

# Safety, Health and Environment (SH&E) Contractor Flysheet for Camden, AR Operations

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## PURPOSE, SCOPE AND PHILOSOPHY

### A. Buyer Contractor Policies

1. Contractor shall adhere to all applicable federal, state, local, municipal and public laws, ordinances, building codes, rules, regulations and orders now existing or later enacted. Should a conflict arise, the most stringent of these laws, ordinances, codes, rules, regulations, orders or contract requirements shall apply. Should any unforeseen consideration or problems arise, they shall be resolved by mutual agreement, recognizing that personnel safety, the environment, and regulatory compliance is of paramount importance.
2. **Prior to commencement of any work on Buyer's facilities or property and expressly before arriving at the Buyer's job site, Contractors involved in trades-type work (e.g., electrical, pipefitting, mechanical) are required to be pre-approved by Aerojet Rocketdyne's Contractor Safety Committee. Contractors will be denied access to the Buyer's facilities until they have received notification from SH&E that they been pre-approved.** Companies requiring pre-approval include, but are not limited to, general contractors, OEMs, construction vendors, riggers/millwrights, painters, machine tool service vendors, and other vendors who use power tools and/or are engaged in activities that involve potentially hazardous chemicals or energy sources. To be Pre-Approved Contractors must submit the following documentation: Completed SH&E Pre-approval form; Completed Contractor Training Documentation Matrix; Injury & Illness Prevention Program (IIPP); Code of Safe Work Practices prior to commencement of any work at Buyer's facilities or property and arriving on the job site. This pre-approval is required for the Contractor and any of the Contractor's subcontractors, at any tier, that need to access the Buyer's facilities in the performance of this Order.
3. Contractor is responsible for controlling the manner and methods of its operations and is directly responsible for the safety of its employees and Subcontractor's employees and ensuring regulatory compliance. In the event Contractor's employees or its Subcontractors' employees fail to comply with Federal, State, and/or local regulations, or this document, Buyer has the right and obligation to stop work, at Contractor's expense, until the issue is rectified to Buyer's satisfaction. Furthermore, violations may be referred to the appropriate regulatory agency(s), which may lead to legal, civil, and/or criminal action.
4. Failure of this document to reference specific laws, ordinance, codes, rules, regulations or orders does NOT excuse Contractor or Contractor's employees from following those regulations that may be applicable to the scope of work being performed by Contractor.
5. The requirements of this document may be modified by the specific safety and environmental rules and procedures of individual operating buildings or facilities. These modifications will be noted and indicated on the drawings.
6. Contractor shall not permit any person to enter upon Buyer's premises, at the work site or elsewhere, except in accordance with Buyer's safety and security requirements.
7. Contractor is solely responsible for the safety and protection of all persons and property while on or near the work site, including the safety and protection of Contractor's employees, agents, delegates, invitees and Subcontractors'.

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8. Contractor agrees to indemnify and hold Buyer harmless from prohibiting any Contractor or Subcontractor's employees, agents, or invitees from entering onto the work site or project if, in the sole opinion of Aerojet Rocketdyne, such employee, agent, or invitee fails to comply with the safety, health, and environmental laws, rules, and regulations, discussed in Section I.A.1 of this document.
9. All Contractor and Subcontractor employees that contact or work on asbestos-containing materials during their work activities shall meet the latest revision of the Arkansas Pollution Control and Ecology Commission Regulation 21 and other applicable Federal, State, and local regulatory requirements.
10. Unless stated otherwise in this document, all reference(s) to Contractor shall include Contractor's employees, agents, delegates, invitees and Subcontractor's employees, agents, delegates, invitees.

## **B. Reference Standards**

1. Occupational Safety and Health Act (OSHA)
2. -Title 29 Code of Federal Regulations (CFR), Parts 1910 & 1926-
3. National Fire Protection Association (NFPA) Standards comprising the National Fire Codes, including, but not limited to the National Electrical Code (NEC).
4. American National Standard Institute (ANSI)
5. National Institute for Occupational Safety and Health (NIOSH)
6. American Conference of Governmental Industrial Hygienists (ACGIH) Industrial Ventilation Manual
7. Bureau of Labor Statistics (BLS)
8. 40 CFR, Resource Conservation and Recovery Act (RCRA)
9. 49 CFR, Department of Transportation of Hazardous Materials and Waste
10. Toxic Substance Control Act (TSCA)
11. Where a standard is referenced in this document, the subject referenced (equipment, material, or work) shall be in compliance with the most recent edition of that standard.
12. The referenced standards are minimum requirements. Where the requirements of this document are in excess of, but not contrary to, the referenced standards, Contractor shall comply with the more stringent requirements of this document.

## **C. SH&E Orientation**

1. Buyer's SH&E Organization or designee will provide Contractor all safety rules and regulations in effect at the worksite. Contractor will be responsible for requiring all of the Contractor's employees to receive this information prior to beginning work at Buyer's facility. These rules will include an explanation of Buyer's:
  - a. Emergency System
  - b. Hazardous Materials or conditions which may affect Contractor's employees
  - c. Safety precautions for facilities in which the Contractor may be working
  - d. Emergency procedures for specific facilities
  - e. Emergency Equipment, Alarms, or Signals
    - (1) Fire extinguishers, fire alarm stations, signal lights, sprinkler systems, emergency lights, and component equipment shall not be removed, disconnected, or reconnected without the specific approval from Security

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Services through the Contract Coordinator. Permission to shut down, remove, modify, or relocate such equipment must be requested through the Contract Coordinator.

- (2) Fire hydrants and fire service control valves shall not be blocked. Permission for the use of fire hydrants must be obtained from Security Services through the Contract Coordinator.
  - f. Emergency Exits
    - (1) Locations
    - (2) Maintaining clear passage
  - g. Evacuation procedures and emergency assembly areas
  - h. Contractor shall keep records showing to whom this information has been given. In the event there is a change in personnel in Contractor's work force, Contractor is responsible for providing any new employees with this information and maintaining all necessary records.
  - i. Plant Fire Safety Rules
  - j. Existing Buyer regulatory permits and conditions which may be affected or impacted by Contractor's scope of work
2. Contractor shall provide these safety rules and regulations to all Subcontractors.

## D. Contractor Responsibilities

1. The Contractor is responsible for controlling the manner and methods of its operations and is directly responsible for the safety of its employees and Subcontractor's employees and ensuring regulatory compliance. To accomplish this, the Contractor will do all things necessary to ensure the safety of Contractor's or Subcontractor's, employees, agents, or invitees, including the following:
  - a. Appoint a Contractor designated representative for project and safety coordination at the job site. The designated representative must be on site while work is being accomplished. The Contractor may designate a Subcontractor's employee as the Contractor's representative, but in any event, the Contractor remains directly responsible to Aerojet Rocketdyne for safety performance of all work, including Subcontractors.
  - b. Use only the plant or building entrance designated by Buyer for entering and exiting.
  - c. Prohibit Contractor and Subcontractor personnel from entering Buyer's buildings or facilities outside scope of worksite.
  - d. Follow local plant access control practice. Buyer may require Contractor's employees to sign a log upon entering and leaving Buyer's buildings, facilities or test sites. The Contractor will also ensure that each Contractor employee is issued and wears a Aerojet Rocketdyne-issued badge.
  - e. Ensure that all Contractor and Subcontractor personnel comply with the terms of the contract, including applicable Security Services and SH&E rules. These rules include, but are not limited to, the Confined Space Entry Procedure, Hot Work Permit, Lockout/Tagout Procedure, and Hazardous Material and Waste Management Procedures.
  - f. Provide supervisors and employees who are competent and adequately trained to perform required work.

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- g. Advise Contractor's employees and Subcontractor's employees of hazards associated with the work to be performed, including any hazard information provided to the Contractor by Buyer. It is the Contractor's obligation to inform its employees and Subcontractor's employees of any hazardous chemical information the Contractor receives from Buyer in compliance with state and federal Right-to-Know legislation and to ensure that the Contractor's employees and Subcontractor's employees receive proper training.
- h. Provide all tools and equipment for the work, including personal protective equipment. The tools and equipment must be properly maintained and appropriate for safe accomplishment of the work. Buyer has the right to refuse or restrict the use of tools, equipment or hazardous materials.
- i. Keep the work area free from safety and health hazards. The Contractor shall promote safety and maintain good housekeeping throughout all phases of construction.
- j. Keep the Contract Coordinator immediately notified and fully informed of any work, which may affect the safety of Buyer's employees or property or which may violate regulatory compliance. This includes complying with state and federal Right-to-Know legislation and providing to the Contract Coordinator appropriate Material Safety Data Sheets (MSDS) or other required information about hazardous materials the Contractor will bring onto Buyer's property.
- k. Follow specific instructions supplied by Contract Coordinator should emergency alarms be activated.
- l. Know who to call and what to do in the event of an emergency involving the Contractor's work or employees.
- m. Provide first-aid and medical services, know where they are located, and how to obtain them for Contractor's employees when needed.
- n. Notify the Contract Coordinator immediately of any injury or illness to the Contractor's employees or Subcontractor's employees occurring while on Buyer's property. Provide a copy of each accident report to the Contract Coordinator within one working day. Contractor is responsible to maintain an adequate supply of investigation forms at the job site.
- o. Coordinate the use of all radiation producing devices or materials such as radiography equipment and alignment lasers with the Contract Coordinator.

