

# RF034-A

*Applicability: This document is site specific for Stennis Space Center (SSC).*

## **Safety, Health and Environment (SH&E) Contractor Flysheet for Aerojet Rocketdyne SSC**

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## I. 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 are 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 Safety, Health and Environment (SH&E) department. Contractors will be denied access to the Buyer's facilities until they have received notification from SH&E that they are pre-approved.** Companies requiring pre-approval include, but 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 and subcontractors must submit the following documentation: *(1) completed Contractor Pre-Approval Form (Form #EHS-AF025); (2) completed Contractor Training Matrix (Form #EHS-AF027); and (3) Contractor Safety & Health Plan* 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 its subcontractors, at any tier, that need to access the Buyer's facilities in the performance of this Project. Detailed Contractor pre-approval information and forms are located at Aerojet Rocketdyne Supplier Information Portal (<http://www.rocket.com/supp/purchase-terms-and-conditions>). **NOTE: You may be in default of your contract if you are not pre-approved and start work on Buyer's facilities or property without this pre-approval.**
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 subcontractor's employees fail to comply with federal, state, local, or municipal 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 its employees from

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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. Requirement modifications for specific safety and environmental rules and procedures will be indicated on drawings.
6. Contractor shall not permit any person to enter 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 its employees, agents, delegates, invitees, and subcontractors.
8. Contractor agrees to indemnify and hold Buyer harmless from prohibiting any Contractor or Subcontractor employees, agents, or invitees from entering the work site or project if, in the sole opinion of Aerojet Rocketdyne, such employee, agent, or invitee fails to comply with SH&E 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 have asbestos awareness training as defined by Code of Federal Regulations, Title 29 and SSC Asbestos Hazard Control Plan, SCWI-8500-0019-ENV. Training shall be completed prior to initiation of work and be current.
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, and invitees.

### **B. References/Standards**

- a. Occupational Safety and Health Act (OSHA)  
Title 29 Code of Federal Regulations (CFR), Parts 1910 & 1926
- b. National Fire Protection Association (NFPA) standards comprising the National Fire Codes, including, but not limited to, the National Electrical Code (NEC) and the NFPA 70E Standard for Electrical Safety in the Workplace
- c. NFPA 30, Flammable and Combustible Liquids Code
- d. American National Standards Institute (ANSI)
- e. American Society for Testing and Materials (ASTM)
- f. International Safety Equipment Association (ISEA)
- g. American Society of Safety Engineers (ASSE)
- h. National Institute for Occupational Safety and Health (NIOSH)
- i. American Conference of Governmental Industrial Hygienists (ACGIH) Industrial Ventilation Manual
- j. Bureau of Labor Statistics (BLS)
- k. 40 CFR, Resource Conservation and Recovery Act (RCRA)
- l. 49 CFR, Department of Transportation of Hazardous Materials and Waste
- m. Toxic Substance Control Act (TSCA)
- n. SCWI-8500-0019-ENV, SSC Asbestos Hazard Control Plan

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1. 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.
2. 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 its employees to receive this information prior to beginning work at Buyer's facility. These rules will include an explanation of Buyer's:
  - a. Emergency systems
  - 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 and Fire Services through the Buyer's Contractor Coordinator. Permission to shut down, remove, modify, or relocate such equipment must be requested through the Buyer's Contractor 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 and Fire Services through the Buyer's Contractor Coordinator.
  - f. Emergency exits
    - (1) Locations
    - (2) Maintaining clear passage
  - g. Evacuation procedures and emergency assembly areas
  - h. Plant fire safety rules
  - i. 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.
3. 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.

### D. Contractor's 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

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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 Subcontractor's work.
- 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 NASA-issued badge or an Aerojet Rocketdyne-issued visitor/contractor badge issued via the Easy Lobby access system.
- e. Ensure that all Contractor and Subcontractor personnel comply with the terms of the contract, including applicable Security and Fire Services and SH&E rules. These rules include, but are not limited to, Confined Space Entry, Hot Work, Lockout/Tagout, hazardous material and waste management.
- f. Provide supervisors and employees who are competent and adequately trained to perform required work.
- 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 Buyer's Contractor Coordinator assigned to the Contractor 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 compliance with state and federal Right-to-Know legislation. Contractor shall provide the Buyer's Contractor Coordinator with

