders

27.3 General Requirements

27.3.1 A stairway or ladder shall be provided at all personnel points of access where there is a break in elevation of 19 inches or more.

27.3.2 Associates shall not use any spiral stairways that will not be a permanent part of the structure on which construction work is being performed.

27.3.3 A double-cleated ladder or two or more separate ladders shall be provided when ladders are the only means of access or exit from a working area for 25 or more associates or when a ladder is to serve simultaneous two-way traffic.

27.3.4 When a building or structure has only one point of access between levels, that point of access shall be kept clear to permit free passage of associates.

27.3.5 When a building or structure has two or more points of access between levels, at least one point of access shall be kept clear to permit free passage of associates.

27.4 Stairways

27.4.1 The following requirements apply to all stairways as indicated:

27.4.1.1 Stairways that will not be a permanent part of the structure on which construction work is being performed shall have landings of not less than 30 inches in the direction of travel and extend at least 22 inches in width at every 12 feet or less of vertical rise.

27.4.1.2 Stairs shall be installed between 30 degrees and 50 degrees from horizontal.

27.4.1.3 Riser height and tread depth shall be uniform within each flight of stairs.

27.4.1.4 Where doors or gates open directly on a stairway, a platform shall be provided, and the swing of the door shall not reduce the effective width of the platform to less than 20 inches.

27.4.1.5 Metal pan stairs and landings shall be secured in place before being filled with concrete or other material.

27.4.1.6 All parts of stairways shall be free of all trip/slip hazards.

27.4.2 Temporary Service

Except during stairway construction, foot traffic is prohibited on stairways with pan stairs unless the stairs are temporarily fitted with a solid material at least to the top edge of each pan.

27.5 Stair Rails and Handrails

27.5.1 Stairways having four or more risers or rising more than 30 inches, shall be equipped with at least one handrail system along each unprotected side.

27.5.2 Winding and spiral stairways shall be equipped with a handrail offset sufficiently to prevent walking on those portions of the stairways where the tread width is less than six inches.

27.5.3 Stair rails shall be not less than 36 inches.

27.5.4 Midrails, screens, or intermediate vertical members shall be provided between the top rail of the stair rail system and the stairway steps.

27.5.5 Midrails, when used, shall be located at a height midway between the top edge of the railing system and the stairway steps.

27.5.6 Screens or mesh, when used, shall extend from the top rail to the stairway step, and along the entire opening between top rail supports.

27.5.7 When intermediate vertical members, such as balusters, are used between posts, they shall be not more than 19 inches apart.

27.5.8 Railing systems shall be capable of withstanding, without failure, a force of at least 200 pounds applied within two inches of the top edge, in any direction, at any point along the top edge.

27.5.9 Railing systems shall be so surfaced as to prevent injury to associates from punctures or lacerations and to prevent snagging of clothing.

27.5.10 Handrails shall provide an adequate hand hold for associates grasping them to avoid falling.

27.5.11 Railing Systems shall be constructed so as not to constitute a projection hazard.

27.5.12 Unprotected sides and edges of stairway landings shall be provided with guardrail systems.

27.6 Ladders

27.6.1 The following requirements apply to all ladders as indicated, including jobmade ladders.

27.6.1.1 Every ladder shall conform to ANSI Standards and non-job-built ladders shall be so marked.

27.6.1.2 Wood ladders shall not be coated with any opaque covering, except for identification or warning labels that may be placed on one face only of a side rail.

27.6.2 The following requirements apply to the use of all ladders.

27.6.2.1 When portable ladders are used for access, the ladder side rails shall extend at least three feet above the upper landing surface; or, when such an extension is not possible because of the ladder's length, then the ladder shall be secured at its top to a rigid support that will not deflect, and a grasping device, such as a grabrail, shall be provided to assist associates in mounting and dismounting the ladder.

27.6.2.2 Ladders shall be maintained free of slipping hazards.

27.6.2.3 Ladders shall not be loaded beyond the manufacturer's capacity rating.

27.6.2.4 Ladders shall be used only for the purpose for which they were designed.

27.6.2.5 Non-self-supporting ladders shall be used at an angle of 1:4

27.6.2.6 Fixed ladders shall be used at a pitch no greater than 90 degrees.

27.6.2.7 Ladders shall be used only on stable and level surfaces.

27.6.2.8 Ladders placed in any location where they can be displaced by workplace activities shall be secured to prevent accidental displacement.

27.6.2.9 The area around the top and bottom of ladders shall be kept clear.

27.6.2.10 Ladders shall not be moved, shifted, or extended while occupied.

27.6.2.11 Ladders shall have nonconductive side rails.

27.6.2.12 The top or top step of a stepladder shall not be used as a step.

27.6.2.13 Cross-bracing on the rear section of stepladders shall not be used for climbing.

27.6.2.14 Ladders shall be inspected by a competent person prior to each use.

27.6.2.15 Broken or damaged ladders will be immediately removed from service and rendered unusable.

27.6.2.16 When ascending or descending a ladder the user shall face the ladder.

27.6.2.17 Each associate shall use at least one hand to grasp the ladder when progressing up and/or down the ladder.

27.6.2.18 An associate shall not carry any object or load that could cause the associate to lose balance and fall.

27.6.3 Wood Job Made Ladders

27.6.3.1 Job-Made ladders shall conform to ANSI Standards and shall be constructed under the supervision of a competent person.

27.6.3.2 Wood job-made ladders with spliced side rails shall be used at an angle such that the horizontal distance is one-eighth the working length of the ladder.

27.6.3.3 Job-made ladders shall be tailored to their intended use.

27.6.3.4 Single-cleat and double-cleat ladders shall not exceed 24 feet in working length. Rails shall extend above the top landing at least 36 inches to provide a handhold for mounting and dismounting and cleats shall be eliminated above the landing level.

27.6.3.5 The width of single-cleat ladders shall be at least 16 inches, but not more than 20 inches. The width of double-cleat ladders shall be not less than 18 or more than 22 inches.

27.6.3.6 Wood cleats shall be nominal 2x4 stress-grade dimension lumber. Each cleat shall be continuous and extend the full width of double-cleat ladders.

27.6.3.7 Filler blocks of the same thickness as the cleats shall be inserted between cleats and shall be butted tightly against the underside of each cleat.

27.6.3.8 Ladder shall be positively fastened to a secure object as near as possible to the top point of bearing.

27.6.3.9 Safe landings shall be provided at the top of all ladders.

27.6.3.10 All job-made ladders, landings, and lashings shall be inspected at least every week, and any defects that have developed shall be immediately corrected.

27.7 Training Requirements

27.7.1 On projects where ladders/stairways are being used the associates shall be trained in the following areas:

27.7.1.1 The nature of fall hazards in the work area.

27.7.1.2 The correct procedures for erecting, maintaining, and disassembling the fall protection systems to be used.

27.7.1.3 The proper construction, use, placement, and care in handling of all stairways and ladders.

27.7.1.4 The maximum intended load-carrying capacities of ladders used.

27.7.1.5 The standards contained in this section.

27.7.2 Retraining shall be provided for each associate as necessary so that the associate maintains the understanding and knowledge acquired through compliance with this section.

27.7.3 Training shall be documented.

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