### **E. Contractor's Safety, Health and Environmental Training**

1. Contractor shall instruct each employee in the recognition and correction of unsafe acts, behavior and conditions and the regulations applicable to Contractor's work environment. The employee shall use these instructions to control or eliminate any hazards or other exposure to illness or injury.
2. Contractor shall acquaint each Contractor's employees with the safety and emergency equipment available and the procedures to be followed in each type of accident occurrence.
3. At a minimum, each Contractor shall be required to conduct weekly safety meetings with Contractor personnel and Subcontractor's employees. Minutes shall be kept onsite and submitted to the Contract Coordinator.
4. Contractor shall provide a qualified supervisor who is responsible for maintaining job site safety and environmental compliance during all phases of construction. The supervisor shall conduct safety meetings with all personnel weekly, monitor site

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safety and environmental compliance activities continuously and thoroughly investigate all accidents and near misses. Depending on the size and type of project, the supervisor may have other work site responsibilities.

5. All Contractor personnel must receive an initial orientation by Contractor's supervisor into Contractor's safety procedures, Contractor's Injury & Illness Prevention Program, and the requirements of this Section.
6. The Contractor is responsible for educating their personnel on the requirements of the Federal and Arkansas Hazard Communication Right-to-Know law regarding hazardous chemical inventories, MSDS's, container labeling, and emergency procedures.
7. Documentation of Federal and Arkansas Hazard Communication Right-to-Know employee training is of paramount importance. Contractor shall keep complete and accurate records of Contractor's personnel training and attendance. This documentation as well as the hazardous chemical inventory, and any permits, and MSDS file, shall be ready for audit at any time by either Buyer's SH&E organization or an inspector from an outside regulatory agency.

## **F. First Aid and Medical Attention**

1. All first aid and medical attention for Contractor's workers shall be handled by Contractor in accordance with OSHA regulations.
2. Contractor shall be required to set up a first aid station in compliance with OSHA and State regulations.
3. Contractor shall be responsible for containerizing all bio-hazardous waste in an OSHA compliant manner and sanitizing any contaminated work areas.
  - a. Buyer will direct Contractor where to dispose of the bio-hazardous waste onsite at Aerojet Rocketdyne.

## **G. Recording and Reporting of Injuries/Illnesses**

1. Contractor shall immediately notify Contract Coordinator of all occupational injuries or illnesses that occur to Contractor's employees while on Buyer's property, and all near-misses that could have led to an injury or illness.
2. Every Contractor and Subcontractor shall maintain occupational injury and illness records for employees which shall include the following forms:
  - a. OSHA 301 - Supplementary Record of Occupational Injuries and Illnesses.
  - b. OSHA 300 - Log and Summary of Occupational Injuries and Illnesses.
3. Contractor shall notify Buyer of the name of Contractor's employee who will be knowledgeable in the prevention of accidents at the job site, and whose duty will be to report immediately in writing to Buyer all accidents and injuries occurring, including near misses, at the worksite. If Contractor files an accident report with a public authority, Contractor shall provide a copy of the report to Buyer, prior to issuance.
4. Contractor shall investigate, as a minimum, each accident and near-miss to determine the cause and implement future corrective measures. Contractor will present a written copy of its investigation report and corrective action measures to Buyer's Health & Safety department through the Contract Coordinator, within one working day.

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## H. Personal Attire

1. Contractor's employees shall wear proper clothing while on Buyer's premises. Removal of shirts or wearing of shorts, "tanktops" or open-toed shoes is not allowed.
2. Contractor employees shall wear hard hats (ANSI Z89.1, Class A or Class B rated) at the job site during all phases of construction activities. The Contractor shall be responsible to ensure that all Contractors' employees adhere to the hard hat policy and that the appropriate signage is posted at the job site.
3. Contractor's employees shall wear appropriate eye protection, consisting as a minimum of safety glasses with side shields (ANSI Z87.1), within Buyer's designated areas and as required by OSHA to perform construction activities. Dark tinted lenses are prohibited indoors, excluding welding operations.
4. Contractor's employees shall wear safety-toe footwear (ANSI Z41.1) when there is potential for injury or within Buyer designated safety-toed footwear areas.
5. For additional requirements concerning personal protective equipment, please refer to Section III.C. of this document.

## I. Personal Conduct/Restricted or Prohibited Items

1. Horseplay, fighting, gambling, unauthorized explosives, possession of firearms, drinking alcoholic beverages, use of regulated drugs, being under the influence of drugs or alcohol, theft, vandalism, sabotage, and distribution of unauthorized literature shall be cause to bar those involved from Buyer's property, indefinitely and subject the individual(s) and/or company to possible legal, civil and/or criminal action.
2. Weapons, ammunition, narcotics, and intoxicating beverages are prohibited items and shall not be admitted on Buyer's premises.
3. Cameras, radios, binoculars, recorders, and transmitting devices are restricted items. Such items are permitted onto the premises only if job related and after obtaining prior approval from Security Services through the Contract Coordinator. Prior approval will be additionally required from Buyer's SH&E organization through the Contract Coordinator, whenever explosives or radioactive materials are to be brought upon the premises.

## J. Smoking Regulations

1. Smoking is prohibited while on Buyer's premises including all buildings and parking area, unless other arrangements have been made by the Contractor Coordinator.

## K. Use of Buyer Tools/Equipment

1. Building cranes may be used by the Contractor only with the prior approval of the Contract Coordinator and only after appropriate bailment liability documentation is approved by Buyer. Testing or proof loading prior to and/or after the Contractor's use shall be at the Contractor's expense.
2. With the exception of Section I.K.1. of this document, the use of Buyer tools and equipment is strictly forbidden.

## L. Buyer Work Safety Permits

1. Permits may be required by Buyer or the State of Arkansas for certain work activities. Examples include, but are not limited to the following:



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- a. Lockout/Tagout
    - (1) Refer to Section III.I. of this document for Lockout/Tagout requirements.
  - b. Excavations
  - c. Hot Work Permit
    - (1) Refer to Section III.B of this document for welding, cutting and spark production requirements.
  - d. Confined Space Entry
    - (1) Entry into a confined or enclosed space or area shall require a "Confined Space Entry Permit" by Contractor to be completed before work begins. Refer to Section III.H of this document for Confined Space Entry requirements.
    - (2) Buyer shall approve Contractor's Confined Space Entry Procedures prior to entry into any confined space.
  - e. Demolition of structures or buildings greater than 36 ft. high.
  - f. Erection of structures or buildings greater than 36 ft. high.
  - g. Operation of internal combustion engines below ground.
  - h. Operation of tower cranes.
  - i. Fire suppression/detection impairment
    - (1) All work that requires the disconnection, severance, or shutting off of a fire suppression or detection system, shall be coordinated through the Contract Coordinator.
    - (2) Buyer's Security Services will be responsible for closing all valves, aborting all fire suppression and detection systems, and completing an "FM Global Red Tag" Impairment Permit.
  - j. Rigging Operations
    - (1) All lifts with rigging shall be planned and then performed in accordance with the plan. Any lift the buyer identifies as "Program Critical" or "Safety Critical" will require a written lift plan that will be reviewed by the buyer's Material Handling Specialist.
  - k. Job Safety Analysis (JSA)
    - (1) Operations the Buyer identifies as "Safety Critical" that are not otherwise addressed under this Work Safety Permits section will require a written Job Safety Analysis (JSA) that identifies the job's hazards and the planned methods for controlling those hazards. The JSA will be reviewed by the Buyer's Environment, Health, & Safety representative.
2. Conditions noted on the permit(s) shall be exactly identical to the actual job conditions. When the conditions of a job change, or when new tools requiring permits are needed to do the job, other than those originally covered in the initial permit, WORK SHALL STOP IMMEDIATELY because the permit is invalid. The permit is only good for what it describes--no more. Work cannot progress until the situation can be carefully analyzed and a new permit issued for the new conditions.
  3. Contractor shall present permit to Contract Coordinator for work scope concurrence and for Contract Coordinator's initials showing proof of approval.
  4. Contractor must ensure that the Contractor's employees are knowledgeable of the permit requirements.