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- appropriate Safety Data Sheets (SDSs) or other required information about hazardous materials the Contractor will bring onto Buyer's property.
- k. Follow specific instructions supplied by Buyer's Contractor Coordinator should emergency alarms be activated.
  - l. Know whom 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 Buyer's Contractor 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 incident report to the Buyer's Contractor Coordinator within one working day. Contractor is responsible to maintain an adequate supply of investigation forms at the job site. Contractor form shall be reviewed by Buyer's SH&E organization.
  - o. Coordinate the use of all radiation-producing devices or materials such as radiography equipment and alignment lasers with the Buyer's Contractor Coordinator.
  - p. Submit to the Buyer's Contractor Coordinator, on a monthly basis, the number of man-hours worked on the Buyer's premise or property for work accomplished on the Project.

### **E. Contractor's SH&E 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 Contractor's employee shall use these instructions to control or eliminate any hazards or other exposure to illness or injury.
2. Contractor shall acquaint each of its 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 its personnel and Subcontractor's employees. Minutes shall be kept onsite and submitted to the Buyer's Contractor 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 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, covering Contractor's safety procedures, Contractor's Safety & Health Plan, and the requirements of this section.

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6. Contractors are responsible for educating their personnel on the requirements of the Federal Hazard Communication Right-to-Know law regarding hazardous chemical inventories, SDSs, container labeling, and emergency procedures.
7. Documentation of Federal 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, any permits, and SDS 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 regulations.
3. Contractor shall be responsible for containerizing all bio-hazardous waste in an OSHA compliant manner and sanitizing any contaminated work areas.
  - a. Contractor will properly dispose of the bio-hazardous waste in accordance with OSHA regulations.

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

1. Contractor shall immediately notify Buyer's Contractor 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, 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.
5. Contractor shall investigate 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 Safety, Health and Environment department through the Buyer's Contractor Coordinator within one (1) working day.

### **H. Personal Attire**

1. Contractor's employees shall wear proper clothing while on Buyer's premises. Removal of shirts or wearing of shorts, tank tops, or open-toed shoes is not allowed.
2. Contractor employees shall wear hard hats (ANSI/ISEA Z89.1, Class A or Class B rated) at the job site during all phases of construction activities. The Contractor



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shall be responsible to ensure that all Contractor employees adhere to the hard hat policy and that the appropriate signage is posted at the job site.

3. Contractor employees shall wear appropriate eye protection, consisting as a minimum of safety glasses with side shields (ANSI Z87/ISEA.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 employees shall wear safety-toed footwear (ASTM F 2413) when there is potential for injury or within Buyer designated safety-toed footwear areas.
5. For additional requirements concerning personal protective equipment, 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, distribution of unauthorized literature, and language that is offensive or disruptive 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, cell phones with camera, PDAs, radios, binoculars, recorders, and radio-frequency (RF) transmitting devices are restricted items. Such items are permitted on the premises only if job related and after obtaining prior approval from Security and Fire Services through the Buyer's Contractor Coordinator. Prior approval will be additionally required from Buyer's SH&E organization through the Buyer's Contractor Coordinator whenever explosives or radioactive materials are to be brought to the premises.

### **J. Smoking Regulations**

1. Smoking or the use of tobacco products is prohibited within all of Buyer's buildings and within 20 ft. of building entrances.
2. Contractor employees are allowed to smoke only within Buyer's designated smoking areas.
3. Cigarettes and cigarette butts shall not be tossed on the ground or in landscape planters. Cigarettes are not to be extinguished by stamping on the ground.
4. Contractor and Contractor's employees shall use the special self-extinguishing receptacles located in the designated smoking areas and at the main building entrances.

### **K. Use of Buyer Tools/Equipment**

1. Building cranes may be used by the Contractor only with the prior approval of the Buyer's Contractor Coordinator and only after appropriate bailment liability documentation is approved by Buyer. Contractor operators must be trained/qualified to operate the equipment. Testing or proof loading prior to and/or after the Contractor's use shall be at the Contractor's expense.

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2. With the exception of Section I.K.1 of this document, the use of Buyer's tools and equipment is strictly forbidden.