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5. The permit must be posted in the work area. If the permit cannot be posted, it should be carried by one of the Contractor's supervisors in that area. Contract Coordinator will periodically question Contractor's employees as to the location of the permit and its requirements. Permits shall not remain in Contractor's trailer.
6. Communication is the key to enhancing the effectiveness of the work permit system. Contractor's employees, agents, delegates, invitees and Subcontractor's, and Buyer's Contract Coordinator, including operators and facility supervisors, should all be aware of the specific requirements of each permit. This then allows each to review the ongoing work and look for possible changing conditions or deviations during their daily work routine.

### **M. Hazardous Material Usage**

1. Before work can begin, Contractor shall provide to Buyer's SH&E organization, through the Contract Coordinator, a hazardous material inventory and the corresponding MSDS's.
2. Hazardous materials shall not be brought onto Buyer's property until approval is received from Buyer's SH&E organization, through the Contract Coordinator.
3. The hazardous material inventory, along with all MSDS's shall be made available to the Contract Coordinator on an immediate basis.
4. The Contractor is required to strictly enforce container labeling. All containers of hazardous substances shall be labeled. Label shall identify substance, appropriate hazard warnings, and emergency procedures.
5. In the event that containers suspected of containing hazardous substances are received without the manufacturer's label, the shipment shall be rejected. All containers of hazardous substances must be appropriately labeled and identified.
6. If a shipment of properly labeled containers is received by Contractor without a MSDS, Contractor shall immediately request the MSDS from the manufacturer. No material shall be brought onsite or used without prior SH&E approval and associated MSDS.
7. A MSDS is not required for subsequent deliveries of the same product, and same manufacturer, for the same job.
8. Contractor shall store hazardous materials in Buyer approved staging areas. Upon request, Contractor shall provide Buyer's Contract Coordinator with a list of hazardous materials used on Buyer's property for each day and the quantities used for each material.

### **N. Air Contaminants and Noise Control**

1. Aerojet Rocketdyne employees shall not be subjected to excessive air contaminants and noise from Contractor's operations. Protective measures may include, but not limited to the following:
  - a. Keeping levels of gases, dust, fumes, etc., below OSHA's Permissible Exposure Level (PEL) in non-office areas and 1/10 the PEL for office locations.
  - b. Isolation of heating, ventilating and air conditioning systems.
  - c. Installation of barriers, temporary walls or approved fire retardant plastic.
  - d. Working off shift hours.

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## II. ENVIRONMENTAL PROTECTION REQUIREMENTS

### A. General

1. Federal, State and Local regulations have specific requirements, pursuant to the handling, management and disposal of hazardous materials including, but not limited to, asbestos and lead-containing materials, specifically lead-based paint; PCB ballasts; fluorescent light tubes, and contaminated soil. The Contractor must comply to the specific requirements associated with this specification, including but not limited to required licenses, certifications, permits and insurance.

### B. Air Quality

1. At any time during repairing, servicing or disposing operations, the Contractor shall at all times comply with all applicable United States Environmental Protection Agency (USEPA) & Arkansas Department of Environmental Quality (ADEQ) Rules and Regulations, including specific permit requirements and conditions that are the Contractor's responsibilities.
2. Buyer or outside agencies have the right to ask for the proper certifications and documentation to perform the operation. Should Buyer find the work is being performed without the proper certification and documentation, Buyer has the right and obligation to stop work, at the Contractor's expense, until the issue is rectified.
3. Contractor shall present all applicable Air Permits to operate, prior to commencing work.
4. Contractor shall present all applicable Arkansas Department of Environmental Quality (ADEQ) Air Permits to operate, prior to commencing work.
5. All hazardous materials (such as paints, solvents, adhesives...) used by contractor have to comply with Regulatory requirements at all times.

### C. Asbestos

1. Contractor shall not be disturbed building materials containing asbestos unless indicated on drawings or as instructed by the Buyer's Contract Coordinator. If such areas must be disturbed, Contractor shall coordinate with Contract Coordinator to obtain written approval from Buyer's SH&E organization. All asbestos removal shall be performed by a State of Arkansas licensed Contractor. Prior to any removal of asbestos material, the State of Arkansas Licensed Contractor shall obtain all required State of Arkansas Department of Environmental Quality (ADEQ) permits and documents. All asbestos removal and disposal shall be performed according to the ADEQ NOI.
2. Buyer defines all asbestos-containing material (ACM) as a material containing any amount of asbestos fibers.
3. The asbestos removal Contractor shall provide to the Buyer's SH&E organization all, "Project Close-out Documents for Asbestos Abatement," in the time period require by the applicable regulations or within 15 days of project completion.

### D. Lead

1. Contractor shall not install lead-containing materials, unless approved by Buyer's SH&E organization. Furthermore, Contractor shall assume all existing paint contains lead, unless analytical data proves otherwise. Paint containing lead shall not be disturbed, unless the activities have been documented in a lead work plan, in accordance with Arkansas Department of Environmental Quality (ADEQ), and

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submitted to Buyer's SH&E organization for review. Activities, which may involve lead include:

- a. Painting and decorating with lead-containing paint or other materials;
  - b. demolition or salvage of structures where lead or materials containing lead are present;
  - c. removal or encapsulation;
  - d. new construction, alteration, repair or renovation of structures, substrates, or portions thereof, that contain lead;
  - e. installation of products containing lead;
  - f. lead contamination/emergency clean-up;
  - g. transportation disposal, storage, or containment of lead or materials containing lead on the site;
  - h. maintenance activities
2. Contractor shall remove lead-containing materials in such a way that does not generate lead dust and follow the specific requirements listed in 29 CFR 1926.62 and CCR Title 8, Section 1532.1.

## **E. Water Discharge**

1. Contractor shall not discharge wastewater to Buyer's ground, sanitary system, or storm drains unless written authorization has been obtained from Buyer's SH&E organization. All equipment or area washdown water shall be contained and discharged according to instructions from Buyer's Contract Coordinator.

## **F. Hazardous Waste**

1. Contractor shall notify Buyer's Contract Coordinator prior to generation of any hazardous waste.
2. All hazardous waste shall be handled, managed and packaged to meet all Federal, State and Local regulations.
3. The Contractor shall store hazardous or potentially hazardous wastes in the Buyer approved staging area(s).
4. Contractor shall make a good faith effort to minimize hazardous waste generation.
5. Should the Contractor or their designated agents not comply with the Federal, State, and/or local regulations, or with this document, Buyer has the right to stop work, at Contractor's expense, until the issue is rectified. The cost for project delays shall be assumed by Contractor.
  - a. Violations may be referred to the appropriate regulatory agency(s), which may lead to legal, civil, and/or criminal action.

## **G. Radiation**

1. When applicable, prior to the conduct of site operations, Buyer's SH&E organization shall review and approve Contractor's radiation safety procedures. Unless specified otherwise in writing, the Contractor shall bear primary responsibility for safe conduct of licensed or registered operations while on Buyer's property.

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## III. HEALTH & SAFETY REQUIREMENTS

### A. Fire Protection & Prevention

1. Contractor's personnel shall observe Buyer's plant fire safety rules and regulations. These include, but are not limited to:
  - a. Contractor shall provide the number of fire extinguishers and fire protection devices required by law and any additional protection devices required by Buyer. Contractor shall also maintain the equipment in good operating condition (i.e., fully charged). All fires shall be promptly reported to Buyer's Security Control Center in accordance with emergency procedures.
  - b. Smoking is only permitted in designated areas.
  - d. Welding, burning, cutting, spark producing equipment, or heating operations require prior approval and a valid permit through the Contract Coordinator.
  - e. Liquefied petroleum fuel tanks require inspection by Contractor Coordinator prior to initial operation. They shall be properly maintained and their exhaust emissions shall not exceed permissible levels.
  - g. Roofing kettles and tar pots used on Buyer's premises must be inspected and approved by Contract Coordinator upon arrival at the job site. The unit must be disconnected from the towing vehicle at all times when in operation and will be kept at a safe distance from buildings.
  - h. The use, handling, or storage of explosives and all blasting operations require approval of Buyer's SH&E organization through the Contract Coordinator. Contractor must request approval for the use of explosives at least 24 hours in advance of such requirement.
  - i. Aisles, exits, and stairways shall be clear and accessible at all times and in good repair. When it is necessary to close off, block or repair an aisle, exit or stairway, prior approval must be obtained from Buyer's SH&E organization through the Contract Coordinator.

### B. Welding, Cutting & Spark Production

1. Contractor's personnel shall observe Buyer's plant safety regulations regarding welding, cutting, burning, grinding or heating operations, open-flame operations and spark production.
2. Proper precautions (isolating welding and cutting, removing fire hazards from the vicinity, providing a fire watch, etc.) for fire prevention shall be taken in areas where welding or other "hot work" is being done. The Permit to Weld or Burn must be completed prior to any welding, cutting, burning, grinding or heating operation, open-flame operations and spark production, or other "hot work" being performed.
3. Contractor shall provide a fire watch person to observe the area where the "hot work" is occurring. The fire watch person shall have no other responsibilities, other than observing the operation for evidence of fire. The fire watch person shall observe the area of "hot work" for a period of at least 30 minutes following the cessation of "hot work" activities.
4. Welding equipment used on the premises must be of an approved type and in good operating condition. When overhead welding operations are to be performed, arrangements shall be made through the Contract Coordinator for removal, whenever possible, of the hazardous materials from the immediate area to a safe

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location. Contractor will provide adequate standby personnel, barriers, and warning signs on lower floor level while performing overhead burning, cutting or welding operations, or other "hot work" operations. Contractor is responsible for furnishing glass cloth blanket, or other approved ceiling covering to protect materials which cannot be removed from the work area and which may be damaged by such operations.

5. When welding or cutting operations are performed with oxygen and acetylene tanks, the tanks must be properly secured in an upright position and equipped with shutoff wrenches. Each oxygen and acetylene tank must be shut off at the tank and hoses bled down when the welding operations using the tanks are completed for the day. Electrical arc welding equipment, including power sources such as gasoline engines, must also be shut off when not in use.
6. Contractor shall exercise extreme care in the use of all open flame equipment. The Contract Coordinator shall be informed daily of all such activities. The following items are of particular importance and shall be strictly enforced by Contractor:
  - a. Contractor shall enforce strict compliance with the above Permit to Weld or Burn.
  - b. Contractor's welding, cutting and spark production or other "hot work" operations, will be permitted in flammable liquid areas only if operations are shut down, vapor checks made, solvents removed and automatic sprinklers are in service.
  - c. Contractor shall use fire-resistant tarpaulins to contain sparks and hot metals.
  - d. Contractor shall confine flammable liquids in approved safety containers.
7. Contractor shall perform welding, cutting and other "hot work" operations in accordance with OSHA regulations. These shall include, but not be limited to:
  - a. All exposed combustible materials located below the welding and cutting area must be removed to a safe location, covered with a fire-resistant material or protected by an approved spark catcher to contain all sparks and slag.
  - b. An approved fire extinguisher must be within the immediate area, which is within 20 ft. of any welding, cutting, or "hot work" operations.
  - c. The user must inspect all leads, grounds, clamps, welding machines, hoses, gauges, torches, and cylinders before they are put into operation.
  - d. All fittings, couplings and connections are to be "leak-free".
  - e. Provide adequate ventilation while cutting, welding, soldering, or working on galvanized material while working within enclosed shelters.
  - f. All work must have a separate and adequate ground, pulled from the welding machine to the item being welded.
  - g. Adequate measures, e.g., flash screens, shall be taken to shield the eyes of personnel in the vicinity from flash burns and the welding rays.
  - h. At the end of each shift (or when not in use for extended periods), the welding machine shall be turned off.
  - i. An OSHA-approved welding helmet which attaches to a hard hat must be worn. Use appropriate fillers for the hazard.
  - j. Electric welding is prohibited from any metal ladder.

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- k. Compressed gas cylinders must be secured vertically to an adequate support while in storage or transit. The protective cap must be on during storage and transit. Under no circumstances shall acetylene cylinders be laid down.
  - l. Keep oil and grease away from oxygen regulators, hoses, and fittings. Do not store wrenches, dies, cutters, or other grease-covered tools in the same compartment with oxygen equipment.
  - m. Approved cutting goggles must be worn. Use appropriate filters for the hazards.
  - n. Gloves shall be worn to protect hands and wrists. Flying chips and weld slag travel a considerable distance and may be dangerous to other personnel in the area and, therefore, shall require a screening or shielding. Heavy leather work gloves, long sleeve shirts or jackets, and goggles and/or a full face shield shall be worn when welding, cleaning, grinding, and brushing surfaces. The same precautions shall be taken for wire brushing and power brushing. Flame-resistant aprons of leather or other suitable material shall be worn as protection against radiating heat and sparks. Clothing should be free of oil and grease.
  - o. Torches shall never be left in a vessel due to potential leaks.
  - p. Oxygen shall not be used to operate pneumatic tools, pressurize a container, blow out lines, or as a substitute for compressed air or other gases.
  - q. Cylinders and hoses shall be placed where they are not exposed to sparks and slag from a welding or cutting operation. or other "hot work" operations.
  - r. Cylinders shall be raised to upper levels with approved rigging gear. Do not lift them with slings or by the protective cap or valve.
  - s. Do not strike an arc on cylinders or use them as rollers.
8. Welding and cutting on barrels or other containers shall be in accordance with all prevailing codes, ordinances and regulations, including all procedures directed by Buyer's Contract Coordinator.

### **C. Personal Protective Equipment**

- 1. If engineering or administrative controls cannot be implemented to limit harmful exposure to airborne contaminants, MSHA or NIOSH-approved respirators shall be provided by Contractor for their workers and any of their Subcontractor's.
- 2. The respirator shall be applicable and suitable for the purpose intended.
- 3. Contractor shall be responsible for the establishment and maintenance of the respirator protective program in accordance with OSHA and the requirements listed below:
  - a. Respirators shall be selected on the basis of hazards to which the worker is exposed.
  - b. The user shall be instructed and trained in the proper use, maintenance and fit of respirators and their limitations.
  - c. Where practical, the respirators should be assigned to individual workers.
  - d. Respirators shall be cleaned, disinfected and filters replaced as per manufacturer's recommendations.
  - e. Employees should not be assigned to a task requiring use of respirators, unless it has been determined that they are physically able to perform the work and use the equipment. Contractor's physician shall determine what health and physical conditions are pertinent on an annual basis.

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4. Contractor is responsible for providing and requiring employees to wear appropriate personal protective equipment for all operations where there is an exposure to hazardous conditions, where there is the need for using such equipment to reduce the hazards to employees, where required by the specifications or MSDS, or where required by plant operating procedures. It is the Contractor's responsibility to ensure their employees and Subcontractor's employees conform to the OSHA regulations regarding personal protective equipment. The most stringent requirements shall take precedence and shall include, but not be limited to:
  - a. Hard hats (metal hard hats shall not be worn), industrial safety glasses with side shields, full-length trousers, and leather shoes are required equipment and must be worn at all times when on the worksite. Hard hats and safety glasses shall be worn with welding helmets and face shields. Flexible slip-on side shields are not acceptable. Additional equipment such as ear plugs, goggles, safety belts, gloves, safety nets, respirators and similar safety items may be required depending on the nature of the work area and the work involved.
  - b. When the possibility of loose particles or flying projectiles exists, the proper safety wearing apparel and safety protection devices shall be worn. A full face shield may be required at the discretion of the Contract Coordinator.
  - c. Safety-toe footwear (ANSI Z41.1) shall be worn when there is potential for injury or within Buyer designated areas.
5. Contractor shall have extra safety glasses and hard hats available on worksite. Safety glass cleaner shall also be made readily available to all Contractors' employees on worksite.

## **D. Material Handling, Storage & Disposal**

1. General:
  - a. Contractor shall be responsible for using safe methods of handling, storage and disposal of materials at the worksite.
  - b. Contractor's personnel shall observe Buyer's plant safety rules and regulations for receiving, handling, storage and disposal of all materials.
2. Material Handling:
  - a. Rigging equipment for material handling shall be of the proper size and rating. All rigging equipment shall be inspected by Contractor 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. All rigging equipment not in use shall be properly secured.
3. Material Storage:
  - a. All materials stored shall be stacked, braced, racked, blocked, interlocked, or otherwise secured to prevent sliding, rolling, falling or collapse.
  - b. Flammable material storage shall be as previously described.
  - c. Storage location shall be approved by the Contract Coordinator.
4. Material Disposal:
  - a. Disposal of debris and waste materials such as chemicals, cleaning solvents, lubricating oils, cutting oils, toxic materials and other hazardous materials, shall comply with all applicable ordinances, regulations and laws of local, city, county, state, and national government agencies.



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- b. Contractor shall take steps necessary to prevent discharging of lubricating oils and cleaning solvents onto the ground and/or into sewers and sewage disposal systems to prevent contaminating rivers, streams, and the environment. These fluids (after use) shall be stored in waste drums or other approved containers and disposed of in a legal and authorized manner, including adherence to the Environmental Protection Agency (EPA) rules.