### L. Work Safety Permits

1. Permits may be required by Buyer for certain work activities. Examples include, but are not limited to, the following:
  - a. Lockout/Tagout
    - (1) Refer to Section III.I of this document for Lockout/Tagout requirements.
  - b. Excavations
  - c. Hot Work
    - (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 Buyer's Contractor Coordinator.
    - (2) Buyer's Security and Fire Services will be responsible for closing all valves and aborting all fire suppression and detection systems.
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 Buyer's Contractor Coordinator for work scope concurrence and for Buyer's Contractor Coordinator's initials showing proof of approval.
4. Contractor must ensure that its employees are knowledgeable of the permit requirements.
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. Buyer's Contractor Coordinator will periodically question Contractor's employees as to

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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, and invitees and Subcontractors and Buyer's Contractor Coordinator, including operators and facility supervisors, should be aware of the specific requirements of each permit. This awareness allows each person 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 begins, Contractor shall provide to Buyer's SH&E organization, through the Buyer's Contractor Coordinator, a hazardous material inventory and the corresponding SDSs.
2. Hazardous materials shall not be brought onto Buyer's property until approval is received from Buyer's SH&E organization through the Contractor Coordinator.
3. The hazardous material inventory along with all SDSs shall be made available to the Buyer's Contractor Coordinator on an immediate basis.
4. Contractors are 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 an SDS, Contractor shall immediately request the SDS from the manufacturer. No material shall be brought onsite or used without an SDS.
7. An SDS is not required for subsequent deliveries of the same product by the same manufacturer for the same job.
8. Contractor shall store hazardous materials in Buyer-approved staging areas. Upon request, Contractor shall provide Buyer's Contractor 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.

## 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 with the specific requirements associated with this specification, including but not limited to, required licenses, certifications, permits, and insurance.
2. The Contractor shall submit to Buyer a close-out package to include, at a minimum, all daily logs, sign-in and sign-out sheets, safety meetings, personnel air/blood monitoring data, SDSs of the materials used, HEPA inspection logs, agency notification and permits, copies of manifests, and general field notes. The close-out package must be submitted to Buyer's Contractor Coordinator within 2 weeks after the end of the project.

### B. Air Conditioning Systems

1. Should the Contractor perform task(s) such as repairing, servicing, or disposing of an air conditioning system, the Contractor must comply with all regulatory requirements specified in 40 CFR Part 82.
  - a. Included in these requirements, at a minimum, the Contractor shall be certified to perform such work and provide Buyer with current certifications and documentation at least 24 hours prior to the start of the project.

### C. Air Quality

1. At any time during repairing, servicing, or disposing operations, the Contractor shall comply with all Environmental Protection Association (EPA) 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.

### D. Asbestos

1. Contractor shall assume all building materials contain asbestos which shall not be disturbed unless indicated on drawings. If such areas must be disturbed, Contractor shall coordinate with Buyer's Contractor Coordinator to obtain written approval from Buyer's SH&E organization.
2. Buyer defines all asbestos-containing material (ACM) as a material containing any amount of asbestos fibers.
3. All Contractor and Subcontractor employees that contact or work on asbestos-containing materials during their work activities shall have asbestos awareness training as defined by 29 CFR and SSC Asbestos Hazard Control Plan, SCWI-

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8500-0019-ENV. Training shall be current and completed prior to initiation of work.

4. If the project's scope of work involves asbestos abatement and consulting services, refer to Buyer's drawings or Statement of Work.
5. Contractor shall make appropriate asbestos notifications for renovation or demolition activities when applicable.

### E. 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 OSHA regulations and 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.
3. Contractor shall assume responsibility for the proper packaging of the lead waste prior to disposal.
4. Buyer shall assume responsibility for disposal of all lead-containing waste that is generated.
5. Contractor shall perform pre-sampling and post-sampling of the area where lead materials will be disturbed.
6. Upon request, Contractor shall provide Buyer with Contractor's personnel air monitoring data and blood lead levels consistent with medical confidentiality provisions.
  - a. If any Contractor's employee or their designated agents exceed the OSHA Permissible Exposure Level for lead of 50 micrograms per cubic meter ( $50 \mu\text{g}/\text{m}^3$ ) or have elevated blood levels greater than 50 micrograms per deciliter ( $50 \mu\text{g}/\text{dl}$ ), the employee shall be removed from the work area and additional engineering work control measures shall be implemented by Contractor.