## **E. Ladders, Scaffolds & Work in Elevated Locations**

### 1. Ladders

- a. The use of erection of ladders shall comply with OSHA regulations and shall include, but not be limited to:
  - (1) Each user must visually inspect each ladder for defects before using.
  - (2) While ascending or descending a ladder, carry nothing which will prevent holding onto the ladder with both hands. Use handline if necessary to raise or lower materials.
  - (3) Metal ladders shall not be used around electrical equipment.
  - (4) Ladders must be securely tied off.
  - (5) When working with ladders, work facing the ladder with both feet on the rungs.
  - (6) All ladders shall have appropriate shoes and footings.
  - (7) Workers shall not stand with their waist above the top step of a step ladder.

### 2. Scaffolds

- a. The use of scaffolds shall comply with OSHA regulations and shall include, but not be limited to:
  - (1) The erection and dismantling of scaffolds shall be performed under the supervision and direction of a qualified person meeting the requirements defined in OSHA. All scaffolds must be erected level and plumb and on a firm base. Platforms must be secured to the scaffold structure.
  - (2) Scaffold handrails, midrails, or brace members shall not be climbed.
  - (3) Appropriate handrails, toeboards and cleats are in place as required.
  - (4) Since federal standards are detailed in their specifications for the dozens of types of scaffolds, OSHA 29 CFR Section 1926.451 must be referred to for each particular job's scaffolding requirements.

### 3. Safety Harnesses

- a. The use of safety harnesses shall comply with OSHA regulations. Safety harnesses with energy-absorbing lanyards are required to be worn and tied off when working on:
  - (1) Sloping roofs
  - (2) Flat roofs without handrails within 10 feet of the edge of the roof or an opening.
  - (3) Open-sided floors or platforms
  - (4) Any suspended scaffolds, platforms, or stages.
  - (5) Any scaffold with incomplete handrails.

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- (6) Aerial devices (any vehicle-mounted or self-propelled device, telescoping extensible or articulating, or both, which is primarily designed to position people).
- (7) Elevated work platforms (a device designed to elevate a platform in a vertical axis, e.g., a Vertical Tower or Scissor Lift) with incomplete rails or rails less than 42 inches high.
- (8) Any steel erection.
- (9) Confined spaces, where required by the Permit, and may include such locations as manholes, tanks, pressure vessels and tunnels.
- (10) Generally, any elevated work area that is without protection to prevent workers from falling, and the person can fall a distance of at least six feet.

b. Safety belts are not permitted to be used.

## F. Walking/Working Surfaces

1. Openings in Floors, Walls and Stairwells
  - a. The protection of unguarded openings in floors, walls and stairwells shall be in compliance with OSHA regulations.
  - b. All holes or openings through floors, decking, or walls at all elevations shall have properly identified hole covers or be barricaded immediately. Floor openings shall be guarded by a standard railing and toeboards or a cover. All open-sided floors or platforms, 30 inches or more above adjacent floor or ground level, shall be guarded by standard railings or the equivalent on all open sides, except where there is an entrance to a ramp, stairway, or fixed ladder.
  - c. Equipment or material shall not be stored on a hole cover.
  - d. Covers shall be secured in place against accidental displacement and extend adequately beyond the edge of the hole or opening.
  - e. Covers must be fabricated from minimum 3/4 inch thick exterior grade plywood provided one dimension of the opening is greater than 12 inches. Covers must have a sign on it stating: "DANGER - FLOOR OPENING - DO NOT REMOVE"
2. Stairways, Platforms, Runways, Walkways and Ramps
  - a. The fabrication and use of temporary stairways, walkways and ramps shall be in compliance with OSHA and ANSI regulations.
  - b. On all structures of two or more floors, stairways, platforms, runways, walkways, and ramps shall be provided for employees during the construction period.
    - (1) Handrails and guardrails shall be as required by OSHA, capable of withstanding a minimum force of 200 pounds in any direction.

## G. Signs, Signals & Barricades

1. The fabrication and use of barricades and handrails shall be in compliance with Buyer's plant safety rules and with OSHA and ANSI regulations. Special attention shall be given by Contractor to the following items:
  - a. To protect workers from injury, Contractor shall construct removable replaceable handrails, temporary barricades or secured covers for all openings in the roof and floors, open trenches in the roof and floor, open trenches crossing roads and pedestrian walkways, and open manholes in accordance

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with all applicable safety regulations. Such handrails, barricades and covers may be removed only when removal is necessary for the performance of work near the opening, trench or manhole. They shall be replaced when any of the following occur:

- (1) The workers take a break or leave the area; or
  - (2) The work is not completed by the end of the working day; or
  - (3) As soon as their absence is no longer necessary for the performance of the work.
- b. When such handrails, barricades or covers are removed by Contractor or any Subcontractor, they shall be replaced or rebuilt as necessary by Contractor or Subcontractor which removed them.
- c. Contractor shall post areas where it is necessary to do overhead work.
2. Contractor shall be responsible for posting, installing, and maintaining signs, signals, and barricades to detour the passage of persons or vehicles at all locations where potential hazards exist.
  3. Contractor's employees shall obey all signs, signals, and barricades which are posted to warn of potential or existing hazard. Contractor shall prepare a barricade plan and drawing when a pathway, aisle, thoroughfare or exit route must be blocked to perform work safely. The Barricade Plan and Drawing must be signed off by the Buyer's SH&E Representative.
  4. Barricades must be 42 inches high, square and level. Barricades should be kept 4 feet back from the edge of excavations, trenches, holes, platforms, and roofs.
  5. The selection and use of signs and tags shall be in conformance with the ANSI D6.1,235.1, and ANSI D6.1,235.2.
  6. Contractor shall be responsible for attaching danger tags to a piece of equipment (or part of a structure) to warn of potential or immediate hazards.
  7. Flagmen must wear red or orange vests. Flags must be of color and size meeting OSHA standards.

## H. Confined Space Entry

1. Definition:
  - a. A confined or enclosed space is defined as a special configuration that could result in any of the following:
    - (1) Atmospheric Condition - a condition in which a dangerous air contamination, oxygen deficiency, flammable atmosphere, or oxygen enrichment may exist or develop.
    - (2) Entry/Exit Access - a condition where the emergency removal of a suddenly disabled person is difficult due to the location or size of the access opening.
    - (3) Engulfment Condition - a condition where the risk of engulfment exists or could develop.
  - b. A confined space or enclosed area has the following characteristics:
    - (1) Large enough and so configured that a person can bodily enter and perform assigned work.
    - (2) The primary function is for something other than human occupancy.
    - (3) The space may contain known or potential hazards.

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- (4) There is limited or restricted means of entry and exit, i.e., use of hands or a contortion of the body to enter into or to exit from the confined space.
  - c. Confined or enclosed space entry means any action resulting in any part of the worker's face breaking the plane of any opening of the confined space, and includes any ensuing work activities inside the confined space.
2. General:
- a. Buyer's SH&E organization shall review and approve Contractor's Confined Space Entry Procedure(s) prior to any entry into a confined or enclosed space.
  - b. Entry into a confined or enclosed space or area shall require a "Confined Space Entry Permit" issued by the Contractor before work begins. Refer to Section I.L of this document for permit requirements. Refer also to Section III.C of this document for personal protective equipment requirements.
  - c. Contractor shall provide proper barriers with appropriate warning signs and lighting for night-time visibility must be provided around uncovered manholes. Stacked up equipment or poorly braced rails are not adequate.
  - d. No confined space shall be entered until tested by the Contractor and found free of dangerous atmospheres, such as flammable or explosive mixtures, hazardous vapors or oxygen levels. Manholes should be tested through a hole in their cover. If there is no hole, the cover should be raised only far enough to clear the test probe. Potentially hazardous mixtures are usually heavier than air, so additional testing at the bottom of the space should be done once the cover is raised.
  - e. All water must be pumped out. The pump shall be positioned where emissions will not contaminate the space. Where seepage is unavoidable, a pump must be kept running rather than waiting for a build-up. Rubber footwear and clothing must be worn in damp or wet locations.
  - f. An adequate supply of oxygen (minimum 19.5%, and maximum 23.5%) must be maintained using positive mechanical ventilation. One person shall remain outside above the manhole and serve as an "attendant" - whose sole responsibility is to monitor and maintain two-way communication with the authorized entrant(s) and to provide assistance and summon rescue personnel in case of emergency. The "attendant" may not enter the confined space to perform rescue, unless equipped and trained to do so.
  - g. A "secondary stand-by" shall be readily available to the "attendant" and shall summon for emergency assistance.
  - h. A safety harness with life line attached shall be worn by the person or persons working in the confined space when required by the Confined Space Entry Permit. The Contractor shall provide and have in place a mechanical means of retrieval.
  - i. Access ladders must be in good condition.
3. Electrical
- a. Refer to Section III.J of this document for required safety precautions during any work activity in a confined space where energized electrical cable and grounding cable is present.
4. Before entering any area or confined space where hazardous air contaminants or oxygen-depleted or oxygen-enriched atmospheres are possible or suspected to exist, Contractor must ensure proper safety equipment is used, including a recovery

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line and backup person. When Contractor's employees work along side Buyer's employees in the same confined space, Contractor's employees shall follow Buyer's procedures so as not to endanger employees with conflicting instructions.

## I. Lockout/Tagout

1. Contractor shall follow all OSHA regulations governing control of hazardous energy.
2. The purpose of Lockout/Tagout is to minimize the risk of personnel injury and equipment damage by emphasizing the requirement of achieving a controlled energy condition for the equipment being worked on before the actual work begins, and by preventing unauthorized or inadvertent energizing of equipment.
3. Definitions:
  - a. Authorized Employee/Person - A person who is authorized to control hazardous energy associated with equipment in order to perform work on that equipment.
  - b. Affected Employee/Person - A person whose job requires operation or use of equipment which MAY be serviced or maintained under Lockout/Tagout procedure or whose job requires the person's presence around equipment on which such servicing or maintenance can be performed. An affected employee and the authorized employee may be one in the same.
  - c. Energy Control Point - A single point at which hazardous energy flow can be effectively and positively controlled so that it cannot cause injury or loss of resources.
  - d. Energy Source - Any source of electrical, mechanical (motion), hydraulic, pneumatic, chemical, thermal, potential/stored (due to pressure, vacuum, gravity, or springs), or other energy.
4. The Authorized Employee shall undertake the following actions for the control of hazardous energy.
  - a. Identify:
    - (1) Hazardous energy sources - identify combinations of hazardous energy sources. Buyer will provide available plans, prints, drawings, manuals or schematics as necessary to help identify all energy sources and paths.
    - (2) Control points for each hazardous energy source - identify all energy control points. These include electrical switches, circuit breakers, and valves or physical setups that block energy such as misaligned pipes, line blanking devices, or missing links. Plans, prints, drawings, and schematics may be reviewed as necessary. Also identify those energy control points that must be locked in a safe position in order to prevent rebuild-up of energy (e.g., vent valves, relief valves, or electrical shorting bars).
    - (3) Appropriate energy control methods - identify the method used to control the energy. The use of locks, tags, and other devices such as blocks, chains, etc.
  - b. Notify Contract Coordinator, affected employees, and the area manager of the work to be done and possible hazards. Ensure that personnel are removed from hazardous areas.
  - c. Shut down the equipment according to established procedures or practices.
  - d. Control the energy by:

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- (1) Isolation - An energy path that is blocked or broken so that it cannot flow to cause injury (i.e., turning off a circuit breaker or switch or physically disconnecting electrical wires to interrupt current).
- (2) Blocking - An energy source is "blocked" if there is some physical barrier installed or some physical setup that prevents parts from moving, objects from falling or activation of switches or connections from being tampered with.
- (3) Dissipation - Energy that is reduced to a level no longer hazardous to a person (e.g., grounding electrical hazard points, allowing cold or hot objects to equilibrate to ambient temperature, releasing pressure or vacuum to ambient pressure, and allowing springs to relax to zero stored energy).

NOTE: Relying upon configuring limit switches, interlock devices, and control circuit devices (such as push buttons and selector switches) as the sole means of de-energizing equipment and controlling the energy is NOT allowed.

- e. Apply locks, tags, and/or other energy control devices. Each authorized person working on the equipment MUST ensure that the equipment cannot be mistakenly or intentionally reactivated without deliberate steps to overcome/circumvent the energy controls. This is to be accomplished by:
  - (1) Locking out each energy control point
    - (a) Whenever a lock is applied, a tag must be applied with it.
    - (b) Lock the appropriate disconnect in the OFF or other appropriate safe position.
    - (c) Due to the design of the equipment, it may be necessary to use a chain, block, or other device to achieve effective energy control through lockout.
  - (2) If it is not possible to apply a lock due to the design of the equipment or the use of the lock may itself present a hazard, then apply a tag at each energy control point.
    - (a) Attach the tag in such a way that it would be plainly visible and attach it in the same location in which a lock would have been.
    - (b) Tagout alone does not provide the same positive hazardous energy control that lockout does. Therefore, additional safety measures MUST be used. These include: stationing a person to monitor the control point; removing an isolating circuit element; blocking a control switch; opening an extra disconnecting device; removing a valve handle; removing fuses, disconnecting wires, barricading the immediate area, etc.
- f. Verify in a positive manner that all energy is controlled.
  - (1) Verification includes using circuit testers, multi-meters, receptacle testers, or pressure gages to ensure energy control.
  - (2) If the authorized employee leaves a job while using lockout/tagout for any reason (lunch break, shift change, called to work on another job, etc.) that employee MUST re-verify the energy controls before beginning work again. During the absence things may have changed. The responsibility for safety is ultimately with the individual performing the work.

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5. The following actions shall be taken by the Authorized Employee in preparation for restoring equipment to normal service.
  - a. Inspect the equipment to ensure that the work necessitating energy control has been completed and that the system is safe to re-energize (i.e., that nonessential items are cleared and that components are operational).
  - b. Re-identify the energy types involved, hazards presented and the controls that were employed. Ensure that controls are in the OFF or other appropriate safe position.
  - c. Notify Contract Coordinator, affected employees and area manager that the energy control devices are going to be removed and ensure affected employees have been safely positioned away from the operation.
  - d. Remove the energy control devices. It may be necessary to request permission from the Contract Coordinator, manager or designee to re-energize the equipment. When authorized, reactivate energy sources using an approved startup sequence.
  - e. Notify affected Contract Coordinator, employees and manager for area that the servicing or maintenance is completed and the equipment is ready to use.
1. Contractor must be knowledgeable about Buyer's lockout/tagout and lock system to avoid confusion over importance of work involved.
2. Contractor must inform affected Buyer's employees of the Contractor's lockout/tagout tag and lock system to ensure safety to all personnel.

## **J. Electrical Work**

1. General Requirements:
  - a. Only a Qualified Person who is trained and knowledgeable of the construction and operation of electrical equipment or a specific work method and is trained to recognize and avoid electrical hazards that might be present with respect to that equipment or work method. Unqualified Persons are prohibited from working on or entering electrical equipment, cabinets or panels while energized.
  - b. All electrical work, installation, and wire capacities shall be in accordance with the pertinent provisions of NFPA 70 (latest revision) and area classifications.
  - c. The construction and installation of permanent and temporary electrical power transmission and distribution lines shall comply with OSHA regulations 29 CFR 1910 Subpart S, and NFPA 70E.
  - d. Prior to starting electrical work which involves cutting, splicing, or tapping existing cables, Contractor shall check to make sure that the circuit to be worked on has been de-energized and the source locked out. Contractor must attach their personal protective locks on the disconnect device.
    - (1) Contractor will check for energized cable with a device intended for the purpose before cutting into the cable or opening a splice or termination. Solidly ground the cable to a known low resistance ground point while working on the cable.
    - (2) Electrical lines shall be de-energized while work is performed. When it is necessary to work with energized lines, only qualified personnel, properly equipped with rubber gloves and blankets which have been tested regularly in accordance with ANSI, shall be utilized

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- (3) At least two people shall be assigned to work on any energized lines or in substations.
  - (4) When it becomes necessary to transport equipment or machinery under overhead lines in a manner that encroaches on specified clearances, the job should be scheduled so the lines can be de-energized.
  - (5) Operations conducted adjacent to overhead lines should not be initiated until coordinated with the local utility officials.
  - (6) Materials and supplies should not be stored under overhead transmission and distribution lines because often times when Contractor's attempt to remove these supplies, they come into contact with the overhead lines.
  - (7) Operations adjacent to overhead lines are prohibited unless one of the following conditions is satisfied:
    - (a) Power has been shut off and positive means taken to prevent the lines from being energized.
    - (b) Equipment, or any part, does not have the capability of coming within the minimum clearance allowed by OSHA from energized overhead lines, or the equipment has been positioned and blocked to assure no part, including cables, can come within the minimum clearances allowed by OSHA.
    - (c) The safe distance requirements from overhead lines energized between 600-50,000 volts shall be at least:
      - (1) 6 ft. for boom-type equipment in transit
      - (2) 10 ft. for boom-type equipment in operation.
      - (3) 6 ft. for people working near overhead lines.
2. Grounding Requirements:
- a. All electrical circuits shall be grounded in accordance with the NEC, unless otherwise noted in this Specification.
  - b. A ground should be provided for non-current-carrying metallic parts of equipment such as: generators (if not exempted by NEC 250-6), electrically powered welders, switches, motor-controller cases, fuse boxes, distribution cabinets, frames, motors of electrically operated cranes, electric elevators, metal frames of non-electric elevators to which electric conductors are attached, other electric equipment and metal enclosures around electric equipment.
  - c. Portable and semi-portable electrical tools and equipment shall be grounded by a multiconductor cord having an identified grounding conductor and a multicontact polarized plug-in receptacle.
  - d. Semi-portable equipment, flood lights and work lights shall be grounded. The protective ground of such equipment shall be maintained during moving unless supply circuits are de-energized.
  - e. Tools protected by a system of double insulation, or its equivalent, need not be grounded. Double-insulated tools shall be distinctly marked and listed by UL or approved by FM.
  - f. Grounding circuits shall be checked to ensure that the circuit between the ground and a grounded power conductor has a resistance which is low enough to permit current flow sufficient to cause the fuse or circuit breaker to interrupt the current.