### F. 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

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organization. All equipment or area wash-down water shall be contained and discharged according to instructions from Buyer's Contractor Coordinator.

2. All concrete-cutting water shall be captured and containerized in Buyer's approved containers and shall be handled by Buyer's SH&E organization.

### **G. Hazardous Waste**

1. Contractor shall notify Buyer's Contractor 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. Contractor shall stage hazardous or potentially hazardous wastes in Buyer-approved hazardous waste containers in Buyer-approved staging area(s). Contractor shall maintain containers in good condition and shall not open, handle, or store waste containers in a manner that may rupture the container or cause it to leak. Contractor shall be responsible for transportation and disposal of all Contractor-generated hazardous wastes in accordance with applicable state and federal regulations.
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, local, or municipal 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.

### **H. 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.

### **I. Soil, Concrete & Asphalt Handling**

1. Historical process data shows the potential for soil and/or groundwater and/or concrete/asphalt contamination. Should the Contractor find any potential contamination spots in the soil, concrete, or asphalt, the Contractor shall immediately stop the project and notify the Buyer's Contractor Coordinator.
2. One week prior to the start of excavation, the Contractor shall notify the Buyer's Contractor Coordinator.
3. When contamination is found and/or suspected during excavation, Contractor shall perform air monitoring every 15 minutes using an organic vapor analyzer.

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- a. The measurements shall be taken at not more than 3 inches from the surface of excavated soil.
- b. If a reading exceeds the specified value determined by Buyer's SH&E organization, Contractor shall immediately notify the Buyer's Contractor Coordinator and implement the soil mitigation plan.
- c. Contractor shall provide Buyer with the daily monitoring reports.
4. All concrete and soil removed shall be transported outside the building and placed on, and covered with, minimum 20-mil polyethylene plastic.
  - a. Buyer shall notify the Contractor of the approved location.
  - b. Storm water must not come into contact with the soil.
  - c. Contractor shall provide run-on and run-off control.
5. Buyer will sample the soil after the soil has been excavated and will determine if the soil meets hazardous waste requirements.
6. If the soil and/or concrete is found to be contaminated, Contractor will provide the appropriate waste containers.
7. Contractor shall dispose of contaminated soil and/or concrete.
8. Soil that is found to be contaminated shall be disposed of by Contractor.
9. After the excavation is complete for each particular area, the Contractor shall allow Buyer sufficient time to collect soil samples prior to any further construction.

### **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. Buyer's Security and Fire Services personnel responsible for fire protection will give Contractor's employees instructions concerning operations which tend to compromise fire prevention practices or standards.
  - c. Smoking is permitted only in designated areas.
  - d. Welding, burning, cutting, spark-producing equipment, or heating operations require prior approval and a valid permit from Security and Fire Services through the Buyer's Contractor Coordinator.
  - e. Operation of gasoline engine or diesel engine-driven equipment (i.e., forklifts, air compressors, generators, pumps, etc.) is not permitted in occupied buildings unless the equipment has been inspected and conditions (e.g., equipped with an approved exhaust purifying device) approved by Buyer's SH&E organization through the Buyer's Contractor Coordinator. While on Buyer's premises, all gasoline or diesel-powered engines shall be shut down

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before fuel tanks are opened or refueled. Refueling shall not occur within a building.

- f. Liquefied petroleum fuel tanks require inspection by Security and Fire Services 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 Security and Fire Services 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 Buyer's Contractor 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 Buyer's Contractor 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 (e.g., 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 Hot Work Permit (form provided by SSC Fire Dept.) must be completed prior to any welding, cutting, burning, grinding, or heating operation, open-flame operations, spark production, or other hot work being performed. SSC Fire Dept. will respond to inspect the proposed operation. No work shall be performed without Fire Service's signature approval on the Hot Work Permit. The Hot Work Permit shall be prominently displayed within the work area. Upon completion of the job, the permit shall be forwarded to the Facilities Engineering department for filing. No welding, cutting, or other hot work shall be done where the application of flammable paints or the presence of other combustible materials or heavy dust concentration creates a fire hazard.
- 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 Buyer's Contractor Coordinator for removal whenever possible of the hazardous materials from the immediate area to a safe location. Contractor will provide adequate standby



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personnel, barriers, and warning signs on lower floor level while performing overhead burning, cutting, 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 Buyer's Contractor 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 Hot Work Permit.
  - b. Contractor's welding, cutting, spark production, or other hot work operations will be permitted in flammable liquid areas only if operations are shut down, vapor checks are made, solvents are 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 (i.e., 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 performing work 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 filters 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, to pressurize a container, to 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 Contractor 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 workers.
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.