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- g. Contractor shall have a policy/program for the use, installation and maintenance of personal protective grounds. The Contract Coordinator will provide available fault current values on the system(s).
  - h. All 120-volt single-phase 15 and 20 ampere receptacle outlets which are not a part of the permanent wiring of the building or structure shall have ground-fault circuit interrupters (GFCI) for personnel protection or an assured equipment-grounding conductor program. Permanent wiring of electrical circuits should be grounded in accordance with NEC. GFCIs may be sensitive to some equipment such as concrete vibrators. In these instances, other precautions shall be taken to protect the equipment/personnel.
  - i. Contractor and its employees and Subcontractor employees shall comply with the latest edition of NFPA 70E.
3. Temporary Wiring:
- a. Temporary wiring shall be guarded, buried or isolated by elevation to prevent accidental contact by workers or equipment.
  - b. Outdoor lighting strings shall consist of lamp sockets and connection plugs permanently molded to the conductor insulation.
  - c. Flexible cord sets shall be of a type listed by the UL. Flexible cord sets used on construction Worksites shall contain the number of conductors required for the service, plus an equipment ground wire. The cords shall be hard usage or extra-hard usage as specified in the NEC. Approved cords may be identified by the word "Outdoor" or letters "WA" on the jacket.
  - d. Bulbs attached to festoon lighting strings and extension cords should be protected by wire guards or equivalent unless deeply recessed in a reflector.
  - e. When temporary wiring is used in tanks or other confined spaces, an approved switch, identified and marked, shall be provided at or near the entrance to such spaces for cutting off the current in emergencies.
  - f. Exposed empty light sockets and broken bulbs shall not be permitted.
  - g. Temporary lights shall be equipped with heavy-duty electric cords with connections and insulation maintained in safe condition. Temporary lights shall not be suspended by their electric cords unless cords and lights are designed for this suspension. Splices should have insulation equal to that of the cable.
  - h. Portable electric lighting used in moist and/or hazardous locations such as drums, tanks, vessels and confined spaces shall be operated at a maximum of 12 volts.
  - i. Temporary lights shall be equipped with guards to prevent accidental contact with the bulb.
  - j. Attachment plugs for use in work areas shall be constructed so that they will endure rough use. They shall be equipped with a cord grip to prevent strain on the terminal screws.

### **K. Motor Vehicles & Equipment**

- 1. Contractor's personnel shall observe Buyer's posted speed limits, parking regulations and prevailing OSHA regulations when operating vehicles and moving equipment at Buyer's facilities.
- 2. Only the vehicles and moving equipment absolutely necessary for Contractor's Work shall be allowed within Buyer's facility. Refer to Section entitled "Summary Of

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The Work” of this Specification regarding ingress and egress to Buyer’s facilities. Seat belts shall be worn by all personnel within an operating vehicle while on Buyer’s property.

3. The driver of each vehicle is responsible for the safety of all passengers and the stability of materials being hauled or handled by the equipment.
4. All vehicles which are not necessary for work shall park in areas designated by the Contract Coordinator.
5. All Contractor vehicles must be covered by Contractor’s insurance requirements as indicated in Buyer’s Contract.
6. Blocking of plant roadways is prohibited except where specifically authorized by the Contract Coordinator.
7. Speed limits shall be strictly followed on Buyer’s property.
8. All Contractors’ equipment (i.e., backhoes, cranes, front end loaders, dozers, earth movers, etc.) shall have functioning backup warning devices.
9. All stationary equipment shall be grounded or isolated, when working near, above, or below grade energized lines or equipment.
10. All vehicle operators shall possess a valid driver’s license and be recognized by the Arkansas Department of Motor Vehicles.
11. All Contractors’ equipment, whether owned, leased, or borrowed, shall be free of defects and free from leaks of oils, coolants, or other chemicals.
12. Operation of gasoline engine or diesel engine driven equipment, i.e., forklift, air compressors, generators, pumps, etc., are not permitted in buildings or enclosed area(s) unless the equipment has been inspected and conditions approved by Buyer’s SH&E organization through the Contract Coordinator, prior to initiation of work. While on Buyer’s premises, all gasoline or diesel-powered engines shall be shutdown before fuel tanks are opened or refueled; propane powered equipment shall be in good working condition. Refueling within a building is prohibited. If Buyer’s SH&E organization authorizes use of gasoline or diesel engine driven equipment within a building or enclosed area, conditional approval will be granted on, but not necessarily limited to, the following requirements:
  - a) The contractor shall use an appropriate ventilation method including but not limited to opening doors, additionally the contractor shall coordinate all activities with the Contract Coordinator in order to eliminate any emission buildup.
  - b) The contractor shall conduct continuous monitoring and record for Carbon Monoxide and/or oxygen deficient atmosphere to detect and alert occupants of any hazardous levels near the operation.

## **L. Excavations & Trenching**

1. The sides of all excavations and trenches must be properly sloped, shored or sheeted before entering according to OSHA regulations and shall be capable of withstanding all soil pressures, including stresses which can be exerted by water, heavy loads or vibrations.
  - a. Shoring and sheeting procedures shall be reviewed by Contractor’s “Competent Person” before work begins.
  - b. Shoring and sheeting shall be removed after trenching installation work has been fully completed.

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- c. Contractor may use OSHA compliant movable steel plate trench boxes or shields during trenching work.
2. Location of all underground structures or utilities shall be verified and marked before digging begins. Contractor shall take all necessary precautions to prevent any hazard from developing. In the event any underground structure is encountered, Contractor shall provide proper support to the structure as required to maintain its integrity and stability. In the event an unexpected or unknown underground utility is encountered, all work shall immediately stop until the utility is identified and the hazard has been properly mitigated.
3. All excavations and trenches must have safe access ways and be properly barricaded. Excavated material may be used to barricade one side of the excavation or trench. The edge of the excavated material shall be at least 3 feet from the edge of the excavation or trench. Excavated material must be piled at least 3 feet high when used as a barricade.
4. Check for soil erosion and stability of all excavation walls before entering and after a heavy rain or thaw. Check shoring and sheeting daily or more often in extremely wet weather for stability and for accumulation of water. Checking shall be done by a person who is competent and knowledgeable for this type of work.
  - a. Workmen will not be permitted in trenches or excavations until accumulated water has been totally removed.
5. The area must be cleared and approved by Contractor's Designated Representative prior to the start of excavation.
6. Workers will not be permitted in trenches or excavations while equipment is being used next to the edge.
7. The use of explosives will not be allowed at any time, unless written approval from the Contract Coordinator is first obtained.

## **M. Concrete, Concrete Forms & Shoring**

1. All equipment and materials used in concrete construction and masonry work shall be as required by OSHA and also the applicable requirements prescribed in ANSI A10.9. Wall shoring shall also be designed to meet applicable federal and state codes.
2. Form work and shoring shall be designed, erected, supported, braced, and maintained so that it will safely support all vertical and lateral loads that may be imposed upon it during placement of concrete.
3. Structural calculations regarding strength and stability of form work and shoring shall be made available to the Contract Coordinator upon request.
4. Forms shall not be removed until the concrete can support its own weight and any superimposed load.

## **N. Cranes & Derricks**

1. Contractor shall comply with the manufacturer's specifications and limitations applicable to the operation of any and all cranes and derricks, meet all applicable OSHA standards. Attachments used with cranes shall not exceed the capacity, rating, or scope recommended by the manufacturer. A copy of the crane manufacturer's operating manual shall be available in the cab of each crane at all times. Manufacturer's load rating plates (in view of the operator) shall be attached to all load hoisting equipment.

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2. All cranes and derricks exceeding three (3) tons rated capacity shall not be used unless certified. Certification documents to be provided to the Contractor Coordinator upon request.
3. All equipment used for hoisting will be inspected daily by Contractor before operations are begun. Cranes or equipment that has been idle shall be inspected by Contractor before being put into operation. Maintenance and inspection of cranes or equipment shall be in accordance with ANSI standards.
  - a. Inspection records shall be made available to the Contract Coordinator if requested by Buyer.
4. Operating cranes or equipment in the vicinity of overhead power lines should not start without the special, written approval of the Contract Coordinator. Approval will include an action plan implemented to insure safe operation. This plan may include building barricades, warning signs, a limited device for boom extension, grounding of equipment, use of nylon slings, wearing insulated gloves and boots, and/or limited access. These are preventive measures. First consideration should be given to alternative methods and routes that will keep equipment away from these areas.
5. The riding of crane hooks and/or "wrecking balls" is prohibited. Doing so will result in immediate dismissal.
6. Rigging equipment shall be certified and inspected by qualified personnel prior to use and as necessary during its use to ensure that it is safe. Inspection documentation shall be submitted to the Contract Coordinator upon request.
7. Only personnel qualified by training and experience shall operate cranes or derricks. Upon request, Contractor shall provide qualification and experience resumes for all operators.
8. One person shall be designated to perform signaling.
9. During assembly and disassembly of crane booms and derrick sections, all components shall be adequately supported so that these components will not shift or fall.
10. When making a lift with a crane, Contractor shall have the area cleared, roped or barricaded off, and shall have someone supervising the lift. No one shall stand or pass under suspended loads. Tag lines shall be used for controlling loads.
11. Cranes and derricks shall not be refueled while in operation.
12. When working near energized lines and equipment, the cranes shall be grounded or isolated.
13. All cranes and derricks not in use shall be properly secured.
14. Outriggers must be fully extended for any lift. Where cribbing is used under the outrigger, it must only be used under the pedestal.
15. The use of a crane or derrick to hoist employees on a personnel platform is prohibited, except when the erection, use and dismantling of conventional means of reaching the worksite, such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform or scaffold, would be more hazardous, or is not possible because of structural design or worksite conditions.

### **O. Steel Erection**

1. The erection of new structural steel and removal of structural steel from existing structures shall comply with OSHA regulations. Contractor shall also comply with Buyer's plant safety regulations regarding welding, cutting and spark production

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- when work encompasses any existing facility equipment or structures, including the posting of area(s) where it is necessary to do overhead work.
2. During the placing of solid structural members, the load shall not be released from the hoisting line or lifting equipment until the members are secured with not less than two bolts (or the equivalent) at each connection and drawn up wrench tight.
    - a. Tags or guidelines shall be used for controlling loads.
  3. Before extra members are assembled, all joint bolts must be in place. Under no circumstances shall the second level of the structure be erected until all the joint bolts of the first elevation are installed.
  4. Contractor shall provide and maintain all necessary temporary guying, bracing, falsework, cribbing or other elements required of steel frame to resist safely all wind or seismic forces and construction loads during erection.
  5. All partially erected structural steel shall be braced or secured in an approved manner during interruptions of work or at the end of the working day.
  6. Loads should not be placed on structural supports until members are positively secured from movement or accidental displacement.

## **P. Miscellaneous Provisions**

### **1. General:**

- a. Contractor is solely responsible for Contractor's equipment and goods. Buyer is not responsible for any losses by theft (or by whatever nature) of Contractor's property.
- b. Loose clothing, rings and other jewelry shall not be worn around operating tools or machines. Keep sleeves buttoned. Industrial leather gloves shall be worn when using tools, but not with rotating equipment.

### **2. Illumination:**

- a. Contractor shall ensure that construction areas, aisles, stairs, ramps, runways, corridors, offices, shops, and storage areas where work is in progress shall be adequately lighted with either natural or artificial illumination. Refer to OSHA Standards for illuminated light levels in all work or access areas.

### **3. Sanitation:**

- a. Contractor shall furnish an adequate supply of potable water, containers, and disposable cups to Contractor's employees for drinking water.
- b. Contractor shall furnish adequate toilet facilities for Contractor's employees. All portable toilets shall be kept clean, sanitary, and located in an easily accessible area. If they are to be used at night, the area shall be well lighted.

### **4. Hand and Power Tools:**

- a. All hand and power tools and similar equipment, whether furnished by Contractor or Contractor's employees shall be maintained in a safe operating condition. Damaged tools shall be immediately repaired or replaced. Tools shall be used only for the purpose for which they were designed.
- b. Any tools that are designed to have guards must have those guards in place at all times. Any worker removing a guard or using an unguarded tool shall be subject to dismissal from the worksite.
- c. Grinders are particularly hazardous. Workers shall be trained in their use. While the grinders are rotating, the operator shall assure that he/she is in a

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balanced position and that the momentum of the disc will carry the tool away from the operator if it becomes stuck.

## 5. Powder-Actuated Tools:

- a. Powder-actuated tools shall meet ANSI A10.3.
- b. Only trained workers can use a powder-actuated tool.
- c. Containers shall be lockable and bear the label, "POWDER-ACTUATED TOOL", on the outside. The container shall be kept under lock and key storage.
- d. The tool shall not be used:
  - (1) in an explosive environment
  - (2) on hard or brittle material
  - (3) on unbacked, thin, soft material
  - (4) within 1/2 inch of the edge of steel
  - (5) within 3 inches of the edge of masonry
  - (6) on thin concrete
  - (7) on spalled areas
  - (8) on existing holes
- e. Eye protection shall be worn by operators and assistants.
- f. The tool shall be inspected prior to use. Defective tools shall not be used.
- g. Tools shall not be loaded until ready for use. Tools shall be unloaded if work is interrupted.
- h. Upon misfire, the tool shall be held in place for 30 seconds.
- i. Warning signs bearing the words "POWDER-ACTUATED TOOLS IN USE", shall be conspicuously posted within 50 feet.

## 6. Laser Equipment:

- a. Anticipated laser use for leveling or surveying must be approved by Buyer's SH&E organization.

## Q. Safety Inspection & Housekeeping:

1. Contractor shall check the work area daily at the beginning and at the end of each work shift to ensure safe working conditions are maintained and all safety procedures are followed.
2. Contractor shall be responsible for properly organizing all activities on the job site to the extent that good housekeeping shall be practiced at all times. This shall include, but not be limited to:
  - a. As the job progresses, work areas must be kept clean at all times.
  - b. All materials, tools, and equipment must be stored in a stable position to prevent rolling or falling. Materials and supplies shall be kept away from edges of floors, hoistways, stairways, and floor openings. When exterior walls are being built, materials and supplies shall be kept away from the perimeter of the building.
  - c. A safe access way to all work areas and storage areas must be maintained. All stairways, corridors, ladders, catwalks, ramps, passageways, and work platforms shall be kept clear of loose material and trash.

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- d. Forms and scrap lumber with protruding nails and all other debris shall be cleared from work areas, passageways, stairs, and in and around buildings or other structures.
  - e. Combustible scrap and debris shall be removed at regular intervals. Safe means shall be provided to facilitate such removal.
  - f. Contractor shall supply an adequate number of dumpsters to insure a clean working area at all times. Contractor shall load and transport all refuse and debris to a suitable disposal area away from the job site and make disposition in a lawful manner. Contractor shall be responsible for daily cleanup of common areas, such as parking lots and roadways. Contractor's parking and staging areas shall also be maintained clean and free of all debris at all times.
  - g. Contractor shall restrict the use and storage of flammable liquids and gases to a minimum. Store all flammables not actually needed for immediate use outside building, in a secure shelter. Store all flammables outside building during non-work hours. Store rags or wiping waste with oily or flammable residue away from flammable liquids and in approved closed, metal containers, located outside the building.
    - (1) Contractor shall collect and dispose of flammable debris and dust as it is accumulated.
    - (2) Storage locations for gasoline or other flammable materials used for vehicles or equipment shall be in areas agreed to by the Contract Coordinator. These areas shall be diked to retain spilled material and have appropriately placed fire extinguisher.
  - h. Cords and hoses shall be kept a minimum of 7 feet overhead or laid flat outside of walkways.
  - i. Tools and equipment shall not be strewn about where they might cause tripping or falling hazards and shall, at the end of each workday, be collected and stored in the tool room or craft gag boxes.
  - j. Each employee shall be instructed to practice required housekeeping as part of assigned duties.
3. Housekeeping and care of the job site shall be in accordance with the Contract.