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- d. Respirators shall be cleaned, disinfected, and filters replaced 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 on an annual basis what health and physical conditions are pertinent.
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 SDS, 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 protective apparel and safety protection devices shall be worn. A full face shield may be required at the discretion of the Buyer's Contractor Coordinator.
  - c. Safety-toed footwear (ASTM F 2413) 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. Safety glass cleaner shall also be made readily available to all Contractor employees.

### 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.
  - b. Tags or guidelines shall be used for controlling loads.

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- c. Special custom design grabs, hooks, clamps, or other lifting accessories (for such units as modular panels, prefabricated structures and similar materials) shall be marked to indicate safe working loads and shall be proof tested prior to use of 125 percent of their rated load.
- 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 managed in accordance with NFPA 30.
  - c. Materials stored inside buildings under construction shall not be placed within 6 feet of any hoist way or inside floor opening nor within 10 feet of an exterior wall which does not extend above the top of the material stored.
  - d. Materials stored on existing structurally supported floors and roofs shall not exceed the uniform design load capacity of floor or roof.
  - e. Storage location shall be approved by the Buyer's Contractor 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 Buyer's procedures and all applicable ordinances, regulations, and laws of local, city, county, state, and national government agencies. For disposal of hazardous material, refer to Section II.G of this document.
  - b. The disposal method of debris and nonhazardous waste materials shall be selected by Buyer. Buyer's SH&E organization will select each disposal method to ensure compliance with applicable ordinances, regulations, and laws of local, city, county, state, and national government agencies having jurisdiction. Contractor shall comply with each waste disposal method selected.
  - c. 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 and 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.

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- (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 without wearing a safety harness that is tied off to a local structure.

### 2. Scaffolds

- a. The use of scaffolds shall comply with OSHA regulations and shall include, but not be limited to:
  - (1) All scaffolds must be erected level and plumb and on a firm base. Platforms must be secured to the scaffold structure.
  - (2) Never exceed safe working loads on scaffolds.
  - (3) Never rig from scaffold handrails or braces.
  - (4) Scaffold handrails, midrails, or brace members shall not be climbed. Use ladders for access.
  - (5) Appropriate handrails, toe boards, and cleats are in place as required.
  - (6) Since federal standards are detailed in their specifications for the dozens of types of scaffolds, OSHA 29 CFR Section 1926.451 must be consulted 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
  - (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.

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- 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 toe boards 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 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 occurs:
    - (1) The workers take a break or leave the area.
    - (2) The work is not completed by the end of the working day.
    - (3) 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 that 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.

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3. Contractor's employees shall obey all signs, signals, and barricades which are posted to warn of potential or existing hazard.
4. Barricades must be 42 inches high, square and level. A sign shall be affixed to each barricade installed to indicate point of contact information and reason that the barricade is in place. 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 high visibility reflective vests (red, orange, or green). 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.
  - (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.

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- 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 unacceptable 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 line and backup person. When Contractor's employees work alongside 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



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energy condition for the equipment being worked on before the actual work begins and by preventing unauthorized or inadvertent energization 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 and 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 (e.g., vent valves, relief valves, or electrical shorting bars) that must be locked in a safe position in order to prevent rebuild-up of energy.
    - (3) Appropriate energy control methods - identify the method used to control the energy (i.e., locks, tags, and other devices such as blocks, chains, etc.)
  - b. Notify Buyer's Contractor 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. Buyer's Contractor Coordinator must apply Buyer's facility "blue lock" to each energy control point in the Contractor's lockout scheme.
  - d. Shut down the equipment according to established procedures or practices.
  - e. Control the energy by:
    - (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

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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.

- f. 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 where 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.
  - g. 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.
5. The following actions shall be taken by the authorized employee in preparation for restoring equipment to normal service:

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- 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 Buyer's Contractor 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 Buyer's Contractor Coordinator, manager, or designee to re-energize the equipment. When authorized, reactivate energy sources using an approved startup sequence.
  - e. Notify affected Buyer's Contractor Coordinator, employees, and manager for area that the servicing or maintenance is completed and the equipment is ready to use.
6. Contractor must be knowledgeable about Buyer's lockout/tagout system to avoid confusion over importance of work involved.
  7. Contractor must inform affected Buyer's employees of the Contractor's lockout/tagout system to ensure safety to all personnel.

### J. Electrical Work

#### 1. General Requirements

- a. All electrical work, installation, wire capacities, and appropriate personal protective equipment shall be in accordance with the pertinent provisions of the National Electric Code (NEC), NFPA 70E (latest revision), and area classifications.
- b. 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.
- c. Prior to starting electrical work which involves cutting, splicing, or tapping existing cables, Contractor will request Buyer to tag and identify all cables present in the area. Contractor shall ensure that the circuit to be worked on has been de-energized and the source locked out. Contractor must attach their personal protective locks in parallel with a Buyer facility "blue lock" on the disconnect device. Buyer facility "blue locks" will be installed by the Buyer's Contractor Coordinator. Review one line diagram to be sure there are no alternate power sources.
  - (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, all work shall be performed by

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qualified personnel as per the NFPA 70E guidelines for energized work. This shall include, but is not limited to, preparation of a live work permit and all information required to complete said permit, as well as ensuring that proper PPE is worn by those involved.

- (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 Contractors often come into contact with the overhead lines when attempting to remove these supplies.
  - (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 document.
  - 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 multi-conductor cord having an identified grounding conductor and a multi-contact 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.

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- 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.
  - g. Contractor shall have a policy/program for the use, installation, and maintenance of personal protective grounds. The Buyer's Contractor 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.
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.

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- 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 the Work" in this document 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 be parked in areas designated by the Buyer's Contractor 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 Buyer's Contractor Coordinator.
7. Speed limits shall be strictly followed on Buyer's property.
8. All Contractor 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 Mississippi Department of Motor Vehicles.

### 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.
  - 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 in order to maintain its integrity and stability. In the event an unexpected or unknown underground utility is

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encountered, all work shall immediately stop until the utility is identified and the hazard has been properly mitigated.

- a. Refer to section entitled “Summary of the Work” in this document for additional requirements regarding underground structures.
3. All excavations and trenches must have safe access ways and be properly barricaded. Barricades with flashing lights are required at night. 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 Buyer’s Contractor Coordinator is first obtained.
8. The written excavation plan must be available onsite for review.

### **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 Buyer’s Contractor 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. 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.
2. All cranes and derricks exceeding three (3) tons rated capacity shall not be used unless certified by a recognized certifying agent.

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3. All equipment used for hoisting will be inspected daily by Contractor before operations are begun. Cranes or equipment that have 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 Buyer's Contractor 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 Buyer's Contractor Coordinator. Approval will include an action plan implemented to ensure safe operation. This plan may include building barricades, warning signs, a limiter 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 state or manufacturer representatives prior to use and as necessary during its use to ensure that it is safe. Inspection documentation shall be submitted to the Buyer's Contractor 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. Operators will be required to wear hard hat identification.
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 where specifically approved by the Buyer's Contractor Coordinator on a case-by case basis, and only 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.



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## 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 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, false work, 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.
- c. Contractor is not allowed to work in a Foreign Object Elimination (FOE) zone unless Contractor is escorted by an Aerojet Rocketdyne employee who has completed FOE Technical training.

### 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 its 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 & Power Tools

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- a. All hand and power tools and similar equipment, whether furnished by Contractor or its 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 ensure that he/she is in a 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/ASSE A10.3 (latest edition).
  - b. Only trained workers holding a valid operator's card 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 may be audited by the Buyer at any point while work is in progress to ensure that Contractor is complying with Buyer's SH&E requirements.

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3. 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, hoist ways, 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.
  - 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 in a secure shelter. During non-work hours, flammable materials must be stored in a location approved by the Buyer's Contractor Coordinator. Rags or wipes with oily or flammable residue must be properly segregated and stored 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 approved by the Buyer's Contractor 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 neatly in craft gang boxes or other designated stowage area.
  - j. Each employee shall be instructed to practice required housekeeping as part of assigned duties.
4. Housekeeping and care of the job site shall be in accordance with the contract.